

## Academic Program Description Form



Name of University : University of Wasit  
College/Institute : College of Sciences  
Science Department : Geology Department  
Academic or Professional program Name : Bachelor  
Final Certificate Name : Bachelor of Science in Geology  
Academic System : Polonga Process system  
Description preparation Date : 2025/10/1  
Form Completion Date : 2025/10/1

Assist.prof.Dr.Ali Jabbar Fraih  
Deputy Dean For Scientific  
Affairs and Postgraduate studies

*Sattar*

Signature  
Head of Department Name :  
Assist. Prof. Sattar Obaid Maios

الاستاذ المساعد  
ستار عبيد مايوس  
رئيس قسم علوم الارض

Signature  
Scientific Associate Name :  
Assist Prof. Dr. Ali Jabbar Fraieh

File Checked by  
Department of Quality assurance and University Performance  
Director of Department : Teacher Assist Dounya Fadhil Abbas

Signature : *[Signature]*  
Date : 2025/10/1

م.م دنيا فاضل عباس  
مسؤول شعبة ضمان الجودة والاداء الجامعي

*[Signature]*  
الاستاذ المساعد الدكتور  
فايزة جعفر الحسيني  
عميد كلية العلوم  
Approval of the Dean

**Academic Polonga Program Description - Department of Geology  
Wasit University / College of Science**

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                               |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>1. Educational Institution</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Wasit University / College of Science                                                                                                                                                                                                         |
| <b>2. Scientific Department / Center</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Department of Geology                                                                                                                                                                                                                         |
| <b>3. Academic or Professional Program Name</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Bachelor of Geology                                                                                                                                                                                                                           |
| <b>4. Final Certificate Name</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Bachelor's Degree                                                                                                                                                                                                                             |
| <b>5. Academic System</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Bologna Process                                                                                                                                                                                                                               |
| <b>6. Accredited Accreditation Program</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | None                                                                                                                                                                                                                                          |
| <b>7. Other External Influences</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <ol style="list-style-type: none"> <li>1. Scientific research related to the department's specialization.</li> <li>2. Internet networks.</li> <li>3. Regular and digital libraries.</li> <li>4. Data show.</li> <li>5. PowerPoint.</li> </ol> |
| <b>8. Date of Description Preparation</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1 <sup>st</sup> October 2025                                                                                                                                                                                                                  |
| <b>9. Academic Program Objectives:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                               |
| <ol style="list-style-type: none"> <li>1. Teaching the basics of Earth Science as a science that researches the physical characteristics of our planet, from earthquakes to raindrops, and floods to fossils. Earth sciences can be considered a branch of planetary sciences, but with a much older history. Earth sciences include four main branches of study: lithosphere, hydrosphere, atmosphere, and finally the biosphere.</li> <li>2. Dealing on the basis of quotation and then learning to develop the student's mental capability.</li> </ol> |                                                                                                                                                                                                                                               |

3. Developing the student's ability to collect information and apply it.
4. Encouraging scientific research and improving the student's discussion skills.
5. Developing the creative and intellectual skills of the department's students to enable them to deal scientifically in making decisions related to their specialization or enabling them to succeed in facing work problems.

## **10. Required Program Outcomes and Methods of Teaching, Learning, and Assessment:**

### **Cognitive Objectives:**

- Familiarize the student with the basics of Earth Science.
- Raise the student's capabilities to the level of understanding in the field relative to their specialization.
- Develop and elevate the student's cognitive abilities.

### **Program-Specific Skills Objectives:**

- Teach the student how to become capable of logical thinking.
- Teach the student to analyze and employ the approved curriculum vocabulary.
- Develop the student's self-mental ability in the specialization, which is an important part of their field.
- Equip the student with communication skills and the effective use of modern educational technologies.

### **Affective Objectives:**

- Direct questions that require answers within short time periods.
- Develop and support discussions inside the classroom.

### **General and Transferable Qualifying Skills:**

- Basic communication skills through (sports activities, educational counseling, college conferences, department seminars, student research discussion seminars).
- Provide an appropriate educational climate for logical thinking through continuous guidance by professors during lectures and opening direct discussions with students.

## **11. Teaching and Learning Methods:**

- Lectures.
- Directing questions and opening dialogue.

- Computer-supported teaching and subject presentation using displays.
- Assigning the student to write some research papers.
- Participation in conferences and scientific trips.
- Curricula, using the internet, display screens, and presentation programs.

### Assessment Methods:

1. Daily and monthly tests.
2. Scientific research.
3. Conducting student seminars to determine their understanding of the material.
4. Preparing working papers and graduation research for the final stage.
5. Oral, monthly, and daily exams.

## 12. Program Structure

### First Stage: First Semester

| Course / Subject Name    | Theory (Hours) | Practical (Hours) | Units |
|--------------------------|----------------|-------------------|-------|
| General Geology 1        | 2              | 3                 | 7     |
| Crystallography          | 2              | 3                 | 7     |
| Chemistry                | 2              | 3                 | 5     |
| Democracy & Human Rights | 2              | -                 | 3     |
| Mathematics 1            | 2              | -                 | 4     |



|                 |   |   |    |
|-----------------|---|---|----|
| Arabic Language | 2 | - | 4  |
| Total Units     |   |   | 30 |

| First Stage: Second Semester |                |                   |       |
|------------------------------|----------------|-------------------|-------|
| Course / Subject Name        | Theory (Hours) | Practical (Hours) | Units |
| General Geology 2            | 2              | 3                 | 7     |
| Minerals                     | 2              | 3                 | 6     |
| Computer 1                   | 2              | 2                 | 4     |
| General Physics              | 2              | 3                 | 6     |
| Mathematics 2                | 2              | -                 | 3     |
| Academic English 1           | 2              | -                 | 4     |
| Total Units                  |                |                   | 30    |

| Second Stage: First Semester |                |                   |       |
|------------------------------|----------------|-------------------|-------|
| Course / Subject Name        | Theory (Hours) | Practical (Hours) | Units |
| Structural Geology 1         | 2              | 2                 | 5     |
| Optical Mineralogy           | 2              | 3                 | 6     |

|                                 |   |   |    |
|---------------------------------|---|---|----|
| Macropaleontology               | 2 | 2 | 5  |
| Geomorphology & Desertification | 2 | 2 | 5  |
| Sedimentology                   | 2 | 2 | 5  |
| Statistics 1                    | 2 | - | 2  |
| Baath Regime Crimes in Iraq     | 1 | - | 2  |
| Total Units                     |   |   | 30 |

### Second Stage: Second Semester

| Course / Subject Name | Theory (Hours) | Practical (Hours) | Units |
|-----------------------|----------------|-------------------|-------|
| Structural Geology 2  | 2              | 2                 | 5     |
| Micropaleontology     | 2              | 2                 | 6     |
| English Language 2    | 2              | -                 | 2     |
| Sedimentary Rocks     | 2              | 2                 | 6     |
| Remote Sensing        | 2              | 2                 | 6     |
| Arabic Language 2     | 2              | -                 | 2     |
| Computers 2           | 2              | 2                 | 3     |
| Total Units           |                |                   | 30    |

| Third Stage: First Semester          |                |                   |       |
|--------------------------------------|----------------|-------------------|-------|
| Course / Subject Name                | Theory (Hours) | Practical (Hours) | Units |
| Igneous Rocks                        | 2              | 2                 | 5     |
| Geotectonics                         | 2              | 2                 | 5     |
| Geochemistry 1                       | 2              | 2                 | 5     |
| Geophysics 1                         | 2              | 2                 | 5     |
| Geographic Information Systems (GIS) | 2              | 2                 | 5     |
| Field Geology                        | 2              | 2                 | 5     |
| Total Units                          |                |                   | 30    |

| Third Stage: Second Semester |                |                   |       |
|------------------------------|----------------|-------------------|-------|
| Course / Subject Name        | Theory (Hours) | Practical (Hours) | Units |
| Hydrogeology                 | 2              | 2                 | 5     |
| Geology of Iraq              | 2              | 2                 | 5     |
| Stratigraphy                 | 2              | 2                 | 5     |
| Geophysics 2                 | 2              | 2                 | 5     |
| Geochemistry 2               | 2              | 2                 | 5     |

|                   |   |   |    |
|-------------------|---|---|----|
| Metamorphic Rocks | 2 | 2 | 5  |
| Total Units       |   |   | 30 |

### 13. Planning for Personal Development

It is the first process of success, through: setting visions, visualizing objectives and programs, working on their implementation, and then continuous evaluation. This is done by including external training programs within the chain of external benefits and motivating students to independently and individually head towards these programs, courses, and specialized institutes, while the institution's role acts as an incentive and motivation through the teaching system.

### 14. Admission Standard (Setting regulations related to college or institute enrollment)

First: College Admission Requirements:

- Adopting student admission requirements according to the regulations of the Ministry of Higher Education and Scientific Research (Central Admission).
- Successfully passing any special test or personal interview deemed necessary by the College or University Council.
- Being medically fit for the applied specialization.

Second: Scientific Department Admission Requirements:

- Selecting the student's preference from multiple choices arranged by priority.
- General Secondary School admission average.
- The grade average of the specific course the student wishes to study in the department.
- The absorption capacity of the scientific department.

## **15. Key Information Sources about the Program**

- Approved teaching methods curriculum at Wasit University.
- Various American and British programs for the University of Iowa, Arkansas, South Carolina, Leeds, and Birmingham.

# وصف البرنامج الأكاديمي

قسم علوم الأرض  
2025-2026



## Course Description Form

|                                                                     |
|---------------------------------------------------------------------|
| 1. Course Name:                                                     |
| General Geology 1                                                   |
| 2. Course Code:                                                     |
|                                                                     |
| 3. Semester / Year:                                                 |
| The first – 2025/ 2026                                              |
| 4. Description Preparation Date:                                    |
| 1/10/2025                                                           |
| 5. Available Attendance Forms:                                      |
| Actual Attendance                                                   |
| 6. Number of Credit Hours (Total) / Number of Units (Total)         |
| (2 Hours Theory) and (2 hours practical)                            |
| 7. Course administrator's name (mention all, if more than one name) |

|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 8. Course Objectives |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Course Objectives    | <ul style="list-style-type: none"><li>It includes learning about geology in general and its relationship with other sciences. It is used for the purpose of identifying the composition of the Earth's interior, including minerals, rocks, ground and surface water, and the various layers of the Earth. It also studies the lives of living organisms that lived and died millions of years ago and the most important earth movements that build mountains</li></ul> |

## 9. Teaching and Learning Strategies

|          |                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Strategy | <ul style="list-style-type: none"> <li>a. Group discussions and assignments</li> <li>b. Creating a competitive atmosphere among students and addressing individual differences using appropriate educational methods</li> <li>c. Research projects</li> <li>d. Interdisciplinary discussion circles</li> <li>e. Incorporating teaching methods that utilize educational technology</li> <li>f. Encouraging students for self-directed learning</li> </ul> |
|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## 10. Course Structure

| Week | Hours | Required Learning Outcomes                                         | Unit or subject name/<br>Theoretical                        | Learning method/<br>practical                              | Evaluation method                              |
|------|-------|--------------------------------------------------------------------|-------------------------------------------------------------|------------------------------------------------------------|------------------------------------------------|
| 1    | 4     | Referred to in the previous axis and each according to the content | Introducing geology and its relationship to other sciences  | Introducing geology and its relationship to other sciences | Daily preparation and oral exam and Discussion |
| 2    | 4     | =                                                                  | Theories of the emergence of the solar system and the Earth | Mineral composition                                        | Daily preparation and oral exam and Discussion |
| 3    | 4     | =                                                                  | Earth spheres                                               | Mineral features                                           | Daily preparation and oral exam and Discussion |
| 4    | 4     | =                                                                  | Crust of the Earth                                          | Chemical properties of minerals                            | Daily preparation and oral exam and Discussion |
| 5    | 4     | =                                                                  | Mantle and core of the Earth                                | Physical properties of minerals                            | Daily preparation and oral exam and Discussion |
| 6    | 4     | =                                                                  | Matter, atoms, chemical bonds, and composition of minerals  | Physical properties of minerals that depends on light      | Daily preparation and oral exam and Discussion |
| 7    | 4     | =                                                                  | Chemical properties of minerals                             | Physical properties of minerals That depends on hardness   | Exam.                                          |

|    |   |   |                                                 |                                  |                                                |
|----|---|---|-------------------------------------------------|----------------------------------|------------------------------------------------|
| 8  | 4 | = | Exam                                            | Exam                             | Daily preparation and oral exam and Discussion |
| 9  | 4 | = | Rocks, types of rocks, rock cycle in nature     | Hardness Mohs scale              | Daily preparation and oral exam and Discussion |
| 10 | 4 | = | Erosion of rocks and soil                       | Silicates minerals               | Daily preparation and oral exam and Discussion |
| 11 | 4 | = | Physical (mechanical) erosion, chemical erosion | Non- Silicates minerals          | Daily preparation and oral exam and Discussion |
| 12 | 4 | = | Soil, soil classification                       | Mineral components of soil types | Daily preparation and oral exam and Discussion |
| 13 | 4 | = | Components of mature soil                       | Components of mature soil        | Daily preparation and oral exam and Discussion |
| 14 | 4 | = | Physical properties of minerals                 | Physical properties of minerals  | Daily preparation and oral exam and Discussion |
| 15 | 4 | = | Review and prepare for the exam                 | Review and prepare for the exam  | Exam.                                          |

## 11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

## 12. Learning and Teaching Resources

|                                                                    |                                                                                         |
|--------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| Required textbooks (curricular books, if any)                      | General Geology<br>(University of Baghdad),<br>General Geology<br>(University of Mosul) |
| Main references (sources)                                          | Physical Geology(S.Zayer<br>and Gollf,2006)                                             |
| Recommended books and references (scientific journals, reports...) | The Iraqi Geological<br>Journal published by the<br>Iraqi Geologists union              |
| Electronic References, Websites                                    | Publications and reports of<br>the Iraqi Geological Survey                              |

# وصف البرنامج الأكاديمي

قسم علوم الأرض  
2025-2026

وصف المقرر الدراسي

|                                                                          |                                                                                                                                                                                                                                                                                                                                        |
|--------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1- اسم المقرر                                                            |                                                                                                                                                                                                                                                                                                                                        |
| اللغة العربية                                                            |                                                                                                                                                                                                                                                                                                                                        |
| 2- رمز المقرر                                                            |                                                                                                                                                                                                                                                                                                                                        |
| قسم علوم الأرض / المرحلة الأولى                                          |                                                                                                                                                                                                                                                                                                                                        |
| 3- الفصل / السنة                                                         |                                                                                                                                                                                                                                                                                                                                        |
| الأول / الثانية                                                          |                                                                                                                                                                                                                                                                                                                                        |
| 4- تاريخ إعداد هذا الوصف                                                 |                                                                                                                                                                                                                                                                                                                                        |
| 2025/9/15                                                                |                                                                                                                                                                                                                                                                                                                                        |
| 5- أشكال الحضور المتاحة                                                  |                                                                                                                                                                                                                                                                                                                                        |
| حضور و إلكتروني                                                          |                                                                                                                                                                                                                                                                                                                                        |
| 6- عدد الساعات الدراسية (الكلية) / عدد الوحدات (الكلية)                  |                                                                                                                                                                                                                                                                                                                                        |
| (2 ساعة نظري) / 2 وحدات                                                  |                                                                                                                                                                                                                                                                                                                                        |
| 7- اسم مسؤول المقرر الدراسي                                              |                                                                                                                                                                                                                                                                                                                                        |
| الاسم: م. ابتسام علي حواس شمخي العويد<br>الایمیل: ehawass@uowasit.edu.iq |                                                                                                                                                                                                                                                                                                                                        |
| 8- أهداف المقرر                                                          |                                                                                                                                                                                                                                                                                                                                        |
| أهداف المقرر                                                             | <ul style="list-style-type: none"><li>• تعزيز فهم الطلاب تطوير المهارات اللغوية والمعرفية للطلاب مما يمكنهم من الاداء الأكاديمي والمهني بشكل افضل كتحسين مهارات الكتابة والاملاء وتنمية قدرة على التعبير الابداعي والتواصل بلغة عربية سليمة</li></ul>                                                                                  |
| 9- استراتيجيات التعليم والتعلم                                           |                                                                                                                                                                                                                                                                                                                                        |
| الاستراتيجية                                                             | <ul style="list-style-type: none"><li>• تضمين طرائق التدريس الحديثة والاستعانة بتقنيات العرض المتطورة</li><li>• المناقشات الجماعية وحل الواجبات</li><li>• خلق اجواء المنافسة بين الطلبة وعلاج الفروقات الفردية باستخدام الوسائل التعليمية المناسبة</li><li>• تشجيع الطلبة على البحث والتعلم الذاتي من خلال المجاميع البحثية.</li></ul> |

| 10- بنية المقرر                                                                                                                                                             |             |                                                                                   |                       |                  |                         |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-----------------------------------------------------------------------------------|-----------------------|------------------|-------------------------|
| الأسبوع                                                                                                                                                                     | عدد الساعات | مخرجات التعلم المطلوبة                                                            | اسم الوحدة أو الموضوع |                  | طريقة التقييم           |
|                                                                                                                                                                             |             |                                                                                   | طريقة التعليم         | النظري           |                         |
| 1                                                                                                                                                                           | 2           | كما جاء في الفقرة 9                                                               | مقدمة                 | شرح،             | اختبارات                |
| 2                                                                                                                                                                           | 2           |                                                                                   | اقسام الكلام          | عرض              | سريعة،                  |
| 3                                                                                                                                                                           | 2           |                                                                                   | الاجطاء اللغوية       | ،                | امتحانات                |
| 4                                                                                                                                                                           | 2           |                                                                                   | الاجطاء الصرفية       | تطبيق            | دورية،                  |
| 5                                                                                                                                                                           | 2           |                                                                                   | الاجطاء الكتابية      | عملي،            | واجبات                  |
| 6                                                                                                                                                                           | 2           |                                                                                   | امتحان شهري أول       | طرح              | يومية                   |
| 7                                                                                                                                                                           | 2           |                                                                                   | العدد                 | أسئلة،           |                         |
| 8                                                                                                                                                                           | 2           |                                                                                   | المبتدأ والخبر        | مناقشة           |                         |
| 9                                                                                                                                                                           | 2           |                                                                                   | علامات الفعل الماضي/  | ، اعداد          |                         |
| 10                                                                                                                                                                          | 2           |                                                                                   | امتحان يومي           | تقارير           |                         |
| 11                                                                                                                                                                          | 2           |                                                                                   | سيرة الشاعر الجواهري  |                  |                         |
| 12                                                                                                                                                                          | 4           |                                                                                   | قصيدة للشاعر الجواهري |                  |                         |
| 13                                                                                                                                                                          | 4           |                                                                                   | امتحان شهري الثاني    |                  |                         |
| 14                                                                                                                                                                          | 4           |                                                                                   | علامات الفعل المضارع  |                  |                         |
| 15                                                                                                                                                                          | 4           |                                                                                   | مناقشة البحوث         |                  |                         |
| 11- طرائق التقييم                                                                                                                                                           |             |                                                                                   |                       |                  |                         |
| <ul style="list-style-type: none"><li>الاجتبارات اليومية (كوزات)</li><li>التقارير</li><li>الواجبات العملية</li><li>الامتحانات الشهرية</li><li>الامتحانات النهائية</li></ul> |             |                                                                                   |                       |                  |                         |
|                                                                                                                                                                             |             |                                                                                   |                       |                  |                         |
| الاجتبارات اليومية (الكوزات)                                                                                                                                                | التقارير    | السمنرات                                                                          | الواجبات              | الامتحان المنتصف | الإمتحان النهائي النظري |
| 10                                                                                                                                                                          | 10          | 10                                                                                | 10                    | 10               | 50                      |
| 12- مصادر التعليم والتدريس                                                                                                                                                  |             |                                                                                   |                       |                  |                         |
| 1- الكتب المقررة المطلوبة                                                                                                                                                   |             | ملزمة اللغة العربية المرحلة الاولى                                                |                       |                  |                         |
| 2- المراجع الرئيسية (المصادر)                                                                                                                                               |             | د.احمد الهاشمي القواعد الاساسية للغة العربية<br>محمد مهدي الجواهري ديوان الجواهري |                       |                  |                         |

|                                                                                                                                                                      |                                                                          |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• المجلة كلية التربية للعلوم الانسانية</li> <li>• مجلة واسط للعلوم الانسانية</li> <li>• مجلة كلية التربية الاساسية</li> </ul> | أ) الكتب والمراجع التي يوصى<br>بها (المجلات العلمية، التقارير<br>.....،) |
| • T.me/L-alnader7 مكتبة فهارس وكتب في اللغة العربية                                                                                                                  | ب) المراجع الالكترونية، مواقع<br>الانترنت، .....                         |

## Mathematics 2 Course Description

|                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|---------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Course Name                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Mathematics 2                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 2. Course Code                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 3. Semester / Year                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| First Semester (2025-2024)                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 4. Description Preparation Date:                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 5 / 4 / 2025                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 5. Available Attendance Forms                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Actual Attendance                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 6. Number of Credit Hours (Total) / Number of Units (Total)                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| (2 Hours Theory, 1hours Seminars) / 4 units                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 7. Course administrator's name (mention all, if more than one name)                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Name: M.Sc. Ahmed Salam Jabbar<br>Email: <a href="mailto:ahmed.salam@uowasit.edu.iq">ahmed.salam@uowasit.edu.iq</a> |                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 8. Course Objectives                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Course Objectives                                                                                                   | Introduction, abbreviations and notations ,Graph and function, Limit and continuity, More about asymptotes ,Sandwich theorem, Continuity, The slope of the curve $y=f(x)$ and the derivative, Transcendental functions ,The logarithmic function, The exponential function, The function $ax$ , The hyperbolic function.                                                                                                                 |
| 9. Teaching and Learning Strategies                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Strategy                                                                                                            | <ul style="list-style-type: none"> <li>Group discussions and assignments</li> <li>Creating a competitive atmosphere among students and addressing individual differences using appropriate educational methods</li> <li>Research projects</li> <li>Interdisciplinary discussion circles</li> <li>Incorporating teaching methods that utilize educational technology</li> <li>Encouraging students for self-directed learning.</li> </ul> |

| 10. Course Structure |       |                                                                    |                                                                        |                 |                                                |
|----------------------|-------|--------------------------------------------------------------------|------------------------------------------------------------------------|-----------------|------------------------------------------------|
| Week                 | Hours | Required Learning Outcomes                                         | Unit or subject name                                                   | Learning method | Evaluation method                              |
| 1                    | 2     | Referred to in the previous axis and each according to the content | Introduction                                                           | Theoretical     | Daily preparation and oral exam and Discussion |
| 2                    | 2     | =                                                                  | Integration                                                            | Theoretical     | Daily preparation and oral exam and Discussion |
| 3                    | 2     | =                                                                  | Methods of integration                                                 | Theoretical     | Daily preparation and oral exam and Discussion |
| 4                    | 2     | =                                                                  | Integral formulae (standard forms                                      | Theoretical     | Daily preparation and oral exam and Discussion |
| 5                    | 2     | =                                                                  | Method [1]<br>Integration by substitution                              | Theoretical     | Daily preparation and oral exam and Discussion |
| 6                    | 2     | =                                                                  | Method [2]<br>Certain powers of trigonometric and hyperbolic integrals | Theoretical     | Daily preparation and oral exam and Discussion |
| 7                    | 2     | =                                                                  | Method [3]<br>Trigonometric substitutions                              | Theoretical     | Exam.                                          |
| 8                    | 2     | =                                                                  | Method [4]<br>Hyperbolic substitutions                                 | Theoretical     | Daily preparation and oral exam and Discussion |
| 9                    | 2     | =                                                                  | Method [5]<br>Integrals involving quadratic functions                  | Theoretical     | Daily preparation and oral exam and Discussion |



|    |   |   |                                                                   |             |                                                |
|----|---|---|-------------------------------------------------------------------|-------------|------------------------------------------------|
| 10 | 2 | = | Method [6]<br>Integration by parts                                | Theoretical | Daily preparation and oral exam and Discussion |
| 11 | 2 | = | Method [7]<br>Integration of rational functions                   | Theoretical | Daily preparation and oral exam and Discussion |
| 12 | 2 | = | Method [8]<br>Integration of irrational functions                 | Theoretical | Daily preparation and oral exam and Discussion |
| 13 | 2 | = | Home work                                                         | Theoretical | Daily preparation and oral exam and Discussion |
| 14 | 2 | = | Method [9]<br>Integration of rational functions of trigonometries | Theoretical | Daily preparation and oral exam and Discussion |
| 15 | 2 | = | Exam.                                                             | Theoretical | Exam.                                          |

## 11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports ... etc

| Course | Daily preparation, daily and oral exams | Daily assignments | Seminars | Mid-term Exam | Final -Exam |
|--------|-----------------------------------------|-------------------|----------|---------------|-------------|
| 1nd    | 5                                       | 5                 | 15       | 25            | 50          |

## ***2. Learning and Teaching Resources***

|                                                                    |                                                                                                   |
|--------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|
| Required textbooks (curricular books, if any)                      | "Calculus, James Stewart                                                                          |
| Main references (sources)                                          | Principles of Mathematical Analysis, Walter Rudin                                                 |
| Recommended books and references (scientific journals, reports...) | Annals of Mathematics<br>Acta Mathematica<br>SIAM Journal on Applied Mathematics                  |
| Electronic References, Websites                                    | <a href="https://www.maths.ox.ac.uk/node/66467?utm">https://www.maths.ox.ac.uk/node/66467?utm</a> |

