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 Basrah

Faculty/Institute: College of engineering

Scientific Department: Electrical Engineering Department

Academic or Professional Program Name: Bachelor's degree (B.Sc.) – Electrical Engineering

Final Certificate Name: B.Sc. in Electrical Engineering

Academic System: Semester System

Description Preparation Date: 8/2025

File Completion Date: 9/2025

Signature:

Head of Department Name:

Date:

Signature:

Scientific Associate Name:

Date:

The file is checked by:

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department:

Date:

Signature:

1. Program Vision

Department of Electrical Engineering looks forward to preparing specialized engineers in various fields of electrical engineering that are armed with a sober scientific, intellectual engineering aspect, and enhanced by practical aspects by linking theoretical curricula with the requirements of the local and regional market . The department also aspires to keep pace with the progress and continuous development in the disciplines of electrical engineering sciences. The department also seeks to localize advanced technology in the industrial sector and harness the outputs of scientific research for it in a way that is compatible with the transition to clean energy and achieve economics of costs and resources. All of this is reflected to achieve the vision of the College of Engineering in the integration of the various engineering disciplines.

2. Program Mission

The electrical engineering department was established in 1964 as the second academic department for the establishment of the College of Engineering at the University of Basrah. It was necessary to establish a department for meeting the emerging need for skilled electrical engineers and to keep abreast of the scientific and technical progress in the world. Since its inauguration, the electrical engineering department adopted a well academic program equal to the electrical engineering departments worldwide by focusing on both theoretical and practical integrated aspects of the electrical engineering fields of study. The undergraduate study at the department is four years in length; from the moment of receiving the freshman year students whose average grades qualify them to join it up till the

graduation of the senior year students where they get their Bachelor of Science degree in electrical engineering.

3. Program Objectives

The curriculum requirements specify subject areas appropriate to Electrical Engineering (EE). The professional component must include:

1) A combination of mathematics and basic sciences general education component (some with experimental experience) appropriate to the discipline.

2) Electrical Engineering topics, consisting of electrical engineering sciences and engineering design appropriate to the electrical utilization study.

3) A general education component that complements the technical content of the curriculum and is consistent with the program and institution objectives..

4. Program Accreditation

5. Other external influences

6. Program Structure

Program Structure	Number of Courses	Credit hours	Percentage	Reviews*
Institution Requirements	7	13	9%	
College Requirements	12	29	22%	
Department Requirements	36	135	69%	
Summer Training				

Other				

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

7. Program Description

Republic of Iraq - Ministry of Higher Education and Scientific Research
University of Basrah
Bachelor's degree in Electrical Engineering (First cycle)
Four years (Eight semesters) - 240 ECTS credits - 1 ECTS = 25 hr
Program Curriculum (2023 - 2024)

جمهورية العراق - وزارة التعليم العالي والبحث العلمي
جامعة البصرة
بكالوريوس في الهندسة الكهربائية (الدورة الأولى)
أربع سنوات (ثمانية فصول دراسية) - ٢٤٠ وحدة اوربية - كل وحدة اوربية = ٢٥ ساعة
المنهاج الدراسي للعام ٢٠٢٣-٢٠٢٤

Level	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w) CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semn (hr/w)	Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type
UGI	One	1	UOB101	English Language	اللغة الإنكليزية	English	2						3	33	17	50	2.00	B
		2	UOB103	Computer Programming-I	برمجة الحاسوب-١	English	2		2				3	63	12	75	3.00	B
		3	E101	Engineering Drawing	الرسم الهندسي	English				3			3	48	52	100	4.00	B
		4	E102	Mathematics-I	الرياضيات-١	English	3				1		3	63	112	175	7.00	B
		5	EE101	Basic of Electrical Engineering- I	أسس الهندسة الكهربائية-١	English	3		3		1		3	108	117	225	9.00	C
		6	E104	Mechanical Engineering	الميكانيك الهندسي	English	2				1		3	48	77	125	5.00	B
						Total	12	0	5	3	3	0	18	363	387	750	30.00	
UGI	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w) CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semn (hr/w)	Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type
	Two	1	UOB102	Human Rights and Democracy	الحرية وحقوق الانسان	Arabic	2						3	33	17	50	2.00	B
		2	E106	Computer Programming-II	برمجة الحاسوب-2	English	2		2				3	63	12	75	3.00	B
		3	EE103	Digital Logic	المنطق الرقمي	English	2		2				3	63	37	100	4.00	C
		4	E103	Mathematics-II	الرياضيات-٢	English	3				1		3	63	112	175	7.00	B
		5	EE102	Basic of Electrical Engineering-II	أسس الهندسة الكهربائية-٢	English	3		3		1		3	108	117	225	9.00	C
		6	E105	Physics	الفيزياء	English	2				1		3	48	77	125	5.00	B
						Total	14	0	7	0	3	0	18	378	372	750	30.00	
Level	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w) CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semn (hr/w)	Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type
UGII	Three	1	E201	Comprehensive Vector and Multi	المتجهات الشاملة و حساب التفا	English	3				1		3	80	70	150	6.00	B
		2	EE201	Electronic Circuits	الدوائر الالكترونية	English	4				1		3	125	100	225	9.00	C
		3	EE202	Electrical Circuits Analysis	تحليل الدوائر الكهربائية	English	3		3		1		3	78	47	125	5.00	C
		4	EE203	Microprocessors and Microcontr	المعالجات والمتحكمات الدقيقة	English	2		2		1		3	78	47	125	5.00	C
		5	EE204	DC Machines	مكائن التيار المستمر	English	3		3		1		3	78	47	125	5.00	C
						Total	45	0	22	0	5	0	48	439	311	750	30.00	
UGII	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w) CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semn (hr/w)	Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type
	Four	1	E202	Mathematical Analysis and Tran	تقنيات التحليل والتحويل الرياض	English	3				1		3	80	45	125	5.00	B
		2	EE205	Introduction to Electrical Network	مقدمة في الشبكات الكهربائية	English	3		3		1		3	108	67	175	7.00	C
		3	EE206	Electromagnetic Fields	المجالات الكهرومغناطيسية	English	4				1		3	125	50	175	7.00	C
		4	EE207	Electrical Transformers	المحولات الكهربائية	English	2		3		1		3	80	45	125	5.00	C
		5	UOB105	Baath Party crimes	جرائم حزب البعث البائد	Arabic	2						3	33	17	50	2.00	B
		6	UOB106	English Language II	اللغة الإنكليزية II	English	2						3	33	17	50	2.00	B
		7	UOB107	Arabic Language	اللغة العربية	Arabic	2						3	33	17	50	2.00	B
						Total	18	0	6	0	4	0	21	492	258	750	30.00	

3rd Year / Course-1			
No.	**Module Name in English**	**Module Name in Arabic**	**Units**
1	**Engineering Analysis**	التحليلات الهندسية	3
2	**Induction Machines**	المكائن الحثية	2
3	**Linear Systems Theory**	نظرية النظم الخطية	3
4	**Communication Theory**	نظرية الاتصالات	3
5	**Power Systems**	أنظمة القدرة	3
6	**Electromagnetic Fields**	المجالات	3

