Ministry of Higher Education and Scientific Research
Scientific Supervision and Scientific Evaluation Apparatus
Directorate of Quality Assurance and Academic Accreditation
Accreditation Department

Academic Program and Course Description Guide

2024

Introduction:

The educational program is a well-planned set of courses that include procedures and experiences arranged in the form of an academic syllabus. Its main goal is to improve and build graduates' skills so they are ready for the job market. The program is reviewed and evaluated every year through internal or external audit procedures and programs like the External Examiner Program.

The academic program description is a short summary of the main features of the program and its courses. It shows what skills students are working to develop based on the program's goals. This description is very important because it is the main part of getting the program accredited, and it is written by the teaching staff together under the supervision of scientific committees in the scientific departments.

This guide, in its second version, includes a description of the academic program after updating the subjects and paragraphs of the previous guide in light of the updates and developments of the educational system in Iraq, which included the description of the academic program in its traditional form (annual, quarterly), as well as the adoption of the academic program description circulated according to the letter of the Department of Studies T 3/2906 on 3/5/2023 regarding the programs that adopt the Bologna Process as the basis for their work.

In this regard, we can only emphasize the importance of writing an academic programs and course description to ensure the proper functioning of the educational process.

Concepts and terminology:

Academic Program Description: The academic program description provides a brief summary of its vision, mission and objectives, including an accurate description of the targeted learning outcomes according to specific learning strategies.

Course Description: Provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the students to achieve, proving whether they have made the most of the available learning opportunities. It is derived from the program description.

Program Vision: An ambitious picture for the future of the academic program to be sophisticated, inspiring, stimulating, realistic and applicable.

Program Mission: Briefly outlines the objectives and activities necessary to achieve them and defines the program's development paths and directions.

Program Objectives: They are statements that describe what the academic program intends to achieve within a specific period of time and are measurable and observable.

Curriculum Structure: All courses / subjects included in the academic program according to the approved learning system (quarterly, annual, Bologna Process) whether it is a requirement (ministry, university, college and scientific department) with the number of credit hours.

Learning Outcomes: A compatible set of knowledge, skills and values acquired by students after the successful completion of the academic program and must determine the learning outcomes of each course in a way that achieves the objectives of the program.

Teaching and learning strategies: They are the strategies used by the faculty members to develop students' teaching and learning, and they are plans that are followed to reach the learning goals. They describe all classroom and extra-curricular activities to achieve the learning outcomes of the program.

Academic Program Description Form

University Name: ..... **University of Wasit**

Faculty/Institute: .....**College of Engineering**

Scientific Department: .....**Electrical Engineering Department**

Academic or Professional Program Name: **Bachelor of Science in Electrical Eng.**

Final Certificate Name: .. **Bachelor of Science in Electrical Eng**.

Academic System: **Bologna for the 1st & 2nd stages**, **APET for the third & fourth**

Description Preparation Date: **1/9/2024**

File Completion Date: 4/9/2024

Signature:

Head of Department Name:

Asst. Prof. Dr. Ismail Sharhan Baqer

Date: 5/9/2024

Signature:

Scientific Associate Name:

Asst. Prof. Dr. Hussein Razzaq Sabah

Date: 5/9/2024

The file is checked by:

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department:

Asst. Prof. Dr. Haider Majid Hassan

Date: 5/9/2024

Signature:

Approval of the Dean

Prof. Dr. Ali Nasser Helou

1. Program Vision

The vision of the Department of Electrical Engineering at Wasit University is to become a distinguished department among similar scientific departments at the international level, to be a leader at the local and global levels in the fields of electrical engineering and its applications, and to participate effectively with community agencies.

2. Program Mission

The mission of the Department of Electrical Engineering at the University of Wasit is to meet the needs of the local community for engineering personnel and to provide high-quality programs in the field of higher education and scientific research.

3. Program Objectives

The program aims to achieve several objectives, including:

1. Developing the engineering student's ability to deal professionally and scientifically enough to solve problems in various fields of electrical engineering, no matter how complex. The program initially aims to familiarize electrical engineering students with the principles of operation and design of various measuring and analysis devices.
2. Designing the operating systems for these devices and how to utilize them to conduct scientific research to advance academic achievement.
3. Working to meet the labor market's needs for this scientific expertise, contributing to the development of qualified national research and academic competencies.
4. Building a sound personality for engineering students through various activities that help them be creative in their professional lives.

5. Encouraging scientifically qualified individuals to continue their studies in master's programs and other programs.

4. **Program Accreditation**
Does the program have program accreditation? And from which agency? nothing

5. **Other external influences**
Is there a sponsor for the program? nothing

6. **Program Structure**

Program Structure	Number of Courses	Credit hours	Percentage	Reviews*
Institution Requirements	8	%3	%3	
College Requirements	8	%3	%3	
Department Requirements	50	232	%96	
Summer Training	--	--	--	
Other				

* This can include notes whether the course is basic or optional.