## Course Description Form

|                                                                     |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                            |                                         |                                                |
|---------------------------------------------------------------------|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|-----------------------------------------|------------------------------------------------|
| 1. Course Name                                                      |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                            |                                         |                                                |
| <b>Gneral chemstiry</b>                                             |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                            |                                         |                                                |
| 2. Course Code                                                      |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                            |                                         |                                                |
|                                                                     |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>StageFirst</b>                                          | <b>Department of Geology /</b>          |                                                |
| 3. Semester / Year                                                  |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                            |                                         |                                                |
| <b>Semester (2023-2024) Frist</b>                                   |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                            |                                         |                                                |
| 4. Description Preparation Date:                                    |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                            |                                         |                                                |
|                                                                     |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                            |                                         | 4/2022      1/                                 |
| 5. Available Attendance Forms                                       |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                            |                                         |                                                |
| <b>Actual Attendance</b>                                            |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                            |                                         |                                                |
| 6. Number of Credit Hours (Total) / Number of Units (Total)         |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                            |                                         |                                                |
| <b>(2 Hours Theory)and (2 hours practical)</b>                      |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                            |                                         |                                                |
| 7. Course administrator's name (mention all, if more than one name) |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                            |                                         |                                                |
| <b>Balqees Reheem Odafa Name: Asst. .</b>                           |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                            |                                         |                                                |
| <b>@uowasit.edu.iqbodafaEmail:</b>                                  |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                            |                                         |                                                |
| 8. Course Objectives                                                |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                            |                                         |                                                |
| <b>Course Objectives</b>                                            |              | <p><b>1- The course aims to consolidate the basic concepts of science chemistry.</b></p> <p><b>2- Identifying the science of chemistry, its importance, branches, applications and its role in development and treatment of environmental pollution, the Chemical reaction of elements in nature that detemine their Chemical and Phsical properties, and methods of experssing the concentrations of solutions, in addition to the comperhensive definition of .atomic structure and its electronic structure and theories</b></p> |                                                            |                                         |                                                |
| 9. Teaching and Learning Strategies                                 |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                            |                                         |                                                |
| <b>Strategy</b>                                                     |              | <ul style="list-style-type: none"> <li>- <b>Group discussions and assignments</b></li> <li>- <b>Creating a competitive atmosphere among students and addressing individual differen using appropriate educational methods</b></li> <li>- <b>Research projects</b></li> <li>- <b>Interdisciplinary discussion circles</b></li> <li>- <b>Incorporating teaching methods that utilize educational technology</b></li> <li>- <b>Encouraging students for self-directed learning.</b></li> </ul>                                         |                                                            |                                         |                                                |
| 10. Course Structure                                                |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                            |                                         |                                                |
| <b>Week</b>                                                         | <b>Hours</b> | <b>Required Learning Outcomes</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>/Unit or subject name Theoretical</b>                   | <b>/Learning method practical</b>       | <b>Evaluation method</b>                       |
| 1                                                                   | 4            | Referred to in the previous axis and                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Presented chemistry and its relationship to other sciences | An Introduction to analytical chemistry | Daily preparation and oral exam and Discussion |

|    |   |                               |                                                       |                                                                                                    |                                                |
|----|---|-------------------------------|-------------------------------------------------------|----------------------------------------------------------------------------------------------------|------------------------------------------------|
|    |   | each according to the content |                                                       |                                                                                                    |                                                |
| 2  | 4 | =                             | Abrief overview of analytical chemistry and its types | Studying the types of volumetric analysis and types of titration                                   | Daily preparation and oral exam and Discussion |
| 3  | 4 | =                             | Volumetric analysis and its practical calcualions     | Prepare a solutions of a solid Chemical                                                            | Daily preparation and oral exam and Discussion |
| 4  | 4 | =                             | Study of the types of .titration                      | Prepare a solution of a liquid chemical                                                            | Daily preparation and oral exam and Discussion |
| 5  | 4 | =                             | Chemical analysis steps                               | Prepare astandard solution of soduim Carbonate                                                     | Daily preparation and oral exam and Discussion |
| 6  | 4 | =                             | First Exam.                                           | First Exam.                                                                                        | Daily preparation and oral exam and Discussion |
| 7  | 4 | =                             | Calculating the equivalent weight                     | Determine the standard of Hydrochloric acid                                                        | Exam.                                          |
| 8  | 4 | =                             | Solution and thier types                              | Determine the standard of sodium hydroxide by trituration with standard Hydrochloric acid solution | Daily preparation and oral exam and Discussion |
| 9  | 4 | =                             | Ways to expereess concentration                       | Determining the titration of a mixture of sodium carbonate and sodium hydroxide                    | Daily preparation and oral exam and Discus     |
| 10 | 4 | =                             | Atomic structure                                      | Introduction of gravimetric analysis methods and sediment Characteristics                          | Daily prepartion and oral exam and Discus      |
| 11 | 4 | =                             | Eletronic structure of the atomic                     | Departmention of the percentage of water of crystallization in aqueous barium chloride salt        | Daily preparation and oral exam and Discussion |
| 12 | 4 | =                             | Classification of elements and Chemical activity      | Determination of lead in the form of lead sulphate                                                 | Daily preparation and oral exam and Discussion |
| 13 | 4 | =                             | Types of bonds in Chemical compounds                  | Learn about analysis Descriptive                                                                   | Daily preparation and oral exam and Discussion |

|    |   |   |                            |                                                   |                                                |
|----|---|---|----------------------------|---------------------------------------------------|------------------------------------------------|
| 14 | 4 | = | Types of Chemical reaction | Determination of positive ions of the first group | Daily preparation and oral exam and Discussion |
| 15 | 4 | = | Second exam.               | Second exam.                                      | Exam.                                          |
|    |   |   |                            |                                                   |                                                |

### 11.Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

| Course | THEORETICAL |             |         | PRACTICAL   |             |         | Final -Exam |
|--------|-------------|-------------|---------|-------------|-------------|---------|-------------|
|        | First Exam. | First Exam. | Quizzes | First Exam. | First Exam. | Quizzes |             |
| 1nd    | 12          | 12          | 4       | 4           | 4           | 4       | 60          |

### 12.Learning and Teaching Resources

|                                                                    |                                                                                                                                                                                                                                                                                  |
|--------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Required textbooks (curricular books, if any)                      | 1- ,General chemistry (University of Baghdad)<br>2- General chemistry (University of Basra)<br>3- Foundations of analytical chemistry, written by ,Dr. Muayyad Qasim and Dr. Thabet saeed<br>4- Practical analytical chemistry by Dr Nabil Adel and .professer Dr. Sarmad Bahjat |
| Main references (sources)                                          | 1- Basics in General chemistry. A. Dr. Suhair Nazmi Abdel Rahman, Dr. Ahlam Abdel Aziz<br>2- .Principles of General chemistry, Dr. Mohieddin Al-Bushi, Dr Yasser Houria<br>3- .Practical analytical chemistry A. Dr. Nabil Abdel Fakhry A .Dr. Sarmad Bahjat Debakran            |
| Recommended books and references (scientific journals, reports...) | 1- The .Iraqi National Journal of Chemical sciences<br>2- .Baghdad Journal of science                                                                                                                                                                                            |
| Electronic References, Websites                                    | = <a href="https://drive.google.com/open?id=Du1ec3ri2mwxc1icw6vok7s6tvohmYwY">https://drive.google.com/open?id=Du1ec3ri2mwxc1icw6vok7s6tvohmYwY</a>                                                                                                                              |

## Course Description Form

|                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                    |                                             |                                            |                                                |
|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|---------------------------------------------|--------------------------------------------|------------------------------------------------|
| 1. Course Name                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                    |                                             |                                            |                                                |
| <b>General Geology 2</b>                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                    |                                             |                                            |                                                |
| 2. Course Code                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                    |                                             |                                            |                                                |
| <b>Department of Geology / first Stage</b>                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                    |                                             |                                            |                                                |
| 3. Semester / Year                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                    |                                             |                                            |                                                |
| <b>Second Semester (2023-2024)</b>                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                    |                                             |                                            |                                                |
| 4. Description Preparation Date:                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                    |                                             |                                            |                                                |
| 1/2/2024                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                    |                                             |                                            |                                                |
| 5. Available Attendance Forms                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                    |                                             |                                            |                                                |
| <b>Actual Attendance</b>                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                    |                                             |                                            |                                                |
| 6. Number of Credit Hours (Total) / Number of Units (Total)                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                    |                                             |                                            |                                                |
| <b>(2 Hours Theory) and (2 hours practical)</b>                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                    |                                             |                                            |                                                |
| 7. Course administrator's name (mention all, if more than one name)               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                    |                                             |                                            |                                                |
| <b>Name: Lec .Dr. Ruaa Issa Muslim</b><br><b>Email: Ralqurashy@uowasit.edu.iq</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                    |                                             |                                            |                                                |
| 8. Course Objectives                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                    |                                             |                                            |                                                |
| <b>Course Objectives</b>                                                          | It includes learning about geology in general and its relationship with other sciences. It is used for the purpose of identifying the composition of the Earth's interior, including minerals, rocks, ground and surface water, and the various layers of the Earth. It also studies the lives of living organisms that lived and died millions of years ago and the most important earth movements that build mountains                                                                       |                                                                    |                                             |                                            |                                                |
| 9. Teaching and Learning Strategies                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                    |                                             |                                            |                                                |
| <b>Strategy</b>                                                                   | <ul style="list-style-type: none"> <li>- <b>Group discussions and assignments</b></li> <li>- <b>Creating a competitive atmosphere among students and addressing individual differences using appropriate educational methods</b></li> <li>- <b>Research projects</b></li> <li>- <b>Interdisciplinary discussion circles</b></li> <li>- <b>Incorporating teaching methods that utilize educational technology</b></li> <li>- <b>Encouraging students for self-directed learning.</b></li> </ul> |                                                                    |                                             |                                            |                                                |
| 10. Course Structure                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                    |                                             |                                            |                                                |
| <b>Week</b>                                                                       | <b>Hours</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>Required Learning Outcomes</b>                                  | <b>/Unit or subject name Theoretical</b>    | <b>/Learning method practical</b>          | <b>Evaluation method</b>                       |
| 1                                                                                 | 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Referred to in the previous axis and each according to the content | Types of rocks, rock cycle in nature        | Igneous rocks                              | Daily preparation and oral exam and Discussion |
| 2                                                                                 | 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | =                                                                  | Igneous rocks, properties of igneous rocks) | Mineralogical composition of igneous rocks | Daily preparation and oral exam and Discussion |

|    |   |   |                                                                              |                                                                              |                                                |
|----|---|---|------------------------------------------------------------------------------|------------------------------------------------------------------------------|------------------------------------------------|
| 3  | 4 | = | The presence of igneous rocks in nature                                      | The presence of igneous rocks in nature                                      | Daily preparation and oral exam and Discussion |
| 4  | 4 | = | Texture of igneous rocks                                                     | Texture of igneous rocks                                                     | Daily preparation and oral exam and Discussion |
| 5  | 4 | = | Mineralogical composition of igneous rocks and the differential Bowen series | Mineralogical composition of igneous rocks and the differential Bowen series | Daily preparation and oral exam and Discussion |
| 6  | 4 | = | Chemical composition, color, classification of igneous rocks                 | Chemical composition, color, classification of igneous rocks                 | Daily preparation and oral exam and Discussion |
| 7  | 4 | = | Exam.                                                                        | Exam.                                                                        | Exam.                                          |
| 8  | 4 | = | Sedimentary rocks, sedimentary processes and formation of sedimentary rocks  | Clastic sedimentary rocks                                                    | Daily preparation and oral exam and Discussion |
| 9  | 4 | = | Properties of sedimentary rocks and classification of sedimentary rocks      | Chemical and organic sedimentary rocks                                       | Daily preparation and oral exam and Discussion |
| 10 | 4 | = | Clastic sedimentary rocks and their primary compositions                     | Metamorphic rocks, metamorphic rock texture                                  | Daily preparation and oral exam and Discussion |
| 11 | 4 | = | Chemical sedimentary rocks, organic sedimentary rocks                        | Classification of diagenetic rocks                                           | Daily preparation and oral exam and Discussion |
| 12 | 4 | = | Types of rocks, rock cycle in nature                                         | Study samples of the types of metamorphic rocks                              | Daily preparation and oral exam and Discussion |
| 13 | 4 | = | Igneous rocks, properties of igneous rocks                                   | How to draw a cross section of a river                                       | Daily preparation and oral exam and Discussion |
| 14 | 4 | = | The presence of igneous rocks in nature                                      | Measurement of river water discharge                                         | Daily preparation and oral exam and Discussion |
| 15 | 4 | = | Exam.                                                                        | Exam.                                                                        | Exam.                                          |
|    |   |   | Mineralogical composition of igneous                                         | Mineralogical composition of igneous rocks                                   | Daily preparation and oral exam and Discussion |

|                                                                                                                                                                                |                    |                    |                                                    |                    |                    |                |                    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------------|----------------------------------------------------|--------------------|--------------------|----------------|--------------------|
|                                                                                                                                                                                |                    |                    | <b>rocks and the differential<br/>Bowen series</b> |                    |                    |                |                    |
| <b>11.Course Evaluation</b>                                                                                                                                                    |                    |                    |                                                    |                    |                    |                |                    |
| <b>Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation,<br/>daily oral, monthly, or written exams, reports .... etc</b> |                    |                    |                                                    |                    |                    |                |                    |
| <b>Course</b>                                                                                                                                                                  | <b>THEORETICAL</b> |                    |                                                    | <b>PRACTICAL</b>   |                    |                | <b>Final -Exam</b> |
|                                                                                                                                                                                | <b>First Exam.</b> | <b>First Exam.</b> | <b>Quizzes</b>                                     | <b>First Exam.</b> | <b>First Exam.</b> | <b>Quizzes</b> |                    |
| <b>1nd</b>                                                                                                                                                                     | <b>12</b>          | <b>12</b>          | <b>4</b>                                           | <b>4</b>           | <b>4</b>           | <b>4</b>       | <b>60</b>          |

|                                                                    |                                                                                                                                       |
|--------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| <b>12.Learning and Teaching Resources</b>                          |                                                                                                                                       |
| Required textbooks (curricular books, if any)                      | eneral Geology (University of Baghdad), General Geology (University of Mosul)                                                         |
| Main references (sources)                                          | 1- Physical Geology(S.Zayer and Gollf,2006)                                                                                           |
| Recommended books and references (scientific journals, reports...) | 1- The Iraqi Geological Journal published by the Iraqi Geologists union<br>2- Publications and reports of the Iraqi Geological Survey |



|                                                                   |                                                                                             |
|-------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| <b>1. Course Title</b>                                            | Computer Fundamentals and Office Applications Description P1                                |
| <b>2. Course Code</b>                                             | Computer Fundamentals and Office Applications<br>Department of Earth Sciences - First Stage |
| <b>3. Semester / Year</b>                                         | Second Semester 2023-2024                                                                   |
| <b>4. Date Description Prepared:</b>                              | 1/2/2024                                                                                    |
| <b>5. Available Attendance Forms</b>                              | In-person                                                                                   |
| <b>6. Credit Hours (Total) / Units (Total)</b>                    | (2) Theory hours + 2 Practical hours weekly                                                 |
| <b>7. Course Coordinator Name (if more than one, mention all)</b> | Name: Assistant Lecturer Ali Khairallah Shaneen<br>Email: akherallah@uowasit.edu.iq         |

## 8. Course Objectives

### Course Objectives:

The course aims to study computer fundamentals as a modern science indispensable in all scientific fields, learn about the historical stages of its inception and development, its internal and external components, the advantages provided by computers in work, and how to utilize computers and their applications in the field of Earth Sciences.

## 9. Teaching and Learning Strategies

### Strategy:

- Group discussions and solving assignments.
- Creating a competitive environment among students and addressing individual differences using appropriate educational aids.
- Interlocking discussion panels.
- Incorporating teaching methods that utilize educational technology.
- Encouraging students toward self-learning.

## 10. Course Structure

| Week | Hours | Required Learning Outcomes                                      | Unit / Topic Name / Material                                         | Practical Material                                                                                                            | Evaluation Method                                |
|------|-------|-----------------------------------------------------------------|----------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|
| 1    | 4     | As mentioned in the previous section, each according to content | Introduction to Computer Science                                     | Visual identification of computer components                                                                                  | Daily preparation, daily quizzes, and discussion |
| 2    | 4     |                                                                 | Chapter One: Computer Fundamentals / Computer phases and generations | Group discussion on previously explained computer parts                                                                       | Daily preparation, daily quizzes, and discussion |
| 3    | 4     |                                                                 | Chapter One: Data and Information / Fields of computer usage         | Computer usage for beginners: turning computer on/off / Getting to know Windows system                                        | Daily preparation, daily quizzes, and discussion |
| 4    | 4     |                                                                 | Chapter One: Computer types / Computer classification                | Desktop components / Start menu / Control Panel                                                                               | Daily preparation, daily quizzes, and discussion |
| 5    | 4     |                                                                 | Chapter Two: Computer components / Hardware parts                    | Computer settings / Basic programs linked to Windows system / Getting to know accessories attached to Windows system (MS-DOS) | Daily preparation, daily quizzes, and discussion |

| Week | Hours | Required Learning Outcomes | Unit / Topic Name / Material                                                                         | Practical Material                                                            | Evaluation Method                                |
|------|-------|----------------------------|------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|--------------------------------------------------|
| 6    | 4     |                            | Chapter Two / Input devices                                                                          | Learning typing and keyboard usage / Basic computer commands                  | Daily preparation, daily quizzes, and discussion |
| 7    | 4     |                            | Chapter Two / Output devices / Introduction to computer software                                     | Exam: Mastering keyboard usage                                                | Daily preparation, daily quizzes, and discussion |
| 8    | 4     |                            | Chapter Three: Computer security and software licensing / Ethics of computer use / Computer security | First Monthly Exam                                                            | Monthly exam                                     |
| 9    | 4     |                            | Chapter Two / License types / Intellectual property of software                                      | Internet applications and safe usage                                          | Daily preparation, daily quizzes, and discussion |
| 10   | 4     |                            | Chapter Two / Cyber hacking / Types / Sources / Risks                                                | Internet applications and safe computer usage                                 | Daily preparation, daily quizzes, and discussion |
| 11   | 4     |                            | Chapter Three / Viruses / Malware / Virus components / Characteristics / Types / Virus protection    | Mastering Windows system usage                                                | Daily preparation, daily quizzes, and discussion |
| 12   | 4     |                            | Chapter Four / Operating systems                                                                     | Getting to know Microsoft Office applications and their general fields of use | Daily preparation, daily quizzes, and discussion |
| 13   | 4     |                            | Chapter Four / Office Applications                                                                   | Second Monthly Exam                                                           | Monthly exam                                     |
| 14   | 4     |                            | Second Month Exam                                                                                    | Second Month Exam                                                             | Exam                                             |

## 11. Course Evaluation

Grading distribution out of 100 according to tasks assigned to the student such as daily preparation, daily/oral/ monthly written quizzes, reports, etc.

| Semester   |                        |            |                        | Final Practical Exam | Final Theoretical Exam |
|------------|------------------------|------------|------------------------|----------------------|------------------------|
| First Exam | Activities and Quizzes | First Exam | Activities and Quizzes |                      |                        |
| 15         | 5                      | 15         | 5                      | 20                   | 40                     |

## Course Description

| <b>1. Course Name:</b>                                                                                                                                                                                                                                                                                                                                                       |       |                            |                               |                                                                         |                                                          |                                 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|----------------------------|-------------------------------|-------------------------------------------------------------------------|----------------------------------------------------------|---------------------------------|
| Mineralogy                                                                                                                                                                                                                                                                                                                                                                   |       |                            |                               |                                                                         |                                                          |                                 |
| <b>2. Course Code:</b>                                                                                                                                                                                                                                                                                                                                                       |       |                            |                               |                                                                         |                                                          |                                 |
| Geology Department/ 1 <sup>st</sup> Stage                                                                                                                                                                                                                                                                                                                                    |       |                            |                               |                                                                         |                                                          |                                 |
| <b>3. Semester / Year:</b>                                                                                                                                                                                                                                                                                                                                                   |       |                            |                               |                                                                         |                                                          |                                 |
| 2 <sup>nd</sup> Semester/1 <sup>st</sup> Year                                                                                                                                                                                                                                                                                                                                |       |                            |                               |                                                                         |                                                          |                                 |
| <b>4. Description Preparation Date:</b>                                                                                                                                                                                                                                                                                                                                      |       |                            |                               |                                                                         |                                                          |                                 |
| 1/2/2024                                                                                                                                                                                                                                                                                                                                                                     |       |                            |                               |                                                                         |                                                          |                                 |
| <b>5. Available Attendance Forms:</b>                                                                                                                                                                                                                                                                                                                                        |       |                            |                               |                                                                         |                                                          |                                 |
| Actual                                                                                                                                                                                                                                                                                                                                                                       |       |                            |                               |                                                                         |                                                          |                                 |
| <b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>                                                                                                                                                                                                                                                                                                           |       |                            |                               |                                                                         |                                                          |                                 |
| (2 hours theoretical + 2 hours practical+ 1 hour seminar weekly) / 5 units                                                                                                                                                                                                                                                                                                   |       |                            |                               |                                                                         |                                                          |                                 |
| <b>7. Course administrator's name (mention all, if more than one name)</b>                                                                                                                                                                                                                                                                                                   |       |                            |                               |                                                                         |                                                          |                                 |
| Lect. Najah Alwan Owayez                                                                                                                                                                                                                                                                                                                                                     |       |                            |                               | Email: <a href="mailto:nauaiz@uowasit.edu.iq">nauaiz@uowasit.edu.iq</a> |                                                          |                                 |
| <b>8. Course Objectives:</b>                                                                                                                                                                                                                                                                                                                                                 |       |                            |                               |                                                                         |                                                          |                                 |
| <p>The course aims to consolidate the general principles of mineralogy through:</p> <ul style="list-style-type: none"> <li>• Introduction to mineralogy</li> <li>• Definition of mineral formation environments</li> <li>• Definition of the physical and other properties of minerals</li> <li>• Classification of minerals and identification of mineral groups</li> </ul> |       |                            |                               |                                                                         |                                                          |                                 |
| <b>9. Teaching and Learning Strategies:</b>                                                                                                                                                                                                                                                                                                                                  |       |                            |                               |                                                                         |                                                          |                                 |
| <ul style="list-style-type: none"> <li>• Displaying lectures on screen and delivering lectures orally</li> <li>• Asking questions and holding discussions</li> <li>• Display models and conduct laboratory analyses</li> <li>• How to perform mathematical calculations and prepare reports</li> <li>• Encouraging research and self-learning</li> </ul>                     |       |                            |                               |                                                                         |                                                          |                                 |
| <b>10. Course Structure:</b>                                                                                                                                                                                                                                                                                                                                                 |       |                            |                               |                                                                         |                                                          |                                 |
| Week                                                                                                                                                                                                                                                                                                                                                                         | Hours | Required Learning Outcomes | Subject Name                  |                                                                         | Learning Method                                          | Evolution Method                |
|                                                                                                                                                                                                                                                                                                                                                                              |       |                            | Theoretical                   | Practical                                                               |                                                          |                                 |
| 1                                                                                                                                                                                                                                                                                                                                                                            | 5     | Point 9                    | Introduction                  | Introduction                                                            | Show and explain the subject, ask questions and discuss, | Quizzes, Exams, Works & Reports |
| 2                                                                                                                                                                                                                                                                                                                                                                            | 5     |                            | Real Elements of Crystal      | Crystallization Environments                                            |                                                          |                                 |
| 3                                                                                                                                                                                                                                                                                                                                                                            | 5     |                            | Real Elements of Crystal      | Real Elements of Crystal                                                |                                                          |                                 |
| 4                                                                                                                                                                                                                                                                                                                                                                            | 5     |                            | Imaginary Elements of Crystal | Imaginary Elements of Crystal                                           |                                                          |                                 |

|    |   |  |                                  |                                  |                 |  |
|----|---|--|----------------------------------|----------------------------------|-----------------|--|
| 5  | 5 |  | Imaginary crystal elements       | Symmetry Elements                | prepare reports |  |
| 6  | 5 |  | First Monthly Exam               |                                  |                 |  |
| 7  | 5 |  | Crystallographic Systems         | Crystallographic Systems         |                 |  |
| 8  | 5 |  | Miller Indices                   | Miller Indices                   |                 |  |
| 9  | 5 |  | Miller Indices                   | Miller Indices                   |                 |  |
| 10 | 5 |  | Cubic and Quadrilateral Systems  | Cubic and Quadrilateral Systems  |                 |  |
| 11 | 5 |  | Orthorhombic System              | Orthorhombic System              |                 |  |
| 12 | 5 |  | Monoclinic and Triclinic Systems | Monoclinic and Triclinic Systems |                 |  |
| 13 | 5 |  | Second Monthly Exam              |                                  |                 |  |
| 14 | 5 |  | Hexagonal system                 | Hexagonal system                 |                 |  |
| 15 | 5 |  | review                           | review                           |                 |  |

### 11. Course Evolution:

- Quizzes
- Reports
- Seminars
- Practical Duties
- Monthly Examinations
- Final Examinations
- Grade distribution according to the table below:

| Quizzes | Reports | Seminar | Daily Works | Mid Exam | Final Exam  |           |
|---------|---------|---------|-------------|----------|-------------|-----------|
|         |         |         |             |          | Theoretical | Practical |
| 15      | 5       | 10      | 10          | 10       | 30          | 20        |

### 12. Learning and Teaching Resources

|                                                                             |                                                                                                                                                                                                                                                                                                                                          |
|-----------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Required Textbooks                                                       | ابراهيم مضوي بابكر. ٢٠٠٤. علم المعادن، جامعة النيلين، كتاب منشور. ٢٣٢ ص                                                                                                                                                                                                                                                                  |
| 2. Main References (Resources)                                              | Blackburn, W.H. and Dennen, W.H., 1988, Principles of Mineralogy: Iowa, WCB Publishers . 413 p.                                                                                                                                                                                                                                          |
| A. Recommended Books and References (Scientific Journals, Reports, ...etc.) | 1- The Iraqi Geological Journal published by the Iraqi Geologists Union<br>2- Publications and reports of the Iraqi Geological Survey                                                                                                                                                                                                    |
| B. Electronic References, Websites                                          | <ul style="list-style-type: none"> <li>• <a href="https://en.wikipedia.org/wiki/Mineralogy">https://en.wikipedia.org/wiki/Mineralogy</a></li> <li>• <a href="https://microscopic.ro/minerals/silicates/nesosilicates/olivine-thin-section/">https://microscopic.ro/minerals/silicates/nesosilicates/olivine-thin-section/</a></li> </ul> |

## Mathematic 1 Course Description

|                                                                           |                                                                                                                                                                                                                                                                                                                          |
|---------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>1.Course Name</b>                                                      |                                                                                                                                                                                                                                                                                                                          |
| Mathematics 1                                                             |                                                                                                                                                                                                                                                                                                                          |
| <b>2. Course Code</b>                                                     |                                                                                                                                                                                                                                                                                                                          |
|                                                                           |                                                                                                                                                                                                                                                                                                                          |
| <b>3. Semester / Year</b>                                                 |                                                                                                                                                                                                                                                                                                                          |
| First Semester (2026-2025)                                                |                                                                                                                                                                                                                                                                                                                          |
| <b>4.Description Preparation Date:</b>                                    |                                                                                                                                                                                                                                                                                                                          |
| 1 / 10 / 2025                                                             |                                                                                                                                                                                                                                                                                                                          |
| <b>5.Available Attendance Forms</b>                                       |                                                                                                                                                                                                                                                                                                                          |
| Actual Attendance                                                         |                                                                                                                                                                                                                                                                                                                          |
| <b>6.Number of Credit Hours (Total) / Number of Units (Total)</b>         |                                                                                                                                                                                                                                                                                                                          |
| (2 Hours Theory, 1hours Seminars) / 4 units                               |                                                                                                                                                                                                                                                                                                                          |
| <b>7.Course administrator's name (mention all, if more than one name)</b> |                                                                                                                                                                                                                                                                                                                          |
| Name: M.Sc. Ahmed Salam Jabbar<br>Email: ahmed.salam@uowasit.edu.iq       |                                                                                                                                                                                                                                                                                                                          |
| <b>8.Course Objectives</b>                                                |                                                                                                                                                                                                                                                                                                                          |
| Course Objectives                                                         | Introduction, abbreviations and notations, Graph and function, Limit and continuity, more about asymptotes, Sandwich theorem, Continuity, The slope of the curve $y=f(x)$ and the derivative, Transcendental functions, The logarithmic function, The exponential function, The function $ax$ , The hyperbolic function. |
| <b>9.Teaching and Learning Strategies</b>                                 |                                                                                                                                                                                                                                                                                                                          |
| Strategy                                                                  | <ul style="list-style-type: none"> <li>Group discussions and assignments</li> </ul>                                                                                                                                                                                                                                      |

|  |                                                                                                                                                                                                                                                                                                                                                                                                           |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <ul style="list-style-type: none"> <li>• Creating a competitive atmosphere among students and addressing individual differences using appropriate educational methods.</li> <li>• Research projects</li> <li>• Interdisciplinary discussion circles.</li> <li>• Incorporating teaching methods that utilize educational technology</li> <li>• Encouraging students for self-directed learning.</li> </ul> |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

| <b>10. Course Structure</b> |              |                                                                    |                                           |                        |                                                |
|-----------------------------|--------------|--------------------------------------------------------------------|-------------------------------------------|------------------------|------------------------------------------------|
| <b>Week</b>                 | <b>Hours</b> | <b>Required Learning Outcomes</b>                                  | <b>Unit or subject name</b>               | <b>Learning method</b> | <b>Evaluation method</b>                       |
| 1                           | 2            | Referred to in the previous axis and each according to the content | Introduction, abbreviations and notations | Theoretical            | Daily preparation and oral exam and Discussion |
| 2                           | 2            | =                                                                  |                                           | Theoretical            | Daily preparation and oral exam and Discussion |
| 3                           | 2            | =                                                                  | Graph and function                        | Theoretical            | Daily preparation and oral exam and Discussion |
| 4                           | 2            | =                                                                  | Limit and continuity                      | Theoretical            | Daily preparation and oral exam and Discussion |
| 5                           | 2            | =                                                                  | More about asymptotes                     | Theoretical            | Daily preparation and oral exam and Discussion |
| 6                           | 2            | =                                                                  | Sandwich theorem                          | Theoretical            | Daily preparation and oral exam                |

|    |   |      |                                |             |                                                            |
|----|---|------|--------------------------------|-------------|------------------------------------------------------------|
|    |   |      |                                |             | and<br>Discussion                                          |
| 7  | 2 | Exam |                                |             |                                                            |
| 8  | 2 | =    | Transcendental<br>functions    | Theoretical | Daily<br>preparation<br>and oral exam<br>and<br>Discussion |
| 9  | 2 | =    | The<br>logarithmic<br>function | Theoretical | Daily<br>preparation<br>and oral exam<br>and<br>Discussion |
| 10 | 2 | =    | The<br>exponential<br>function | Theoretical | Daily<br>preparation<br>and oral exam<br>and<br>Discussion |
| 11 | 2 | =    | The function ax                | Theoretical | Daily<br>preparation<br>and oral exam<br>and<br>Discussion |
| 12 | 2 | =    | Hom work                       | Theoretical | Daily<br>preparation<br>and oral exam<br>and<br>Discussion |
| 13 | 2 | =    | The hyperbolic<br>function     | Theoretical | Daily<br>preparation<br>and oral exam<br>and<br>Discussion |
| 14 | 2 | =    | Second<br>examination          | Theoretical | Daily<br>preparation<br>and oral exam<br>and<br>Discussion |
| 15 | 2 | Exam |                                |             |                                                            |