		الكهرومغناطيسية	
7	Laboratory 5	مختبرات 5	2
Total units			19
3rd Year / Course-2			
No.	Module Name in English	Module Name in Arabic	Units
1	Engineering Numerical Methods	الطرق العددية التطبيقية	3
2	Synchronous Machines	المكائن التزامنية	2
3	Linear Control Systems	منظومات التحكم الخطية	3
4	Digital Signals and Noise	الإشارات الرقمية والضوضاء	3
5	Analog and Digital Electronics	الالكترونيات التناظرية والرقمية	3
6	Digital Signal Processing	معالجة الإشارات الرقمية	3
7	Laboratory 6	مختبرات 6	2
Total units			19
4th Year Communication / Course-1			
No.	Module Name in English	Module Name in Arabic	Units
1	Engineering Economics	اقتصاديات الهندسة	2
2	Digital Communication I	اتصالات رقمية I	3
3	Microwaves Engineering I	هندسة المايكرويف I	3
4	Antennas & Propagation I	هوائيات وانتشار I	3
5	Optical Communications	الاتصالات الضوئية	2
6	Programmable Logic Controller and Automation	اتمتة صناعية و PLC	2
7	Laboratory 7	مختبرات 7	2
8	Engineering Project 1	مشروع هندسي 1	2
Total units			19
4th Year Communication / Course-2			
No.	Module Name in English	Module Name in Arabic	Units
1	Project Management	ادارة مشاريع	2
2	Digital Communication II	اتصالات رقمية II	3
3	Microwaves Engineering II	هندسة المايكرويف II	3
4	Antennas & Propagation II	هوائيات وانتشار II	3
5	Optical Electronics	الالكترونيات الضوئية	2
6	Information Transmission and Coding Theory	نظرية نقل المعلومات والتشفير	2
7	Laboratory 8	مختبرات 8	2
8	Engineering Project 2	مشروع هندسي 2	2
Total units			19
4th Year Control / Course-1			

No.	Module Name in English	Module Name in Arabic	Units
1	**Engineering Economics**	اقتصاديات الهندسة	2
2	**Smart Controllers**	المتحكمات الذكية	3
3	**Modern Control Theory**	نظرية التحكم الحديث	3
4	**Principles of Robotics**	اساسيات الروبوتات	3
5	**Electrical Design & Sustainability**	التصميم الكهربائي والاستدامة	2
6	**Adaptive Control and System Definition**	تحكم متكيف وتعريف النظام	2
7	**Laboratory** 7	مختبرات 7	2
8	**Engineering Project** 1	مشروع هندسي 1	2
Total units			**19**
4th Year Control / Course-2			
No.	**Module Name in English**	**Module Name in Arabic**	**Units**
1	**Project Management**	ادارة مشاريع	2
2	**Industrial Automation**	اتمتة صناعية	3
3	**Process control**	تحكم العمليات	3
4	**Soft Computing Techniques**	تقنيات الحوسبة الناعمة	3
5	**Digital Control Systems**	أنظمة التحكم الرقمي	2
6	**Introduction to Nanotechnology**	مقدمة في تقنية النانو	2
7	**Laboratory 8**	مختبرات 8	2
8	**Engineering Project 2**	مشروع هندسي 2	2
Total units			**19**
4th Year Power / Course-1			
No.	**Module Name in English**	**Module Name in Arabic**	**Units**
1	**Engineering Economics**	اقتصاديات الهندسة	2
2	**Power Electronics**	الكترونيات القدرة	3
3	**Power System Analysis I**	تحليل أنظمة القدرة **I**	3
4	**Power System Protection**	حماية أنظمة القدرة	3
5	**Electrical Design & Sustainability**	التصميم الكهربائي والاستدامة	2
6	**Programmable Logic Controller**	متحكمات المنطق الرقمي	2
7	**Laboratory** 7	مختبرات 7	2
8	**Engineering Project** 1	مشروع هندسي 1	2
Total units			**19**
4th Year Power / Course-2			
No.	**Module Name in English**	**Module Name in Arabic**	**Units**
1	**Project Management**	ادارة مشاريع	2
2	**Special Machines**	مكائن خاصة	3
3	**Power System Analysis II**	تحليل أنظمة القدرة **II**	3

4	**Renewable Energy**	طاقة متجددة	3
5	**Smart Networks**	شبكات ذكية	2
6	**Power Systems Operation and Control**	تشغيل وتحكم أنظمة القدرة	2
7	**Laboratory 8**	مختبرات 8	2
8	**Engineering Project 2**	مشروع هندسي 2	2
Total units			**19**

8. Expected learning outcomes of the program

Knowledge	
Learning Outcomes 1	• LO1: Demonstrate understanding of fundamental concepts in mathematics, science, and engineering necessary to analyze and solve complex engineering problems.
Skills	
Learning Outcomes 2	• LO2: Apply modern engineering tools, techniques, and methodologies to design, analyze, and optimize engineering systems
Learning Outcomes 3	• LO3: Communicate effectively in oral, written, and graphical forms to present engineering ideas and technical solutions clearly and accurately.
Ethics	
Learning Outcomes 4	LO4: Recognize and evaluate the social, environmental, and ethical implications of engineering solutions, considering sustainability and safety.
Learning Outcomes 5	• LO5: Demonstrate the ability to work collaboratively and responsibly in multidisciplinary teams, respecting diverse perspectives and professional responsibilities.

9. Teaching and Learning Strategies

- Lectures and multimedia-supported theoretical instruction.
- Laboratory experiments and practical sessions.
- Problem-based learning (PBL) for real-world applications.
- Project-based learning and design assignments.
- Seminars, workshops, and interactive tutorials.

- Industrial training and field/site visits.
- Self-learning using e-learning platforms and digital resources.
- Final year capstone project integrating knowledge, skills, and ethics.

10. Evaluation methods

Written examinations (midterm and final).

Quizzes and short tests.

Laboratory reports and practical assessments.

Homework assignments and problem-solving exercises.

Oral presentations and seminars.

Project reports and design evaluations.

Participation in discussions, tutorials, and workshops.

Industrial training and fieldwork evaluation.

Final year capstone project assessment (report, presentation, and viva).

11. Faculty

Faculty Members

Academic Rank	Specialization		Special Requirements/Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	Lecturer
Professor	Electrical Engineering				10	–
Assistant Professor	Electrical Engineering				13	–
Lecturer	Electrical Engineering				10	10

Assistant Lecturer	Electrical Engineering				16	-

Professional Development

Mentoring new faculty members

Mentoring New Faculty Members

At the University of Basrah, College of Engineering, Electrical Engineering Department, a structured process is followed to mentor new, visiting, full-time, and part-time faculty members. The process includes:

- **Orientation Programs:** New faculty members are introduced to the university regulations, academic policies, and departmental procedures.
- **Assigned Mentors:** Each new faculty member is paired with an experienced senior staff member who provides guidance on teaching methods, course planning, student assessment, and research activities.
- **Workshops and Training Sessions:** Regular professional development workshops are offered to enhance pedagogical skills, research capacity, and the use of modern engineering tools.
- **Peer Observation and Feedback:** Junior faculty are encouraged to attend classes of senior staff and receive constructive feedback on their own teaching performance.
- **Collaborative Activities:** New faculty are integrated into departmental committees, research groups, and student advising to strengthen teamwork and academic engagement.
- **Continuous Support:** Both full-time and part-time faculty receive ongoing support through departmental meetings, open discussions, and access to teaching resources.

This structured mentoring process ensures that new faculty members are effectively integrated into the academic environment and are able to contribute to the department's teaching, research, and community service missions.

Professional development of faculty members

The Electrical Engineering Department at the University of Basrah supports the professional and academic development of its faculty through a combination of teaching strategies, assessment methods, and ongoing training. Faculty members use lectures, seminars, laboratory sessions, project-based learning, and collaborative activities to enhance student learning. Student

outcomes are assessed through exams, course evaluations, surveys, and regular program reviews to ensure educational objectives are met. The department also encourages faculty participation in workshops, conferences, and collaborations with industry and other institutions to improve teaching skills, stay updated on technological advancements, and engage in research, fostering continuous professional growth.

12. Acceptance Criterion

The Electrical Engineering Department at the University of Basrah follows the centralized admission system established by the Ministry of Higher Education and Scientific Research in Iraq. For the 2024 academic year, prospective students must meet the following criteria:

- Educational Background: Completion of secondary education with a focus on scientific subjects, particularly those relevant to engineering disciplines.
- Minimum Grade Point Average (GPA): Achieving a GPA that meets or exceeds the threshold set by the Ministry for the 2024 academic year.
- Age Limit: Applicants should be born in 1997 or later.
- Graduation Status: Only students who have graduated in the current academic year are eligible to apply.