7. Program Description

Year/Level	Course Code	Course Name	Credit Hours	
			theoretical	practical
3rd stage\1st semester	UoWEE12375	Numerical Analysis I	3	0
	UoWEE12376	Electrical Machines III	2	2
	UoWEE12377	Electronics III	2	2
	UoWEE12378	Communication Theories I	2	0
	UoWEE12379	Antennas and Wave Propagation I	2	0
	UoWEE12380	Electrical Power Systems I	3	0
	UoWEE12381	English Language V	1	0
		Total	15	4
	UoWEE12382	Numerical Analysis II	3	0
3rd stage\2nd semester	UoWEE12383	Electrical Machines IV	2	2
	UoWEE12384	Electronics V	2	2
	UoWEE12385	Communication Theories II	2	0
	UoWEE12386	Antennas and Wave Propagation II	2	0
	UoWEE12387	Electrical Power Systems II	3	0
	UoWEE12388	English Language VI	1	0
		Total	15	**4**

Program Description

Year/Level	Course Code	Course Name	Credit Hours	
			theoretical	practical
4th stage\1st semester	UoWEE12389	Engineering Project I	1	0
	UoWEE12390	Advanced Electronics I	2	0
	UoWEE12391	Control Systems I	2	2
	UoWEE12392	Digital Communications I	2	2
	UoWEE12393	Electrical Power Systems Analysis	2	
	UoWEE12394	Computer Networks I	2	2
	UoWEE12395	English Language VII	1	0
		Total	12	6
	UoWEE12396	Engineering Project II	1	0
4th stage\2nd semester	UoWEE12397	Advanced Electronics II	2	
	UoWEE12398	Control Systems II	2	2
	UoWEE12399	Digital Communications II	2	2
	UoWEE12400	Electronic Power	2	0
	UoWEE12401	Computer Networks II	2	2
	UoWEE12402	English Language VIII	1	0
		Total	12	6

8.Expected learning outcomes of the program	
Knowledge	
Learning Outcomes 1	a) Comprehensive knowledge of theoretical and applied sciences (mathematics, physics, and computer science), probability and statistics applicable to EE. b) Capability to apply knowledge of mathematics, science, and engineering to resolve engineering problems to meet a requirement that is posed by society. c) Solid background in the fundamentals of the field, with social sensitivity, inspiration and critical thinking, which is needed for a successful career in engineering. d) Knowledge of basic electrical and electronic components and their use in analog circuits and digital circuits. e) In depth knowledge in the field of communication systems and networks, biomedical engineering, electric energy systems, intelligent systems and control, and waves, antennas, and optics. f) Extent of knowledge in the areas of circuits, electronics, digital logic, signals and systems, computer organization and microprocessors, control systems, electromagnetism, communication systems, and power systems. g) Knowledge of modern issues and ability to use EE principles to report the technological challenges of the future. h) Broad education necessary to understand the impact of engineering solutions in a global/societal field.
Skills	
Learning Outcomes 2	a) Skills in using software packages and writing computer programs to solve engineering problems. b) Skills in identifying, formulating, and solving engineering problems using techniques, skills and modern engineering tools necessary for engineering practice. c) Skills in developing and using models for the analysis and design of components and systems. d) Basic component and systems level understanding and their integration.

	e) Skills in designing a system, component, or process to meet desired needs. f) Skills in incorporating new knowledge that will allow them to design, evaluating and composing new products or services. g) Skills in troubleshooting engineering problems. h) Skills in designing and conducting experiments as well as analyzing and interpreting data. i) Skill to function on multidisciplinary teams and to communicate effectively. Also, ability to perform in leadership roles.
Ethics	
Learning Outcomes 4	a) Understanding of professional and ethical responsibility. b) Robust self-improvement and self-evaluation incentives to obtain particular knowledge in areas of interest in their future career. c) Recognition of the need for and the skill to engage in lifelong learning.

9. Teaching and Learning Strategies

a) Students learn by tackling complex, real-world engineering projects, which develops skills in design, implementation, teamwork, communication, and decision-making.
b) Analyzing real-world engineering scenarios helps students understand the application of theory, the complexities of engineering challenges, and various stakeholder perspectives.
c) E-learning and Digital tools for interactive content, recorded lectures, discussion forums, and other e-learning materials can transform theoretical concepts into engaging content.
d) Group work prepare students for the interdisciplinary and team-oriented nature of professional engineering.
e) By means of simulation software, students try virtually experiment with circuits, systems, and phenomena without physical hardware, improving practical understanding.

10. Evaluation methods
Weekly, monthly, daily and end of year exams.

11. Faculty							
Faculty Members							
Academic Rank		**Specialization**		**Special Requirements/Skills (if applicable)**		**Number of the teaching staff**	
		General	**Special**			**Staff**	**Lecturer**
Prof.	Muayad Sajit	Elec. Eng.	Embedded Systems			✓	

Asst. Prof.	Asaad Ali	Elec. Eng.	General Electrical			✓	
Lecturer	Firas Naji	Elec. Eng.	Materials			✓	
Asst. Lecturer	Ibtihal Razzaq	Elec. Eng.	General Electrical			✓	
Asst. Lecturer	Maha Akram	Elec. Eng.	General Electrical			✓	
Asst. Lecturer	Nebras Hazem	Elec. Eng.	General Electrical			✓	
Lecturer	Ali Khalaf	Elec. Eng.	General Electrical			✓	
Lecturer	Sameer Faleh	Mech. Eng.	Materials			✓	
Asst. Lecturer	Ahmed Abdul Amir	Elec. Eng.	General Electrical			✓	
Lecturer	Nour Sabah	Elec. Eng.	General Electrical			✓	
Asst. Prof.	Mohammed Abdul Khabeer	Mech. Eng.	Applied Electrical			✓	
Asst. Lecturer	Ahmed Sattar	Elec. Eng.	Informatics			✓	
Lecturer	Salem Mohammed	Elec. Eng.	Informatics			✓	
Asst. Lecturer	Nuha Adnan	Elec. Eng.	General Electrical			✓	
Asst. Lecturer	Zahraa Hassan	Elec. Eng.	General Electrical			✓	
Asst. prof.	Manaf Kazem	Elec. Eng.	Medical Devices			✓	