### **1. Course Evaluation**

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports ... etc

| Course | Daily preparation, daily and oral exams | Daily assignments | Seminars | Mid-term Exam | Final -Exam |
|--------|-----------------------------------------|-------------------|----------|---------------|-------------|
| 1nd    | 5                                       | 5                 | 15       | 25            | 50          |

### **2. Learning and Teaching Resources**

|                                                                    |                                                                                                   |
|--------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|
| Required textbooks (curricular books, if any)                      | "Calculus, James Stewart                                                                          |
| Main references (sources)                                          | Principles of Mathematical Analysis, Walter Rudin                                                 |
| Recommended books and references (scientific journals, reports...) | Annals of Mathematics<br>Acta Mathematica<br>SIAM Journal on Applied Mathematics                  |
| Electronic References, Websites                                    | <a href="https://www.maths.ox.ac.uk/node/66467?utm">https://www.maths.ox.ac.uk/node/66467?utm</a> |



## General Physics Description Form

|                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>1. Course Name</b>                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| General physics                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>2. Course Code</b>                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>3. Semester / Year</b>                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| First Semester (2026-2025)                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>4. Description Preparation Date:</b>                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 5 / 10 / 2025                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>5. Available Attendance Forms</b>                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Actual Attendance                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| (2 Hours Theory, 2hours practical, 1hours Seminars) / 5 units              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>7. Course administrator's name (mention all, if more than one name)</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Name: M.Sc. Ahmed Salam Jabbar<br>Email: ahmed.Salam@uowasit.edu.iq        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>8. Course Objectives</b>                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Course Objectives                                                          | Introducing and teaching the students of the Department of Earth Sciences to the subject of physics and understanding the symbols used in general physics, as well as knowing vectors and dimensions, and introducing the student to the methods and methods of the graphing process and applying important laws. At the end of this course, students should be able to understand the basics of physics, the theory of measurements, and interpretations and applications of types. Various physical theories. Students should also know how to calculate parameters, diagrams, and ways to connect electrical circuits |
| <b>9. Teaching and Learning Strategies</b>                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Strategy                                                                   | Group discussions and assignments.<br>Creating a competitive atmosphere among students and addressing individual differences using appropriate educational methods.<br>Research projects.<br>Interdisciplinary discussion circles.<br>Incorporating teaching methods that utilize educational                                                                                                                                                                                                                                                                                                                            |

|  |                                                                 |
|--|-----------------------------------------------------------------|
|  | technology.<br>Encouraging students for self-directed learning. |
|--|-----------------------------------------------------------------|

| 10. Course Structure |       |                                                                    |                                                                |                                             |                                                |
|----------------------|-------|--------------------------------------------------------------------|----------------------------------------------------------------|---------------------------------------------|------------------------------------------------|
| Week                 | Hours | Required Learning Outcomes                                         | Unit or subject name                                           | Learning method/ practical                  | Evaluation method                              |
| 1                    | 4     | Referred to in the previous axis and each according to the content | Introduction, Measurement                                      | Introduction, graph                         | Daily preparation and oral exam and Discussion |
| 2                    | 4     | =                                                                  | Motion in one dimension                                        | Ohm law                                     | Daily preparation and oral exam and Discussion |
| 3                    | 4     | =                                                                  | Acceleration. The particles are under constant acceleration    | Daily exam                                  | Daily preparation and oral exam and Discussion |
| 4                    | 4     | =                                                                  | Freely falling objects                                         | The simple pendulum                         | Daily preparation and oral exam and Discussion |
| 5                    | 4     | =                                                                  | Vectors. Vector quantities and scalar quantities               | Home work                                   | Daily preparation and oral exam and Discussion |
| 6                    | 4     | =                                                                  | Properties of vectors, components of vectors, and unit vectors | calculating the focal length of convex lens | Daily preparation and oral exam and Discussion |
| 7                    | 4     | Exam.                                                              |                                                                |                                             |                                                |
| 8                    | 4     | =                                                                  | Motion in two dimensions: position, velocity, and acceleration | Home work                                   | Daily preparation and oral exam and Discussion |

|    |   |                    |                                                     |                                                  |                                                |
|----|---|--------------------|-----------------------------------------------------|--------------------------------------------------|------------------------------------------------|
| 9  | 4 | =                  | Motion in two dimensions with constant acceleration | the spiral spring                                | Daily preparation and oral exam and Discussion |
| 10 | 4 | =                  | Projectile movement                                 | Ohms law                                         | Daily preparation and oral exam and Discussion |
| 11 | 4 | =                  | Force and movement. Laws of motion                  | calculating internal resistance of the voltmeter | Daily preparation and oral exam and Discussion |
| 12 | 4 | =                  | Newton's laws of motion                             | Home work                                        | Daily preparation and oral exam and Discussion |
| 13 | 4 | =                  | Applications of Newton's laws of motion             | Second semester exam                             | Daily preparation and oral exam and Discussion |
| 14 | 4 | =                  | Friction force                                      | Review and prepare for the exam                  | Daily preparation and oral exam and Discussion |
| 15 | 4 | Second examination |                                                     |                                                  |                                                |

### 11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports ... etc

| Course | THEORETICAL |             |         | PRACTICAL   |             |         | Final - Exam |
|--------|-------------|-------------|---------|-------------|-------------|---------|--------------|
|        | First Exam. | First Exam. | Quizzes | First Exam. | First Exam. | Quizzes |              |
| 1nd    | 12          | 12          | 4       | 4           | 4           | 4       | 60           |

### 12. Learning and Teaching Resources

|                                               |                                                                                               |
|-----------------------------------------------|-----------------------------------------------------------------------------------------------|
| Required textbooks (curricular books, if any) | "Fundamentals of Physics" by Halliday, Resnick, and Walker<br>The Feynman Lectures on Physics |
|-----------------------------------------------|-----------------------------------------------------------------------------------------------|

|                                                                    |                                                                                                                                                                                                             |
|--------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Main references (sources)                                          | MIT OpenCourseWare (OCW)<br>Schaum's Outline of Physics                                                                                                                                                     |
| Recommended books and references (scientific journals, reports...) | College Physics (OpenStax)<br>University Physics (Young & Freedman)                                                                                                                                         |
| Electronic References, Websites                                    | <a href="https://www.pearson.com/en-us/subject-catalog/p/university-physics/P200000006995/9780135216118">https://www.pearson.com/en-us/subject-catalog/p/university-physics/P200000006995/9780135216118</a> |

|                                                                     |                                                                                                                                                                                                                                                                                    |
|---------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| أ- الكتب والمراجع التي يوصي بيها (المجلات العلمية، التقارير، .....) |                                                                                                                                                                                                                                                                                    |
| ب- المراجع الالكترونية، مواقع الانترنت.....                         | 1- <a href="https://www.adelaide.edu.au/englishfor-uni/tenses-in-academic-writing">https://www.adelaide.edu.au/englishfor-uni/tenses-in-academic-writing</a><br>2- <a href="https://elt.oup.com/student/headway/%20beg/test-">https://elt.oup.com/student/headway/%20beg/test-</a> |

### The Course Description

|                                                                                                                                                                                                   |                                                                                                      |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|
| <b>1- Educational institution</b>                                                                                                                                                                 | <b>The University of Wasit</b>                                                                       |
| <b>2- Scientific department/type of study</b>                                                                                                                                                     | <b>The Department of Geology – 1<sup>st</sup> Year</b>                                               |
| <b>3- Name of the course (subject)</b>                                                                                                                                                            | <b>English Language</b>                                                                              |
| <b>4- Available forms of attendance</b>                                                                                                                                                           | <b>Attendance in the halls of Geology Department, College of Science</b>                             |
| <b>5- Semester/year</b>                                                                                                                                                                           | <b>Second Semester/ 2023-2024</b>                                                                    |
| <b>6- Number of study hours (total)</b>                                                                                                                                                           | <b>(2 Hours Theoretical) Weekly</b>                                                                  |
| <b>7- The date this description was prepared</b>                                                                                                                                                  | <b>15/01/2024</b>                                                                                    |
| <b>8- Preparing the lesson</b>                                                                                                                                                                    | <b>Lect. Dr. Reyadh H. R.<br/><a href="mailto:r.radhy@uowasit.edu.iq">r.radhy@uowasit.edu.iq</a></b> |
| <b>9- The Course Objectives</b>                                                                                                                                                                   |                                                                                                      |
| <ul style="list-style-type: none"> <li>- Learning the English language and its vocabulary, and becoming familiar with geological terminology, which is within the student's specialty.</li> </ul> |                                                                                                      |

|                                                                                                                                                                                                                                                                                                          |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>10- Course outcomes and teaching, learning and evaluation methods</b>                                                                                                                                                                                                                                 |
| A- Cognitive objectives<br>1- Identifying the parts of speech in the English language.<br>2- Giving the student confidence to speak English through short conversations that help him in conducting interviews for foreign companies.<br>3- Preparation on how to write academic scientific research.    |
| B- The skills objectives of the course<br>1- Communication skill.<br>2- Writing skill.<br>3- Scientific reports related to geology.                                                                                                                                                                      |
| C- Emotional and value goals<br>1- Accuracy in analysis and decision making<br>2- Credibility and transparency in scientific research.<br>3- Developing the student's ability to dialogue and discuss.                                                                                                   |
| D- Through the processes of criticism, issuing opinions, rulings, and renewal. And also through teamwork and problem solving.<br>1- Developing communication skills<br>2- Developing analytical and research skills<br>3- Desire to learn<br>4- Having creative skills and the ability to solve problems |

### Teaching and learning methods

1- Using the method of lecture, discussion, and applications through the computer.  
2- Introducing elective courses to develop higher learning skills, such as critical thinking, creative thinking, systems analysis and design, and philosophy of science, as university requirements, through further description of case studies and applications.

1. Readings, self-learning, discussion panels.
2. Exercises and activities in the classroom.
3. Directing students to some websites to benefit from them.
4. Holding research seminars in which oil reservoirs are explained.
5. Manage the lecture in a way that makes time feel important.
6. Assigning the student to some group activities and duties.
7. Allocate a percentage of the grade to group activities.

### Evaluation methods

Homework related to solving the problem

- 1- Homework related to solving the problem.
- 2- Participation in the classroom.
- 3- Providing activities.
- 4- Semester and final tests and activities.
- 5- quick quizzes.
- 6- Setting grades for students' participation during the lecture.
- 7- Giving grades to homework.
- 8- Giving grades for students' attendance.
- 9- Giving grades to students while they use clarification tools during the lecture.

## 11- The Course Structure

| Week | Hours | Required learning outcomes                                         | Name of the unit/topic           | Evaluation method                                                                                         |
|------|-------|--------------------------------------------------------------------|----------------------------------|-----------------------------------------------------------------------------------------------------------|
| 1    | 2     | An introductory lecture on the importance of the English language. | Unit 1<br>Home and away          | Interactive questions during the lecture, quick quizzes, exams, write scientific reports, and attendance. |
| 2    | 2     | The Grammar of English Language                                    | Unit 2<br>Been there, done that! |                                                                                                           |
| 3    | 2     | general-review-sentence-types-and-structure                        | Unit 4<br>Tenses                 |                                                                                                           |
| 4    | 2     | Tenses-Present-Simple-vs.-Present-Continuous.                      | Unit 5<br>Tenses                 |                                                                                                           |
| 5    | 2     | Tenses-Past-Simple-vs.-Past-Continuous.                            | Unit 1<br>Home and away          |                                                                                                           |
| 6    | 2     | Tenses Present-Perfect-vs.-Past-Perfect.                           | Unit 6<br>Tenses                 |                                                                                                           |
| 7    | 2     | Discussion                                                         | Repeating to previous topics.    |                                                                                                           |

|    |   |                                                             |                                |
|----|---|-------------------------------------------------------------|--------------------------------|
| 8  | 2 | First Monthly Exam                                          |                                |
| 9  | 2 | Futurity                                                    | Unit 7<br>An eye to the future |
| 10 | 2 | Writing types and how to write a formal email               | Unit Writing.                  |
| 11 | 2 | Give a definition of Important geological vocabulary.       | Geological terminology         |
| 12 | 2 | Discuss geological figures and diagrams.                    | Geological terminology         |
| 13 | 2 | Conduct short dialogues between students to develop speech. | Dialogues                      |
| 14 | 2 | Repeating of previous topics                                | Comprehensive review           |
| 15 | 2 | Second Exam                                                 |                                |

## 12- Course evaluation

Distribution of the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, written exams, reports, etc.

| Quizzes | Daily Works | Reports | Monthly Exam | Final Exam |
|---------|-------------|---------|--------------|------------|
| 5       | 5           | 5       | 25           | 60         |

## 13- Education and teaching references

|                                                                       |                                                                                                                                                                                                                                                                                    |
|-----------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1- Required prescribed books                                          | - New-headway-plus-upper-intermediate-students-book.<br>- New-headway-plus-upper-intermediate-students-workbook                                                                                                                                                                    |
| 2- Main references (sources)                                          | المحاضرات المؤرشفة من قبل تدريسي الاختصاص لكل مادة.                                                                                                                                                                                                                                |
| 3- Recommended books and references (scientific journals, reports...) |                                                                                                                                                                                                                                                                                    |
| 4- Electronic references, websites...                                 | 1- <a href="https://www.adelaide.edu.au/englishfor-uni/tenses-in-academic-writing">https://www.adelaide.edu.au/englishfor-uni/tenses-in-academic-writing</a><br>2- <a href="https://elt.oup.com/student/headway/%20beg/test-">https://elt.oup.com/student/headway/%20beg/test-</a> |

## Course Description

| <b>1. Course Name:</b>                                                                                                                                                                                                                                                                                                                                   |       |                            |                          |                                                                         |                                             |                                 |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|----------------------------|--------------------------|-------------------------------------------------------------------------|---------------------------------------------|---------------------------------|
| Crystallography                                                                                                                                                                                                                                                                                                                                          |       |                            |                          |                                                                         |                                             |                                 |
| <b>2. Course Code:</b>                                                                                                                                                                                                                                                                                                                                   |       |                            |                          |                                                                         |                                             |                                 |
| Geology Department/ 1 <sup>st</sup> Stage                                                                                                                                                                                                                                                                                                                |       |                            |                          |                                                                         |                                             |                                 |
| <b>3. Semester / Year:</b>                                                                                                                                                                                                                                                                                                                               |       |                            |                          |                                                                         |                                             |                                 |
| 1 <sup>st</sup> Semester/1 <sup>st</sup> Year                                                                                                                                                                                                                                                                                                            |       |                            |                          |                                                                         |                                             |                                 |
| <b>4. Description Preparation Date:</b>                                                                                                                                                                                                                                                                                                                  |       |                            |                          |                                                                         |                                             |                                 |
| 1/10/2023                                                                                                                                                                                                                                                                                                                                                |       |                            |                          |                                                                         |                                             |                                 |
| <b>5. Available Attendance Forms:</b>                                                                                                                                                                                                                                                                                                                    |       |                            |                          |                                                                         |                                             |                                 |
| Actual                                                                                                                                                                                                                                                                                                                                                   |       |                            |                          |                                                                         |                                             |                                 |
| <b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>                                                                                                                                                                                                                                                                                       |       |                            |                          |                                                                         |                                             |                                 |
| (2 hours theoretical + 2 hours practical weekly) / 3 units                                                                                                                                                                                                                                                                                               |       |                            |                          |                                                                         |                                             |                                 |
| <b>7. Course administrator's name (mention all, if more than one name)</b>                                                                                                                                                                                                                                                                               |       |                            |                          |                                                                         |                                             |                                 |
| Lect. Najah Alwan Owayez                                                                                                                                                                                                                                                                                                                                 |       |                            |                          | Email: <a href="mailto:nauaiz@uowasit.edu.iq">nauaiz@uowasit.edu.iq</a> |                                             |                                 |
| <b>8. Course Objectives:</b>                                                                                                                                                                                                                                                                                                                             |       |                            |                          |                                                                         |                                             |                                 |
| <p>The course aims to consolidate the general principles of crystallography through:</p> <ul style="list-style-type: none"> <li>• Introduction to crystallography</li> <li>• Definition of crystallization environments</li> <li>• Introduction to real and imaginary crystal elements</li> <li>• Introduction to crystallization systems</li> </ul>     |       |                            |                          |                                                                         |                                             |                                 |
| <b>9. Teaching and Learning Strategies:</b>                                                                                                                                                                                                                                                                                                              |       |                            |                          |                                                                         |                                             |                                 |
| <ul style="list-style-type: none"> <li>• Displaying lectures on screen and delivering lectures orally</li> <li>• Asking questions and holding discussions</li> <li>• Display models and conduct laboratory analyses</li> <li>• How to perform mathematical calculations and prepare reports</li> <li>• Encouraging research and self-learning</li> </ul> |       |                            |                          |                                                                         |                                             |                                 |
| <b>10. Course Structure:</b>                                                                                                                                                                                                                                                                                                                             |       |                            |                          |                                                                         |                                             |                                 |
| Week                                                                                                                                                                                                                                                                                                                                                     | Hours | Required Learning Outcomes | Subject Name             |                                                                         | Learning Method                             | Evolution Method                |
|                                                                                                                                                                                                                                                                                                                                                          |       |                            | Theoretical              | Practical                                                               |                                             |                                 |
| 1                                                                                                                                                                                                                                                                                                                                                        | 5     | Point 9                    | Introduction             | Introduction                                                            | Show and explain the subject, ask questions | Quizzes, Exams, Works & Reports |
| 2                                                                                                                                                                                                                                                                                                                                                        | 5     |                            | Real Elements of Crystal | Crystallization Environments                                            |                                             |                                 |
| 3                                                                                                                                                                                                                                                                                                                                                        | 5     |                            | Real Elements of Crystal | Real Elements of Crystal                                                |                                             |                                 |
| 4                                                                                                                                                                                                                                                                                                                                                        | 5     |                            | Imaginary Elements of    | Imaginary Elements of                                                   |                                             |                                 |



|    |   |  |                                     |                                     |                                    |  |
|----|---|--|-------------------------------------|-------------------------------------|------------------------------------|--|
|    |   |  | Crystal                             | Crystal                             | and discuss,<br>prepare<br>reports |  |
| 5  | 5 |  | Imaginary crystal<br>elements       | Symmetry Elements                   |                                    |  |
| 6  | 5 |  | First Monthly Exam                  |                                     |                                    |  |
| 7  | 5 |  | Crystallographic Systems            | Crystallographic<br>Systems         |                                    |  |
| 8  | 5 |  | Miller Indices                      | Miller Indices                      |                                    |  |
| 9  | 5 |  | Miller Indices                      | Miller Indices                      |                                    |  |
| 10 | 5 |  | Cubic and Quadrilateral<br>Systems  | Cubic and Quadrilateral<br>Systems  |                                    |  |
| 11 | 5 |  | Orthorhombic System                 | Orthorhombic System                 |                                    |  |
| 12 | 5 |  | Monoclinic and Triclinic<br>Systems | Monoclinic and Triclinic<br>Systems |                                    |  |
| 13 | 5 |  | Second Monthly Exam                 |                                     |                                    |  |
| 14 | 5 |  | Hexagonal system                    | Hexagonal system                    |                                    |  |
| 15 | 5 |  | review                              | review                              |                                    |  |

### 11. Course Evolution:

- Quizzes
- Reports
- Seminars
- Practical Duties
- Monthly Examinations
- Final Examinations
- Grade distribution according to the table below:

| Quizzes | Reports | Seminar | Daily Works | Mid Exam | Final Exam  |           |
|---------|---------|---------|-------------|----------|-------------|-----------|
|         |         |         |             |          | Theoretical | Practical |
| 15      | 5       | 10      | 10          | 10       | 30          | 20        |

### 12. Learning and Teaching Resources

|                                                                             |                                                                                                                                                                                                                                   |
|-----------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Required Textbooks                                                       | Hoffmann, F., 2020, "Introduction to Crystallography", Springer, 1 <sup>st</sup> Ed.                                                                                                                                              |
| 2. Main References (Resources)                                              |                                                                                                                                                                                                                                   |
| A. Recommended Books and References (Scientific Journals, Reports, ...etc.) | 1- The Iraqi Geological Journal published by the Iraqi Geologists Union<br>2- Publications and reports of the Iraqi Geological Survey                                                                                             |
| B. Electronic References, Websites                                          | <ul style="list-style-type: none"> <li>• <a href="https://indico.ictp.it/event/a10148/session/22/contribution/16/material/0/0.pdf">https://indico.ictp.it/event/a10148/session/22/contribution/16/material/0/0.pdf</a></li> </ul> |

## Course description of Baath Party crimes

|                                                                                                                                                                                                                                                                                                                                          |                    |                        |                               |                                         |          |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|------------------------|-------------------------------|-----------------------------------------|----------|
| Course name : Baath Party crimes .1                                                                                                                                                                                                                                                                                                      |                    |                        |                               |                                         |          |
|                                                                                                                                                                                                                                                                                                                                          |                    |                        |                               |                                         |          |
| : Course Code .2                                                                                                                                                                                                                                                                                                                         |                    |                        |                               |                                         |          |
|                                                                                                                                                                                                                                                                                                                                          |                    |                        |                               |                                         |          |
| Semester/ Year : Semester .3                                                                                                                                                                                                                                                                                                             |                    |                        |                               |                                         |          |
|                                                                                                                                                                                                                                                                                                                                          |                    |                        |                               |                                         |          |
| Date this description was prepared : 2026 .4                                                                                                                                                                                                                                                                                             |                    |                        |                               |                                         |          |
|                                                                                                                                                                                                                                                                                                                                          |                    |                        |                               |                                         |          |
| ) theoretical( Available forms of attendance : In-person .5                                                                                                                                                                                                                                                                              |                    |                        |                               |                                         |          |
|                                                                                                                                                                                                                                                                                                                                          |                    |                        |                               |                                         |          |
| 2 : Number of study hours (total)/number of units (total) .6                                                                                                                                                                                                                                                                             |                    |                        |                               |                                         |          |
|                                                                                                                                                                                                                                                                                                                                          |                    |                        |                               |                                         |          |
| Name of the course administrator (if more than one name is mentioned) .7                                                                                                                                                                                                                                                                 |                    |                        |                               |                                         |          |
| Ibtisam Ali Hawas .Name: M<br>ehawass@uowsit.edu.iq :address email The                                                                                                                                                                                                                                                                   |                    |                        |                               |                                         |          |
| objectives Course .8                                                                                                                                                                                                                                                                                                                     |                    |                        |                               |                                         |          |
| <b>providing the student with general knowledge about the basics of the former regime and all the crimes it committed against the Iraqi people of various components and sects, and establishing a conscious generation that rejects all kinds of injustice, .tyranny, and tyranny, and the extent of its demands for all its rights</b> |                    |                        |                               | <b>ectives of the study<br/>subject</b> |          |
| Teaching and learning strategies .9                                                                                                                                                                                                                                                                                                      |                    |                        |                               |                                         |          |
| eoretical lectures and group discussions for the purpose of facilitating the d research, and assigning explanation of the material, in addition to reports : student some activities is evidence of the student's commitment and the ent of his understanding and comprehension of the subject of the Baath .Party's crimes              |                    |                        |                               | <b>The strategy</b>                     |          |
| Course structure .10                                                                                                                                                                                                                                                                                                                     |                    |                        |                               |                                         |          |
| Evaluation<br>method                                                                                                                                                                                                                                                                                                                     | Teaching<br>method | Name of the unit/topic | Required learning<br>outcomes | hours                                   | the week |

|                         |                                      |                                                                   |                       |   |    |
|-------------------------|--------------------------------------|-------------------------------------------------------------------|-----------------------|---|----|
| Daily and monthly exams | Theoretical lecture with discussions | The concept of crimes linguistically and terminologically         | Second stage students | 1 | 1  |
| Daily and monthly exams | Theoretical lecture with discussions | Crime departments                                                 |                       | 1 | 2  |
| Daily and monthly exams | theoretical                          | Baath Party crimes according to the Supreme Criminal Court Law    |                       | 1 | 3  |
| Daily and monthly exams | theoretical                          | Identify international crimes                                     |                       | 1 | 4  |
| Daily and monthly exams | theoretical                          | Learn about the decisions issued by the Supreme Criminal Court    |                       | 1 | 5  |
| Daily and monthly exams | theoretical                          | Identifying psychological crimes and their most prominent effects |                       | 1 | 6  |
| Daily and monthly exams | theoretical                          | Identify the mechanisms of psychological crimes                   |                       | 1 | 7  |
| Daily and monthly exams | theoretical                          | Identify social crimes                                            |                       | 1 | 8  |
| Daily and monthly exams | theoretical                          | The Baath Party's position on religion                            |                       | 1 | 9  |
| Daily and monthly exams | theoretical                          | Militarization of society                                         |                       | 1 | 10 |
| Daily and monthly exams | theoretical                          | Identify the most prominent human rights violations               |                       | 1 | 11 |
| Daily and monthly exams | theoretical                          | Identify environmental crimes                                     |                       | 1 | 12 |
| Daily and monthly exams | theoretical                          | Identifying mass graves                                           |                       | 1 | 13 |
| Daily and monthly exams | theoretical                          | Identifying military pollution                                    |                       | 1 | 14 |
| Daily and monthly exams | theoretical                          | Dredging orchards                                                 |                       |   | 15 |

#### Course evaluation .11

The grade is distributed out of 100, divided into two halves: 50 according to the tasks assigned to the student, such as daily and monthly exams and reports, and 50 for the final exam

#### Learning and teaching resources .12

|                                                |                                          |
|------------------------------------------------|------------------------------------------|
| Baath Party crimes methodology                 | Required textbooks (methodology, if any) |
| Archives of the Political Prisoners Foundation | Main references (sources)                |
|                                                | Recommended supporting books             |

|  |                                                      |
|--|------------------------------------------------------|
|  | and references (scientific journals,<br>(....reports |
|  | Electronic references, Internet sites                |