These regulations are part of the centralized admission system designed to standardize and streamline the enrollment process across public universities in Iraq. Prospective students are encouraged to consult the official announcements from the Ministry of Higher Education and Scientific Research for the most current and detailed information regarding admission criteria.

13. The most important sources of information about the program

The primary sources of information about the Electrical Engineering program at the University of Basrah include:

1. **Official Department Website**: The Electrical Engineering Department's page provides comprehensive details about the department's history, faculty, research areas, and contact information.

2. **Academic Program Information**: The Academic Program page outlines the curriculum, program learning outcomes, and course specifications, offering insights into the educational structure and objectives.
3. **University of Basrah Official Website**: The University's main site serves as a central hub for announcements, regulations, and broader institutional information relevant to prospective and current students.
4. **Ministry of Higher Education and Scientific Research**: The Ministry's website is the authoritative source for national admission policies, accreditation standards, and updates on higher education regulations in Iraq.

These resources collectively offer detailed and up-to-date information about the Electrical Engineering program at the University of Basrah.

14. Program Development Plan

List all courses in the program by term starting with the first term of the first year and ending with the last term of the final year			Indicate Whether Course is Required, Elective or Selected Elective by R, E or SE[1]	Subject Area			Last Two Terms the Course was Offered: Year and Semester	Maximum Section Enrollment for the Last Two Terms the Course was Offered[2]
Course				Math & Basic	Engineering Topics. Check (√) if Contai	Oth		
Dept.	Code	Title						
Electrical	UOB101	English Language	**Required**			2	FS (2024-2025)	250
Electrical	UOB103	Computer Programming-I	**Required**			3	FS (2024-2025	250
Electrical	E101	Engineering Drawing	**Required**			4	FS (2024-2025	250
Electrical	E102	Mathematics-I	**Required**	7			FS (2024-2025	250
Electrical	EE101	Basic of Electrical Engineering- I	**Required**		9		FS (2024-2025	250
Electrical	E104	Mechanical Engineering	**Required**			5	FS (2024-2025	250

Electrical	UOB102	Human Rights and Democracy	**Required**			2	SS (2024-2025	250
Electrical	E106	Computer Programming-II	**Required**			2	SS (2024-2025	250
Electrical	EE103	Digital Logic	**Required**		4		SS (2024-2025	250
Electrical	E103	Mathematics-II	**Required**	7			SS (2024-2025	250
Electrical	EE102	Basic of Electrical Engineering-II	**Required**		9		SS (2024-2025	250
Electrical	E105	Applied Sciences	**Required**	5			SS (2024-2025	250
Electrical	E201	Comprehensive Vector and	**Required**	6			FS (2024-2025)	700
Electrical	EE201	Electronic Circuits	**Required**		9		FS (2024-2025	700
Electrical	EE202	Electrical Circuits Analysis	**Required**		5		FS (2024-2025	700
Electrical	EE203	Microprocessors and	**Required**		5		FS (2024-2025	700
Electrical	EE204	DC Machines	**Required**		5		FS (2024-2025	700
Electrical	E202	Mathematical Analysis and	**Required**	5			FS (2024-2025	700
Electrical	EE205	Introduction to Electrical Networks	**Required**		9		SS (2024-2025	700
Electrical	EE206	Electromagnetic Fields	**Required**		7		SS (2024-2025	700
Electrical	EE207	Electrical Transformers	**Required**		5		SS (2024-2025	700
Electrical	UOB105	Baath Party crimes	**Required**			2	SS (2024-2025	700
Electrical	UOB106	English Language II	**Required**			2	SS (2024-2025	700
Electrical	UOB107	Arabic Language	**Required**			2	SS (2024-2025	700
Electrical	EE301	Engineering Analysis	**Required**	3			FS (2024-2025	343
Electrical	EE302	Induction Machines	**Required**		2		FS (2024-2025	343
Electrical	EE303	Linear Systems Theory	**Required**		3		FS (2024-2025	343
Electrical	EE304	Communication Theory	**Required**		3		FS (2024-2025	343
Electrical	EE305	Power Systems	**Required**		3		FS (2024-2025	343
Electrical	EE313	Laboratory 5	**Required**		2		FS (2024-2025	343
Electrical	EE306	Engineering Numerical Methods	**Required**	3			SS (2024-2025	343
Electrical	EE307	Synchronous Machines	**Required**		2		SS (2024-2025	343

Electrical	EE308	Linear Control Systems	**Required**		3		SS (2024-2025	343
Electrical	EE309	Digital Signals and Noise	**Required**		3		SS (2024-2025	343
Electrical	EE310	Analog and Digital Electronics	**Required**		3		SS (2024-2025	343
Electrical	EE311	Digital Signal Processing	**Required**		3		SS (2024-2025	343
Electrical	EE314	Laboratory 6	**Required**		2		SS (2024-2025	343
Electrical	E401	Engineering Project I	**Required**		2		FS (2024-2025	181
Electrical	E402	Engineering Project II	**Required**		2		SS (2024-2025	181
Electrical	E403	Engineering Economics	**Required**			2	FS (2024-2025	181
Electrical	E404	Project Management	**Required**			2	SS (2024-2025	181
Electrical	CS411	Smart Controllers	**Required**		3		FS (2024-2025	62
Electrical	CS417	Electrical Design &Sustainability	**Elective**		2		FS (2024-2025	62
Electrical	CS409	Adaptive Control and System	**Required**		2		FS (2024-2025	62
Electrical	CS401	Programmable Logic Controller	**Required**		3		FS (2024-2025	62
Electrical	CS410	Digital Control System	**Required**		2		SS (2024-2025	62
Electrical	CS402	Industrial Automation	**Required**		3		SS (2024-2025	62
Electrical	CS403	Modern Control Theory	**Required**		3		FS (2024-2025	62
Electrical	CS404	Process Control	**Required**		3		SS (2024-2025	62
Electrical	CS414	Introduction to Nanotechnology	**Elective**		2		SS (2024-2025	62
Electrical	CS405	Principles of Robotics	**Elective**		3		FS (2024-2025	62
Electrical	CS406	Soft Computing Techniques	**Elective**		3		SS (2024-2025	62
Electrical	CS407	Laboratories 7	**Required**		2		FS (2024-2025	181
Electrical	CS408	Laboratories 8	**Required**		2		SS (2024-2025	181
Electrical	CE409	Optical Communication	Required		2		FS (2024-2025	57
Electrical	CE410	Optical Electronic	**Elective**		2		SS (2024-2025	57
Electrical	CE416	Information Transmission and Coding Theory	**Required**		2		SS (2024-2025	57
Electrical	CE411	Programmable Logic Controller and Automation	**Elective**		2		FS (2024-2025	57

Electrical	CE401	Digital Communication I	**Required**		3		FS (2024-2025	57
Electrical	CE402	Digital Communication II	**Required**		3		SS (2024-2025	57
Electrical	CE403	Microwaves Engineering I	**Required**		3		FS (2024-2025	57
Electrical	CE404	Microwaves Engineering II	**Required**		3		SS (2024-2025	57
Electrical	CE405	Antennas & Propagation I	**Elective**		3		FS (2024-2025	57
Electrical	CE406	Antennas & Propagation II	**Elective**		3		SS (2024-2025	57
Electrical	PM401	Power Electronics	**Required**		3		FS (2024-2025	62
Electrical	PM410	Programmable Logic Controller	**Elective**		2		FS (2024-2025	62
Electrical	PM402	Special Machines	**Required**		3		SS (2024-2025	62
Electrical	PM409	Electrical Design &Sustainability	**Required**		2		FS (2024-2025	62
Electrical	PM413	Smart Networks	**Elective**		2		SS (2024-2025	62
Electrical	PM418	Power System Operation and	**Required**		2		SS (2024-2025	62
Electrical	PM403	Power System Analysis I	**Required**		3		FS (2024-2025	62
Electrical	PM404	Power System Analysis II	**Required**		3		SS (2024-2025	62
Electrical	PM405	Power System Protection	**Required**		3		FS (2024-2025	62
Electrical	PM406	Renewable Energy	**Required**		3		SS (2024-2025	62
Add rows as needed to show all courses in the curriculum								
Overall credit hours for completion of the program				**36**	**135**	**28**		
Totals must satisfy minimum semester credit hours				30				