Asst. Lecturer	Humam Munim	Elec. Eng.	General Electrical			✓	
Asst. prof.	Faisal Diab	Elec. Eng.	Power			✓	
Asst. prof.	Amjad Yousef	Elec. Eng.	Communications			✓	
Lecturer	Riyadh Abd Rabbo	Elec. Eng.	Electronics			✓	
Asst. Lecturer	Safa Nouri	Elec. Eng.	General Electrical			✓	
Prof.	Hassan Fahd	Elec. Eng.	General Electrical			✓	
Lecturer	Nasreen Khalil	Elec. Eng.	General Electrical			✓	
Asst. Lecturer	Duaa Ali	Elec. Eng.	General Electrical			✓	
Asst. Prof.	Ismail Sharhan	Elec. Eng.	Communications			✓	
Lecturer	Bassem Khalaf	Elec. Eng.	Communications			✓	
Prof.	Haider Diab	Elec. Eng.	Communications			✓	
Asst. Prof.	Ali Asaad	Elec. Eng.	Artificial Intelligence			✓	
Asst. Prof.	Mohammed Abdul Redha	Elec. Eng.	Power			✓	
Prof.	Muayad Sajit	Elec. Eng.	Embedded Systems			✓	

Professional Development
Mentoring new faculty members
Urging new faculty members to work on developing the scientific curriculum and lecture delivery methods, and to deliver the scientific material to the recipient in as smooth a manner as possible.
Professional development of faculty members
Encouraging faculty to develop the scientific aspect by developing work in scientific laboratories to support this aspect among students is a scientific specialty.

12. Acceptance Criterion

The Department of Electrical Engineering at Wasit University accepts intermediate school graduates from the science stream who have passed the general examinations with a GPA of 80 or higher.

13. The most important sources of information about the program

- Curriculum and prescribed books from the Ministry of Higher Education and Scientific Research.
- Websites recommended by specialized professors.
- Non-curricular books recommended by specialized professors.

14. Program Development Plan

The Department of Electrical Engineering at Wasit University, in coordination with the Department Head, the Department Council, and the Department's Scientific Committee, has a plan to develop the program and provide the necessary requirements for this process, whether from a practical or theoretical perspective.

Program Skills Outline

Year/ Level	Course Code	Course Name	Basic or optional	Required program Learning outcomes											
				Knowledge				Skills				Ethics			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4
1st /	UoWEE12361	Human Rights and Democracy	Basic	+	+	+	+	+	+		+	+	+		+
	UoWEE12362	Digital Technology	Basic	+	+	+	+	+	+		+	+	+		+
	UoWEE12363	Mathematics	Basic	+	+	+	+	+	+		+	+	+	+	+
	UoWEE12364	Electrical Engineering Fundamentals	Basic	+	+	+	+	+	+	+	+	+	+	+	+
	UoWEE12365	Electronics Physics	Basic	+	+		+	+		+	+	+	+	+	+
	UoWEE12366	Computer Fundamentals and Programming	Basic	+	+		+	+		+	+	+	+	+	+
	UoWEE12367	Arabic Language	Basic	+	+		+	+		+	+	+		+	+
		Engineering Drawing and AutoCAD	Basic	+	+		+	+		+	+	+		+	+
	UoWEE12368	Mechanical Engineering	Basic	+	+	+		+	+	+	+	+		+	+
	UoWEE12369	English Language	Basic	+	+	+		+	+		+	+		+	+
2nd	UoWEE12370	Engineering Mathematics	Basic												
	UoWEE12371	Electromagnetic Fields	Basic	+	+	+		+	+		+	+	+	+	+
	UoWEE12372	Electrical Circuits	Basic	+	+	+		+	+		+	+	+	+	+
	UoWEE12373	Electronic Circuits	Basic	+	+			+	+		+	+	+	+	+
	UoWEE12374	Electrical Machines	Basic	+	+		+	+	+	+	+			+	+
	UoWEE12361	Computer Engineering	Basic	+	+		+		+	+	+			+	+
	UoWEE12362	English Language	Basic	+	+		+		+	+	+			+	+
	UoWEE12363	Embedded Systems (FPGA)	Basic	+	+	+	+		+	+	+	+	+	+	+
3rd	UoWEE12389	Numerical Analysis	Basic	+	+	+	+		+	+	+	+	+	+	+
	UoWEE12390	Electrical Machines	Basic	+			+	+	+	+	+			+	+

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	**To understand Principles of Electronic Circuits and Design of electronic circuits.**
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	**Recognize how Electronic Circuits work.**
Indicative Contents المحتويات الإرشادية	Part A - Basic Definitions [20 hrs] Part B – Electronic Circuits: [10 hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	48	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	3.2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	77	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5.1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

Module Evaluation تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Timing circuits: Multidirector
Week 2	Bi-stable, Monostable, and Astable circuits.
Week 3	The 555 Timer circuit design, Schmitt trigger circuit
Week 4	Shift Registers: principles, and applications.
Week 5	Sequence generators principles & design
Week 6	Analysis & Design of Finite State machines
Week 7	Synchronous state machine, steps of the design with its application
Week 8	A synchronous state machine, steps of the design with its application.
Week 9	Digital to Analogue & Analogue to Digital Converters
Week 10	Types of D/A converters (Resistive network, Ladder, MDAC).
Week 11	Types of A/D converters - Voltage to Frequency converters,
Week 12	Voltage to Time converters. and their Applications
Week 13	Sample & Hold circuit
Week 14	Multiplexer
Week 15	Errors. Review
Week 16	Preparatory week before the final Exam

Grading Scheme

مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (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 (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