## نموذج وصف المادة الدراسية

| Module Information                 |                            |                                                                                                                                                                                                         |                        |
|------------------------------------|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| معلومات المادة الدراسية            |                            |                                                                                                                                                                                                         |                        |
| Module Title                       | حقوق الانسان والديموقراطية | Module Delivery                                                                                                                                                                                         |                        |
| Module Type                        | Core                       | <input checked="" type="checkbox"/> Theory<br><input checked="" type="checkbox"/> Lecture<br><input type="checkbox"/> Lab<br><br><input type="checkbox"/> Practical<br><input type="checkbox"/> Seminar |                        |
| Module Code                        | Wuo4                       |                                                                                                                                                                                                         |                        |
| ECTS Credits                       | 2                          |                                                                                                                                                                                                         |                        |
| SWL (hr/sem)                       | 50                         |                                                                                                                                                                                                         |                        |
| Module Level                       |                            |                                                                                                                                                                                                         |                        |
| Administering Department           | Human rights and Democracy | College                                                                                                                                                                                                 | Science                |
| Module Leader                      | Ibtisam Ali Hawas          | e-mail                                                                                                                                                                                                  | ehawass@uowasit.edu.iq |
| Module Leader's Acad. Title        |                            | Module Leader's Qualification                                                                                                                                                                           | Master                 |
| Module Tutor                       |                            | e-mail                                                                                                                                                                                                  |                        |
| Peer Reviewer Name                 |                            | e-mail                                                                                                                                                                                                  |                        |
| Scientific Committee Approval Date |                            | Version Number                                                                                                                                                                                          | 1.0                    |

| Relation with other Modules       |      |          |  |
|-----------------------------------|------|----------|--|
| العلاقة مع المواد الدراسية الأخرى |      |          |  |
| Prerequisite module               | NONE | Semester |  |
| Co-requisites module              | NONE | Semester |  |

| Module Aims, Learning Outcomes and Indicative Contents           |                                                                                                                                                                                                                                                                                                                                                      |
|------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية         |                                                                                                                                                                                                                                                                                                                                                      |
| <b>Module Aims</b><br>أهداف المادة الدراسية                      | يهدف الى اكتساب الطلبة معرفة عامة عن اصول وجذور مفهوم حقوق الانسان وكيفية التعامل مع المشاكل التي تمس حقوق الانسان وحياته الاساسية وخصوصا المشاكل التي تواجه الطلاب التي تتمثل بالعنف الاسري والابتزاز الالكتروني وتعاطي المخدرات ومدى مطالبته بصيانة هذه الحقوق وكيفية الاطلاع على الدستور العراقي لعام 2005 الذي . . تضمن الحقوق والحريات الاساسية |
| <b>Module Learning Outcomes</b><br>مخرجات التعلم للمادة الدراسية | تخريج جيل واعى ومثقف وواعي لواجباته تجاه دولته وماله من حقوق مقابل تلك - الواجبات<br>تنمية ثقافة الاحترام المتبادل بين الافراد دون اي تمييز فيما بينهم-<br>تنمية قدرة الطالب على الحوار والمناقشة والمشاركة في تحليل المشاكل الناشئة في- المجتمع<br>زيادة معرفة الطلاب عن طريق تكليفهم بأعداد تقارير خاصة بحقوق الانسان-                             |

|                                                   |                                                                                                                                                                                                                   |
|---------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Indicative Contents</b><br>المحتويات الإرشادية | فهم المفاهيم الأساسية التي تتمثل ب مفهوم الحق ومفهوم الانسان والحقوق<br>والحريات الأساسية وغير الأساسية وتحليل الشخصية القانونية ومصادر حقوق<br>الانسان والضمانات الأساسية التي تحافظ على هذه الحقوق من اي انتهاك |
|---------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

| <b>Learning and Teaching Strategies</b><br>استراتيجيات التعلم والتعليم |                                                                                                                                                                                                                                                                                                                                                                                  |
|------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Strategies</b>                                                      | ان يميل الطالب الى درس حقوق الانسان ويتعرف على اهمية هذه الحقوق وتأثيرها المباشر على حياة الفرد والمجتمع وإدارة المحاضرة بما يشعر الطالب بأهمية الوقت وتكليف الطالب ببعض الأنشطة والواجبات الجماعية والمشاركة الفعالة في الفصل دليل على التزام الطالب والالتزام بالمواعيد المقررة . لتسليم التقارير المطلوبة وأخيراً " تعكس الاختبارات الفصلية واليومية التحصيل المعرفي لكل طالب |

| <b>Student Workload (SWL)</b><br>الحمل الدراسي للطلاب محسوب لـ ١٥ اسبوعا       |    |                                                                           |   |
|--------------------------------------------------------------------------------|----|---------------------------------------------------------------------------|---|
| <b>Structured SWL (h/sem)</b><br>الحمل الدراسي المنتظم للطلاب خلال الفصل       | 33 | <b>Structured SWL (h/w)</b><br>الحمل الدراسي المنتظم للطلاب أسبوعيا       | 2 |
| <b>Unstructured SWL (h/sem)</b><br>الحمل الدراسي غير المنتظم للطلاب خلال الفصل | 17 | <b>Unstructured SWL (h/w)</b><br>الحمل الدراسي غير المنتظم للطلاب أسبوعيا | 1 |
| <b>Total SWL (h/sem)</b><br>الحمل الدراسي الكلي للطلاب خلال الفصل              |    |                                                                           |   |

| <b>Module Evaluation</b><br>تقييم المادة الدراسية |              |             |                  |          |                           |
|---------------------------------------------------|--------------|-------------|------------------|----------|---------------------------|
|                                                   |              | Time/Number | Weight (Marks)   | Week Due | Relevant Learning Outcome |
| <b>Formative assessment</b>                       | Quizzes      | 2           | 20% (20)         | 5 and 10 | LO #1, 2, and 10, 11      |
|                                                   | Assignments  | 2           | 10% (10)         | 2 and 12 | LO , 3, 4 and 6 ,7        |
|                                                   |              |             |                  |          |                           |
|                                                   | Report       | 1           | 10% (10)         | 13       | LO #5, 8, and 10          |
| <b>Summative assessment</b>                       | Midterm Exam | 2hr         | 10%(10)          | 7        | LO # 1-7                  |
|                                                   | Final Exam   | 3hr         | 50%(50)          | 16       | All                       |
| <b>Total assessment</b>                           |              |             | 100% (100 Marks) |          |                           |

| <b>Delivery Plan (Weekly Syllabus)</b><br>المنهاج الاسبوعي النظري |                         |
|-------------------------------------------------------------------|-------------------------|
|                                                                   | <b>Material Covered</b> |

|         |                                                     |
|---------|-----------------------------------------------------|
| Week 1  | مفهوم حقوق الانسان                                  |
| Week 2  | خصائص حقوق الانسان                                  |
| Week 3  | انواع حقوق الانسان                                  |
| Week 4  | حقوق الانسان في الاسلام                             |
| Week 5  | حقوق الانسان في العصور الوسطى                       |
| Week 6  | حقوق الانسان في العصور الحديثة                      |
| Week 7  | الحقوق والحريات في الدستور العراقي النافذ لعام 2005 |
| Week 8  | مصادر حقوق الانسان                                  |
| Week 9  | المصادر الوطنية لحقوق الانسان                       |
| Week 10 | المصادر الدولية لحقوق الانسان                       |
| Week 11 | الديمقراطية                                         |
| Week 12 | اشكال الديمقراطية                                   |
| Week 13 | خصائص الديمقراطية                                   |
| Week 14 | الانتخابات                                          |
| Week 15 | انواع النظم الانتخابية                              |
| Week 16 | مراجعة والتحضير قبل الامتحان                        |

| Delivery Plan (Weekly Lab. Syllabus) |                  |
|--------------------------------------|------------------|
| المنهاج الاسبوعي للمختبر             |                  |
|                                      | Material Covered |
| Week 1                               |                  |
| Week 2                               |                  |
| Week 3                               |                  |
| Week 4                               |                  |
| Week 5                               |                  |
| Week 6                               |                  |
| Week 7                               |                  |

| Learning and Teaching Resources |      |                           |
|---------------------------------|------|---------------------------|
| مصادر التعلم والتدريس           |      |                           |
|                                 | Text | Available in the Library? |

|                   |                                     |     |
|-------------------|-------------------------------------|-----|
| Required Texts    | 1. كتاب حقوق الانسان حميد حنون خالد | pdf |
| Recommended Texts |                                     |     |
| Websites          |                                     |     |

| Grading Scheme<br>مخطط الدرجات                                                                                                                                                                                                                                                                                                                                                       |                  |                     |           |                                       |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|---------------------|-----------|---------------------------------------|
| Group                                                                                                                                                                                                                                                                                                                                                                                | Grade            | التقدير             | Marks (%) | Definition                            |
| Success Group<br>(50 - 100)                                                                                                                                                                                                                                                                                                                                                          | A - Excellent    | امتياز              | 90 - 100  | Outstanding Performance               |
|                                                                                                                                                                                                                                                                                                                                                                                      | B - Very Good    | جيد جدا             | 80 - 89   | Above average with some errors        |
|                                                                                                                                                                                                                                                                                                                                                                                      | C - Good         | جيد                 | 70 - 79   | Sound work with notable errors        |
|                                                                                                                                                                                                                                                                                                                                                                                      | D - Satisfactory | متوسط               | 60 - 69   | Fair but with major shortcomings      |
|                                                                                                                                                                                                                                                                                                                                                                                      | E - Sufficient   | مقبول               | 50 - 59   | Work meets minimum criteria           |
| Fail Group<br>(0 – 49)                                                                                                                                                                                                                                                                                                                                                               | FX – Fail        | راسب (قيد المعالجة) | (45-49)   | More work required but credit awarded |
|                                                                                                                                                                                                                                                                                                                                                                                      | F – Fail         | راسب                | (0-44)    | Considerable amount of work required  |
|                                                                                                                                                                                                                                                                                                                                                                                      |                  |                     |           |                                       |
| <b>Note:</b> Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above. |                  |                     |           |                                       |



# وصف البرنامج الأكاديمي

قسم علوم الأرض  
2025-2026

## Course Description Form

|                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Course Name:                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Paleontology (Macropalenotology)                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 2. Course Code:                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 3. Semester / Year:                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| The first – 2025/ 2026                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 4. Description Preparation Date:                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 1/10/2025                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 5. Available Attendance Forms:                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Actual Attendance                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 6. Number of Credit Hours (Total) / Number of Units (Total)                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 4 unites / 4 hours in week                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 7. Course administrator's name (mention all, if more than one name)                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Name: Assist. Prof. Ruaa Issa Muslim                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Email: Ralqurashy@uowasit.edu.iq                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Ms.c. Basma Saleem Dawood<br>Ms.c. Hani Hussain Shalal<br>Ms.c. Ali abdulhussain Chaloob |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 8. Course Objectives                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Course Objectives                                                                        | <ul style="list-style-type: none"> <li>· Identify the types of fossils of large invertebrates that can be seen with the naked eye, such as sponges, corals, foraminifera, and all types of molluscs, classify these fossils, study their stratigraphic importance and their applications for studying paleoclimate and the Paleozoic area.....</li> <li>· .....</li> </ul>                                                                          |
| 9. Teaching and Learning Strategies                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Strategy                                                                                 | <ul style="list-style-type: none"> <li>- Group discussions and assignments</li> <li>- Creating a competitive atmosphere among students and addressing individual differences using appropriate educational methods</li> <li>- Research projects</li> <li>- Interdisciplinary discussion circles</li> <li>- Incorporating teaching methods that utilize educational technology</li> <li>- Encouraging students for self-directed learning</li> </ul> |

## 10. Course Structure

| Week | Hours | Unit or subject name/<br>Theoretical        | Learning method/<br>practical                                              | Evaluation method                              |
|------|-------|---------------------------------------------|----------------------------------------------------------------------------|------------------------------------------------|
| 1    | 4     | The life during the geological time scale   | Placing life events on geological time scale                               | Daily preparation and oral exam and Discussion |
| 2    | 4     | Introduction to the paleoecology            | Make a table about the division of the hard structures of fossils          | Daily preparation and oral exam and Discussion |
| 3    | 4     | Methods of preserving fossils               | Make a plan for methods of fossil preservation with examples               | Daily preparation and oral exam and Discussion |
| 4    | 4     | The importance and uses of fossils          | Make and draw a correlation with fossils between two stratigraphic columns | Daily preparation and oral exam and Discussion |
| 5    | 4     | Foraminifera                                | Samples of Foraminifera                                                    | Daily preparation and oral exam and Discussion |
| 6    | 4     | Radiolaria                                  | Samples of Radiolaria)                                                     | Daily preparation and oral exam and Discussion |
| 7    | 4     | Classification of Organisms                 | Classification of Organisms                                                | Exam.                                          |
| 8    | 4     | <i>Sponges</i> ) ) <i>Phylum Porifera</i> ) | <i>Samples of ( Sponges) Phylum</i>                                        | Daily preparation and oral exam and Discussion |
| 9    | 4     | Phylum Mollusca                             | Classification of Phylum Mollusca                                          | Daily preparation and oral exam and Discussion |
| 10   | 4     | Class الرخويات صنف المحاريات Pelecypoda     | Samples Class Pelecypoda                                                   | Daily preparation and oral exam and Discussion |
| 11   | 4     | Castropoda                                  | Samples Castropoda                                                         | Daily preparation and oral exam and Discussion |
| 12   | 4     | Cephaloppda                                 | Samples Cephaloppda)                                                       | Daily preparation and oral exam and Discussion |
| 13   | 4     | Brachiopods                                 | Samples of Brachiopods                                                     | Daily preparation and oral exam and Discussion |
| 14   | 4     | Trilobite                                   | Samples of Trilobite                                                       | Daily preparation and oral exam and Discussion |
| 15   | 4     | Exam                                        | Exam                                                                       | Exam.                                          |

## 11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports.... etc.

## 12. Learning and Teaching Resources

|                                                                    |                                                                                                                                                                        |
|--------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Required textbooks (curricular books, if any)                      | Macdonald, J; Macdonald, M., Rich, P., Rich, L., Rich, T., 1997, Fossil Collector's Guide, Kangaroo press, P.172                                                       |
| Main references (sources)                                          | Al-Omari, Farouk Sanallah and Abbawi, Tariq Saleh, 1982, Paleontology, Press of the Dar Al-Kutub Directorate for Printing and Publishing, University of Mosul, p. 474. |
| Recommended books and references (scientific journals, reports...) | The Iraqi Geological Journal published by the Iraqi Geologists unio Publications and reports of the Iraqi Geological Survey                                            |
| Electronic References, Websites                                    | published papers                                                                                                                                                       |

# وصف البرنامج الأكاديمي

قسم علوم الأرض  
2025-2026

## Course Description Form

|                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Course Name:                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                        |
| Paleontology (Micropaleontology)                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                        |
| 2. Course Code:                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                        |
|                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                        |
| 3. Semester / Year:                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                        |
| The second– 2025/ 2026                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                        |
| 4. Description Preparation Date:                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                        |
| 1/10/2025                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                        |
| 5. Available Attendance Forms:                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                        |
| Actual Attendance                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                        |
| 6. Number of Credit Hours (Total) / Number of Units (Total)                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                        |
| (2 Hours Theory)and (2 hours practical)                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                        |
| 7. Course administrator's name (mention all, if more than one name)                                                                                                                                                |                                                                                                                                                                                                                                                                                                                        |
| Name: Assit. Prof. Ruaa Issa Muslim<br>Email: <a href="mailto:Ralqurashy@uowasit.edu.iq">Ralqurashy@uowasit.edu.iq</a><br>Ms.c. Hani Hussain Shalal<br>Ms.c. Basma Saleem Dawood<br>Ms.c. Ali abdulhussain Chaloob |                                                                                                                                                                                                                                                                                                                        |
| 8. Course Objectives                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                        |
| Course Objectives                                                                                                                                                                                                  | <ul style="list-style-type: none"> <li>• Identifying the types of microfossils that can be seen with an electron microscope (steromicroscope), such as Foraminifera., classify these fossils, study their stratigraphic importance and their applications for studying paleoclimate and the Paleozoic area.</li> </ul> |
| 9. Teaching and Learning Strategies                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                        |
| Strategy                                                                                                                                                                                                           | - Group discussions and assignments                                                                                                                                                                                                                                                                                    |
|                                                                                                                                                                                                                    | - Creating a competitive atmosphere among students and addressing individual differences using appropriate educational methods                                                                                                                                                                                         |
|                                                                                                                                                                                                                    | - Research projects                                                                                                                                                                                                                                                                                                    |
|                                                                                                                                                                                                                    | - Interdisciplinary discussion circles                                                                                                                                                                                                                                                                                 |
|                                                                                                                                                                                                                    | - Incorporating teaching methods that utilize educational technology                                                                                                                                                                                                                                                   |
|                                                                                                                                                                                                                    | - Encouraging students for self-directed learning                                                                                                                                                                                                                                                                      |

| 10. Course Structure |       |                                                           |                                                               |                                                |
|----------------------|-------|-----------------------------------------------------------|---------------------------------------------------------------|------------------------------------------------|
| Week                 | Hours | Unit or subject name/<br>Theoretical                      | Learning method/<br>practical                                 | Evaluation<br>method                           |
| 1                    | 4     | Introduction to the Micropaleontology                     | Introduction to the Micropaleontology                         | Daily preparation and oral exam and Discussion |
| 2                    | 4     | Classification of Micropaleontology                       | Classification of Micropaleontology                           | Daily preparation and oral exam and Discussion |
| 3                    | 4     | Calcareous microfossils                                   | Classification of Microfossils (Working Scheme with Examples) | Daily preparation and oral exam and Discussion |
| 4                    | 4     | Foraminifera (Composition and microstructure of the wall) | Collection and preparation of samples                         | Daily preparation and oral exam and Discussion |
| 5                    | 4     | Foraminifera(Shape of test and chambers)                  | Foraminifera (Shape of test and chambers)                     | Daily preparation and oral exam and Discussion |
| 6                    | 4     | Foraminifera (Arrangement of chambers)                    | Foraminifera (Arrangement of chambers)                        | Daily preparation and oral exam and Discussion |
| 7                    | 4     | Foraminifera ) Apertures)                                 | Foraminifera (Ornamentations)                                 | Exam.                                          |
| 8                    | 4     | Foraminifera(Ornamentatios)                               | Samples of Foraminifera (slides)                              | Daily preparation and oral exam and Discussion |
| 9                    | 4     | Classification of Foraminifera                            | Study Samples of Foraminifera (slides)                        | Daily preparation and oral exam and Discussion |
| 10                   | 4     | Applied of Foraminifera                                   | Study Samples of Foraminifera (slides)                        | Daily preparation and oral exam and Discussion |
| 11                   | 4     | Morphology Of Ostrácodos((Ornamentation and Hing Line)    | Study Samples of Foraminifera (slides)                        | Daily preparation and oral exam and Discussion |
| 12                   | 4     | Principles of Ostracoda Biostratigraphy                   | Morphology Of Ostrácodos                                      | Daily preparation and oral exam and Discussion |
| 13                   | 4     | Ostracoda and petroleum Geology                           | Morphology Of Ostrácodos                                      | Daily preparation and oral exam and Discussion |

|    |   |                                                                                                  |                                |                                                      |
|----|---|--------------------------------------------------------------------------------------------------|--------------------------------|------------------------------------------------------|
| 14 | 4 | - Phosphatic Microfossils/<br>Condonts.<br><br>- Organic - Walled<br>Microfossils Palepalynology | Ornamentation of<br>Ostrácodos | Daily preparation<br>and oral exam<br>and Discussion |
| 15 | 4 | Exam                                                                                             | Exam                           | Exam.                                                |

#### 11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

#### 12. Learning and Teaching Resources

|                                                                    |                                                                                                                                                                        |
|--------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Required textbooks (curricular books, if any)                      | Macdonald, J; Macdonald, M., Rich, P., Rich, L., Rich, T., 1997, Fossil Collector's Guide, Kangaroo press, P.172                                                       |
| Main references (sources)                                          | Al-Omari, Farouk Sanallah and Abbawi, Tariq Saleh, 1982, Paleontology, Press of the Dar Al-Kutub Directorate for Printing and Publishing, University of Mosul, p. 474. |
| Recommended books and references (scientific journals, reports...) | The Iraqi Geological Journal published by the Iraqi Geologists unio Publications and reports of the Iraqi Geological Survey                                            |
| Electronic References, Websites                                    | published papers                                                                                                                                                       |



## وصف البرنامج الأكاديمي

قسم علوم الأرض

2025-2026

وصف المقرر الدراسي

|                                                                         |                                                                                                                                                                                                                                                                                                                                        |
|-------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1- اسم المقرر                                                           |                                                                                                                                                                                                                                                                                                                                        |
| اللغة العربية                                                           |                                                                                                                                                                                                                                                                                                                                        |
| 2- رمز المقرر                                                           |                                                                                                                                                                                                                                                                                                                                        |
| قسم علوم الأرض/ المرحلة الثانية                                         |                                                                                                                                                                                                                                                                                                                                        |
| 3- الفصل / السنة                                                        |                                                                                                                                                                                                                                                                                                                                        |
| الثاني/ الثانية                                                         |                                                                                                                                                                                                                                                                                                                                        |
| 4- تاريخ إعداد هذا الوصف                                                |                                                                                                                                                                                                                                                                                                                                        |
| 2025/9/15                                                               |                                                                                                                                                                                                                                                                                                                                        |
| 5- أشكال الحضور المتاحة                                                 |                                                                                                                                                                                                                                                                                                                                        |
| حضور و إلكتروني                                                         |                                                                                                                                                                                                                                                                                                                                        |
| 6- عدد الساعات الدراسية (الكلية)/عدد الوحدات(الكلية)                    |                                                                                                                                                                                                                                                                                                                                        |
| (2 ساعة نظري) / 2 وحدات                                                 |                                                                                                                                                                                                                                                                                                                                        |
| 7- اسم مسؤول المقرر الدراسي                                             |                                                                                                                                                                                                                                                                                                                                        |
| الاسم: م. ابتسام علي حواس شمخي العويد<br>الايمل: ehawass@uowasit.edu.iq |                                                                                                                                                                                                                                                                                                                                        |
| 8- أهداف المقرر                                                         |                                                                                                                                                                                                                                                                                                                                        |
| أهداف المقرر                                                            | <ul style="list-style-type: none"><li>• تعزيز فهم الطلاب تطوير المهارات اللغوية والمعرفية للطلاب مما يمكنهم الاداء الأكاديمي والمهني بشكل أفضل كتحسين مهارات الكتابة والاملاء وتنمية قدرة على التعبير الابداعي والتواصل بلغة عربية سليمة</li></ul>                                                                                     |
| 9- استراتيجيات التعليم والتعلم                                          |                                                                                                                                                                                                                                                                                                                                        |
| الاستراتيجية                                                            | <ul style="list-style-type: none"><li>• تضمين طرائق التدريس الحديثة والاستعانة بتقنيات العرض المتطورة</li><li>• المناقشات الجماعية وحل الواجبات</li><li>• خلق اجواء المنافسة بين الطلبة وعلاج الفروقات الفردية باستخدام الوسائل التعليمية المناسبة</li><li>• تشجيع الطلبة على البحث والتعلم الذاتي من خلال المجاميع البحثية.</li></ul> |

|                                                                                                                                                                                       |             |                        |                                                      |          |                                                       |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|------------------------|------------------------------------------------------|----------|-------------------------------------------------------|
|                                                                                                                                                                                       |             |                        |                                                      |          |                                                       |
| 10- بنية المقرر                                                                                                                                                                       |             |                        |                                                      |          |                                                       |
| الأسبوع                                                                                                                                                                               | عدد الساعات | مخرجات التعلم المطلوبة | اسم الوحدة أو الموضوع                                |          | طريقة التقييم                                         |
|                                                                                                                                                                                       |             |                        | النظري                                               |          |                                                       |
| 1                                                                                                                                                                                     | 2           | كما جاء في الفقرة 9    | مقدمة                                                |          | شرح، عرض، تطبيق عملي، طرح أسئلة، مناقشة، اعداد تقارير |
|                                                                                                                                                                                       |             |                        | الفعل الماضي                                         |          |                                                       |
|                                                                                                                                                                                       |             |                        | الفعل المضارع                                        |          |                                                       |
|                                                                                                                                                                                       |             |                        | الادب                                                |          |                                                       |
|                                                                                                                                                                                       |             |                        | قصيدة الشاعر الجواهري يادجلة الخير                   |          |                                                       |
|                                                                                                                                                                                       |             |                        | امتحان شهري أول                                      |          |                                                       |
|                                                                                                                                                                                       |             |                        | الفعل اللازم والفعل المتعدي                          |          |                                                       |
|                                                                                                                                                                                       |             |                        | سيرة حياة ابو القاسم الشابي                          |          |                                                       |
|                                                                                                                                                                                       |             |                        | قصيدة ابو القاسم الشابي ارادة الحياة                 |          |                                                       |
|                                                                                                                                                                                       |             |                        | امتحان يومي                                          |          |                                                       |
|                                                                                                                                                                                       |             |                        | سيرة الشاعر معروف عبد الغني الرصافي                  |          |                                                       |
|                                                                                                                                                                                       |             |                        | قصيدة للشاعر معروف عبد الغني الرصافي الارملة المرضعة |          |                                                       |
|                                                                                                                                                                                       |             |                        | امتحان شهري الثاني                                   |          |                                                       |
|                                                                                                                                                                                       |             |                        | المعرب والمبني                                       |          |                                                       |
|                                                                                                                                                                                       |             |                        | مناقشة البحوث                                        |          |                                                       |
| 11- طرائق التقييم                                                                                                                                                                     |             |                        |                                                      |          |                                                       |
| <ul style="list-style-type: none"><li>• الاختبارات اليومية (كوزات)</li><li>• التقارير</li><li>• الواجبات العملية</li><li>• الامتحانات الشهرية</li><li>• الامتحانات النهائية</li></ul> |             |                        |                                                      |          |                                                       |
|                                                                                                                                                                                       |             |                        |                                                      |          |                                                       |
| الاختبارات اليومية (الكوزات)                                                                                                                                                          |             | التقارير               | السمنرات                                             | الواجبات | الامتحان المنتصف                                      |
| 50                                                                                                                                                                                    |             | 10                     | 10                                                   | 10       | 10                                                    |
| 12- مصادر التعليم والتدريس                                                                                                                                                            |             |                        |                                                      |          |                                                       |

|                                                                   |                                                                                                                                                                      |
|-------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1- الكتب المقررة المطلوبة                                         | ملزمة اللغة العربية المرحلة الاولى                                                                                                                                   |
| 2- المراجع الرئيسية (المصادر)                                     | د.احمد الهاشمي القواعد الاساسية للغة العربية<br>محمد مهدي الجواهري ديوان الجواهري<br>ديوان ابي قاسم الشابي                                                           |
| أ) الكتب والمراجع التي يوصى بها (المجلات العلمية ،التقارير .....) | <ul style="list-style-type: none"> <li>• المجلة كلية التربية للعلوم الانسانية</li> <li>• مجلة واسط للعلوم الانسانية</li> <li>• مجلة كلية التربية الاساسية</li> </ul> |
| ب) المراجع الالكترونية ،مواقع الانترنت ،.....                     | <ul style="list-style-type: none"> <li>• T.me/L-alnader7 مكتبة فهارس وكتب في اللغة العربية</li> </ul>                                                                |