Program Skills Outline															
				Required program Learning outcomes											
Year/Level	Course Code	Course Name	Basic or optional	Knowledge				Skills				Ethics			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4
first	UOB101	English Language	Basic							*	*				
	UOB103	Computer Programming-I	Basic	*	*			*	*						
	E101	Engineering Drawing	Basic	*	*	*	*	*	*	*	*				
	E102	Mathematics -I	Basic	*	*	*	*								
	EE101	Basic of Electrical Engineering-I	Basic	*	*	*	*								
	E104	Mechanical Engineering	Basic	*	*	*	*								
	UOB102	Human Rights and Democracy	Basic									*	*	*	*

	E106	Computer Programming-II	**Basic**	*	*			*	*						
	EE103	Digital Logic	**Basic**	*	*	*	*								
	E103	Mathematics -II	**Basic**	*	*	*	*								
	EE102	Basic of Electrical Engineering-II	**Basic**	*	*	*	*								
	E105	Applied Sciences	**Basic**	*	*	*	*								
second	E201	Comprehensive Vector and Multivariable Calculus	**Basic**	*	*	*	*								
	EE201	Electronic Circuits	**Basic**	*	*	*	*								
	EE202	Electrical Circuits Analysis	**Basic**	*	*	*	*								
	EE203	Microprocessors and Microcontrollers	**Basic**	*	*	*	*	*	*						

	EE204	DC Machines	**Basic**	*	*	*	*								
	E202	Mathematical Analysis and Transform Techniques	**Basic**	*	*	*	*								
	EE205	Introduction to Electrical Networks	**Basic**	*	*	*	*								
	EE206	Electromagnetic Fields	**Basic**	*	*	*	*								
	EE207	Electrical Transformers	**Basic**	*	*	*	*								
	UOB105	Baath Party crimes	**Basic**									*	*	*	*
	UOB106	English Language II	**Basic**							*	*				
	UOB107	Arabic Language	**Basic**							*	*				
Third	EE301	Engineering Analysis	**Basic**	*	*	*	*								
	EE302	Induction Machines	**Basic**	*	*	*	*								
	EE303	Linear Systems Theory	**Basic**	*	*	*	*								
	EE304	Communication Theory	**Basic**	*	*	*	*								

	EE305	Power Systems	**Basic**	*	*	*	*								
	EE313	Laboratory 5	**Basic**					*	*						
	EE306	Engineering Numerical Methods	**Basic**	*	*	*	*								
	EE307	Synchronous Machines	**Basic**	*	*	*	*								
	EE308	Linear Control Systems	**Basic**	*	*	*	*								
	EE309	Digital Signals and Noise	**Basic**	*	*	*	*								
	EE310	Analog and Digital Electronics	**Basic**	*	*	*	*								
	EE311	Digital Signal Processing	**Basic**	*	*	*	*								
	EE314	Laboratory 6	**Basic**	*	*	*	*	*	*						
Fourth	E401	Engineering Project I	**Basic**	*	*	*	*	*	*	*	*	*	*	*	*
	E402	Engineering Project II	**Basic**	*	*	*	*	*	*	*	*	*	*	*	*
	E403	Engineering Economics	**Basic**					*	*			*	*	*	*

	E404	Project Management	**Basic**							*	*	*	*	*	*
	CS411	Smart Controllers	**Basic**	*	*	*	*	*	*						
	CS417	Electrical Design &Sustainability	**optional**	*	*	*	*					*	*	*	*
	CS409	Adaptive Control and System Definition	**Basic**	*	*	*	*								
	CS401	Programmable Logic Controller	**Basic**	*	*	*	*	*	*						
	CS410	Digital Control System	**Basic**	*	*	*	*	*	*						
	CS402	Industrial Automation	**Basic**	*	*	*	*	*	*						
	CS403	Modern Control Theory	**Basic**	*	*	*	*								
	CS404	Process Control	**Basic**	*	*	*	*								
	CS414	Introduction to	**optional**	*	*	*	*								

		Nanotechnology													
	CS405	Principles of Robotics	**optional**	*	*	*	*	*	*						
	CS406	Soft Computing Techniques	**optional**	*	*	*	*	*	*						
	CS407	Laboratories 7	**Basic**	*	*	*	*	*	*						
	CS408	Laboratories 8	**Basic**	*	*	*	*	*	*						
	CE409	Optical Communication	**Basic**	*	*	*	*	*	*						
	CE410	Optical Electronic	**optional**	*	*	*	*	*	*						
	CE416	Information Transmission and Coding Theory	**Basic**	*	*	*	*								
	CE411	Programmable Logic Controller and Automation	**optional**	*	*	*	*	*	*						
	CE401	Digital Communication I	**Basic**	*	*	*	*	*	*						

	CE402	Digital Communication II	**Basic**	*	*	*	*	*	*						
	CE403	Microwaves Engineering I	**Basic**	*	*	*	*	*	*						
	CE404	Microwaves Engineering II	**Basic**	*	*	*	*	*	*						
	CE405	Antennas & Propagation I	**optional**	*	*	*	*	*	*						
	CE406	Antennas & Propagation II	**optional**	*	*	*	*	*	*						
	PM401	Power Electronics	**Basic**	*	*	*	*	*	*						
	PM410	Programmable Logic Controller	**optional**	*	*	*	*	*	*						
	PM402	Special Machines	**Basic**	*	*	*	*								
	PM409	Electrical Design &Sustainability	**Basic**	*	*	*	*					*	*	*	*
	PM413	Smart Networks	**optional**	*	*	*	*	*	*						
	PM418	Power System	**Basic**	*	*	*	*	*	*						

		Operation and Control													
	PM403	Power System Analysis I	**Basic**	*	*	*	*	*	*			*	*	*	*
	PM404	Power System Analysis II	**Basic**	*	*	*	*	*	*						
	PM405	Power System Protection	**Basic**	*	*	*	*	*	*						
	PM406	Renewable Energy	**Basic**	*	*	*	*	*	*						

- **Please tick the**
- **boxes corresponding to the individual program learning outcomes under evaluation.**

Course Description Form

1. Course Name:
English Language
2. Course Code:
UOB101
3. Semester / Year:
1/2024
4. Description Preparation Date:
5. Available Attendance Forms:
6. Number of Credit Hours (Total) / Number of Units (Total)
ECTS Credits 2 SWL (hr/sem) 50
7. Course administrator's name (mention all, if more than one name)
Name: Lecturer Ali A. Numan Email:
8. Course Objectives

Course Objectives	This course is designed to enable the students to achieve academic oral and written communication to the standard required at university level. The course integrates all the language skills with emphasis on writing, and it stimulates students' imagination, and promotes personal expression. Students, in this course, are trained to apply critical thinking skills to a wide range of challenging subjects from diverse academic disciplines. Course activities include writing various types of academic essays, acquiring advanced academic vocabulary, and getting involved in group discussions and debates. In addition, the course also includes other skills to consolidate the main skills, such as further .readings and use of the Blackboard Suite
9. Teaching and Learning Strategies	
Strategy	.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1			Course introduction, syllabus review Information Theory Basics		
2			Reading:The Engineering Profession Discussion and Solving Exercises		
3			Reading:The Electric Current		
4					
5			Solving Exercises and Skimming Reading		
6			Reading: The Effects of an Electric Current		
7			Scanning and extracting key information form electrical engineering-related article		
8			Reading:Electric Circuits (Part 1)		
9			Reading:Electric Circuits (Part 2)		
10			Scanning and extracting key information form electrical-related article		
11			Solving Exercises and Skimming Reading		
12			Reading:Conductors, Insulators, Semiconductors		