Note: 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.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Advanced Electronics II**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**UoW12388**				
ECTS Credits	**7**				
SWL (hr/sem)	**175**				
Module Level	1		**Semester of Delivery**	1	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader	Name		**e-mail**	E-mail	
Module Leader's Acad. Title	Professor		**Module Leader's Qualification**	Ph.D.	
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023		**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	
Module Aims أهداف المادة الدراسية	1. To understand Principles of Electronic Circuits
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Recognize how Electronic Circuits work.
Indicative Contents المحتويات الإرشادية	Part A - Basic Definitions [20 hrs] Part B – Electronic Circuits : [10 hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	37	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	30	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	75		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Logic Families
Week 2	General characteristics,
Week 3	Different Types of logic circuits families
Week 4	interface between TTL & CMOS circuits.
Week 5	Semiconductor Memories
Week 6	Memories ROM,
Week 7	EPROM,
Week 8	EEPROM, RAM.
Week 9	PLA, some types of array circuits.
Week 10	Hardware design of microcomputers and microprocessors.
Week 11	Hardware design of microcomputers and microprocessors.
Week 12	Hardware design of microcomputers and microprocessors.
Week 13	Hardware design of microcomputers and microprocessors.
Week 14	Hardware design of microcomputers and microprocessors.
Week 15	Review
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Lab. **Material Covered**
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	
Week 8	

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts		Yes
Recommended Texts		No
Websites	https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering	

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A** - Excellent	امتياز	90 - 100	Outstanding Performance
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Fail Group (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

Note: 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.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Communications Theories I**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**UoW12372**				
ECTS Credits	**7**				
SWL (hr/sem)	**175**				
Module Level	1		**Semester of Delivery**	1	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader	Name		**e-mail**	E-mail	
Module Leader's Acad. Title	Professor		**Module Leader's Qualification**	Ph.D.	
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023		**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	
Module Aims أهداف المادة الدراسية	1. To understand Principles of Communications Theories
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Recognize how Communications systems work.
Indicative Contents المحتويات الإرشادية	Part A - Communications sysyems . [20 hrs] Part B – Communications Theories . [10 hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	37	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	30	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	75		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction of Communications Systems,
Week 2	Fourier Series and its applications.
Week 3	Communication system elements
Week 4	(Signal analysis):
Week 5	Signal classification of periodic and non-periodic signals
Week 6	Fourier series and Fourier transform
Week 7	classification of systems,
Week 8	power spectral density and correlation.
Week 9	Noise
Week 10	Types, power calculation, thermal white Gaussian noise (AWGN),
Week 11	band- limited noise (base band and band pass) noise through linear system.
Week 12	linear modulation (AM): AM/DSB- SC, AM/DSB- LC, AM/SSB- SC,
Week 13	AM/VSB, frequency division multiplexing (FDM),
Week 14	commercial receivers (TRF and super heterodyne), and noise in AM systems.
Week 15	Review
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	1. Harmonic Analysis of a Square Wave
Week 2	2. Harmonic Analysis of Modulated Waveform
Week 3	3. Single-Side Band (SSB)
Week 4	4. Amplitude Modulation With & Without Carrier Suppression
Week 5	5. Amplitude Modulation and Demodulation
Week 6	6. Frequency modulation and Demodulation
Week 7	7. Sample and Hold
Week 8	8. Pulse Code Modulation
Week 9	9. Delta & Delta - sigma Modulation

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts		Yes
Recommended Texts		No
Websites	https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering	

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (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 (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

Note: 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.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Communications Theories II**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**UoW12378**				
ECTS Credits	**7**				
SWL (hr/sem)	**175**				
Module Level	1		**Semester of Delivery**	1	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader	Name		**e-mail**	E-mail	
Module Leader's Acad. Title	Professor		**Module Leader's Qualification**	Ph.D.	
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023		**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	
Module Aims أهداف المادة الدراسية	1. To understand Principles of Communications Theories
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Recognize how Communications systems work.
Indicative Contents المحتويات الإرشادية	Part A - Communications sysyems . [20 hrs] Part B – Communications Theories . [10 hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	37	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	30	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	75		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Angle modulation
Week 2	NBFM, NBPM, WBPM, WBPM, noise in angle modulation system.
Week 3	Digital communications
Week 4	Nyquist sampling theorem, pulse modulation PAM. PWM, PPM,
Week 5	time division multiplexing (TDM),
Week 6	noise in pulse modulation,
Week 7	pulse code modulation PCM/TDM. Delta modulation (DM),
Week 8	quantization noise in PCM and DM.
Week 9	signaling format (unipolar, bipolar& split- phase Manchester)
Week 10	sinusoidal digital modulation ASK, PSK, FSK and M-ary.
Week 11	Noise in ASK, PSK FSK (error probability using coherent matched filter and non- coherent detection).
Week 12	Transmission lines
Week 13	Equivalent circuit, characteristic impedance, phase velocity, reflection coefficient, standing waves, quarter- wave transformer,
Week 14	Smith chart calculation and stub matching.
Week 15	Review
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	1. Harmonic Analysis of a Square Wave
Week 2	2. Harmonic Analysis of Modulated Waveform
Week 3	3. Single-Side Band (SSB)
Week 4	4. Amplitude Modulation With & Without Carrier Suppression
Week 5	5. Amplitude Modulation and Demodulation
Week 6	6. Frequency modulation and Demodulation
Week 7	7. Sample and Hold
Week 8	8. Pulse Code Modulation
Week 9	9. Delta & Delta - sigma Modulation

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts		Yes
Recommended Texts		No
Websites	https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering	

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (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 (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