## Course Description Form

| 1. Course Name                                                                                |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                      |                                                |                                                |
|-----------------------------------------------------------------------------------------------|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|------------------------------------------------|------------------------------------------------|
| <b>Geomorphology</b>                                                                          |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                      |                                                |                                                |
| 2. Course Code                                                                                |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                      |                                                |                                                |
| <b>Department of Geology / Second Stage</b>                                                   |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                      |                                                |                                                |
| 3. Semester / Year                                                                            |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                      |                                                |                                                |
| <b>First Semester (2023-2024)</b>                                                             |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                      |                                                |                                                |
| 4. Description Preparation Date:                                                              |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                      |                                                |                                                |
| 1/10/2023                                                                                     |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                      |                                                |                                                |
| 5. Available Attendance Forms                                                                 |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                      |                                                |                                                |
| <b>Actual Attendance</b>                                                                      |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                      |                                                |                                                |
| 6. Number of Credit Hours (Total) / Number of Units (Total)                                   |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                      |                                                |                                                |
| <b>(2 Hours Theory) and (2 hours practical)</b>                                               |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                      |                                                |                                                |
| 7. Course administrator's name (mention all, if more than one name)                           |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                      |                                                |                                                |
| <b>Name: Asst. Prof. Sattar Obaid Maiws Al-Mayyahi</b><br><b>Email: sobaid@uowasit.edu.iq</b> |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                      |                                                |                                                |
| 8. Course Objectives                                                                          |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                      |                                                |                                                |
| Course Objectives                                                                             |       | Identify geomorphological shapes, the reasons for their formation, and the extent of their impact on changing the features of the Earth's surface                                                                                                                                                                                                                                                                                                    |                                                      |                                                |                                                |
| 9. Teaching and Learning Strategies                                                           |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                      |                                                |                                                |
| Strategy                                                                                      |       | <ul style="list-style-type: none"> <li>- Group discussions and assignments</li> <li>- Creating a competitive atmosphere among students and addressing individual differences using appropriate educational methods</li> <li>- Research projects</li> <li>- Interdisciplinary discussion circles</li> <li>- Incorporating teaching methods that utilize educational technology</li> <li>- Encouraging students for self-directed learning.</li> </ul> |                                                      |                                                |                                                |
| 10. Course Structure                                                                          |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                      |                                                |                                                |
| Week                                                                                          | Hours | Required Learning Outcomes                                                                                                                                                                                                                                                                                                                                                                                                                           | Unit or subject name / Theoretical                   | Learning method / practical                    | Evaluation method                              |
| 1                                                                                             | 4     | Referred to in the previous axis and each according to the content                                                                                                                                                                                                                                                                                                                                                                                   | Introduction to geomorphology and its basic concepts | Introduction to contour maps/<br>Drawing scale | Daily preparation and oral exam and Discussion |
| 2                                                                                             | 4     | =                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Weathering, erosion, transport and deposition        | Drawing horizontal contour maps                | Daily preparation and oral exam and Discussion |
| 3                                                                                             | 4     | =                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Running surface water                                | Drawing horizontal contour maps                | Daily preparation and oral exam and Discussion |
| 4                                                                                             | 4     | =                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Shapes produced by                                   | Draw cross sections                            | Daily preparation and oral exam and            |

|    |   |   |                                               |                                            |                                                       |
|----|---|---|-----------------------------------------------|--------------------------------------------|-------------------------------------------------------|
|    |   |   | <b>running water</b>                          |                                            | <b>Discussion</b>                                     |
| 5  | 4 | = | <b>Topographic maps</b>                       | <b>Draw cross sections</b>                 | <b>Daily preparation and oral exam and Discussion</b> |
| 6  | 4 | = | <b>First monthly exam</b>                     | <b>First monthly exam</b>                  | <b>Exam</b>                                           |
| 7  | 4 | = | <b>Deserts and everything related to them</b> | <b>Circularity ratio/ Elongation ratio</b> | <b>Daily preparation and oral exam and Discussion</b> |
| 8  | 4 | = | <b>Seas</b>                                   | <b>Form factor/ Basin relief</b>           | <b>Daily preparation and oral exam and Discussion</b> |
| 9  | 4 | = | <b>Glacial</b>                                | <b>Relief ratio / relative relief</b>      | <b>Daily preparation and oral exam and Discussion</b> |
| 10 | 4 | = | <b>Mountains, valleys and plateaus</b>        | <b>Ruggedness value/ stream order</b>      | <b>Daily preparation and oral exam and Discussion</b> |
| 11 | 4 | = | <b>Contour maps</b>                           | <b>Bifurcation ratio/ drainage density</b> | <b>Daily preparation and oral exam and Discussion</b> |
| 12 | 4 | = | <b>Lakes and swamps</b>                       | <b>Sinuosity factor/ derange pattern</b>   | <b>Daily preparation and oral exam and Discussion</b> |
| 13 | 4 | = | <b>Volcanoes and related landforms</b>        | <b>General exercises</b>                   | <b>Daily preparation and oral exam and Discussion</b> |
| 14 | 4 | = | <b>Karst</b>                                  | <b>review</b>                              | <b>Daily preparation and oral exam and Discussion</b> |
| 15 | 4 | = | <b>Second monthly exam</b>                    | <b>Second monthly exam</b>                 | <b>Exam.</b>                                          |
|    |   |   |                                               |                                            |                                                       |

### 11.Course Evaluation

**Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports ... etc**

| <b>Course</b> | <b>THEORETICAL</b> |                    |                | <b>PRACTICAL</b>   |                    |                | <b>Final -Exam</b> |
|---------------|--------------------|--------------------|----------------|--------------------|--------------------|----------------|--------------------|
|               | <b>First Exam.</b> | <b>First Exam.</b> | <b>Quizzes</b> | <b>First Exam.</b> | <b>First Exam.</b> | <b>Quizzes</b> |                    |
| <b>1nd</b>    | <b>12</b>          | <b>12</b>          | <b>4</b>       | <b>4</b>           | <b>4</b>           | <b>4</b>       | <b>60</b>          |

| 12.Learning and Teaching Resources                                 |                                                      |
|--------------------------------------------------------------------|------------------------------------------------------|
| Required textbooks (curricular books, if any)                      | Geomorphology - Abdul-Ilah Razouki                   |
| Main references (sources)                                          | Library locations in some international universities |
| Recommended books and references (scientific journals, reports...) | - Virtual library<br>- Follow reliable websites      |
| Electronic References, Websites                                    | Follow up on electronic programs and the Internet    |

## Course Description Form

| 1. Course Name                                                                                |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                      |                                                |                                                |
|-----------------------------------------------------------------------------------------------|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|------------------------------------------------|------------------------------------------------|
| <b>Geomorphology</b>                                                                          |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                      |                                                |                                                |
| 2. Course Code                                                                                |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                      |                                                |                                                |
| <b>Department of Geology / Second Stage</b>                                                   |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                      |                                                |                                                |
| 3. Semester / Year                                                                            |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                      |                                                |                                                |
| <b>First Semester (2023-2024)</b>                                                             |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                      |                                                |                                                |
| 4. Description Preparation Date:                                                              |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                      |                                                |                                                |
| 1/10/2023                                                                                     |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                      |                                                |                                                |
| 5. Available Attendance Forms                                                                 |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                      |                                                |                                                |
| <b>Actual Attendance</b>                                                                      |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                      |                                                |                                                |
| 6. Number of Credit Hours (Total) / Number of Units (Total)                                   |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                      |                                                |                                                |
| <b>(2 Hours Theory) and (2 hours practical)</b>                                               |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                      |                                                |                                                |
| 7. Course administrator's name (mention all, if more than one name)                           |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                      |                                                |                                                |
| <b>Name: Asst. Prof. Sattar Obaid Maiws Al-Mayyahi</b><br><b>Email: sobaid@uowasit.edu.iq</b> |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                      |                                                |                                                |
| 8. Course Objectives                                                                          |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                      |                                                |                                                |
| Course Objectives                                                                             |       | Identify geomorphological shapes, the reasons for their formation, and the extent of their impact on changing the features of the Earth's surface                                                                                                                                                                                                                                                                                                    |                                                      |                                                |                                                |
| 9. Teaching and Learning Strategies                                                           |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                      |                                                |                                                |
| Strategy                                                                                      |       | <ul style="list-style-type: none"> <li>- Group discussions and assignments</li> <li>- Creating a competitive atmosphere among students and addressing individual differences using appropriate educational methods</li> <li>- Research projects</li> <li>- Interdisciplinary discussion circles</li> <li>- Incorporating teaching methods that utilize educational technology</li> <li>- Encouraging students for self-directed learning.</li> </ul> |                                                      |                                                |                                                |
| 10. Course Structure                                                                          |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                      |                                                |                                                |
| Week                                                                                          | Hours | Required Learning Outcomes                                                                                                                                                                                                                                                                                                                                                                                                                           | Unit or subject name / Theoretical                   | Learning method / practical                    | Evaluation method                              |
| 1                                                                                             | 4     | Referred to in the previous axis and each according to the content                                                                                                                                                                                                                                                                                                                                                                                   | Introduction to geomorphology and its basic concepts | Introduction to contour maps/<br>Drawing scale | Daily preparation and oral exam and Discussion |
| 2                                                                                             | 4     | =                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Weathering, erosion, transport and deposition        | Drawing horizontal contour maps                | Daily preparation and oral exam and Discussion |
| 3                                                                                             | 4     | =                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Running surface water                                | Drawing horizontal contour maps                | Daily preparation and oral exam and Discussion |
| 4                                                                                             | 4     | =                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Shapes produced by                                   | Draw cross sections                            | Daily preparation and oral exam and            |

|    |   |   |                                               |                                            |                                                       |
|----|---|---|-----------------------------------------------|--------------------------------------------|-------------------------------------------------------|
|    |   |   | <b>running water</b>                          |                                            | <b>Discussion</b>                                     |
| 5  | 4 | = | <b>Topographic maps</b>                       | <b>Draw cross sections</b>                 | <b>Daily preparation and oral exam and Discussion</b> |
| 6  | 4 | = | <b>First monthly exam</b>                     | <b>First monthly exam</b>                  | <b>Exam</b>                                           |
| 7  | 4 | = | <b>Deserts and everything related to them</b> | <b>Circularity ratio/ Elongation ratio</b> | <b>Daily preparation and oral exam and Discussion</b> |
| 8  | 4 | = | <b>Seas</b>                                   | <b>Form factor/ Basin relief</b>           | <b>Daily preparation and oral exam and Discussion</b> |
| 9  | 4 | = | <b>Glacial</b>                                | <b>Relief ratio / relative relief</b>      | <b>Daily preparation and oral exam and Discussion</b> |
| 10 | 4 | = | <b>Mountains, valleys and plateaus</b>        | <b>Ruggedness value/ stream order</b>      | <b>Daily preparation and oral exam and Discussion</b> |
| 11 | 4 | = | <b>Contour maps</b>                           | <b>Bifurcation ratio/ drainage density</b> | <b>Daily preparation and oral exam and Discussion</b> |
| 12 | 4 | = | <b>Lakes and swamps</b>                       | <b>Sinuosity factor/ derange pattern</b>   | <b>Daily preparation and oral exam and Discussion</b> |
| 13 | 4 | = | <b>Volcanoes and related landforms</b>        | <b>General exercises</b>                   | <b>Daily preparation and oral exam and Discussion</b> |
| 14 | 4 | = | <b>Karst</b>                                  | <b>review</b>                              | <b>Daily preparation and oral exam and Discussion</b> |
| 15 | 4 | = | <b>Second monthly exam</b>                    | <b>Second monthly exam</b>                 | <b>Exam.</b>                                          |
|    |   |   |                                               |                                            |                                                       |

### 11.Course Evaluation

**Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports ... etc**

| <b>Course</b> | <b>THEORETICAL</b> |                    |                | <b>PRACTICAL</b>   |                    |                | <b>Final -Exam</b> |
|---------------|--------------------|--------------------|----------------|--------------------|--------------------|----------------|--------------------|
|               | <b>First Exam.</b> | <b>First Exam.</b> | <b>Quizzes</b> | <b>First Exam.</b> | <b>First Exam.</b> | <b>Quizzes</b> |                    |
| <b>1nd</b>    | <b>12</b>          | <b>12</b>          | <b>4</b>       | <b>4</b>           | <b>4</b>           | <b>4</b>       | <b>60</b>          |



| 12.Learning and Teaching Resources                                 |                                                      |
|--------------------------------------------------------------------|------------------------------------------------------|
| Required textbooks (curricular books, if any)                      | Geomorphology - Abdul-Ilah Razouki                   |
| Main references (sources)                                          | Library locations in some international universities |
| Recommended books and references (scientific journals, reports...) | - Virtual library<br>- Follow reliable websites      |
| Electronic References, Websites                                    | Follow up on electronic programs and the Internet    |

## Course Description

### Optical Mineralogy

|                                                                       |                                                                                                                                                                                                                                                                        |
|-----------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Course Name:                                                       |                                                                                                                                                                                                                                                                        |
| Optical Mineralogy                                                    |                                                                                                                                                                                                                                                                        |
| 2. Course Code:                                                       |                                                                                                                                                                                                                                                                        |
| Second stage                                                          |                                                                                                                                                                                                                                                                        |
| 3. Semester / Year:                                                   |                                                                                                                                                                                                                                                                        |
| 2025-2026                                                             |                                                                                                                                                                                                                                                                        |
| 4. Description Preparation Date:                                      |                                                                                                                                                                                                                                                                        |
| 2025-1-10                                                             |                                                                                                                                                                                                                                                                        |
| 5. Available Attendance Forms:                                        |                                                                                                                                                                                                                                                                        |
| Actual Attendance                                                     |                                                                                                                                                                                                                                                                        |
| 6. Number of Credit Hours (Total) / Number of Units (Total)           |                                                                                                                                                                                                                                                                        |
| 2 hours theory and 2 hours practical                                  |                                                                                                                                                                                                                                                                        |
| 7. Course administrator's name (mention all, if more than one name)   |                                                                                                                                                                                                                                                                        |
| Name: assist. prof. Dr. Zinah Saleem<br>Email: zsaleem@uowasit.edu.iq |                                                                                                                                                                                                                                                                        |
| 8. Course Objectives                                                  |                                                                                                                                                                                                                                                                        |
| Cours Objectives                                                      | Introducing the students of the Department of Earth Sciences to the concept of mineral optics Introducing and training the student to use a polarizing microscope Teaching optical properties of minerals and mineralogical diagnosis<br>.....                         |
| 9. Teaching and Learning Strategies                                   |                                                                                                                                                                                                                                                                        |
| Strategy                                                              | Group discussions, brainstorming Assigning students to research and prepare reports on the optical properties of minerals Training on the microscope and displaying similar examples of minerals Students competed in groups to present new information, evaluate them |

| 10. Course Structure |       |                                                         |                                    |                                 |
|----------------------|-------|---------------------------------------------------------|------------------------------------|---------------------------------|
| Week                 | Hours | Subjects / Titels                                       |                                    | Evaluation method               |
| 1                    | 4     | Concept of optical mineralogy and polarizing microscopy | Identify the parts of a microscope | Discussion and asking questions |

|    |   |                                                             |                                                    |                                 |
|----|---|-------------------------------------------------------------|----------------------------------------------------|---------------------------------|
| 2  | 4 | optical classification of opaque and transparent minerals   | Distinguish minerals by microscope                 | Discussion and asking questions |
| 3  | 4 | Uniaxial optical minerals                                   | Distinguish minerals by microscope of uniaxial     | Discussion and asking questions |
| 4  | 4 | Biaxial optical minerals                                    | Distinguish minerals by microscope of Biaxial      | Discussion and asking questions |
| 5  | 4 | concept of engineering form (idicatrix                      | Centering of mineral grain under micro.            | Discussion and asking questions |
| 6  | 4 | concept of engineering form ( isotropic idicatrix           | =                                                  | Discussion and asking questions |
| 7  | 4 | concept of engineering form (uni and bi axial idicatrix     | Exam                                               | Discussion and asking questions |
| 8  | 4 | Types of rock samples and methods of preparing glass slides | methods of preparing glass slides                  | Discussion and asking questions |
| 9  | 4 | optical characteristics using only a polarized light        | Form of the minerals under micro                   | Discussion and asking questions |
| 10 | 4 | Refractive indexes                                          | Refractive indexes                                 | Discussion and asking questions |
| 11 | 4 | Color, cleavage, parting and others of minerals             | Color, cleavage, parting and others                | Discussion and asking questions |
| 12 | 4 | Relief                                                      | Relief                                             | Discussion and asking questions |
| 13 | 4 | Twining and interference figure using a microscope          | Twining and interference figure using a microscope | Discussion and asking questions |
| 14 | 2 | Exam                                                        | Exam                                               |                                 |

|                                                                                                                                                                |                    |         |      |          |      |            |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|---------|------|----------|------|------------|
| 11.Course evaluation                                                                                                                                           |                    |         |      |          |      |            |
| Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc |                    |         |      |          |      |            |
| Course                                                                                                                                                         | Quiz               | reports | Oral | Homework | Exam | Final Exam |
| 1                                                                                                                                                              | 5                  | 5       | 5    | 5        | 20   | 60         |
| 12. learning and Teaching resources                                                                                                                            |                    |         |      |          |      |            |
| Require textbooks                                                                                                                                              | Optical mineralogy |         |      |          |      |            |
| Recommend books                                                                                                                                                |                    |         |      |          |      |            |
| Electronic references                                                                                                                                          | Minerals data base |         |      |          |      |            |

# Course Description Form

|                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |  |
|---------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| 1. Course Name:                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |  |
| Statistics                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |  |
| 2. Course Code:                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |  |
|                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |  |
| 3. Semester / Year:                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |  |
| The first – 2025/ 2026                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |  |
| 4. Description Preparation Date:                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |  |
| 1/10/2025                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |  |
| 5. Available Attendance Forms:                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |  |
| Actual Attendance                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |  |
| 6. Number of Credit Hours (Total) / Number of Units (Total)         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |  |
| 2 unites / 2 hours in week                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |  |
| 7. Course administrator's name (mention all, if more than one name) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |  |
| Name: Ms.c. Saja Abdulameer Said                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |  |
| Email: ssayed@uowasit.edu.iq                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |  |
|                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |  |
| 8. Course Objectives                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |  |
| Course Objectives                                                   | The main objective of studying statistics in Earth science is to develop quantitative and analytical thinking in understanding geological phenomena, by applying statistical methods to interpret geological and environmental data, using graphs and software tools for effective analysis and presentation, evaluating relationships between geological variables and testing their significance, and supporting geological modeling, exploration, and hazard assessment through accurate statistical analysis. |  |  |
| 9. Teaching and Learning Strategies                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |  |
| Strategy                                                            | <ul style="list-style-type: none"> <li>- Group discussions and assignments</li> <li>- Creating a competitive atmosphere among students and addressing individual differences using appropriate educational methods</li> <li>- Research projects</li> <li>- Interdisciplinary discussion circles</li> <li>- Incorporating teaching methods that utilize educational technology</li> <li>- Encouraging students for self-directed learning</li> </ul>                                                               |  |  |

| 10. Course Structure |       |                                   |                   |
|----------------------|-------|-----------------------------------|-------------------|
| Week                 | Hours | Unit or subject name/ Theoretical | Evaluation method |

|    |   |                                                                             |                                                |
|----|---|-----------------------------------------------------------------------------|------------------------------------------------|
| 1  | 2 | Introduction to statistics and its importance in geology and earth sciences | Daily preparation and oral exam and Discussion |
| 2  | 2 | Measures of central tendency                                                | Daily preparation and oral exam and Discussion |
| 3  | 2 | Dispersion measures.                                                        | Daily preparation and oral exam and Discussion |
| 4  | 2 | -                                                                           | Daily exam and Discussion                      |
| 5  | 2 | Frequency distributions and tables.                                         | Daily preparation and oral exam and Discussion |
| 6  | 2 | Probabilities: Concept and Basic Rules.                                     | Daily preparation and oral exam and Discussion |
| 7  | 2 | -                                                                           | Exam.                                          |
| 8  | 2 | <i>Normal distribution and its importance in natural phenomena.)</i>        | Daily preparation and oral exam and Discussion |
| 9  | 2 | Sample distribution and parameter estimation.                               | Daily preparation and oral exam and Discussion |
| 10 | 2 | .Hypothesis Testing                                                         | Daily preparation and oral exam and Discussion |
| 11 | 2 | Chi-square test.                                                            | Daily preparation and oral exam and Discussion |
| 12 | 2 | Correlation                                                                 | Daily preparation and oral exam and Discussion |
| 13 | 2 | Linear Regression                                                           | Daily preparation and oral exam and Discussion |
| 14 | 2 | ANOVA                                                                       | Daily preparation and oral exam and Discussion |
| 15 | 2 | Advanced applications using Excel/SPSS.                                     | Daily preparation and oral exam and Discussion |
| 16 | 2 | Case studies review.                                                        | Daily preparation and oral exam and Discussion |

## 11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports.... etc.

## 12. Learning and Teaching Resources

|                                                                    |  |
|--------------------------------------------------------------------|--|
| Required textbooks (curricular books, if any)                      |  |
| Main references (sources)                                          |  |
| Recommended books and references (scientific journals, reports...) |  |
| Electronic References, Websites                                    |  |

## Course Description

| <b>1. Course Name:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                   |       |                            |                                |                                                                         |                                                          |                                 |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|----------------------------|--------------------------------|-------------------------------------------------------------------------|----------------------------------------------------------|---------------------------------|
| Sedimentology                                                                                                                                                                                                                                                                                                                                                                                                                                            |       |                            |                                |                                                                         |                                                          |                                 |
| <b>2. Course Code:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                   |       |                            |                                |                                                                         |                                                          |                                 |
| Geology Department/ 2 <sup>nd</sup> Stage                                                                                                                                                                                                                                                                                                                                                                                                                |       |                            |                                |                                                                         |                                                          |                                 |
| <b>3. Semester / Year:</b>                                                                                                                                                                                                                                                                                                                                                                                                                               |       |                            |                                |                                                                         |                                                          |                                 |
| 3 <sup>th</sup> Semester/ 2 <sup>nd</sup> Year                                                                                                                                                                                                                                                                                                                                                                                                           |       |                            |                                |                                                                         |                                                          |                                 |
| <b>4. Description Preparation Date:</b>                                                                                                                                                                                                                                                                                                                                                                                                                  |       |                            |                                |                                                                         |                                                          |                                 |
| 1/10/2023                                                                                                                                                                                                                                                                                                                                                                                                                                                |       |                            |                                |                                                                         |                                                          |                                 |
| <b>5. Available Attendance Forms:</b>                                                                                                                                                                                                                                                                                                                                                                                                                    |       |                            |                                |                                                                         |                                                          |                                 |
| Actual                                                                                                                                                                                                                                                                                                                                                                                                                                                   |       |                            |                                |                                                                         |                                                          |                                 |
| <b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>                                                                                                                                                                                                                                                                                                                                                                                       |       |                            |                                |                                                                         |                                                          |                                 |
| (2 hours theoretical + 2 hours practical weekly) / 3 units                                                                                                                                                                                                                                                                                                                                                                                               |       |                            |                                |                                                                         |                                                          |                                 |
| <b>7. Course administrator's name (mention all, if more than one name)</b>                                                                                                                                                                                                                                                                                                                                                                               |       |                            |                                |                                                                         |                                                          |                                 |
| Lect. Najah Alwan Owayez                                                                                                                                                                                                                                                                                                                                                                                                                                 |       |                            |                                | Email: <a href="mailto:nauaiz@uowasit.edu.iq">nauaiz@uowasit.edu.iq</a> |                                                          |                                 |
| <b>8. Course Objectives:</b>                                                                                                                                                                                                                                                                                                                                                                                                                             |       |                            |                                |                                                                         |                                                          |                                 |
| <p>The course aims to consolidate the general principles of sedimentology through:</p> <ul style="list-style-type: none"> <li>• Introduction to sedimentology and its connection with other sciences</li> <li>• Defining the origin and types of sediments</li> <li>• Defining the processes that lead to sediment accumulation and solidification</li> <li>• How to conduct volumetric analyzes of sediments and apply volumetric parameters</li> </ul> |       |                            |                                |                                                                         |                                                          |                                 |
| <b>9. Teaching and Learning Strategies:</b>                                                                                                                                                                                                                                                                                                                                                                                                              |       |                            |                                |                                                                         |                                                          |                                 |
| <ul style="list-style-type: none"> <li>• Displaying lectures on screen and delivering lectures orally</li> <li>• Asking questions and holding discussions</li> <li>• Display models and conduct laboratory analyses</li> <li>• How to perform mathematical calculations and prepare reports</li> <li>• Encouraging research and self-learning</li> </ul>                                                                                                 |       |                            |                                |                                                                         |                                                          |                                 |
| <b>10. Course Structure:</b>                                                                                                                                                                                                                                                                                                                                                                                                                             |       |                            |                                |                                                                         |                                                          |                                 |
| Week                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Hours | Required Learning Outcomes | Subject Name                   |                                                                         | Learning Method                                          | Evolution Method                |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                          |       |                            | Theoretical                    | Practical                                                               |                                                          |                                 |
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 4     | Point 9                    | Introduction                   | Introduction                                                            | Show and explain the subject, ask questions and discuss, | Quizzes, Exams, Works & Reports |
| 2                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 4     |                            | Weathering & Erosion           | Sample Collection                                                       |                                                          |                                 |
| 3                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 4     |                            | Transport & Deposition         | Grain Size Analysis                                                     |                                                          |                                 |
| 4                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 4     |                            | Physical Properties of Gravels | Sphericity & Roundness of Grains                                        |                                                          |                                 |
| 5                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 4     |                            | Physical Properties of         | Sphericity & Roundness of                                               |                                                          |                                 |



|    |   |  | Gravels                     | Grains                                   | prepare reports |  |
|----|---|--|-----------------------------|------------------------------------------|-----------------|--|
| 6  | 4 |  | First Monthly Exam          |                                          |                 |  |
| 7  | 4 |  | Physical Properties of Sand | Grain Size Analysis of Sand Using Sieves |                 |  |
| 8  | 4 |  | Physical Properties of Sand | Grain Size Analysis of Sand Using Sieves |                 |  |
| 9  | 4 |  | Grain Size Parameters       | Grain Size Parameters-Problems           |                 |  |
| 10 | 4 |  | Grain Size Parameters       | Grain Size Parameters-Problems           |                 |  |
| 11 | 4 |  | Porosity of Sediments       | Wet Grain Size Analysis of Sediments     |                 |  |
| 12 | 4 |  | Permeability of Sediments   | Grain Size Analysis Using Pipe           |                 |  |
| 13 | 4 |  | Second Monthly Exam         |                                          |                 |  |
| 14 | 4 |  | Sedimentary Structures      | Presenting of Sedimentary Structures     |                 |  |
| 15 | 4 |  | Sedimentary Structures      | Presenting of Sedimentary Structures     |                 |  |

### 11. Course Evolution:

- Quizzes
- Reports
- Practical Duties
- Monthly Examinations
- Final Examinations
- Grade distribution according to the table below:

| Quizzes | Daily Works | Reports | Monthly Exam |           | Final Exam  |           |
|---------|-------------|---------|--------------|-----------|-------------|-----------|
|         |             |         | Theoretical  | Practical | Theoretical | Practical |
| 4       | 4           | 4       | 20           | 8         | 40          | 20        |

### 12. Learning and Teaching Resources

|                                                                             |                                                                                                                                                                                                                                                                                                                        |
|-----------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Required Textbooks                                                       | <p>ا.د. علي جواد علي و ا.د. عدنان سعدالله، ١٩٩٠، "علم الرسوبيات"، كتاب مؤلف، مطبعة جامعة بغداد، كلية العلوم</p> <p>ا.د. سعدي الدهان، ٢٠٢٠، "الصخور الرسوبية"، كتاب مترجم، جامعة الكوفة، كلية العلوم، الطبعة الأولى</p>                                                                                                 |
|                                                                             |                                                                                                                                                                                                                                                                                                                        |
| 2. Main References (Resources)                                              | Selley, R. C., 2000, "Applied Sedimentology", Academic Press, 2nd. Edition, US, pp. 1-290.                                                                                                                                                                                                                             |
| A. Recommended Books and References (Scientific Journals, Reports, ...etc.) | <p>1- The Iraqi Geological Journal published by the Iraqi Geologists Union</p> <p>2- Publications and reports of the Iraqi Geological Survey</p>                                                                                                                                                                       |
| B. Electronic References, Websites                                          | <ul style="list-style-type: none"> <li>• <a href="https://www.ga.gov.au/scientific-topics/disciplines/sedimentology">https://www.ga.gov.au/scientific-topics/disciplines/sedimentology</a></li> <li>• <a href="https://en.wikipedia.org/wiki/Sedimentology">https://en.wikipedia.org/wiki/Sedimentology</a></li> </ul> |