13 14 15 16			Discussion and Solving Exercises Summarizing essential information from electrical engineering related materials Final Project Preparatory week before the final Exam		

11. Course Evaluation

s		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	3	10% (10)	6,8, 10	LO #1, 2, 5 and 9
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	2	10% (10)	6,8	All
	Report	1	10% (10)	14	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)		

12. Learning and Teaching Resources

	Text
Required Texts	Electricity and Electronics by Marija Krznaric
Recommended Texts	Electricity and Electronics by Marija Krznaric
Websites	

Course Description Form

1. Course Name:
Mechanical Engineering
2. Course Code:
E104
Semester / Year:
1/2024
Description Preparation Date:
Available Attendance Forms:
Number of Credit Hours (Total) / Number of Units (Total)
ECTS Credits 5 SWL (hr/sem) 125
Course administrator's name (mention all, if more than one name)
Name: Lecturer Raad Email:
Course Objectives

Course Objectives	**Static:** Force system, units system, parallelogram law, force+ components, resultant of coplanar forces, components of force in space, moment of a force, moment of coupler, equilibrium, free body diagram, coplanar system, analysis of trusses, friction, nature of friction, theory of friction, coefficient of friction, centroids and center of gravity, centroids of area, centroids determined by integration, moments of inertia, parallel axes theorem, 2nd moment of area by integration, radius of gyration, moment of inertia of composite area. **Dynamics:** Kinetics of particle, rectilinear motion, curvilinear motion, rectangular components of curvilinear motion, normal and tangential component of acceleration, kinetics, force, mass and acceleration, kinetic of particle Newton's 2nd law. ***Workshop Skills:** The workshop training program is designed to satisfy the following: Objectives Teaching safety rules and regulations on-

	site in an industrial environment proper use of working tools, instruments, and machines, introducing basic workshop practices, production, labor, and time-requirements of workshop operations. The students are introduced to training programs in six workshops: welding, forging, turning and milling, carpentry, and casting. The student is to spend 4 hours of training in every workshop

Teaching and Learning Strategies

Strategy	.

Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1			Engineering Mechar Statics		
2			General Principles,Machir Fundamental Concepts, U of Measurement , T international system of ur		
3			Force Vector, Scala Vectors , Vector Operatic Vectors addition of force. Addition of a System Coplanar Forces		
4			Equilibrium of a Parti Condition for the Equilibri of a Particle		
5			The Free-Body Diagra Coplanar Force Systems		
6					

7			Force System Resulta Moment of a Force—Sca Formulation		
8			Equilibrium of a Rigid Bo Equilibrium of a Rigid Bo Two- and Three-Fo Members		
9			Friction, Problems Involv Dry Friction		
10			Center of Gravity Centroid, Center of Grav Center of Mass, and Centroid of a Body		
11			Engineering Mechar Dynamics		
12			Kinematics of Partic Rectilinear Motion Particles,		
13			Position, Velocity, and Acceleration - Determination of the Motion of a Particle - Uniform Rectilinear Moti		
14			Curvilinear Motion Particles, Position Vec Velocity, and Acceleration		
15			Rectangular Components Velocity and Acceleration		
16			Preparatory week before t final Exam		

. Course Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	4	10% (10)	3, 6, 9 12	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	4, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	2	10% (10)	5, 8	All
	Report	2	10% (10)	6, 11	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)		

. Learning and Teaching Resources

	Text
Required Texts	Engineering Mechanics for Static and Dynamic H.C.HIBBELI Thirteen Edition
Recommended Texts	Vector Mechanics for Engineering Beer, Tenth Edition
Websites	

Course Description Form

1. Course Name:
Computer Programming-I
Course Code:
UOB103
Semester / Year:
1/2024
Description Preparation Date:
Available Attendance Forms:
Number of Credit Hours (Total) / Number of Units (Total)
ECTS Credits 3 SWL (hr/sem) 75
Course administrator's name (mention all, if more than one name)
Name: Lecturer Aeada K. Alberi Email:
Course Objectives

Course Objectives	**Problem solving algorithms** Data structures, searching and sorting algorithms **V. Basic Variables** Variable types Variable Names Declarations **Assignment statements and expressions in V. Basic** Logical expressions and operators Mathematical expressions and operators **Conditional Decisions and Loops** **Conditional Decisions** If/Then/End If statement If/Then/Else/End If statement If/Then/ElseIf/End If statement Select Case statement Switch statement 6) IIf statement 7) Choose statement **Loops** For-Next statement While-Wend statement

	Do Until-Loop statement Do While-Loop statement 5) Do-Loop Until statement 6) Do-Loop While statement **ARRAYS** Declaring Arrays Input and Output Arrays Generate Specific Array Elements Computational (mathematical) processes that take place on the matrices (arrays)

Teaching and Learning Strategies

Strategy	.

Course Structure

Week	**Hours**	**Required Learning Outcomes**	**Unit or subject name**	**Learning method**	**Evaluation method**
1			Problem solving algorithn		
2			V.Basic Variables		
3			Assignment statements expressions in v.basic		
4			Conditional decisions: statements		
5			Conditional decisions: statements		
6			Select case statement		
7			Nested if statements		
8			For-next statement		
9			While statement, Do ur loop statement		
10			Do while-loop statement, loop until statement		
			Do-loop while statement		

11 12 13 14 15			Nested for statement Declaring arrays Input and output arrays Preparatory week before final Exam		

. Course Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	4	10% (10)	4, 8,12,14	LO #1, 2, 8 and 10
	Assignments	2	5 % (5)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	20 % (20)	Continuous	All
	Report	7	5% (5)	2,4,6,8,10,12,14	LO # 5, 8 and 10
Summative assessment	Midterm Exam	1 hr	10% (10)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

. Learning and Teaching Resources

	Text
Required Texts	Text Lectures+ video lectures
Recommended Texts	Text Lectures+ video lectures
Websites	

Course Description Form

1. Course Name:
Basics of Electrical Engineering-I
Course Code:
EE101
Semester / Year:
1/2024
Description Preparation Date:
Available Attendance Forms:
Number of Credit Hours (Total) / Number of Units (Total)
ECTS Credits 9 SWL (hr/sem) 225
Course administrator's name (mention all, if more than one name)
Name: Assistant professor Basim T. Kadhem Email:
Course Objectives

Course Objectives	To develop problem solving skills and understanding of circuit theory through the application of techniques. To understand voltage, current and power from a given circuit. This course deals with the basic concept of electrical circuits. This is the basic subject for all electrical and electronic circuits. To understand Kirchhoff's current and voltage Laws problems. To perform mesh and Nodal analysis.
Teaching and Learning Strategies	
Strategy	Type something like: 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.

Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1			Modern Electron Theory		
2			The SI system of units		
3			Resistance and resistivity		
4			Effect of temperature on resistance		
5			Kirchhoff's laws		
6			Types of DC circuits		
7			Sources of Energy		
8			Network analysis by Maxwell's circulating currents		
9			Nodal Analysis		
10			Superposition Theorem		
11			Thevenin's theorem		
12			Norton's theorem		
13			Maximum power transfer theorem		
14			Generation of AC voltage		
15			Average value and effective value of AC quantity		
			Preparatory week before final Exam		

16					

. Course Evaluation

		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)		

. Learning and Teaching Resources

	Text
Required Texts	Text book 1: Basics of Electrical Engineering, W. S. Gilc Milngavic, Sep. 1971
Recommended Texts	Text book 2: Basic Electrical Engineering Science, I. Mckenzie Smith and K.T. Hosie, rans. To Arabic by: Dr. Mohammad Zaki M.K. and Mothafar A., Mosel Univ., 1973. Text book 3: Electrical and Mechanical Engineering, Theraja, LTD, New Delhi, 2005
Websites	https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering

Course Description Form

1. Course Name:
Mathematics-I
Course Code:
E102
Semester / Year:
1/2024
Description Preparation Date:
Available Attendance Forms:
Number of Credit Hours (Total) / Number of Units (Total)
ECTS Credits 7 SWL (hr/sem) 175
Course administrator's name (mention all, if more than one name)
Name: Lecturer Ali K. Marzook Email:
Course Objectives

Course Objectives	**Brief Review:** Trigonometry, Analytic Geometry, Sets, Relations, Functions (Algebraic and Trigonometric), Differentiation and Integration. **Transcendental Functions:** Inverse Trigonometric, Natural Logarithmic, Exponential and Power: i. Definitions ii. Properties iii. Graphs iv. Derivatives and Integrals. **Application of the Definite Integral:** i) Areas between curves. ii) Volumes of revolution. iii) (Length of the curve. iv) Surface Area of revolution. **Hyperbolic Function:** i) Definition, ii) Properties iii) Graphs iv) Inverse hyperbolic. v) differentiation and Integration **Methods of Integration I:** Trigonometric Substitutions, Quadratics, Partial Fractio
Teaching and Learning Strategies	
Strategy	
Course Structure	

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1			Prerequisites for calculas		
2			Functions (types, doma range)		
3			Graph of functions		
4			Graph of functions		
5			The Limits		
6			The Continuity		
7			Derivatives (rules)		
8			Derivatives (examples)		
9			Implicit differentiation		
10			Applications derivatives (analysis functions)		
11			Applications derivatives (related Ra of changes)		
12			Integration(indefinite integrals)		
13			Integration(definite integrals)		
14			Applications of integr (area between curves)		
15			----------		
16			Preparatory week before final Exam		

. Course Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	6, 12	LO #1, 2, 10 and 11
	Assignments	5	10% (10)	2, 4, 6, 8, 10	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	13	All
	Report	5	10% (10)	3, 5, 7, 9, 11	LO # 5, 8 and 10
Summative assessment	**Midterm Exam**	1 hr	10% (10)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

. Learning and Teaching Resources

	Text
Required Texts	Calculus
Recommended Texts	Mathematics for engineering
Websites	

Course Description Form

1. Course Name:
Engineering Drawings-I
Course Code:
E101
Semester / Year:
1/2024
Description Preparation Date:
Available Attendance Forms:
Number of Credit Hours (Total) / Number of Units (Total)
ECTS Credits 4 SWL (hr/sem) 100
Course administrator's name (mention all, if more than one name)
Name: Lecturer Hanan Majeed Hameed Al Shaabani Email:
Course Objectives

Course Objectives	Introduction Graphic Instruments and Their Use Lettering Graphic Geometry Multi View Ortho Graphic Projection in First and Third Angle Projection Dimensions Third View Isometric Drawing and Sketching Oblique Drawing Section of Isometric Drawing Sectional View
Teaching and Learning Strategies	
Strategy	
Course Structure	

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1			GettingStarted AutoC 2021 User Interface , Drawing Units and Limits		
2			**Basic Drawing Skills** Drawings , Draw Lines , Rectangles , Draw Circles, A and Polygons		
3			**Shaping Curves** Draw Edit Curved Polylines Dr Ellipses Shape Splines		
4			**Editing Entities1** Can Erase, and Undo , Use Coordin Systems , Use Fillet and Cham		
5			**Editing Entities2** Cre Selection Sets Move and C Work with Arrays Use Trim Extend		
6			**Editing Entities3** Lengthen and Stretch Use Of and Mirror Edit with Grips		
7			**Drawing Aids** Use Grid Snap , Employ Ortho and Po Tracking , Use Polar Snap , Se Running Object Snaps , Ap Object Snap Tracking		
8			**Dimensioning** S Dimensions , Add Dimensio Edit Dimensions		
9			**Object Visibility a Appearance** Change Ob Properties Set the Current La Manage Layer Properties Con Layer Visibility Apply Linetyp		
10			**Hatching and Gradie** Specify Hatch Areas . Hatch v Patterns . or Gradients		
11			**Organizing Objects** De Blocks Insert Blocks Edit Blo Work with Groups		

12			**Creating and Editing Te** Style Text , Write Lines of Te Write and Format Paragra Using MTEXT , Edit Text		
13			**Working with Data** Imp Sketch Up Models , Ins Attributed Blocks , Edit Ta Styles and Create Tables		
14			**Modeling in 3D** Create Edit Surface Models , Create S Models , Create Renderings		
15			**Navigating 3D Models** Visual Styles , Navigate with View Cube , Use Camera Navigate with SteeringWheel		
16			Preparatory week before final Exam		

. Course Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	5	10% (10)	3,6,9,12,14	LO #1, 2, 10 and 11
	Assignments	14	10% (10)	All	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	14	10% (10)	All	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)		

. Learning and Teaching Resources

	Text
Required Texts	AutoCAD 2022 Tutorial First Level 2D Fundamentals
Recommended Texts	AutoCAD® 2018 and AutoCAD LT 2018ss

Course Description Form

1. Course Name:
Mathematics-II
Course Code:
E103
Semester / Year:
2/2024
Description Preparation Date:
Available Attendance Forms:
Number of Credit Hours (Total) / Number of Units (Total)
ECTS Credits 7 SWL (hr/sem) 175
Course administrator's name (mention all, if more than one name)
Name: Lecturer Ali K. Marzook Email:
Course Objectives

Course Objectives	**) Methods of Integration II:** **6 hrs** Integration by parts, Further Substitutions. **) Approximation Integral:** **6 hrs** i) Trapezoidal ii) Simpson **) Vector Algebra:** **6 hrs** i) Representation of Vectors in space (I,j.k) (unit vectors ii) Scalar Product iii) Vector product. **4) Complex Numbers:** **9 hrs** i) Invented number systems ii) The Argand diagram. iii) Addition, Subtraction, product, Qutient, Power and Roots. iv) Demoivers theorem. **5) Polar Coordinates:** **9 hrs** i) The polar coordinate system. ii) Graphs of polar equations. iii) Plane area in polar coordinates. **6) Matrices and Determinats:** **9 hrs** i) Definition ii) Properties. iii) Inverse of a matrix. iv) Solution of Equations (Cramer's rule).

Teaching and Learning Strategies

Strategy	

Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1			Transcendental functions (p 1)		
2			Transcendental functions (p 2)		
3			Hyperbolic functions		
4			Inverse trigonome functions		
5			Method of integrations (par		
6			Method of integrations (par		
7			Method of integrations (par		
8			Method of integrations (par		
9			Matrices		
10			Determents		
11			Solve of linear equations matrices		
12			Complex numbers (part 1)		
13			Complex numbers (part 2)		
14			Polar coordinates (part 1)		
15			Polar coordinates (part2)		
16			Preparatory week before final Exam		

. Course Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	6, 12	LO #1, 2, 10 and 11

	Assignments	6	10% (10)	2, 4, 6, 8, 10, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	15	All
	Report	6	10% (10)	3, 5, 7, 9, 11, 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)		

Learning and Teaching Resources

	Text
Required Texts	Calculus
Recommended Texts	Mathematics for engineering
Websites	

Course Description Form

1. Course Name:
Human Rights and Democracy
Course Code:
UOB102
Semester / Year:
2/2024
Description Preparation Date:
Available Attendance Forms:
Number of Credit Hours (Total) / Number of Units (Total)
ECTS Credits 2 SWL (hr/sem) 50
Course administrator's name (mention all, if more than one name)
Name: Lecturer Hussain Email:
Course Objectives