Note: 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.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Computer Network I**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**UoW12386**				
ECTS Credits	**7**				
SWL (hr/sem)	**175**				
Module Level	1		**Semester of Delivery**	1	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader	Name		**e-mail**	E-mail	
Module Leader's Acad. Title	Professor		**Module Leader's Qualification**	Ph.D.	
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023		**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	
Module Aims أهداف المادة الدراسية	1. To understand Principles of Computer Network II
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Recognize how Computer Network work.
Indicative Contents المحتويات الإرشادية	Part A - Basic Definitions [20 hrs] Part B – networks : [10 hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	37	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	30	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	75		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Networking Fundamentals
Week 2	Bandwidth, Digital Versus Analog Bandwidth, Bandwidth Measurement,
Week 3	Bandwidth Limitation, Bandwidth Throughput, and Data Transfer Calculations.
Week 4	Data Network, Network Devices, Network Topology, Local Area Network (LAN),
Week 5	Wide Area Network (WAN), Network Interconnection, Peer-to-Peer Network, and Client/Server.
Week 6	Networking Models
Week 7	Using layers to describe data communication, OSI model, OSI layers,
Week 8	The Application Layer, The Presentation Layer, The Session Layer,
Week 9	The Transport Layer, The Network Layer, The Data Link Layer, and The Physical Layer.
Week 10	Encapsulation, Peer Layer Communications, TCP/IP Model, and Data Movement Through the Protocol Stack.
Week 11	Network Media
Week 12	Introduction, Copper Cable, Cable Specification, Coaxial Cables, STP Cable,
Week 13	Screened UTP (ScTP), UTP Cable, and UTP Implementation.
Week 14	Fiber-Optic, Single-Mode and Multi-Mode Fiber, Other Optical Components, and Wireless Media
Week 15	MAC Address: Address details, Individual Address Block, and Printed Format.
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Lab. **Material Covered**
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	
Week 8	

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts		Yes
Recommended Texts		No
Websites	https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering	

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (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 (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

Note: 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.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Computer Network II**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**UoW12392**				
ECTS Credits	**7**				
SWL (hr/sem)	**175**				
Module Level		1	**Semester of Delivery**		1
Administering Department		Type Dept. Code	**College**	Type College Code	
Module Leader	Name		**e-mail**	E-mail	
Module Leader's Acad. Title		Professor	**Module Leader's Qualification**		Ph.D.
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name		Name	**e-mail**	E-mail	
Scientific Committee Approval Date		01/06/2023	**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	
Module Aims أهداف المادة الدراسية	1. To understand Principles of Computer Network II
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Recognize how Computer Network work.
Indicative Contents المحتويات الإرشادية	Part A - Basic Definitions [20 hrs] Part B – networks : [10 hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	37	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	30	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	75		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Network Layer: The IP (Internet Protocol) Addresses, Assignment of IP Addresses,
Week 2	IP Address Format, IP Address Class Identification, Class A Address, Class B Address, Class C Address
Week 3	Broadcast Address, Subnets, Network and Sub Network Masks, and More Sub-netting Masks Ways for Class B.
Week 4	Public and Private IP Addresses, IPv4 Versus IPv6, Obtaining an Internet Address,
Week 5	Static Assignment of an IP Address, RARP IP Address Assignment, BOOTP IP Address Assignment,
Week 6	DHCP IP Address Management, Problems in Address Resolution, and Address Resolution Protocol (ARP).
Week 7	Routing, Routing Information Protocol (RIP), Interior Gateway Routing Protocols (IGRP), and Open Shortest Path First (OSPF).
Week 8	Transport Layer
Week 9	The Purpose of the Transport Layer, Duties (Primary Functions) of the Transport Layer,
Week 10	Transport Layer Connection, The OSI Transport Layer Protocol, The TCP/IP Transport Layer Protocol, and Port Addressing.
Week 11	Summery, Transport Layer Functions, Application and Operation of TCP Mechanisms, Managing TCP Sessions, Confirming Receipt of Segments,
Week 12	Flow Control, Managing TCP Sessions, and UDP Protocol. Network Applications: Using The Internet,

Week 13	**Understanding the World Wide Web, Recognizing Web Page Elements, Using the Uniform Resource Locator (URL), Identifying Other Elements,**
Week 14	**Understanding Viruses, Performing a Data Backup,**
Week 15	**The Electronic Mail, Internal Mail, Internet E-mail, Domain Name Format, Internet Server Types, Looking at E-mail Components, and Using E-mail Options.**
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Lab. **Material Covered**
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	
Week 8	

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts		Yes
Recommended Texts		No
Websites	https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering	

Grading Scheme

مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A** - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
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MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Control Systems I**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**UoW12383**				
ECTS Credits	**7**				
SWL (hr/sem)	**175**				
Module Level	1		**Semester of Delivery**	1	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader	Name		**e-mail**	E-mail	
Module Leader's Acad. Title	Professor		**Module Leader's Qualification**	Ph.D.	
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023		**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	
Module Aims أهداف المادة الدراسية	1. To understand Principles of Computer Network II
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Recognize how Computer Network work.
Indicative Contents المحتويات الإرشادية	Part A - Basic Definitions [20 hrs] Part B – networks : [10 hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	37	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	30	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	75		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Basic definition
Week 2	Transfer functions: Transfer functions of electrical system, mechanical system& Servo systems.
Week 3	Block diagram algebra
Week 4	Signal flow graph & Mason 's rule.
Week 5	Time domain response:
Week 6	Typical test signals & types of the systems,
Week 7	the steady-state error due to step. Ramp& parabolic inputs.
Week 8	Transient response of second order system: Stability of control system, Routh criterion, root locus.
Week 9	Frequency response:
Week 10	Compensation:
Week 11	Introduction to Nyquist plot, Nyquist plot, phase margin, gain margin,
Week 12	Introduction to Bode diagram, bode diagram.
Week 13	Lead, lag,
Week 14	lead- lag.
Week 15	Review
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Lab. **Material Covered**
Week 1	1. D.C Servo Motor Characteristic
Week 2	2. Characteristic of Operation Amplifier.
Week 3	3. Armature Controlled Speed Control System With Constant Gain.
Week 4	4. Armature Controlled Speed Control System With Variable Gain.
Week 5	5. The Characteristics of Pre-Amplifier
Week 6	6. Transient Response of Simple Speed Control System.
Week 7	7. Simple Position Control.
Week 8	8. The General Characteristic of Synchronous.