## Course Description

| <b>1. Course Name:</b>                                                                                                                                                                                                                                                                                                                         |       |                            |                                |                                                                         |                                                          |                                 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|----------------------------|--------------------------------|-------------------------------------------------------------------------|----------------------------------------------------------|---------------------------------|
| Sedimentary Rocks                                                                                                                                                                                                                                                                                                                              |       |                            |                                |                                                                         |                                                          |                                 |
| <b>2. Course Code:</b>                                                                                                                                                                                                                                                                                                                         |       |                            |                                |                                                                         |                                                          |                                 |
| Geology Department/ 2 <sup>nd</sup> Stage                                                                                                                                                                                                                                                                                                      |       |                            |                                |                                                                         |                                                          |                                 |
| <b>3. Semester / Year:</b>                                                                                                                                                                                                                                                                                                                     |       |                            |                                |                                                                         |                                                          |                                 |
| 4 <sup>th</sup> Semester/ 2 <sup>nd</sup> Year                                                                                                                                                                                                                                                                                                 |       |                            |                                |                                                                         |                                                          |                                 |
| <b>4. Description Preparation Date:</b>                                                                                                                                                                                                                                                                                                        |       |                            |                                |                                                                         |                                                          |                                 |
| 1/2/2024                                                                                                                                                                                                                                                                                                                                       |       |                            |                                |                                                                         |                                                          |                                 |
| <b>5. Available Attendance Forms:</b>                                                                                                                                                                                                                                                                                                          |       |                            |                                |                                                                         |                                                          |                                 |
| Actual                                                                                                                                                                                                                                                                                                                                         |       |                            |                                |                                                                         |                                                          |                                 |
| <b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>                                                                                                                                                                                                                                                                             |       |                            |                                |                                                                         |                                                          |                                 |
| (2 hours theoretical + 2 hours practical)/ 3 units                                                                                                                                                                                                                                                                                             |       |                            |                                |                                                                         |                                                          |                                 |
| <b>7. Course administrator's name (mention all, if more than one name)</b>                                                                                                                                                                                                                                                                     |       |                            |                                |                                                                         |                                                          |                                 |
| Lect. Najah Alwan Owayez                                                                                                                                                                                                                                                                                                                       |       |                            |                                | Email: <a href="mailto:nauaiz@uowasit.edu.iq">nauaiz@uowasit.edu.iq</a> |                                                          |                                 |
| <b>8. Course Objectives:</b>                                                                                                                                                                                                                                                                                                                   |       |                            |                                |                                                                         |                                                          |                                 |
| <ul style="list-style-type: none"> <li>Definition of sedimentary rocks and their types</li> <li>Definition of depositional environments and sedimentary structures</li> <li>Identifying the components of mineral rocks and studying them under the microscope</li> </ul>                                                                      |       |                            |                                |                                                                         |                                                          |                                 |
| <b>9. Teaching and Learning Strategies:</b>                                                                                                                                                                                                                                                                                                    |       |                            |                                |                                                                         |                                                          |                                 |
| <ul style="list-style-type: none"> <li>Displaying lectures on screen and delivering lectures orally</li> <li>Asking questions and holding discussions</li> <li>Display models and conduct laboratory analyses</li> <li>How to perform mathematical calculations and prepare reports</li> <li>Encouraging research and self-learning</li> </ul> |       |                            |                                |                                                                         |                                                          |                                 |
| <b>10. Course Structure:</b>                                                                                                                                                                                                                                                                                                                   |       |                            |                                |                                                                         |                                                          |                                 |
| Week                                                                                                                                                                                                                                                                                                                                           | Hours | Required Learning Outcomes | Subject Name                   |                                                                         | Learning Method                                          | Evolution Method                |
|                                                                                                                                                                                                                                                                                                                                                |       |                            | Theoretical                    | Practical                                                               |                                                          |                                 |
| 1                                                                                                                                                                                                                                                                                                                                              | 4     | Point 9                    | Introduction                   | Introduction                                                            | Show and explain the subject, ask questions and discuss, | Quizzes, Exams, Works & Reports |
| 2                                                                                                                                                                                                                                                                                                                                              | 4     |                            | Weathering & Erosion           | Sample Collection                                                       |                                                          |                                 |
| 3                                                                                                                                                                                                                                                                                                                                              | 4     |                            | Transport & Deposition         | Grain Size Analysis                                                     |                                                          |                                 |
| 4                                                                                                                                                                                                                                                                                                                                              | 4     |                            | Physical Properties of Gravels | Sphericity & Roundness of Grains                                        |                                                          |                                 |
| 5                                                                                                                                                                                                                                                                                                                                              | 4     |                            | Physical Properties of         | Sphericity & Roundness                                                  |                                                          |                                 |

|    |   |  |                             |                                          |                 |  |
|----|---|--|-----------------------------|------------------------------------------|-----------------|--|
|    |   |  | Gravels                     | of Grains                                | prepare reports |  |
| 6  | 4 |  | First Monthly Exam          |                                          |                 |  |
| 7  | 4 |  | Physical Properties of Sand | Grain Size Analysis of Sand Using Sieves |                 |  |
| 8  | 4 |  | Physical Properties of Sand | Grain Size Analysis of Sand Using Sieves |                 |  |
| 9  | 4 |  | Grain Size Parameters       | Grain Size Parameters-Problems           |                 |  |
| 10 | 4 |  | Grain Size Parameters       | Grain Size Parameters-Problems           |                 |  |
| 11 | 4 |  | Porosity of Sediments       | Wet Grain Size Analysis of Sediments     |                 |  |
| 12 | 4 |  | Permeability of Sediments   | Grain Size Analysis Using Pipe           |                 |  |
| 13 | 4 |  | Second Monthly Exam         |                                          |                 |  |
| 14 | 4 |  | Sedimentary Structures      | Presenting of Sedimentary Structures     |                 |  |
| 15 | 4 |  | Sedimentary Structures      | Presenting of Sedimentary Structures     |                 |  |

### 11. Course Evolution:

- Quizzes
- Reports
- Practical Duties
- Monthly Examinations
- Final Examinations
- Grade distribution according to the table below:

| Quizzes | Daily Works | Reports | Monthly Exam |           | Final Exam  |           |
|---------|-------------|---------|--------------|-----------|-------------|-----------|
|         |             |         | Theoretical  | Practical | Theoretical | Practical |
| 4       | 4           | 4       | 20           | 8         | 40          | 20        |

### 12. Learning and Teaching Resources

|                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Required Textbooks                                                       | ا. د. سعدي الدهان، ٢٠٢٠، "الصخور الرسوبية"، كتاب مترجم، جامعة الكوفة، كلية العلوم، الطبعة الأولى                                                                                                                                                                                                                                                                                                                                                                       |
| 2. Main References (Resources)                                              | A. E. Adams, W.S. Mackenzie and C. Guilford, 1984, "Atlas of Sedimentary Rocks under the Microscope", Longman, England, ELBS Ed.                                                                                                                                                                                                                                                                                                                                       |
| A. Recommended Books and References (Scientific Journals, Reports, ...etc.) | 1- The Iraqi Geological Journal published by the Iraqi Geologists Union<br>2- Publications and reports of the Iraqi Geological Survey                                                                                                                                                                                                                                                                                                                                  |
| B. Electronic References, Websites                                          | <ul style="list-style-type: none"> <li>• <a href="https://www.virtualmicroscope.org/sites/default/files/html5Assets/12072/index2.html?specimen=/node/749">https://www.virtualmicroscope.org/sites/default/files/html5Assets/12072/index2.html?specimen=/node/749</a></li> <li>• <a href="https://microscopic.ro/minerals/silicates/nesosilicate/s/olivine-thin-section/">https://microscopic.ro/minerals/silicates/nesosilicate/s/olivine-thin-section/</a></li> </ul> |

## The Course Description

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| <b>1- Educational institution</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>The University of Wasit</b>                                                                      |
| <b>2- Scientific department/type of study</b>                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>The Department of Geology – 2<sup>nd</sup> Year</b>                                              |
| <b>3- Name of the course (subject)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>Remote Sensing (RS)</b>                                                                          |
| <b>4- Available forms of attendance</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <b>Attendance in the halls of Geology Department, College of Science</b>                            |
| <b>5- Semester/year</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <b>Second Semester/ 2023-2024</b>                                                                   |
| <b>6- Number of study hours (total)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <b>(2 Hours Theoretical + 2 Hours Practical Units</b>                                               |
| <b>7- The date this description was prepared</b>                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>15/1/2024</b>                                                                                    |
| <b>8- Preparing the lesson</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <b>Lect. Dr. Reyadh H. R.</b><br><a href="mailto:r.radhy@uowasit.edu.iq">r.radhy@uowasit.edu.iq</a> |
| <b>9- The Course Objectives</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                     |
| 1. Enabling students to learn about the geographic map, its elements, and methods for designing and representing it.<br>2. Enabling students to learn about taking measurements from maps, representing phenomena, and reading map.<br>3. Enable students to understand the process of drawing and producing a map.<br>4. Methods of entering and defining satellite images.<br>5. Methods of analysing the results and presenting them in the form of reports, maps, or electronic files. |                                                                                                     |
| <b>10- Course outcomes and teaching, learning and evaluation methods</b>                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                     |
| <b>A- Cognitive objectives.</b><br>1- To understand the basic concepts of remote sensing<br>2- That the student understands how to analyse visuals and how to deal with images.<br>3- To know satellites and sensors.                                                                                                                                                                                                                                                                      |                                                                                                     |
| <b>B- Subject-specific skills</b><br>1- How to analyse and interpret satellite images.<br>2- How to monitor the health of vegetation.<br>3- How to use remote sensing applications.<br>4- Enabling the student to use ERDAS IMAGINE and ArcMap GIS programs<br>5- Enabling the student to manage data.<br>6- Enabling the student to analyse data.                                                                                                                                         |                                                                                                     |
| <b>C- Emotional and value goals:</b><br>1- Accuracy in analysis and decision making.<br>2- Credibility and transparency in scientific research.<br>3- Developing environmental geology concepts by preserving vegetation and water bodies using satellite i<br>4- Encouraging students to take notes, which is a skill used to record notes and important information in a and written form.                                                                                               |                                                                                                     |
| <b>D- Through the processes of criticism, issuing opinions, rulings, and renewal. And also through teamwork problem solving.</b><br>1- Developing communication skills<br>2- Developing analytical and research skills<br>3- Desire to learn<br>4- Having creative skills and the ability to solve problems                                                                                                                                                                                |                                                                                                     |
| <b>Teaching and learning methods</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                     |

- 1- Using the method of lecture, discussion, and applications through the computer.
- 2- Introducing elective courses to develop higher learning skills, such as critical thinking, creative thinking, systems analysis and design, and philosophy of science, as university requirements, through further description of case studies and applications.

### Evaluation methods

Homework related to solving the problem.

- 1- Daily exams.
- 2- Setting grades for students' participation during the lecture.
- 3- Giving grades to homework.
- 4- Giving grades for students' attendance.
- 5- Giving grades to students while they use clarification tools during the lecture.

## 11- The Course Structure

| Week | Hours                | Required learning outcomes                                                                   | Name of the unit/topic                                      | Evaluation method                                                                                     |
|------|----------------------|----------------------------------------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|
| 1    | 4<br>(2 Theo. +2 Pra | The history and Origination of Remote Sensing                                                | The Introduction                                            | Interactive questions during lecture, quick quizzes, exams, write scientific reports, and attendance. |
| 2    | 4                    | What is remote sensing and what are its components?                                          | Remote sensing concept                                      |                                                                                                       |
| 3    | 4                    | The electromagnetic spectrum, its properties and its interaction                             | What is the electromagnetic spectrum?                       |                                                                                                       |
| 4    | 4                    | Radiation interaction in the atmosphere                                                      | What are the interactions of radiation with the atmosphere? |                                                                                                       |
| 5    | 4                    | Satellites and sensors                                                                       | Data collection devices                                     |                                                                                                       |
| 6    | 4                    | Types of satellites and satellite visualization                                              | Types of remote sensing data                                |                                                                                                       |
| 7    | 4                    | Distinguish between Raster and Vector Data                                                   | Data Types                                                  |                                                                                                       |
| 8    | 4                    | First Monthly Exam                                                                           |                                                             |                                                                                                       |
| 9    | 4                    | Remote sensing images                                                                        | Display data                                                |                                                                                                       |
| 10   | 4                    | Study of climate and environmental changes                                                   | Display Data                                                |                                                                                                       |
| 11   | 4                    | Satellite visual analysis                                                                    | Data processing                                             |                                                                                                       |
| 12   | 4                    | Digital processing of satellite images                                                       | Maps                                                        |                                                                                                       |
| 13   | 4                    | Remote sensing applications such as geological, agricultural, and desertification monitoring | What are the applications of remote sensing?                |                                                                                                       |
| 14   | 4                    | Review for the second exam                                                                   | Comprehensive review                                        |                                                                                                       |
| 15   | 4                    | Second Exam                                                                                  |                                                             |                                                                                                       |

## 12- Course evaluation

Distribution of the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, written exams, reports, etc.

| Quizzes | Daily Works | Reports | Monthly Exam |           | Final Exam  |           |
|---------|-------------|---------|--------------|-----------|-------------|-----------|
|         |             |         | Theoretical  | Practical | Theoretical | Practical |
| 4       | 4           | 4       | 20           | 8         | 40          | 20        |

| 13- Education and teaching references                                    |                                                                                                                                                                |
|--------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1- Required prescribed books                                             | Introductory Digital Image Processing,<br>R. Jensen                                                                                                            |
| 2- Main references (sources)                                             | Satellite image processing database<br>management GPS and Query language,<br>A.de                                                                              |
| 3- Recommended books and references (scientific<br>journals, reports...) | <a href="https://www.mdpi.com/journal/remotesens">https://www.mdpi.com/journal/remotesens</a>                                                                  |
| 4- Electronic references, websites...                                    | <a href="https://earthexplorer.usgs.gov/">https://earthexplorer.usgs.gov/</a><br><a href="https://www.esri.com/en-us/home">https://www.esri.com/en-us/home</a> |

|                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                            |
|---------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Course Name                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                            |
| Structural Geology1                                                             |                                                                                                                                                                                                                                                                                                                                                                                                            |
| 2. Course Code                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                            |
| Department of Geology / Second Stage                                            |                                                                                                                                                                                                                                                                                                                                                                                                            |
| 3. Semester / Year                                                              |                                                                                                                                                                                                                                                                                                                                                                                                            |
| First Semester (2025-2026)                                                      |                                                                                                                                                                                                                                                                                                                                                                                                            |
| 4. Description Preparation Date:                                                |                                                                                                                                                                                                                                                                                                                                                                                                            |
| 1/9/2025                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                            |
| 5. Available Attendance Forms                                                   |                                                                                                                                                                                                                                                                                                                                                                                                            |
| Actual Attendance                                                               |                                                                                                                                                                                                                                                                                                                                                                                                            |
| 6. Number of Credit Hours (Total) / Number of Units (Total)                     |                                                                                                                                                                                                                                                                                                                                                                                                            |
| (2 Hours Theory)and (2 hours practical)                                         |                                                                                                                                                                                                                                                                                                                                                                                                            |
| 7. Course administrator's name (mention all, if more than one name)             |                                                                                                                                                                                                                                                                                                                                                                                                            |
| Name: Prof.Dr. Sarteel Hamid Enad Al- Shammery<br>Email: sarteel@uowasit.edu.iq |                                                                                                                                                                                                                                                                                                                                                                                                            |
| 8. Course Objectives                                                            |                                                                                                                                                                                                                                                                                                                                                                                                            |
| Course Objectives                                                               |                                                                                                                                                                                                                                                                                                                                                                                                            |
| 9. Teaching and Learning Strategies                                             |                                                                                                                                                                                                                                                                                                                                                                                                            |
| Strategy                                                                        | <ul style="list-style-type: none"> <li>- 1. Introducing and teaching students of the Department of Earth Sciences the science of structural geology, which is the geological structures resulting from the exposure of rock layers to deformation.</li> <li>- 2. Teaching students the subject of structural geology, its definition, studying fractur faults of all kinds, cracks, and joints.</li> </ul> |

| 10. Course Structure |       |                                                                    |                                                                  |                                             |                                                |
|----------------------|-------|--------------------------------------------------------------------|------------------------------------------------------------------|---------------------------------------------|------------------------------------------------|
| Week                 | Hours | Required Learning Outcomes                                         | Unit or subject name/Theoretical                                 | Learning method/practical                   | Evaluation method                              |
| 1                    | 4     | Referred to in the previous axis and each according to the content | Structural geology, structural analysis, geotectonics            | Geological structures                       | Daily preparation and oral exam and Discussion |
| 2                    | 4     | =                                                                  | Mechanical foundations, stress, strain, and deformation of rocks | How to measure stress practically           | Daily preparation and oral exam and Discussion |
| 3                    | 4     | =                                                                  | Factors affecting the behavior of rocks                          | The relationship between stress and emotion | Daily preparation and oral exam and Discussion |

|    |   |   |                                                                                                                                                       |                                                                                                                                |                                                |
|----|---|---|-------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|
| 4  | 4 | = | Layers, slope and strike line                                                                                                                         | The direction of the layers relative to the north, the strike line, and the angle of inclination of the layers                 | Daily preparation and oral exam and Discussion |
| 5  | 4 | = | Geometric analysis of folds, definition of the fold, geometric elements of the fold                                                                   | Drawing the racket lines practically with one appearance point                                                                 | Daily preparation and oral exam and Discussion |
| 6  | 4 | = | Geometric classification of folds                                                                                                                     | First exam.                                                                                                                    | Daily preparation and oral exam and Discussion |
| 7  | 4 | = | Classification of folds based on the shape of the fold in three dimensions.<br>Classification of folds based on the direction of the fold's curvature | Drawing the strike lines practically with two emergence points on the same contour and drawing the boundaries of the layers    | Exam.                                          |
| 8  | 4 | = | Classification of folds based on the direction of the fold                                                                                            | Drawing the paddle lines practically with three emergence points at different heights and drawing the boundaries of the layers | Daily preparation and oral exam and Discussion |
| 9  | 4 | = | Classification of folds based on the position of the wings                                                                                            | Drawing layer boundaries and drawing the cross section on the geological map                                                   | Daily preparation and oral exam and Discussion |
| 10 | 4 | = | Classification of folds based on the position of the joint line,<br>Classification of folds based on the position                                     | Drawing layer boundaries and drawing the cross section on the geological map                                                   | Daily preparation and oral exam and Discussion |



|    |   |   |                                                                                                                                                                                       |                                                                                                                                                                  |                                                              |
|----|---|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|
|    |   |   | of the axial plane                                                                                                                                                                    |                                                                                                                                                                  |                                                              |
| 11 | 4 | = | Classification of folds based on the shape of the fold in the plane of the profile, joints, cracks and veins, geometric classification of joints, structural classification of joints | Drawing layer boundaries and drawing the cross section on the geological map                                                                                     | Daily preparation and oral exam and Discussion               |
| 12 | 4 | = | Cracks, veins, faults, geometric elements of faults                                                                                                                                   | Drawing the boundaries of the layers, drawing the cross-section on the geological map, and determining the angle of inclination and the direction of inclination | Daily preparation and oral exam and Discussion               |
| 13 | 4 | = | Engineering classification of faults                                                                                                                                                  | Drawing the boundaries of the layers, drawing the cross-section on the geological map, and determining the angle of inclination and the direction of inclination | Daily preparation and oral exam and Discussion               |
| 14 | 4 | = | Engineering classification of faults                                                                                                                                                  | Drawing the boundaries of the layers, drawing the cross-section on the geological map, and determining the angle                                                 | Daily preparation and oral exam and Discussion<br>Discussion |

### 11.Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc

| Course | THEORETICAL |             |         | PRACTICAL   |             |         | Final - Exam |
|--------|-------------|-------------|---------|-------------|-------------|---------|--------------|
|        | First Exam. | First Exam. | Quizzes | First Exam. | First Exam. | Quizzes |              |
| 1nd    | 15          | 15          | 5       | 6           | 6           | 3       | 50           |

### 12.Learning and Teaching Resources

|                                                                    |                                                                                                                                       |
|--------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| Required textbooks (curricular books, if any)                      | Structural geology and geotectonics (Dr. Wathiq Ghazi), lectures b<br>Prof. Dr. Sarteel Hamid Al-Shammary                             |
| Main references (sources)                                          | Structural Geology ( Billings) Text Book                                                                                              |
| Recommended books and references (scientific journals, reports...) | 1- The Iraqi Geological Journal published by the Iraqi Geologists union<br>2- Publications and reports of the Iraqi Geological Survey |
| Electronic References, Websites                                    | <a href="https://ar.unesco.org/themes/water-security/hydrology">https://ar.unesco.org/themes/water-security/hydrology</a>             |

| 1. Course Name                                                      |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                      |                                                               |                                                |
|---------------------------------------------------------------------|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|---------------------------------------------------------------|------------------------------------------------|
| Structural Geology 2                                                |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                      |                                                               |                                                |
| 2. Course Code                                                      |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                      |                                                               |                                                |
| Department of Geology / Second Stage                                |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                      |                                                               |                                                |
| 3. Semester / Year                                                  |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                      |                                                               |                                                |
| Second Semester (2025-2026)                                         |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                      |                                                               |                                                |
| 4. Description Preparation Date:                                    |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                      |                                                               |                                                |
| 10/9/2025                                                           |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                      |                                                               |                                                |
| 5. Available Attendance Forms                                       |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                      |                                                               |                                                |
| Actual Attendance                                                   |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                      |                                                               |                                                |
| 6. Number of Credit Hours (Total) / Number of Units (Total)         |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                      |                                                               |                                                |
| (2 Hours Theory) and (2 hours practical)                            |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                      |                                                               |                                                |
| 7. Course administrator's name (mention all, if more than one name) |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                      |                                                               |                                                |
| Name: Prof.Dr. Sarteel Hamid Enad Al- Shammery                      |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                      |                                                               |                                                |
| Email: sarteel@uowasit.edu.iq                                       |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                      |                                                               |                                                |
| 8. Course Objectives                                                |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                      |                                                               |                                                |
| Course Objectives                                                   |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                      |                                                               |                                                |
| 9. Teaching and Learning Strategies                                 |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                      |                                                               |                                                |
| Strategy                                                            |       | <ul style="list-style-type: none"> <li>- 1. Introducing and teaching students of the Department of Earth Sciences the science of structural geology, which is the geological structures resulting from the exposure of rock layers to deformation.</li> <li>- 2. Teaching students the subject of structural geology, its definition, studying fractur faults of all kinds, cracks, and joints. Salt structures and igneous structures.</li> </ul> |                                      |                                                               |                                                |
| 10. Course Structure                                                |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                      |                                                               |                                                |
| Week                                                                | Hours | Required Learning Outcomes                                                                                                                                                                                                                                                                                                                                                                                                                         | Unit or subject name/ Theoretical    | Learning method/ practical                                    | Evaluation method                              |
| 1                                                                   | 4     | Referred to in the previous axis and each according to the content                                                                                                                                                                                                                                                                                                                                                                                 | Fissures, veins                      | Introduction to drawing faults on a geological map            | Daily preparation and oral exam and Discussion |
| 2                                                                   | 4     | =                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Geometric elements of faults         | Identifying moving layers due to faults on the geological map | Daily preparation and oral exam and Discussion |
| 3                                                                   | 4     | =                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Engineering classification of faults | Drawing the type of rocks for moving layers due to faults     | Daily preparation and oral exam and Discussion |

|   |   |   |                                 |                                                              |                                                |
|---|---|---|---------------------------------|--------------------------------------------------------------|------------------------------------------------|
| 4 | 4 | = | The faulting process, its types | How to draw paddle lines for layers of a certain thickness   | Daily preparation and oral exam and Discussion |
| 5 | 4 | = | Structures accompanying faults  | How to draw paddle lines for layers of different thicknesses | Daily preparation and oral exam and Discussion |
| 6 | 4 | = | First exam.                     | First exam.                                                  | Daily preparation and oral exam and Discussion |

|    |   |   |                                                                                                                            |                                                                                                                         |                                                |
|----|---|---|----------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|
| 7  | 4 | = | Salt compositions, components of salt compositions                                                                         | layers and the angle of inclination of the layers tools using engineering Determine the direction of inclination of the | Exam.                                          |
| 8  | 4 | = | The economic importance of salt structures, salt basins and how they are formed                                            | Calculating the amplitude of layers from the geological map                                                             | Daily preparation and oral exam and Discussion |
| 9  | 4 | = | Classification of salt structures, structural classification                                                               | Calculating the thickness of layers from the geological map                                                             | Daily preparation and oral exam and Discussion |
| 10 | 4 | = | Igneous structures, the importance of studying igneous structures in structural geology, how igneous structures are formed | Drawing a cross-section on a geological structural map                                                                  | Daily preparation and oral exam and Discussion |
| 11 | 4 | = | Classification of pyrotechnic compositions, primary and secondary penetrating compositions                                 | Drawing inclined layers in cross section                                                                                | Daily preparation and oral exam and Discussion |



| 12.Learning and Teaching Resources                                 |                                                                                                                                       |
|--------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| Required textbooks (curricular books, if any)                      | Structural geology and geotectonics (Dr. Wathiq Ghazi), lectures b Prof. Dr. Sarteel Hamid Al-Shammary                                |
| Main references (sources)                                          | Structural Geology ( Billings) Text Book                                                                                              |
| Recommended books and references (scientific journals, reports...) | 1- The Iraqi Geological Journal published by the Iraqi Geologists union<br>2- Publications and reports of the Iraqi Geological Survey |
| Electronic References, Websites                                    | <a href="https://ar.unesco.org/themes/water-security/hydrology">https://ar.unesco.org/themes/water-security/hydrology</a>             |

# وصف البرنامج الأكاديمي

قسم علوم الأرض  
2025-2026

## Field Geology Course Description

|                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                           |
|--------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Course Name:                                                                |                                                                                                                                                                                                                                                                                                                                                                                                           |
| Field Geology                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                           |
| 2. Course Code:                                                                |                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                           |
| 3. Semester / Year:                                                            |                                                                                                                                                                                                                                                                                                                                                                                                           |
| First Semester 3 <sup>rd</sup> Stage/ 2025–2026                                |                                                                                                                                                                                                                                                                                                                                                                                                           |
| 4. Description Preparation Date:                                               |                                                                                                                                                                                                                                                                                                                                                                                                           |
| 2025/10/1                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                           |
| 5. Available Attendance Forms:                                                 |                                                                                                                                                                                                                                                                                                                                                                                                           |
| Attending                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                           |
| 6. Number of Credit Hours (Total) / Number of Units (Total)                    |                                                                                                                                                                                                                                                                                                                                                                                                           |
| 2 Hours for Theoretical part & 2 Hours for Experimental part per week          |                                                                                                                                                                                                                                                                                                                                                                                                           |
| 7. Course administrator's name (mention all, if more than one name)            |                                                                                                                                                                                                                                                                                                                                                                                                           |
| Name: Head of Geological in wasit Government : Dia'a Kherbat Shather<br>Email: |                                                                                                                                                                                                                                                                                                                                                                                                           |
| 8. Course Objectives                                                           |                                                                                                                                                                                                                                                                                                                                                                                                           |
| Course Objectives                                                              | To prepare the student to:<br><br>– Use a geological compass and determine dip and stratigraphic orientations.<br>– Describe rock units and identify stratigraphic relationships.<br>– Conduct and scientifically document detailed field observations.<br>– Prepare preliminary geological maps and explanatory sections.<br>– Analyze geological structures and relate them to the history of the area. |
| 9. Teaching and Learning Strategies                                            |                                                                                                                                                                                                                                                                                                                                                                                                           |
| Strategy                                                                       | Knowledge and Understanding:<br>– Understanding the geological behavior of rocks in the field, and knowing how to measure structural elements.<br>– Distinguishing between rock types and tectonic and stratigraphic relationships.                                                                                                                                                                       |