Course Objectives	د المواد هامة والضرورية للطلبة حيث يتم تعريفهم بمفهوم حقوق الانسان ومبادىء وقيم ماهو مستقبل هذه الحقوق في ظل التطور والتقدم التكنولوجي وتجليات العولمة وخلق للجميع والدفاع عنها حيث ان هذه الحقوق منذ ان ولد الانسان ولدت معه حقوقه. حيث ان الطالب يحتاج الى المام بثقافة الديمقراطية ومعرفتها العلمية لما في ذلك من ا وسبل ممارستها ،كما ان دراسة الديمقراطية دراسة علمية سيسهم في ارساء دولة
Teaching and Learning Strategies	
Strategy	القدرة على معرفة هذه الحقوق والحريات والعمل بها
Course Structure	

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1			اهيم عامة حول فكرة حقوق الانسان		
2			التطور التاريخي لفكرة الحقوق		
3			مصادر الحقوق		
4			المصادر الدولية		
5			المصادر الوطنية		
6			حق الحياة		
7			حق الخصوصية		
8			حق التظاهر		
9			حق الجنسية		
10			حرية الرأي والتعبير		
11			حرية العقيدة والدين		
12			حرية التنقل والاقامة		
13			حقوق ذوي الاحتياجات الخاصة		
14			الوسائل الدولية		
15			الوسائل الوطنية		
16			Preparatory week bef the final Exam		

. Course Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	15	10% (10)	All	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	8	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)		

. Learning and Teaching Resources

	Text
Required Texts	ج حقوق الانسان والديمقراطية المعد من قبل وزارة التعليم العالي والبحث العلمي
Recommended Texts	قانون العقوبات العراقي قانون الخدمة المدنية قانون انضباط موظفي الدولة تعليمات انضباط الطلبة التعليمات الامتحانية تعليمات تنفيذ العقود القانون المدني العراقي

Course Description Form

1. Course Name:
Computer Programming-II
Course Code:
E106
Semester / Year:
2/2024
Description Preparation Date:
Available Attendance Forms:
Number of Credit Hours (Total) / Number of Units (Total)
ECTS Credits 3 SWL (hr/sem) 75
Course administrator's name (mention all, if more than one name)
Name: Lecturer Samea Email:
Course Objectives

Course Objectives	**Programming in C++:** Basic syntax and semantics, variables, types, expressions, assignment, mathematical functions, logical and arithmetic operations, simple I/O, functions and parameter passing, procedure programming. **Control structures**: Conditional and iterative control structures, loops, sequencing, selection, and iteration functions. **Basic Data Structures:** Primitive types, Arrays, Strings and string processing, Records, stack, and heap allocation. **Structure programming**: static and dynamic structure programming. **Recursion:** Recursive mathematical functions, Divide-and-conquer strategies, Recursive backtracking, Implementation of recursion in C++.
Teaching and Learning Strategies	
Strategy	
Course Structure	

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1			Two dimensional arrays		
2			Two dimensional arrays		
3			Two dimensional arrays		
4			Graphics in Visual Basic		
5			Review of basic instructions v.basic to prepare advanced v.basic		
6			Sub Procedure and Funct Procedure		
7			Sub Procedure and Funct Procedure		
8			Build in functions		
9			Sequential files		
10			Random files		
11			Ms chart		
12			Ms flex grid		
13			Tree &database control		
14			Database control		
15			Picture &image control		
16			Preparatory week before final Exam		

. Course Evaluation

	Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome

Formative assessment	**Quizzes**	4	10% (10)	4, 8,12,14	LO #1, 2, 10 and 11
	Assignments	7	10% (10)	2,4,6,8,10,12,14	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	2,4,6,8,10,12,14	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)		

. Learning and Teaching Resources

	Text
Required Texts	Text Lectures+ video lectures

Course Description Form

1. Course Name:
Computer Programming-II
Course Code:
E106
Semester / Year:
2/2024
Description Preparation Date:
Available Attendance Forms:
Number of Credit Hours (Total) / Number of Units (Total)
ECTS Credits 3 SWL (hr/sem) 75
Course administrator's name (mention all, if more than one name)
Name: Lecturer Samea Email:
Course Objectives

Course Objectives	**Programming in C++:** Basic syntax and semantics, variables, types, expressions, assignment, mathematical functions, logical and arithmetic operations, simple I/O, functions and parameter passing, procedure programming. **Control structures**: Conditional and iterative control structures, loops, sequencing, selection, and iteration functions. **Basic Data Structures:** Primitive types, Arrays, Strings and string processing, Records, stack, and heap allocation. **Structure programming**: static and dynamic structure programming. **Recursion:** Recursive mathematical functions, Divide-and-conquer strategies, Recursive backtracking, Implementation of recursion in C++.
Teaching and Learning Strategies	
Strategy	
Course Structure	

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1			Two dimensional arrays		
2			Two dimensional arrays		
3			Two dimensional arrays		
4					
5			Graphics in Visual Basic		
6			Review of basic instructions v.basic to prepare advanced v.basic		
7			Sub Procedure and Funct Procedure		
8			Sub Procedure and Funct Procedure Build in functions		
9			Sequential files		
10			Random files		
11			Ms chart		
12			Ms flex grid		
13			Tree &database control		
14			Database control		
15			Picture &image control		
16			Preparatory week before final Exam		

. Course Evaluation

	Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome	

Formative assessment	**Quizzes**	4	10% (10)	4, 8,12,14	LO #1, 2, 10 and 11
	Assignments	7	10% (10)	2,4,6,8,10,12,14	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	2,4,6,8,10,12,14	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)		

. Learning and Teaching Resources

	Text
Required Texts	Text Lectures+ video lectures

Course Description Form

1. Course Name:
Digital Logic
Course Code:
EE103
Semester / Year:
2/2024
Description Preparation Date:
Available Attendance Forms:
Number of Credit Hours (Total) / Number of Units (Total)
ECTS Credits 4 SWL (hr/sem) 100
Course administrator's name (mention all, if more than one name)
Name: Lecturer Giadaa J. Kadhim Email:
Course Objectives

Course Objectives	- **Introduction to Digital Techniques:** - **Number Systems:** eneral number formula: binary, octal, decimal and hexadecimal numbers **3- Numbers Base Conversion:** rithmetic operations in different number systems, complements, binary codes, DCB, Ex-3, and Gray codes, **4-Boolean Algebra:** asic definitions, basic theorem and properties, Boolean functions. **5- Canonical and Standard forms:** - **Karanough Maps:** - **Combinational Logic Analysis:** asic combinational logic circuits, implementation combinational logic, the universal property of NAND and NOR Gates, combinational logic using NAND and NOR gates, and logic circuit operation. - **Adders Arithmetic Operations:** Subtractions, half and full adders and subtractions, binary parallel address.

	Code Conversion: Even and odd party logic, decoders, encoders, comparators, multiplexers and demultiplexers. **)- Sequentional Logic:** Sequential Logic; base of flip-flops, RS flip-flops, J-K flip-flops, T and D flip-flops, Synchronous Sequential Logic, Excitation tables of SR flip-flops, J-K flip-flops, T and D flip-flops for design. **1- Counters and registers.** **. Memory units**.

Teaching and Learning Strategies

Strategy	

Course Structure

Week	**Hours**	**Required Learning Outcomes**	**Unit or subject name**	**Learning method**	**Evaluation method**
1			Number Systems(introductio Decimal System,Binary System.		
2			Octal System,Hexadecimal System.		
3			Arithmetic operation. Arithmetic operation on Binary number. Arithmetic		
4			operation on Octal number.		
5			Arithmetic operation on Octal number. Arithmetic operation on Hexadecimal number.		