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts		Yes
Recommended Texts		No
Websites	https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering	

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (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 (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

Note: 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.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Control Systems II**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**UoW12389**				
ECTS Credits	**7**				
SWL (hr/sem)	**175**				
Module Level	1		**Semester of Delivery**	1	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader	Name		**e-mail**	E-mail	
Module Leader's Acad. Title	Professor		**Module Leader's Qualification**	Ph.D.	
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023		**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	
Module Aims أهداف المادة الدراسية	1. To understand Principles of Computer Network II
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Recognize how Computer Network work.
Indicative Contents المحتويات الإرشادية	Part A - Basic Definitions [20 hrs] Part B – networks : [10 hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	37	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	30	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	75		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Three- term controller
Week 2	Proportional-Integral-Derivative (PID) controller
Week 3	Proportional-Integral-Derivative (PID) controller
Week 4	Proportional-Integral-Derivative (PID) controller
Week 5	Review
Week 6	State space analysis
Week 7	State equation for dynamic system (electrical system) solving state equations.
Week 8	State equation for dynamic system (electrical system) solving state equations.
Week 9	Analogue computer simulation
Week 10	Analogue computer simulation
Week 11	Nonlinear control system
Week 12	Review
Week 13	Describing function approach
Week 14	Describing function approach
Week 15	Review
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Lab. **Material Covered**
Week 1	1. D.C Servo Motor Characteristic
Week 2	2. Characteristic of Operation Amplifier.
Week 3	3. Armature Controlled Speed Control System With Constant Gain.
Week 4	4. Armature Controlled Speed Control System With Variable Gain.
Week 5	5. The Characteristics of Pre-Amplifier
Week 6	6. Transient Response of Simple Speed Control System.
Week 7	7. Simple Position Control.
Week 8	8. The General Characteristic of Synchronous.

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts		Yes
Recommended Texts		No
Websites	https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering	

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (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 (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

Note: 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.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Digital Communications I**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**UoW12384**				
ECTS Credits	**7**				
SWL (hr/sem)	**175**				
Module Level	1		**Semester of Delivery**	1	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader	Name		**e-mail**	E-mail	
Module Leader's Acad. Title	Professor		**Module Leader's Qualification**	Ph.D.	
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023		**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	
Module Aims أهداف المادة الدراسية	To understand Principles of Communications Theories
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Recognize how Communications systems work.
Indicative Contents المحتويات الإرشادية	Part A - Communications sysyems . [20 hrs] Part B – Communications Theories . [10 hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	37	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	30	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	75		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	1-Information Theory
Week 2	Self-information, source entropy and source entropy rate, mutual information, channel model BSC and TSC.
Week 3	joint and conditional entropies, capacity and efficiency of symmetric and non- symmetric discrete channels,
Week 4	Optimum threshold setting.
Week 5	Capacity of continuous channel (Shannon equation).
Week 6	Conding of Discrete Sources
Week 7	Efficiency and redundancy of a code, fixed length codes,
Week 8	variable length codes, Fano code, Huffman code,
Week 9	Shannon code, Non-binary source coding, source extension for higher coding efficiency.
Week 10	Channal Coding
Week 11	Even and odd parity error detecting codes, probe of undetected errors, error, correcting codes, linear block codes (generator and parity check matrices),
Week 12	hamming distance, hamming weight Hamming bound and error correction capabilities.
Week 13	Decoding of linear block codes (syndromes). Cyclic codes: generator polynomial, nonsystematic code (multiplication),
Week 14	systematic cyclic code (division) and realization logic circuit for encoding and decoding of systematic cyclic codes.

Week 15	**Convolutional codes, encoding logic (generation), tree diagram, state diagram and trellis diagram of convolutional code. Decoding of convolutional codes using Viterbi algorithm**
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	
Week 8	
Week 9	

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts		Yes
Recommended Texts		No
Websites	https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering	

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**

Success Group (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 (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

Note: 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.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Digital Communications II**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**UoW12390**				
ECTS Credits	**7**				
SWL (hr/sem)	**175**				
Module Level		1	**Semester of Delivery**		1
Administering Department		Type Dept. Code	**College**	Type College Code	
Module Leader	Name		**e-mail**	E-mail	
Module Leader's Acad. Title		Professor	**Module Leader's Qualification**		Ph.D.
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name		Name	**e-mail**	E-mail	
Scientific Committee Approval Date		01/06/2023	**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	
Module Aims أهداف المادة الدراسية	To understand Principles of Communications Theories
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Recognize how Communications systems work.
Indicative Contents المحتويات الإرشادية	Part A - Communications sysyems . [20 hrs] Part B – Communications Theories . [10 hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	37	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	30	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	75		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction to Digital Signal Processing (DSP)
Week 2	Block diagram of a general (DSP) system. Basic concept
Week 3	linear, time variant, stable and casual discrete systems, Input/out relations in Z-domains.
Week 4	Discrete convolution techniques: tabular method, Z- transforms method,
Week 5	matrix method, add over method. Deconvolution methods:
Week 6	iterative method and Z- transform method. Frequency response of discrete system.
Week 7	Discrete Fourier transform (DFT) fast Fourier transform (FFT) decimation in time
Week 8	Digital Filter Design:
Week 9	Review of analogue filter design (Butterworth and Chebyshe filter). Classification and realization of discrete systems (FIR and IIR systems)
Week 10	IIR filter design using analogue filters and the bilinear transformation,
Week 11	filter transformations for IIR (LPF/ LPF, LPF/HPF, LPF/ BPF, LPF/ BSF).
Week 12	FIR filter Design using windows: rectangular, Bartlett, Hanning, Hamming and Blackman windows, LPF, HPF, BPF, and BSF FIR filter.
Week 13	Selected Communication Systems: Descriptive lectures on: a) Optical communication system.
Week 14	b) Satellite communication system. c) Spread spectrum systems (Direct Sequence And Frequency Hopping) PN codes and CDMA
Week 15	Review
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	
Week 8	
Week 9	