## 10. Course Structure

| Week | Hours | Required Learning Outcomes                                                                                                 | Unit or subject name       | Learning method     | Evaluation method               |
|------|-------|----------------------------------------------------------------------------------------------------------------------------|----------------------------|---------------------|---------------------------------|
| 1    | 4     | student learns about the evolution of the structural movements that shaped the Earth's crust in Iraq over geological time. | Tectonic History of Iraq   | Theoretical & Field | Discussion and asking questions |
| 2    | 4     | student learns to divide the structural movements that shaped the Earth's crust in Iraq over geological time.              | Tectonic Division of Iraq  | Theoretical & Field | Discussion and asking questions |
| 3    | 4     | The profile and tectonic structure of Iraq and the characteristics, faults and practical options of the Earth's crust.     | Structural geology of Iraq | Theoretical & Field | Discussion and asking questions |
| 4    | 4     | It refers to the depression that began to take shape deep in front of the Zagros Mountains as a result of tectonic         | Mesopotamia foredeep       | Theoretical & Field | Discussion and asking questions |

|   |   |                                                                                                                                                                                         |                                                                     |                     |                                 |
|---|---|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|---------------------|---------------------------------|
|   |   | loading and bovine loading.                                                                                                                                                             |                                                                     |                     |                                 |
| 5 | 4 | It deals with the sequence of rock layers of Iraq during the Paleozoic era, including depositional environments and their evolution through the early periods of the region's history.  | The Stratigraphy of Iraq – Paleozoic Formations                     | Theoretical & Field | Discussion and asking questions |
| 6 | 4 | The history of the sedimentary civilization in Iraq is reviewed through the Triassic, Early Jurassic, etc., with respect for the changing environments of the pastoralists in that era. | The Stratigraphy of Iraq – Mesozoic, Triassic, L.Jurassic Formation | Theoretical & Field | Discussion and asking questions |
| 7 | 4 | First Exam                                                                                                                                                                              |                                                                     |                     |                                 |
| 8 | 4 | The history of the sedimentary civilization in Iraq is reviewed through the Triassic, Early Jurassic, etc.,                                                                             | The Stratigraphy of Iraq – Mesozoic, , M.L.Jurassic Formation       | Theoretical & Field | Discussion and asking questions |

|    |   |                                                                                                                                                                                         |                                                                   |                     |                                 |
|----|---|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|---------------------|---------------------------------|
|    |   | with respect for the changing environments of the pastoralists in that era.                                                                                                             |                                                                   |                     |                                 |
| 9  | 4 | The history of the sedimentary civilization in Iraq is reviewed through the Triassic, Early Jurassic, etc., with respect for the changing environments of the pastoralists in that era. | The Stratigraphy of Iraq – Mesozoic, , M.L.Jurassic Formation     | Theoretical & Field | Discussion and asking questions |
| 10 | 4 | It examines the sedimentary succession during the Tethonian-Aptian in Iraq and the evidence it provides for the transition between marine and shallow environments.                     | The Stratigraphy of Iraq – Mesozoic, L.Tithonian Aptian Formation | Theoretical & Field | Discussion and asking questions |
| 11 | 4 | It focuses on the sedimentary sequence from the Albanian                                                                                                                                | The Stratigraphy of Iraq – Mesozoic, Albanian, Early              | Theoretical & Field | Discussion and asking questions |

|                                                                                                                                                                     |   |                                                                                                                  |                                                            |                     |                                 |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|---------------------|---------------------------------|
|                                                                                                                                                                     |   | to the early Turonian in Iraq and what it reveals about the evolution of marine environments during that period. | Turonian Formation                                         |                     |                                 |
| 12                                                                                                                                                                  | 4 | The specific sequence portion of the Late Turonian to Danian evolution.                                          | The Stratigraphy of Iraq – Late Turonian Danian Formation  | Theoretical & Field | Discussion and asking questions |
| 13                                                                                                                                                                  | 4 | The specific sequence portion of the Late Turonian to Danian evolution.                                          | The Stratigraphy of Iraq – Danian, Eocene Formation        | Theoretical & Field | Discussion and asking questions |
| 14                                                                                                                                                                  | 4 | The specific sequence portion of the Late Eocene to -9Quternary evolution.                                       | The Stratigraphy of Iraq –Late Eocene Quternary Formations | Theoretical & Field | Discussion and asking questions |
| 15                                                                                                                                                                  | 4 | Second Exam                                                                                                      |                                                            |                     |                                 |
| 11. Course Evaluation                                                                                                                                               |   |                                                                                                                  |                                                            |                     |                                 |
| Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports.... etc. |   |                                                                                                                  |                                                            |                     |                                 |
| 12. Learning and Teaching Resources                                                                                                                                 |   |                                                                                                                  |                                                            |                     |                                 |
| Required textbooks (curricular books, if any)                                                                                                                       |   |                                                                                                                  |                                                            |                     |                                 |
| Main references (sources)                                                                                                                                           |   |                                                                                                                  |                                                            |                     |                                 |
| Recommended books and references (scientific journals, reports...)                                                                                                  |   |                                                                                                                  | Iraqi Geological Structure                                 |                     |                                 |
| Electronic References, Websites                                                                                                                                     |   |                                                                                                                  | Middle East Geological Form Website                        |                     |                                 |

# وصف البرنامج الأكاديمي

قسم علوم الأرض  
2025-2026

## Course Description Form

|                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Course Name:                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Environmental Geology                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 2. Course Code:                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 3. Semester / Year:                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| The first – 2025/ 2026                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 4. Description Preparation Date:                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 1/10/2025                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 5. Available Attendance Forms:                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Actual Attendance                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 6. Number of Credit Hours (Total) / Number of Units (Total)                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| (2 Hours Theory)and (2 hours practical)                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 7. Course administrator's name (mention all, if more than one name)                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Name: Assit. Prof. Ruaa Issa Muslim<br>Email: Ralqurashy@uowasit.edu.iq<br>Ms.c Mostafa Rafid |                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 8. Course Objectives                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Course Objectives                                                                             | <ul style="list-style-type: none"> <li>· The course aims to consolidate the basic concepts of environmental geology.</li> <li>· Identifying the most important environmental hazard , such as earthquakes, volcanoes, their harmful effects, mass wasting, desertification, and drought, and controlling and predicting them before they occur. Also identifying the most important sources of pollution, such as air, soil, surface and groundwater pollution.</li> </ul> |
| 9. Teaching and Learning Strategies                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Strategy                                                                                      | <p>Group discussions and assignments</p> <p>Creating a competitive atmosphere among students and addressing individual differences using appropriate educational methods</p> <p>Research projects</p> <p>Interdisciplinary discussion circles</p> <p>Incorporating teaching methods that utilize educational technology</p> <p>Encouraging students for self-directed learning</p>                                                                                         |

## 10. Course Structure

| Week | Hours | Unit or subject name/ Theoretical                                  | Learning method/ practical                                                                                | Evaluation method                                                                                                          |
|------|-------|--------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| 1    | 4     | Introduction, Environmental Geology                                | Increased salinity of the Euphrates River water                                                           | Interpreting previous studies and drawing a graph showing the increase in river salinity                                   |
| 2    | 4     | Minerals and rocks and their relationship to environmental geology | How to find the most important pollutants with toxic heavy metals in the sediments of the Euphrates River | Interpretation of previous studies, drawing a diagram showing pollution by toxic heavy metals in the river, and discussion |
| 3    | 4     | Earth's structure and plate tectonics                              | Environmental geology of Sawa Lake                                                                        | Daily preparation and oral exam and Discussion                                                                             |
| 4    | 4     | Earthquakes and related environmental risks                        | Landslides at the Qattara Maaam of Imam Ali in northwest Karbala                                          | Daily preparation and oral exam and Discussion                                                                             |
| 5    | 4     | Volcanoes and related environmental risks                          | Sources of air pollution                                                                                  | Daily preparation and oral exam and Discussion                                                                             |
| 6    | 4     | First Exam.                                                        | First Exam.                                                                                               | Daily preparation and oral exam and Discussion                                                                             |
| 7    | 4     | Mass Wasting                                                       | Clay minerals                                                                                             | Exam.                                                                                                                      |
| 8    | 4     | Soil Pollution                                                     | Non -Clay minerals                                                                                        | Daily preparation and oral exam and Discussion                                                                             |
| 9    | 4     | Surface Water Pollution                                            | Sources of soil pollution in the capital, Baghdad                                                         | Daily preparation and oral exam and Discussion                                                                             |
| 10   | 4     | Ground Water Pollution                                             | Sources of water pollution of the Tigris River, Baghdad                                                   | Daily preparation and oral exam and Discussion                                                                             |
| 11   | 4     | Desertification and drought                                        | Environmental geology of Wasit Governorate                                                                | Daily preparation and oral exam and Discussion                                                                             |
| 12   | 4     | Desertification and drought                                        | Environmental geology of Wasit Governorate                                                                | Daily preparation and oral exam and Discussion                                                                             |
| 13   | 4     | Global Warming                                                     | Study of desertification and drought samples from Iraq                                                    | Daily preparation and oral exam and Discussion                                                                             |

|    |   |                |                                                        |                                                |
|----|---|----------------|--------------------------------------------------------|------------------------------------------------|
| 14 | 4 | Global Warming | Study of desertification and drought samples from Iraq | Daily preparation and oral exam and Discussion |
| 15 | 4 | Second exam.   | Second exam.                                           | Exam.                                          |

#### 11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

#### 12. Learning and Teaching Resources

|                                                                    |                                                                                                                                                              |
|--------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Required textbooks (curricular books, if any)                      | Unpublished Phd and MSC theses                                                                                                                               |
| Main references (sources)                                          | Environmental Geology Book 2017. Gh Attia Zarak, Lafta Salman Kazem, Mahm Fadel Abd. Ministry of Higher Education and Scientific Research, Tikrit University |
| Recommended books and references (scientific journals, reports...) | The Iraqi Geological Journal published by the Iraqi Geologists union<br>Publications and reports of the Iraqi Geological Survey                              |
| Electronic References, Websites                                    | published papers                                                                                                                                             |



# وصف البرنامج الأكاديمي

قسم علوم الأرض  
2025-2026

## Course Description Form

|                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Course Name:                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Stratigraphy                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 2. Course Code:                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Department of Geology / Third Stage                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 3. Semester / Year:                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| The second – 2025/ 2026                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 4. Description Preparation Date:                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 1/10/2025                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 5. Available Attendance Forms:                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Actual Attendance                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 6. Number of Credit Hours (Total) / Number of Units (Total)                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 2 Hours Theory                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 7. Course administrator's name (mention all, if more than one name)                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Name: Assist. Prof. Ruaa Issa Muslim<br>Email: <a href="mailto:Ralqurashy@uowasit.edu.iq">Ralqurashy@uowasit.edu.iq</a> |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 8. Course Objectives                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Course Objectives                                                                                                       | Identify the most important stratigraphic units and classify them in detail (such as lithological, temporal, biostratigraphy units, etc.), for the purpose of understanding and interpreting the relationship of lateral, vertical, and mixed stratigraphic units, such as unconformity surfaces. As well as studying biotope and lithofacies for the purpose of drawing and interpreting maps.....                                                 |
| 9. Teaching and Learning Strategies                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Strategy                                                                                                                | <ul style="list-style-type: none"> <li>- Group discussions and assignments</li> <li>- Creating a competitive atmosphere among students and addressing individual differences using appropriate educational methods</li> <li>- Research projects</li> <li>- Interdisciplinary discussion circles</li> <li>- Incorporating teaching methods that utilize educational technology</li> <li>- Encouraging students for self-directed learning</li> </ul> |

| 10. Course Structure |       |                                       |                                     |                                                |
|----------------------|-------|---------------------------------------|-------------------------------------|------------------------------------------------|
| Week                 | Hours | Unit or subject name<br>/Theoretical  | Learning method<br>/practical       | Evaluation<br>method                           |
| 1                    | 2     | Definition of Stratigraphy            | Principle of Stratigraphy           | Daily preparation and oral exam and Discussion |
| 2                    | 2     | Introduction to stratigraphy          | Uniformitarianism                   | Daily preparation and oral exam and Discussion |
| 3                    | 2     | Classification of stratigraphic units | Superposition                       | Daily preparation and oral exam and Discussion |
| 4                    | 2     | lithostratigraphic units              | Law of original horizontality       | Daily preparation and oral exam and Discussion |
| 5                    | 2     | lithostratigraphic units              | Cross cutting relation              | Daily preparation and oral exam and Discussion |
| 6                    | 2     | Soil stratigraphic units              | Lateral continuity                  | Daily preparation and oral exam and Discussion |
| 7                    | 2     | Biostratigraphic units                | Law of faunal and floral succession | Exam.                                          |
| 8                    | 2     | <i>Biostratigraphic units</i>         | Law of inclusion                    | Daily preparation and oral exam and Discussion |
| 9                    | 2     | Chronstratigraphic units              | Unconformity                        | Daily preparation and oral exam and Discussion |
| 10                   | 2     | Chronstratigraphic Units              | Types of Unconformity               | Daily preparation and oral exam and Discussion |
| 11                   | 2     | Magnetostratigraphic Units            | Types of Unconformity               | Daily preparation and oral exam and Discussion |
| 12                   | 2     | Stratigraphic relationship            | Correlation                         | Daily preparation and oral exam                |

|    |   |                      |                   |                                                |
|----|---|----------------------|-------------------|------------------------------------------------|
|    |   |                      |                   | and Discussion                                 |
| 13 | 2 | Lateral relationship | Litho-correlation | Daily preparation and oral exam and Discussion |
| 14 | 2 | Facies               | Bio-correlation   | Daily preparation and oral exam and Discussion |
| 15 | 2 | Exam                 | Exam              | Exam.                                          |

#### 11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports.... etc.

#### 12. Learning and Teaching Resources

|                                                                    |                                                                                                                                                      |
|--------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| Required textbooks (curricular books, if any)                      | Al-Omari, Farouk Sanallah and Nader, Amer Daoud, 2001, Historical Guidelines, Dar Al-Kutub for Printing and Publishing, University of Mosul, p. 628. |
| Main references (sources)                                          | 1- Brice, J. C, Levin, H. L. and Smith, M. S., 1997, Laboratory studies in Earth History, WCB McGraw – Hill, P 255.                                  |
|                                                                    | 2. Murck, B. W. and Skinner, B. J., 1999, Geology Today: Understanding Our Planet, John Wily & Sons, INC, pp. 527..                                  |
| Recommended books and references (scientific journals, reports...) | The Iraqi Geological Journal published by the Iraqi Geologists union                                                                                 |
| Electronic References, Websites                                    | Publications and reports of the Iraqi Geological Survey                                                                                              |

|                                                                   |                                                                                      |
|-------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| <b>1. Course Title</b>                                            | Geology of Iraq                                                                      |
| <b>2. Course Code</b>                                             | Department of Earth Sciences - Third Stage                                           |
| <b>3. Semester / Year</b>                                         | Second Semester 2023-2024                                                            |
| <b>4. Date Description Prepared:</b>                              | 20/1/2024                                                                            |
| <b>5. Available Attendance Forms</b>                              | In-person                                                                            |
| <b>6. Credit Hours (Total) / Units (Total)</b>                    | (2) Theory hours + 2 Practical hours weekly                                          |
| <b>7. Course Coordinator Name (if more than one, mention all)</b> | Name: Senior Chief Geologist Dhiya Kharbat Shadhar<br>Email: dhiyaalmouswy@yahoo.com |

## 8. Course Objectives

### Course Objectives:

1. The course aims to introduce the student to the geology and tectonics of Iraq, as well as the sedimentary cycles in the region during geological time, while observing the impact of orogenic movements and their effect on Iraq.
2. Identify the tectonic history of Iraq and its tectonic subdivisions.
3. Identify the main geological structures present within these tectonic zones in Iraq.
4. Distribution of lithostratigraphy and the sequence of geological formations within the tectonic zones in Iraq.
5. Study the paleogeography of Iraq.

## 9. Teaching and Learning Strategies

### Strategy:

- Group discussions and solving assignments.
- Knowledge and understanding.
- Research groups - interlocking discussion panels.
- Incorporating teaching methods that utilize educational technology.
- Teaching students how to think and use imagination to connect geological information and benefit from it.
- Analyzing data derived from field and laboratory work to achieve objectives.
- Field trips for the purpose of applying theoretical knowledge in the field.

## 10. Course Structure

| Week | Hours | Required Learning Outcomes                                      | Unit / Topic Name / Theoretical Material                           | Practical Material | Evaluation Method                              |
|------|-------|-----------------------------------------------------------------|--------------------------------------------------------------------|--------------------|------------------------------------------------|
| 1    | 4     | As mentioned in the previous section, each according to content | Theory: Overview of the surface geology of Iraq                    | Practical          | Daily preparation, daily exams, and discussion |
| 2    | 4     |                                                                 | Theory: Tectonic subdivisions of Iraq                              | Practical          | Daily preparation, daily exams, and discussion |
| 3    | 4     |                                                                 | Theory: Geological structures within tectonic subdivisions in Iraq | Practical          | Daily preparation, daily exams, and discussion |
| 4    | 4     |                                                                 | Theory: Geology of the Stable Shelf                                | Practical          | Daily preparation, daily exams, and discussion |
| 5    | 4     |                                                                 | Theory: Geology of the Stable Shelf                                | Practical          | Daily preparation, daily exams, and discussion |
| 6    | 4     |                                                                 | Theory: First Monthly Exam                                         | Practical          | Exam                                           |
| 7    | 4     |                                                                 | Theory: Geology of the Unstable Shelf                              | Practical          | Daily preparation, daily exams, and discussion |

| Week | Hours | Required Learning Outcomes | Unit / Topic Name / Theoretical Material           | Practical Material | Evaluation Method                              |
|------|-------|----------------------------|----------------------------------------------------|--------------------|------------------------------------------------|
| 8    | 4     |                            | Theory: Tectonic evolution in Iraq                 | Practical          | Daily preparation, daily exams, and discussion |
| 9    | 4     |                            | Theory: Tectonic evolution in Iraq                 | Practical          | Daily preparation, daily exams, and discussion |
| 10   | 4     |                            | Theory: Geological formations of the Paleozoic Era | Practical          | Daily preparation, daily exams, and discussion |
| 11   | 4     |                            | Theory: Geological formations of the Mesozoic Era  | Practical          | Daily preparation, daily exams, and discussion |
| 12   | 4     |                            | Theory: Geological formations of the Mesozoic Era  | Practical          | Daily preparation, daily exams, and discussion |
| 13   | 4     |                            | Theory: Geological formations of the Cenozoic Era  | Practical          | Daily preparation, daily exams, and discussion |
| 14   | 4     |                            | Theory: Geological formations of the Cenozoic Era  | Practical          | Daily preparation, daily exams, and discussion |
| 15   | 4     |                            | Theory: Second Monthly Exam                        | Practical          | Exam                                           |

## 11. Course Evaluation

Grading distribution out of 100 according to tasks assigned to the student such as daily preparation, daily/oral/monthly written exams, reports, etc.

| Semester | Semester   |             |                        |            |             |                        | Final Practical Exam | Final Theoretical Exam |
|----------|------------|-------------|------------------------|------------|-------------|------------------------|----------------------|------------------------|
|          | Theory     |             |                        | Practical  |             |                        |                      |                        |
|          | First Exam | Second Exam | Activities and Quizzes | First Exam | Second Exam | Activities and Quizzes |                      |                        |
| Second   | 10         | 10          | 8                      | 4          | 4           | 4                      | -                    | 60                     |

## 12. Learning and Teaching Resources

### Required Textbooks (Curriculum if any):

Geology of Iraq (Jassim and Goff, 2006)

### Main References (Sources):

Following websites and the internet

### Recommended Supporting Books and References (Scientific journals, reports...):

Communicating with relevant departments, for example, the Geological Survey Authority

1- Iraqi Geological Journal issued by the Iraqi Geologists Syndicate

2- Publications and reports of the Iraqi Geological Survey Authority

## Hydrogeology Course Description

|                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Course Name                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Hydrgeology                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 2. Course Code                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Department of Geology / Third Stage                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 3. Semester / Year                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Second Semester (2025-2026)                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 4. Description Preparation Date:                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 10/9/2025                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 5. Available Attendance Forms                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Actual Attendance                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 6. Number of Credit Hours (Total) / Number of Units (Total)                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| (2 Hours Theory)and (2 hours practical)                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 7. Course administrator's name (mention all, if more than one name)               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Name: Prof. Dr. Sarteel Hamid Enad Al- Shammmary<br>Email: sarteel@uowasit.edu.iq |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 8. Course Objectives                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Course Objectives                                                                 | 1- The course aims to consolidate the basic concepts of Hydrogeology.                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                                                                                   | 2- Identifying the science of hydrogeology, its importance, branches, applications and its role in developing water sources and the various hydrological processes that determine the movement, distribution, and cycle of water, estimating its quantities, and preserving its quality by following various scientific methods to plan the use of surface water sources and preserving its sustainability as a national wealth. Identifying groundwater reservoirs and methods for knowing hydraulic characteristics. |
| 9. Teaching and Learning Strategies                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Strategy                                                                          | a. Group discussions and assignments.<br>b. Creating a competitive atmosphere among students and addressing individual difference using appropriate educational methods.<br>c. Research projects.<br>d. Interdisciplinary discussion circles<br>e. Incorporating teaching methods that utilize educational technology.<br>f. Encouraging students for self-directed learning.                                                                                                                                          |

| 10. Course Structure |       |                                                                    |                                                                                 |                                                         |                                                |
|----------------------|-------|--------------------------------------------------------------------|---------------------------------------------------------------------------------|---------------------------------------------------------|------------------------------------------------|
| Week                 | Hours | Required Learning Outcomes                                         | Unit or subject name/<br>Theoretical                                            | Learning method/<br>practical                           | Evaluation method                              |
| 1                    | 4     | Referred to in the previous axis and each according to the content | Groundwater sources                                                             | Drawing groundwater levels on a map                     | Daily preparation and oral exam and Discussion |
| 2                    | 4     | =                                                                  | Vertical distribution of groundwater                                            | Drawing groundwater levels on a map                     | Daily preparation and oral exam and Discussion |
| 3                    | 4     | =                                                                  | Groundwater movement (porosity, permeability)                                   | Calculating the porosity of rocks in the laboratory     | Daily preparation and oral exam and Discussion |
| 4                    | 4     | =                                                                  | Groundwater Aquifers                                                            | Calculating the permeability of rocks in the laboratory | Daily preparation and oral exam and Discussion |
| 5                    | 4     | =                                                                  | Pumping test of groundwater wells                                               | Application of the Theis method in pumping testing      | Daily preparation and oral exam and Discussion |
| 6                    | 4     | =                                                                  | Pumping test of groundwater wells                                               | First Exam.                                             | Daily preparation and oral exam and Discussion |
| 7                    | 4     | =                                                                  | Exam.                                                                           |                                                         |                                                |
| 8                    | 4     | =                                                                  | Hydraulic conductivity K                                                        | Application of Jacob's method in pumping testing        | Daily preparation and oral exam and Discussion |
| 9                    | 4     | =                                                                  | Conductivity coefficient T, storage coefficient of the underground reservoir Sc | Application of Jacob's method in pumping testing        | Daily preparation and oral exam and Discussion |



|    |   |              |                                    |                                                                          |                                                |
|----|---|--------------|------------------------------------|--------------------------------------------------------------------------|------------------------------------------------|
| 10 | 4 | =            | Methods of analyzing pumping tests | Chemical analyzes and physical measurements of well water samples        | Daily preparation and oral exam and Discussion |
| 11 | 4 | =            | Theis method of pumping test       | Accuracy calculations of chemical analyses                               | Daily preparation and oral exam and Discussion |
| 12 | 4 | =            | acob's method for pumping testing  | Calculating the suitability of groundwater uses for humans and animals   | Daily preparation and oral exam and Discussion |
| 13 | 4 | =            | Groundwater quality                | Calculating the suitability of using groundwater for irrigation of crops | Daily preparation and oral exam and Discussion |
| 14 | 4 | =            | Groundwater quality                | Calculating the suitability of using groundwater for other purposes      | Daily preparation and oral exam and Discussion |
| 15 | 4 | Second exam. |                                    |                                                                          |                                                |

## 11.Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc.

| Course | THEORETICAL |             |         | PRACTICAL   |             |         | Final - Exam |
|--------|-------------|-------------|---------|-------------|-------------|---------|--------------|
| 1nd    | First Exam. | Second Exam | Quizzes | First Exam. | Second Exam | Quizzes | 50           |
|        | 15          | 15          | 5       | 6           | 6           | 3       |              |

## 12.Learning and Teaching Resources

|                                                                    |                                                                                                                                       |
|--------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| Required textbooks (curricular books, if any)                      | Lectures by Prof. Dr. Sartil Hamed Al-Shammari<br>Groundwater Hydrogeology                                                            |
| Main references (sources)                                          | Groundwater Hydrogeology, (Tood,1980)                                                                                                 |
| Recommended books and references (scientific journals, reports...) | 1- The Iraqi Geological Journal published by the Iraqi Geologists union<br>2- Publications and reports of the Iraqi Geological Survey |
| Electronic References, Websites                                    | <a href="https://ar.unesco.org/themes/water-security/hydrology">https://ar.unesco.org/themes/water-security/hydrology</a>             |

## Course Description

| <b>1. Course Name:</b>                                                                                                                                                                                                                                                                                                                                   |       |                            |                         |                                                                                |                                             |                                 |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|----------------------------|-------------------------|--------------------------------------------------------------------------------|---------------------------------------------|---------------------------------|
| <b>Metamorphic Rocks</b>                                                                                                                                                                                                                                                                                                                                 |       |                            |                         |                                                                                |                                             |                                 |
| <b>2. Course Code:</b>                                                                                                                                                                                                                                                                                                                                   |       |                            |                         |                                                                                |                                             |                                 |
| <b>Geology Department/ 3<sup>th</sup> Stage</b>                                                                                                                                                                                                                                                                                                          |       |                            |                         |                                                                                |                                             |                                 |
| <b>3. Semester / Year:</b>                                                                                                                                                                                                                                                                                                                               |       |                            |                         |                                                                                |                                             |                                 |
| <b>5<sup>th</sup> Semester/ 3<sup>th</sup> Year</b>                                                                                                                                                                                                                                                                                                      |       |                            |                         |                                                                                |                                             |                                 |
| <b>4. Description Preparation Date:</b>                                                                                                                                                                                                                                                                                                                  |       |                            |                         |                                                                                |                                             |                                 |
| <b>1/10/2023</b>                                                                                                                                                                                                                                                                                                                                         |       |                            |                         |                                                                                |                                             |                                 |
| <b>5. Available Attendance Forms:</b>                                                                                                                                                                                                                                                                                                                    |       |                            |                         |                                                                                |                                             |                                 |
| <b>Actual</b>                                                                                                                                                                                                                                                                                                                                            |       |                            |                         |                                                                                |                                             |                                 |
| <b>6. Number of Credit Hours (Total) / Number of Units (Total)</b>                                                                                                                                                                                                                                                                                       |       |                            |                         |                                                                                |                                             |                                 |
| <b>(2 hours theoretical + 2 hours practical)/ 3 units</b>                                                                                                                                                                                                                                                                                                |       |                            |                         |                                                                                |                                             |                                 |
| <b>7. Course administrator's name (mention all, if more than one name)</b>                                                                                                                                                                                                                                                                               |       |                            |                         |                                                                                |                                             |                                 |
| <b>Lect. Najah Alwan Owayez</b>                                                                                                                                                                                                                                                                                                                          |       |                            |                         | <b>Email: <a href="mailto:nauaiz@uowasit.edu.iq">nauaiz@uowasit.edu.iq</a></b> |                                             |                                 |
| <b>8. Course Objectives:</b>                                                                                                                                                                                                                                                                                                                             |       |                            |                         |                                                                                |                                             |                                 |
| <ul style="list-style-type: none"> <li>• Introduction to metamorphic rocks, their types and classifications</li> <li>• Definition of transformation factors</li> <li>• Definition of transformation environments</li> <li>• Identifying the components of mineral rocks and studying them under the microscope</li> </ul>                                |       |                            |                         |                                                                                |                                             |                                 |
| <b>9. Teaching and Learning Strategies:</b>                                                                                                                                                                                                                                                                                                              |       |                            |                         |                                                                                |                                             |                                 |
| <ul style="list-style-type: none"> <li>• Displaying lectures on screen and delivering lectures orally</li> <li>• Asking questions and holding discussions</li> <li>• Display models and conduct laboratory analyses</li> <li>• How to perform mathematical calculations and prepare reports</li> <li>• Encouraging research and self-learning</li> </ul> |       |                            |                         |                                                                                |                                             |                                 |
| <b>10. Course Structure:</b>                                                                                                                                                                                                                                                                                                                             |       |                            |                         |                                                                                |                                             |                                 |
| Week                                                                                                                                                                                                                                                                                                                                                     | Hours | Required Learning Outcomes | Subject Name            |                                                                                | Learning Method                             | Evolution Method                |
|                                                                                                                                                                                                                                                                                                                                                          |       |                            | Theoretical             | Practical                                                                      |                                             |                                 |
| 1                                                                                                                                                                                                                                                                                                                                                        | 4     | Point 9                    | Introduction            | Introduction                                                                   | Show and explain the subject, ask questions | Quizzes, Exams, Works & Reports |
| 2                                                                                                                                                                                                                                                                                                                                                        | 4     |                            | Metamorphic Conditions  | Factors of Metamorphism                                                        |                                             |                                 |
| 3                                                                                                                                                                                                                                                                                                                                                        | 4     |                            | Factors of Metamorphism | Metamorphic Rocks under Microscope                                             |                                             |                                 |
| 4                                                                                                                                                                                                                                                                                                                                                        | 4     |                            | Metamorphic             | Foliated Metamorphic                                                           |                                             |                                 |

|    |   |  |                                        |                                                    |                                       |  |
|----|---|--|----------------------------------------|----------------------------------------------------|---------------------------------------|--|
|    |   |  | Environments                           | Rocks under Microscope                             | and<br>discuss,<br>prepare<br>reports |  |
| 5  | 4 |  | Metamorphic<br>Environments            | Foliated Metamorphic<br>Rocks under Microscope     |                                       |  |
| 6  | 4 |  | First Monthly Exam                     |                                                    |                                       |  |
| 7  | 4 |  | Classification of<br>Metamorphic Rocks | Foliated Metamorphic<br>Rocks under Microscope     |                                       |  |
| 8  | 4 |  | Metamorphic Grades                     | Non-Foliated Metamorphic<br>Rocks under Microscope |                                       |  |
| 9  | 4 |  | Foliated Metamorphic Rocks             | Non-Foliated Metamorphic<br>Rocks under Microscope |                                       |  |
| 10 | 4 |  | Foliated Metamorphic Rocks             | Non-Foliated Metamorphic<br>Rocks under Microscope |                                       |  |
| 11 | 4 |  | Non-foliated Metamorphic<br>Rocks      | Non-Foliated Metamorphic<br>Rocks under Microscope |                                       |  |
| 12 | 4 |  | Non-foliated Metamorphic<br>Rocks      | Metamorphic Facies                                 |                                       |  |
| 13 | 4 |  | Second Monthly Exam                    |                                                    |                                       |  |
| 14 | 4 |  | Metamorphic Facies                     | Metamorphic Facies                                 |                                       |  |
| 15 | 4 |  | Review                                 | Review                                             |                                       |  |