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts		Yes
Recommended Texts		No
Websites	https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering	

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (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 (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

Note: 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.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Electric Power Systems I**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**UoW12374**				
ECTS Credits	**7**				
SWL (hr/sem)	**175**				
Module Level		1	**Semester of Delivery**		1
Administering Department		Type Dept. Code	**College**	Type College Code	
Module Leader	Name		**e-mail**	E-mail	
Module Leader's Acad. Title		Professor	**Module Leader's Qualification**		Ph.D.
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name		Name	**e-mail**	E-mail	
Scientific Committee Approval Date		01/06/2023	**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	
Module Aims أهداف المادة الدراسية	1. To understand Electric Power Systems
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Recognize how Electric Power Systems work.
Indicative Contents المحتويات الإرشادية	Part A - Electric Power [20 hrs] Part B – Electric Power Systems. [10 hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	37	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	30	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	75		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Sources of electrical energy
Week 2	Structure of power system and elements,
Week 3	power stations, steam, hydro, gas, turbines, nuclear power and development of electric power,
Week 4	load curve, diversity factor , load factor,….etc .
Week 5	Economic aspects of power system planning:
Week 6	Cost evaluation of power system projects, economic dispatch of generation station, selection of generation units, power factor improvement.
Week 7	Mechanical design of transmission line:
Week 8	Calculation of sag, number of towers and insulators,
Week 9	design of suspension insulators, voltage distribution and efficiency of starting insulators.
Week 10	Transmission line parameters:
Week 11	Line resistance, line inductance,
Week 12	single- phase line with multi-conductors,
Week 13	bundling, line inductance of three- phase transmission systems,
Week 14	single-phase and three- phase capacitance.
Week 15	Electrical characteristics of an overhead transmission lines: 6hrs. Short, medium and long transmission lines, line voltage regulation and compensation, power circle diagrams.
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	
Week 8	

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts		Yes
Recommended Texts		No
Websites	https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering	

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (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 (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

Note: 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.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Electric Power Systems II**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**UoW12380**				
ECTS Credits	**7**				
SWL (hr/sem)	**175**				
Module Level	1		**Semester of Delivery**	1	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader	Name		**e-mail**	E-mail	
Module Leader's Acad. Title	Professor		**Module Leader's Qualification**	Ph.D.	
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023		**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	
Module Aims أهداف المادة الدراسية	1. To understand Electric Power Systems
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Recognize how Electric Power Systems work.
Indicative Contents المحتويات الإرشادية	Part A - Electric Power [20 hrs] Part B – Electric Power Systems. [10 hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	37	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	30	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	75		

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

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Corona
Week 2	Phenomenon, disruptive critical voltage,
Week 3	visual critical voltage,
Week 4	corona losses, factor and conditions affecting corona losses.
Week 5	Underground cables
Week 6	Advantages and disadvantages,
Week 7	types of cables, insulating resistance and capacitance,
Week 8	electrical stress, inter-sheets capacitance grading in three- core cables,
Week 9	thermal characteristics, power factor in cables,
Week 10	capacitance in three- core cables,
Week 11	thermal characteristics.
Week 12	Distribution
Week 13	Different types of distributors AC & DC distributor fed from one, two ends.
Week 14	Different types of distributors AC & DC distributor fed from one, two ends.
Week 15	Review
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	
Week 8	

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts		Yes
Recommended Texts		No
Websites	https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering	

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (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 (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

Note: 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.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Electrical Machines III**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**UoW12370**				
ECTS Credits	**7**				
SWL (hr/sem)	**175**				
Module Level		1	**Semester of Delivery**		1
Administering Department		Type Dept. Code	**College**	Type College Code	
Module Leader	Name		**e-mail**	E-mail	
Module Leader's Acad. Title		Professor	**Module Leader's Qualification**		Ph.D.
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name		Name	**e-mail**	E-mail	
Scientific Committee Approval Date		01/06/2023	**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	
Module Aims أهداف المادة الدراسية	To understand Principles of Electrical Machines
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Recognize how Electrical Machines work.
Indicative Contents المحتويات الإرشادية	Part A - D.C Machine [20 hrs] Part B – Motors : [10 hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	37	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	30	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	75		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Synchronous machine
Week 2	Construction
Week 3	salient and non-salient pole types
Week 4	E.M.F. equation,
Week 5	windings, chording and distribution factors
Week 6	armature reaction
Week 7	phasor diagram for salient and non- salient pole generators
Week 8	parallel operation of Synchronous generators
Week 9	Performance of generator connected to infinite- bus
Week 10	Synchronous motors
Week 11	Synchronous motor phasor diagram and equivalent circuit
Week 12	power- factor control, V and V-curves,
Week 13	torque angle characteristics of Synchronous motors,
Week 14	Synchronous motor starting, hunting of Synchronous machines.
Week 15	Review
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Lab. **Material Covered**
Week 1	**To Determine the Efficiency of Three Phase Transformer by Open Delta Test**
Week 2	**Separation of a Single-Phase Transformer Core Losses**
Week 3	**Parallel Operation of Two Three Phase Transformers**
Week 4	**To Study the Effect of External Rotor Resistance on The Performance of Three Phase Wound Rotor Induction Motor**
Week 5	**Determination of Performance Characteristics of a three Phase Squirrel Cage Induction Motor By Load Test**
Week 6	**Performance Determination of a Three Phase Induction Motor from Circle Diagram**
Week 7	**To Control the Speed of Three Phase Induction Motor by Stator Voltage Variation and Variable Frequency Supply**
Week 8	

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts		Yes
Recommended Texts		No
Websites	https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering	

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (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 (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

Note: 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.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Electrical Machines IV**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**UoW12376**				
ECTS Credits	**7**				
SWL (hr/sem)	**175**				
Module Level	1		**Semester of Delivery**	1	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader	Name		**e-mail**	E-mail	
Module Leader's Acad. Title	Professor		**Module Leader's Qualification**	Ph.D.	
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023		**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	
Module Aims أهداف المادة الدراسية	To understand Principles of Electrical Machines
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Recognize how Electrical Machines work.
Indicative Contents المحتويات الإرشادية	Part A - D.C Machine [20 hrs] Part B – Motors : [10 hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	37	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	30	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	75		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Single Phase Induction Motor (IM)
Week 2	Analysis of single-phase IM using double revolving field theory.
Week 3	Characteristics & winding of single-phase IM.
Week 4	Analysis of combined winding performance using revolving field theory.
Week 5	Symmetrical components Analysis. MMF components & components elimination.
Week 6	General equivalent circuit & particular cases. Two Phase Servo Motor
Week 7	Shade Pole Single Phase Motor and AC Series motor,
Week 8	Principles of operation, Construction, Application problems.
Week 9	Shaded Pole Motors:
Week 10	Construction, Principle of operation, speed reversal & speed changing.
Week 11	Universal & Single- Phase AC Series Motors
Week 12	Principle, torque & speed equations. Small universal & large AC motors speed changing. Applications.
Week 13	Single Phase Repulsion Motors: Repulsion Principle& repulsion motors. Repulsion start LM. Repulsion IM. Stepper Motor (SM)
Week 14	Permanent magnet SM, variable reluctance SM. Properties of SM, characteristics. Step angle & speed.
Week 15	Review
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Lab. **Material Covered**
Week 1	D.C Servo Motor Characteristic
Week 2	Armature Controlled Speed Control System With Constant Gain.
Week 3	Armature Controlled Speed Control System With Variable Gain.
Week 4	The General Characteristic of Synchronous.
Week 5	Measurement of Transformer Output.
Week 6	
Week 7	
Week 8	

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts		Yes
Recommended Texts		No
Websites	https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering	

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (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	**FX** – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded

(0 – 49)	**F –** Fail	راسب	(0-44)	Considerable amount of work required

Note: 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.

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Electrical Power System Analysis**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☐ **Lecture** ☒ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**UoW12385**				
ECTS Credits	**7**				
SWL (hr/sem)	**175**				
Module Level	1		**Semester of Delivery**	1	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader	Name		**e-mail**	E-mail	
Module Leader's Acad. Title	Professor		**Module Leader's Qualification**	Ph.D.	
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	01/06/2023		**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	
Module Aims أهداف المادة الدراسية	1. To understand Electric Power Systems
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Recognize how Electric Power Systems work.
Indicative Contents المحتويات الإرشادية	Part A - Electric Power [20 hrs] Part B – Electric Power Systems. [10 hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	37	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	30	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	75		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Per unit system: Per phase Analysis, Transformer modeling, Normal Systems, Per Unit normalization, Per Unit Three-Phase Quantities,
Week 2	Change of Base, Per Unit Analysis of normal Systems.
Week 3	Network Matrices Solution by Nodal Equations, Bus Admittance Matrix
Week 4	Symnetrical Fault calculations: Transients in RL Series Circuits, Internal Voltages of loaded Machines Under Transient Conditions,
Week 5	Fault Calculation by Thevenin's Theorem.
Week 6	Symnetrical components, The Symmetrical components of Unsymmetrical Phasors, Power in Terms of Symmetrical components, Sequence Impedances and sequence networks,
Week 7	Generator Models for Sequence networks, Transformer Models for sequence networks, Sequence Representation of Transmission lines.
Week 8	Power Flow Analysis Power flow equations, The power flow problem, Solutions by Gauss-Seidel Iterative Method
Week 9	Solutions by Newton-Raphson Iterative Method, Decoupled power flow method
Week 10	Power System Stability: The stability problem, Energy balance, Rotor dynamics and the swing equation, linearization of the Swing Equation,
Week 11	The Power angle equation, Equal- area criterion of stability.
Week 12	Power System Protection: Protection of Radial systems, Zones of protection,
Week 13	Over current Relays, protection with Two sources, Impedance (Distance) Relays, Differential Protection of Generator, Differential Protection of Transformer,

Week 14	**Differential Protection of Busses and Line.**
Week 15	**Review**
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	
Week 8	

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts		Yes
Recommended Texts		No
Websites	https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering	

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group	**A -** Excellent	امتياز	90 - 100	Outstanding Performance

(50 - 100)	**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 (0 – 49)	**FX –** Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
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Note: 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.