## 11. Course Evolution:

- Quizzes
- Reports
- Practical Duties
- Monthly Examinations
- Final Examinations
- Grade distribution according to the table below:

| Quizzes | Daily Works | Reports | Monthly Exam |           | Final Exam  |           |
|---------|-------------|---------|--------------|-----------|-------------|-----------|
|         |             |         | Theoretical  | Practical | Theoretical | Practical |
| 4       | 4           | 4       | 20           | 8         | 40          | 20        |

## 12. Learning and Teaching Resources

|                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Required Textbooks                                                       | Kurt Bucher and Rodney Grapes, 2011, "Petrogenesis of Metamorphic Rocks", Springer, 8 <sup>th</sup> Ed.                                                                                                                                                                                                                                                                                                                                                                                                                |
| 2. Main References (Resources)                                              | B. D. W. Yardley, W.S. Mackenzie and C. Guilford, 1990, "Atlas of metamorphic rocks and their texture", Longman, England, ELBS Ed.                                                                                                                                                                                                                                                                                                                                                                                     |
| A. Recommended Books and References (Scientific Journals, Reports, ...etc.) | <ul style="list-style-type: none"> <li>• المجلة العراقية الجيولوجية/ نقابة الجيولوجيين العراقيين</li> <li>• منشورات وتقارير هيئة المسح الجيولوجي العراقية</li> </ul>                                                                                                                                                                                                                                                                                                                                                   |
| B. Electronic References, Websites                                          | <ul style="list-style-type: none"> <li>• <a href="https://www.virtualmicroscope.org/sites/default/files/html5Assets/12072/index2.html?specimen=/node/749">https://www.virtualmicroscope.org/sites/default/files/html5Assets/12072/index2.html?specimen=/node/749</a></li> <li>• <a href="https://www.virtualmicroscope.org/sites/default/files/html5Assets/12072/index2.html?specimen=/node/749">https://www.virtualmicroscope.org/sites/default/files/html5Assets/12072/index2.html?specimen=/node/749</a></li> </ul> |

## Course Description Form

|                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                      |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Course Name: Geophysics 1                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                      |
| 2. Course Code:                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                      |
| 3. Semester / Year: 2025 - 2026                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                      |
| 4. Description Preparation Date: 26\10\2025                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                      |
| 5. Available Attendance Forms: Attendance in the halls of Geology department, College of Science                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                      |
| 6. Number of Credit Hours (Total) / Number of Units (Total): ( 2 Hours Theoretical + 2 Hours Partical                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                      |
| 7. Course administrator's name (mention all, if more than one name)                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                      |
| <p style="text-align: right;">Name: Lect. Dr. Ali Abd Mohee</p> <p style="text-align: right;">Email: <a href="mailto:alimuhhi@uowasit.edu.iq">alimuhhi@uowasit.edu.iq</a></p> <p style="text-align: right;">Ms.C. Ahmed Salam Jabar</p> <p style="text-align: right;">Ms.C. Hussain Abdulelah Yaseen</p> <p style="text-align: right;">Ms.C. Hani Hussain Shalal</p> <p style="text-align: right;">Ms.C. Ali Abdulhussain Chaloob</p> |                                                                                                                                                                                                                      |
| 8. Course Objectives                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                       | <ul style="list-style-type: none"> <li>Enable students to identify the different types used in geophysical exploration</li> <li>Enabling students to learn gravitational and magnetic exploration methods</li> </ul> |

- Enabling students to interpret gravity and magnetic maps

## 9. Teaching and Learning Strategies

- Using lecture and discussion methods with students and practical applications
- Group participation of students in discussion and developing scientific solution to exploration problems

## 10. Course Structure

| week | Hours                                      | Required learning | Unit of subject name                              | Learning method       | Evaluation method              |
|------|--------------------------------------------|-------------------|---------------------------------------------------|-----------------------|--------------------------------|
| 1    | 2 hours of theory and 2 hours of practical | Introduction      | Knowing the types of geophysical methods          | Theory with practical | Lecture and general discussion |
| 2    | 2 hours of theory and 2 hours of practical | Gravity method    | The theoretical basis of the gravitational method | Theory with practical | Lecture and general discussion |

|   |                                            |                               |                                                                      |                       |                                |
|---|--------------------------------------------|-------------------------------|----------------------------------------------------------------------|-----------------------|--------------------------------|
| 3 | 2 hours of theory and 2 hours of practical | Universal equation of gravity | Objection of the global equation                                     | Theory with practical | Lecture and general discussion |
| 4 | 2 hours of theory and 2 hours of practical | Absolute gravity meter        | Types of gravimeter                                                  | Theory with practical | Lecture and general discussion |
| 5 | 2 hours of theory and 2 hours of practical | Field procedures              | Knowing the types of gravitational corrections                       | Theory with practical | Lecture and general discussion |
| 6 | 2 hours of theory and 2 hours of practical | Gravitational Drift           | Theoretical and practical method for calculating gravitational drift | Theory with practical | Lecture and general discussion |
| 7 | 2 hours of theory and 2 hours of practical | The effect of latitude        | Knowing the latitude correction                                      | Theory with practical | Lecture and general discussion |

|    |                                                     |                                                |                                                                                  |                             |                                                  |
|----|-----------------------------------------------------|------------------------------------------------|----------------------------------------------------------------------------------|-----------------------------|--------------------------------------------------|
| 8  |                                                     |                                                |                                                                                  | Theory<br>with<br>practical | First<br>theoretical<br>and<br>practical<br>exam |
| 9  | 2 hours of<br>theory and 2<br>hours of<br>practical | Height<br>correction                           | Know the<br>theoretical<br>and<br>practical<br>method of<br>correcting<br>height | Theory<br>with<br>practical | Lecture<br>and<br>general<br>discussion          |
| 10 | 2 hours of<br>theory and 2<br>hours of<br>practical | Boguer<br>correction                           | Know the<br>theoretical<br>and<br>practical<br>method of<br>correcting<br>boguer | Theory<br>with<br>practical | Lecture<br>and<br>general<br>discussion          |
| 11 | 2 hours of<br>theory and 2<br>hours of<br>practical | Calculate<br>the value of<br>boguer<br>anomaly | Know the<br>theoretical<br>and<br>practical for<br>calculate                     | Theory<br>with<br>practical | Lecture<br>and<br>general<br>discussion          |



|    |                                                     |                         |                                                                                             |                             |                                         |
|----|-----------------------------------------------------|-------------------------|---------------------------------------------------------------------------------------------|-----------------------------|-----------------------------------------|
|    |                                                     |                         | the boguer<br>value                                                                         |                             |                                         |
| 12 | 2 hours of<br>theory and 2<br>hours of<br>practical | Magnetic<br>method      | Theoretical<br>basis of the<br>magnetic<br>method                                           | Theory<br>with<br>practical | Lecture<br>and<br>general<br>discussion |
| 13 | 2 hours of<br>theory and 2<br>hours of<br>practical | Magnetic<br>survey      | Field<br>procedures<br>for<br>magnetic<br>surveying                                         | Theory<br>with<br>practical | Lecture<br>and<br>general<br>discussion |
| 14 | 2 hours of<br>theory and 2<br>hours of<br>practical | Magnetic<br>corrections | Knowledge<br>of<br>theoretical<br>and<br>practical<br>methods of<br>magnetic<br>corrections | Theory<br>with<br>practical | Lecture<br>and<br>general<br>discussion |
| 15 |                                                     |                         |                                                                                             |                             | Second<br>theoretical<br>and            |

|                                                                                                                                                                     |  |  |  |  |                   |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|-------------------|
|                                                                                                                                                                     |  |  |  |  | practical<br>exam |
|                                                                                                                                                                     |  |  |  |  |                   |
| 11. Course Evaluation                                                                                                                                               |  |  |  |  |                   |
| Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports.... etc. |  |  |  |  |                   |
| 12. Learning and Teaching Resources                                                                                                                                 |  |  |  |  |                   |
| Required textbooks (curricular books, if any)                                                                                                                       |  |  |  |  |                   |
| Main references (sources)                                                                                                                                           |  |  |  |  |                   |
| Recommended books and references<br>(scientific journals, reports...)                                                                                               |  |  |  |  |                   |
| Electronic References, Websites                                                                                                                                     |  |  |  |  |                   |



## Course Description Form

|                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                          |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Course Name: Geophysics 2                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                          |
|                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                          |
| 2. Course Code:                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                          |
|                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                          |
| 3. Semester / Year: 2025 - 2026                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                          |
|                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                          |
| 4. Description Preparation Date: 26\10\2025                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                          |
|                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                          |
| 5. Available Attendance Forms: Attendance in the halls of Geology department, College of Science                                                                                                                                                   |                                                                                                                                                                                                                                                                                          |
|                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                          |
| 6. Number of Credit Hours (Total) / Number of Units (Total): ( 2 Hours Theoretical + 2 Hours Partical                                                                                                                                              |                                                                                                                                                                                                                                                                                          |
|                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                          |
| 7. Course administrator's name (mention all, if more than one name)                                                                                                                                                                                |                                                                                                                                                                                                                                                                                          |
| Name: Lect. Dr. Ali Abd Mohee<br>Email: <a href="mailto:alimuhhi@uowasit.edu.iq">alimuhhi@uowasit.edu.iq</a>                                                                                                                                       |                                                                                                                                                                                                                                                                                          |
| 8. Course Objectives                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                          |
|                                                                                                                                                                                                                                                    | <ul style="list-style-type: none"><li>• Enable students to identify the different types used in geophysical exploration</li><li>• Enabling students to learn gravitational and magnetic exploration methods</li><li>• Enabling students to interpret gravity and magnetic maps</li></ul> |
| 9. Teaching and Learning Strategies                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                          |
| <ul style="list-style-type: none"><li>• Using lecture and discussion methods with students and practical applications</li><li>• Group participation of students in discussion and developing scientific solution to exploration proplems</li></ul> |                                                                                                                                                                                                                                                                                          |

## 10. Course Structure

| week | Hours                                      | Required learning       | Unit of subject name                        | Learning method       | Evaluation method              |
|------|--------------------------------------------|-------------------------|---------------------------------------------|-----------------------|--------------------------------|
| 1    | 2 hours of theory and 2 hours of practical | Introduction            | Knowing the types of geophysical methods    | Theory with practical | Lecture and general discussion |
| 2    | 2 hours of theory and 2 hours of practical | Seismic method          | The theoretical basis of the seismic method | Theory with practical | Lecture and general discussion |
| 3    | 2 hours of theory and 2 hours of practical | Reflection method       | General principles                          | Theory with practical | Lecture and general discussion |
| 4    | 2 hours of theory and 2 hours of practical | Energy sources          | Types of energy sources                     | Theory with practical | Lecture and general discussion |
| 5    | 2 hours of theory and 2 hours of practical | Seismic waves           | Knowing the types of seismic waves          | Theory with practical | Lecture and general discussion |
| 6    | 2 hours of theory and 2 hours of practical | Elasticity coefficients | Types of elasticity coefficients            | Theory with practical | Lecture and general discussion |
| 7    | 2 hours of theory                          | Wave                    | Knowing                                     | Theory                | Lecture                        |

|    |                                            |                                 |                                                      |                       |                                      |
|----|--------------------------------------------|---------------------------------|------------------------------------------------------|-----------------------|--------------------------------------|
|    | and 2 hours of practical                   | velocity and elasticity modulus | the relation between velocity and elasticity modulus | with practical        | and general discussion               |
| 8  |                                            |                                 |                                                      | Theory with practical | First theoretical and practical exam |
| 9  | 2 hours of theory and 2 hours of practical | Velocity with depth             | Determine the velocity                               | Theory with practical | Lecture and general discussion       |
| 10 | 2 hours of theory and 2 hours of practical | Time – distance curve           | Learn how to plot a time – distance curve            | Theory with practical | Lecture and general discussion       |
| 11 | 2 hours of theory and 2 hours of practical | Time – distance curve           | Multiple layers                                      | Theory with practical | Lecture and general discussion       |
| 12 | 2 hours of theory and 2 hours of practical | Refraction method               | Applications                                         | Theory with practical | Lecture and general discussion       |
| 13 | 2 hours of theory and 2 hours of practical | Refraction method               | Refraction survey                                    | Theory with practical | Lecture and general                  |

|    |                                            |                   |                                                    |                       |                                       |
|----|--------------------------------------------|-------------------|----------------------------------------------------|-----------------------|---------------------------------------|
|    |                                            |                   |                                                    |                       | discussion                            |
| 14 | 2 hours of theory and 2 hours of practical | Refraction method | Distribution method for power source and receivers | Theory with practical | Lecture and general discussion        |
| 15 |                                            |                   |                                                    |                       | Second theoretical and practical exam |

### 11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports.... etc.

### 12. Learning and Teaching Resources

|                                                                    |                                         |
|--------------------------------------------------------------------|-----------------------------------------|
| Required textbooks (curricular books, if any)                      | Introduction in geophysical Prospecting |
| Main references (sources)                                          | Dobrin , Sharma                         |
| Recommended books and references (scientific journals, reports...) |                                         |
| Electronic References, Websites                                    |                                         |

|                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Course Name                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Geotectonic                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 2. Course Code                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Department of Geology / Third Stage                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 3. Semester / Year                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| First Semester (2025-2026)                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 4. Description Preparation Date:                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 1/9/2025                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 5. Available Attendance Forms                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Actual Attendance                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 6. Number of Credit Hours (Total) / Number of Units (Total)                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| (2 Hours Theory)and (2 hours practical)                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 7. Course administrator's name (mention all, if more than one name)                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <p>Name: Prof.Dr. Sarteel Hamid Enad Al- Shammery<br/>Email: sarteel@uowasit.edu.iq</p> <p>Ms.c. Ebtesam Ali Hawas<br/>Ms.c. Mohammed Yahya Raham<br/>Ms.c. Hiba Fouad<br/>Ms.c. Hussain Abdulelah Yaseen</p> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 8. Course Objectives                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Course Objectives                                                                                                                                                                                             | <p>a. The course aims to consolidate the basic concepts of geotectonic science.</p> <p>b. Identifying geotectonics, its importance, its branches, applications and its role in understanding modern theories regarding the divisions of the Earth's crust and the causes of the occurrence of natural phenomena such as earthquakes and volcanoes and determining their locations, as well as the apparent changes on the Earth's surface during geological time.</p> |



| 9. Teaching and Learning Strategies |                                                                                                                                                                                                                                                                                                                                                                         |
|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Strategy                            | a. Group discussions and assignments<br>b. Creating a competitive atmosphere among students and addressing individual difference using appropriate educational methods.<br>C. Research projects<br>d. Interdisciplinary discussion circles<br>e. Incorporating teaching methods that utilize educational technology<br>Encouraging students for self-directed learning. |

| 10. Course Structure |       |                                                                    |                                                                                  |                                                   |                                                |
|----------------------|-------|--------------------------------------------------------------------|----------------------------------------------------------------------------------|---------------------------------------------------|------------------------------------------------|
| Week                 | Hours | Required Learning Outcomes                                         | Unit or subject name/ Theoretical                                                | Learning method/ practical                        | Evaluation method                              |
| 1                    | 4     | Referred to in the previous axis and each according to the content | n introduction to geotectonics and its relationship to other geological sciences | Determine the inclination angle of the layers     | Daily preparation and oral exam and Discussion |
| 2                    | 4     | =                                                                  | Primary and secondary geological structures                                      | Primary and secondary geological structures       | Daily preparation and oral exam and Discussion |
| 3                    | 4     | =                                                                  | Theories that preceded the theory of sheet tectonics                             | Drawing the movement of plates in general         | Daily preparation and oral exam and Discussion |
| 4                    | 4     | =                                                                  | Wackner's theory of continental drift                                            | Drawing the movement of plates in subduction zone | Daily preparation and oral exam and Discussion |
| 5                    | 4     |                                                                    | Paleomagnetism of the Earth                                                      | Measurement of Paleomagnetism of the Earth        | Daily preparation and oral exam and Discussion |

|    |   |       |                                                   |                                            |                                                |
|----|---|-------|---------------------------------------------------|--------------------------------------------|------------------------------------------------|
| 6  | 4 | Exam. |                                                   |                                            |                                                |
| 7  | 4 |       | Magnetic reversals                                | Magnetic reversal of the Earth's poles     | Daily preparation and oral exam and Discussion |
| 8  | 4 |       | Magnetic reversals                                | Magnetic reversal of the Earth's poles     | Daily preparation and oral exam and Discussion |
| 9  | 4 |       | Magnetic reversals                                | Magnetic reversal of the Earth's poles     | Daily preparation and oral exam and Discussion |
| 10 | 4 |       | The main structural features of the Earth's crust | Virtual roaming of the pole                | Daily preparation and oral exam and Discussion |
| 11 | 4 |       | History of the movement of                        | Draw the main tectonic plates              | Daily preparation and oral exam and            |
| 12 | 4 |       | Movement of continents,                           | Drawing secondary tectonic plates          | Daily preparation and oral exam and Discussion |
| 13 | 4 |       | Volcanoes and plate tectonics                     | Drawing the movements of converging plates | Daily preparation and oral exam and Discussion |
| 14 | 4 |       | Earthquakes and plate tectonics                   | Drawing the movements of divergent plates  | Daily preparation and oral exam and Discussion |
| 15 | 4 | Exam. |                                                   |                                            |                                                |

| 11.Course Evaluation                                                                                                                                           |             |             |         |                                                                                                                           |             |         |             |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-------------|---------|---------------------------------------------------------------------------------------------------------------------------|-------------|---------|-------------|
| Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc |             |             |         |                                                                                                                           |             |         |             |
| Course                                                                                                                                                         | THEORETICAL |             |         | PRACTICAL                                                                                                                 |             |         | Final -Exam |
|                                                                                                                                                                | First Exam. | First Exam. | Quizzes | First Exam.                                                                                                               | First Exam. | Quizzes |             |
| 1nd                                                                                                                                                            | 15          | 15          | 5       | 6                                                                                                                         | 6           | 3       | 50          |
| 12.Learning and Teaching Resources                                                                                                                             |             |             |         |                                                                                                                           |             |         |             |
| Required textbooks (curricular books, if any) Main references (sources)                                                                                        |             |             |         | Structural geology and geotectonics (Dr. Wathiq Ghazi), lectures b Prof. Dr. Sarteel Hamid Al-Shammary                    |             |         |             |
|                                                                                                                                                                |             |             |         | Physical Geology(S.Zayer and Gollf,2006)                                                                                  |             |         |             |
| Recommended books and references (scientific journals, reports...)                                                                                             |             |             |         | 1- The Iraqi Geological Journal published by the Iraqi Geologists union                                                   |             |         |             |
|                                                                                                                                                                |             |             |         | 2- Publications and reports of the Iraqi Geological Survey                                                                |             |         |             |
| Electronic References, Websites                                                                                                                                |             |             |         | <a href="https://ar.unesco.org/themes/water-security/hydrology">https://ar.unesco.org/themes/water-security/hydrology</a> |             |         |             |

|                                                                                                                                                                                                                                                                                    |                                                                     |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|
| المحاضرات المؤرخة من قبل تدريسي الاختصاص لكل مادة.                                                                                                                                                                                                                                 | 2 – المراجع الرئيسية(المصادر)                                       |
|                                                                                                                                                                                                                                                                                    | أ- الكتب والمراجع التي يوصي بيها (المجلات العلمية، التقارير، .....) |
| 1- <a href="https://www.adelaide.edu.au/englishfor-uni/tenses-in-academic-writing">https://www.adelaide.edu.au/englishfor-uni/tenses-in-academic-writing</a><br>2- <a href="https://elt.oup.com/student/headway/%20beg/test-">https://elt.oup.com/student/headway/%20beg/test-</a> | ب- المراجع الالكترونية، مواقع الانترنت.....                         |

### The Course Description

|                                                                                                                                                 |                                                                                              |
|-------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| 1- Educational institution                                                                                                                      | The University of Wasit                                                                      |
| 2- Scientific department/type of study                                                                                                          | The Department of Geology – 3 <sup>rd</sup> Year                                             |
| 3- Name of the course (subject)                                                                                                                 | English Language                                                                             |
| 4- Available forms of attendance                                                                                                                | Attendance in the halls of Geology Department, College of Science                            |
| 5- Semester/year                                                                                                                                | Second Semester/ 2023-2024                                                                   |
| 6- Number of study hours (total)                                                                                                                | (2 Hours Theoretical) Weekly                                                                 |
| 7- The date this description was prepared                                                                                                       | 15/01/2024                                                                                   |
| 8- Preparing the lesson                                                                                                                         | Lect. Dr. Reyadh H. R.<br><a href="mailto:r.radhy@uowasit.edu.iq">r.radhy@uowasit.edu.iq</a> |
| 9- The Course Objectives                                                                                                                        |                                                                                              |
| - Learning the English language and its vocabulary, and becoming familiar with geological terminology, which is within the student's specialty. |                                                                                              |

|                                                                                                                                                                                                                                                                                                       |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 10- Course outcomes and teaching, learning and evaluation methods                                                                                                                                                                                                                                     |
| A- Cognitive objectives<br>1- Identifying the parts of speech in the English language.<br>2- Giving the student confidence to speak English through short conversations that help him in conducting interviews for foreign companies.<br>3- Preparation on how to write academic scientific research. |
| B- The skills objectives of the course<br>1- Communication skill.<br>2- Writing skill.<br>3- Scientific reports related to geology.                                                                                                                                                                   |
| C- Emotional and value goals<br>1- Accuracy in analysis and decision making<br>2- Credibility and transparency in scientific research.<br>3- Developing the student's ability to dialogue and discuss.                                                                                                |

D- Through the processes of criticism, issuing opinions, rulings, and renewal. And also through teamwork and problem solving.

- 1- Developing communication skills
- 2- Developing analytical and research skills
- 3- Desire to learn
- 4- Having creative skills and the ability to solve problems

#### **Teaching and learning methods**

1- Using the method of lecture, discussion, and applications through the computer.  
 2- Introducing elective courses to develop higher learning skills, such as critical thinking, creative thinking, systems analysis and design, and philosophy of science, as university requirements, through further description of case studies and applications.

1. Readings, self-learning, discussion panels.
2. Exercises and activities in the classroom.
3. Directing students to some websites to benefit from them.
4. Holding research seminars in which oil reservoirs are explained.
5. Manage the lecture in a way that makes time feel important.
6. Assigning the student to some group activities and duties.
7. Allocate a percentage of the grade to group activities.

#### **Evaluation methods**

Homework related to solving the problem

- 1- Homework related to solving the problem.
- 2- Participation in the classroom.
- 3- Providing activities.
- 4- Semester and final tests and activities.
- 5- quick quizzes.
- 6- Setting grades for students' participation during the lecture.
- 7- Giving grades to homework.
- 8- Giving grades for students' attendance.
- 9- Giving grades to students while they use clarification tools during the lecture.

### **11- The Course Structure**

| <b>Week</b> | <b>Hours</b> | <b>Required learning outcomes</b>                                                      | <b>Name of the unit/topic</b> | <b>Evaluation method</b>                                                                                  |
|-------------|--------------|----------------------------------------------------------------------------------------|-------------------------------|-----------------------------------------------------------------------------------------------------------|
| 1           | 2            | The tens system, - informal language, - compound word, - casual conversations.         | Unit 1 Home and away          | Interactive questions during the lecture, quick quizzes, exams, write scientific reports, and attendance. |
| 2           | 2            | General -review-sentence-types-and-structure                                           | Unit 2 Been there, done that! |                                                                                                           |
| 3           | 2            | Narrative tenses, -Giving news and responding, - Books and films, - showing - interest | Unit 3 What a story!          |                                                                                                           |
| 4           | 2            | Questions and negatives, - prefixes and antonyms, - Being polite.                      | Unit 4 Nothing but the truth  |                                                                                                           |

|    |   |                                                          |                                              |
|----|---|----------------------------------------------------------|----------------------------------------------|
| 5  | 2 | Tenses Present-Perfect-vs.-<br>Past-Perfect              | Unit 5<br>Tenses<br>Present P.<br>vs Past P. |
| 6  | 2 | Futurity                                                 | Unit 6 An<br>eye to the<br>future            |
| 7  | 2 | Discussion                                               | Repeating<br>to previous<br>topics           |
| 8  | 2 | First Monthly Exam                                       |                                              |
| 9  | 2 | Writing Types                                            | Unit<br>Writing.                             |
| 10 | 2 | Academic-Writing                                         | Unit<br>Writing.                             |
| 11 | 2 | Give definition of Important<br>geological vocabularies. | Geological<br>terminology                    |
| 12 | 2 | Discuss geological figures<br>and diagrams.              | Geological<br>terminology                    |
| 13 | 2 | How to present a geological<br>poster in a conference?   | Presentation                                 |
| 14 | 2 | Review previous topics                                   | Comprehen<br>sive review                     |
| 15 | 2 | Second Exam                                              |                                              |

## 12- Course evaluation

Distribution of the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, written exams, reports, etc.

| Quizzes | Daily<br>Works | Reports | Monthly Exam | Final Exam |
|---------|----------------|---------|--------------|------------|
| 5       | 5              | 5       | 25           | 60         |

## 13- Education and teaching references

|                                                                       |                                                                                                                                                              |
|-----------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1- Required prescribed books                                          | - New-headway-plus-upper-intermediate-students-book.<br>- New-headway-plus-upper-intermediate-students-workbook                                              |
| 2- Main references (sources)                                          | المحاضرات المؤرخة من قبل تدريسي الاختصاص لكل مادة.                                                                                                           |
| 3- Recommended books and references (scientific journals, reports...) |                                                                                                                                                              |
| 4- Electronic references, websites...                                 | 1- <a href="https://www.adelaide.edu.au/englishfor-uni/tenses-in-academic-writing">https://www.adelaide.edu.au/englishfor-uni/tenses-in-academic-writing</a> |

|  |                                                                                                                    |
|--|--------------------------------------------------------------------------------------------------------------------|
|  | 2- <a href="https://elt.oup.com/student/headway/%20beg/test-">https://elt.oup.com/student/headway/%20beg/test-</a> |
|--|--------------------------------------------------------------------------------------------------------------------|