6			Number base conversion. Decimal to Binary conversion. Decimal to Octal conversion. Decimal to Hexadecimal conversion.		
7			Binary to Octal conversion. Negative Numbers.		
8			Complement Representation. Coding System.		
9			Boolean algebra.		
10			Simplification Theorems.		
11			Combination network Design using a truth table.		
12			Karnaugh map.		
13			Quine - McClusky method.		
14			Map-Entered Variables		
15			Preparatory week before the fi Exam		
16					
. Course Evaluation					

		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	1 hr	10% (10)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

. Learning and Teaching Resources

	Text
Required Texts	Fundamental of Logic Design
Recommended Texts	Digital Computer Fundamentals
Website	

Course Description Form

1. Course Name:
Basics of Electrical Engineering-II
Course Code:
EE102
Semester / Year:
2/2024
Description Preparation Date:
Available Attendance Forms:
Number of Credit Hours (Total) / Number of Units (Total)
ECTS Credits 9 SWL (hr/sem) 225
Course administrator's name (mention all, if more than one name)
Name: Assistant professor Basim T. Kadhem Email:
Course Objectives

Course Objectives	1- Analysis of single phase a.c circuits: (10 hrs) Resistance, reactance and impedance, conductance – suspactance and admittance, the phasor diagram, series – parallel – and series / parallel circuits, power calculation in a.c. circuits, power factor & power factor correction. 2- Complex number & its application to a.c circuits: (10 hrs) Equivalent impedance : series – parallel – series / parallel – delta and star connections introduction to network theorems, Kirchoff's laws : KVL – KCL, Maxwell s circulating currents (mesh analysis) nodal analysis, super position theorem, Thevenin's theorem, Norton s theorem, maximum power transfer theorem, Millman's theorem, substitution theorem, reciprocity theorem, power calculation (complex power).

	3- Resonance: (10 hrs) Series resonance : quality factor – selectivity – half power – frequency and bandwidth, parallel resonance : quality factor – selectivity – half power – frequency and bandwidth, series / parallel resonance circuits. 4. Magnetic circuit: (15 hrs) Magnetic field, direction of magnetic fi characteristics of lines of magnetic field , magnetic fi due to electric, magnetic field in a coil, force in curr carrent carrying conductor across a magnetic field, hand rule, magnitude of the force, electromagn induction, faraday s law, right hand rule, magnitude induced e.m,f magnitude of e.m.f. in a coil, mm magnetic field strength, magnetic constants, reluctan magnetic leakage and fringing, magnetic facto magnetic circuit: series – parallel and series / parall kirchoff ,s laws for magnetic circuit, hysteresis factors on its loop, hysteresis loss and eddy current lo condition for minimum volume of a permanent magn load line of a permanent magnet, force between t magnetic poles, magnetic pull between two iron surfac

Teaching and Learning Strategies

Strategy	Type something like: 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.

Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1			Series AC circuits		
2			Parallel AC circuit		
3			Network analysis Maxwell's in AC circuit		
4			Nodal Analysis		
5			Superposition Theorem		
6			Thevenin's theorem		

7			Norton's theorem		
8			Maximum power trans theorem		
9			Power factor correction		
10			Resonance		
11			Magnetic Circuit		
12			Faraday Laws, S inductance and Mut inductance		
13			Hysteresis loop and Ec current loss		
14			Electrostatics and Capacitanc		
15			Charging of capacitor Discharging of capacitor		
16			Preparatory week before final Exam		

. Course Evaluation

		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)		

. Learning and Teaching Resources

	Text
Required Texts	Text book 1: Basics of Electrical Engineering, W. S. Gilc Milngavic, Sep. 1971
Recommended Texts	Text book 2: Basic Electrical Engineering Science, I. Mckenzie Smith and K.T. Hosie, rans.

	To Arabic by: Dr. Mohammad Zaki M.K. and Mothafar A., Mosel Univ., 1973. Text book 3: Electrical and Mechanical Engineering, Theraja, LTD, New Delhi, 2005
Websites	https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering

Course Description Form

1. Course Name:
Applied Science
Course Code:
E105
Semester / Year:
2/2024
Description Preparation Date:
Available Attendance Forms:
Number of Credit Hours (Total) / Number of Units (Total)
ECTS Credits 3 SWL (hr/sem) 75
Course administrator's name (mention all, if more than one name)
Name: Assistant Lecturer Anwer Musa Email:
Course Objectives

Course Objectives	**Build a Strong Foundation in Core Scientific Principles** To provide students with a solid understanding of key concepts in chemistry and physics, including atomic structure, chemical reactions, forces, energy, and motion. • **Develop Practical and Experimental Skills** To enable students to carry out laboratory experiments safely and effectively, using appropriate scientific methods, equipment, and techniques relevant to both chemistry and physics. • **Apply Scientific Knowledge to Real-World Contexts** To explore how principles of chemistry and physics are applied in everyday life, technology, healthcare, and industry, fostering relevance and engagement. • **Enhance Problem-Solving and Analytical Thinking** To strengthen students' abilities to analyze data, interpret experimental results, and solve scientific

	problems through logical and quantitative reasoning. • **Encourage Interdisciplinary Understanding** To promote awareness of the interconnectedness between chemistry and physics and their combined applications in applied science fields such as materials science, energy, and environmental technology. • **Support Scientific Communication and Collaboration** To develop students' ability to communicate scientific ideas clearly, both verbally and in writing, and to collaborate effectively on scientific investigations. • **Prepare for Further Study or Science-Ba Careers** To lay the groundwork for progression to higher-le education or employment in science-related fields fostering both academic and practical competencies.
Teaching and Learning Strategies	
Strategy	To ensure students gain both theoretical understanding and practical competence, a variety of learning and teaching strategies are employed: **1. Lectures and Interactive Presentations** Deliver core scientific concepts in chemistry and physics. Use visual aids, demonstrations, and multimedia to enhance engagement and understanding. Encourage questioning and discussion to clarify complex ideas. **2. Practical Laboratory Work** Regular hands-on experiments to develop essential scientific and technical skills. Emphasize safety, accuracy, and methodical data collection. Link experiments directly to theoretical learning to reinforce understanding.

	3. Group Work and Collaborative Learning Promote teamwork through group experiments, discussions, and projects. Encourage peer support and collaborative problem-solving. Develop communication, leadership, and interpersonal skills. **4. Problem-Based and Inquiry-Based Learning** Use real-world scenarios to apply physics and chemistry concepts to solve practical problems. Foster critical thinking and independent learning. **5. Tutorials and Workshops** Small-group sessions to focus on problem-solving, calculations, and applying theory. Provide targeted support and enable deeper exploration of key topics. **6. Digital and Online Learning Tools** Use virtual simulations and online resources (e.g., PhET simulations, virtual labs, video tutorials). Support remote or blended learning environments through VLE platforms (e.g., Moodle, Google Classroom). **7. Formative Assessment and Feedback** Regular quizzes, short assignments, and lab reports to monitor progress. Provide timely feedback to identify strengths and address areas for improvement. **8. Reflective Learning** Encourage students to reflect on their learning through lab diaries, learning logs, or self-assessment exercises.

	Develop metacognitive skills and promote continuous improvement.

Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1			The atomic structure: Ato Number, Silicon Germanium,		
2			Atom Shells, Energy lev Energy gap,		
3			Energy gap in semiconductors , Electri field intensity, Potential,		
4			Drift velocity & Mobil Current density,		
			Conductivity, Resistivity		
7			Semiconductors: Intrin semiconductor, The hole,		
8			Extrinsic Semiconductor, type material (Donor), P-t material Acceptors)		
9			Charge Densities in Semiconductor, for N-t material, for P-type materia		
10			The Hall effect, Fe distribution, density of state		
11			p-n Junction: Open circuit junction, Depletion regi Diffusion, Einst Relationship,		
12			Total current density in a n junction, Barrier poten voltage, p-n Junction a diode,		
13					

14 15 16			The biasing of p-n dic forward biasing, resista levels, D.C. or Static resistance, A (Dynamic) resistance, Capacitances of the Dic Diffusion Capacitance. The atomic structure: Ato Number, Silicon Germanium, Preparatory week before final Exam		

. Course Evaluation

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

. Learning and Teaching Resources

	Text
Required Texts	Electronic Devices and Circuit Theory
Recommended Texts	Solid State Electronic Devices
Websites	https://nanohub.org/courses/SFUN/2020x

Course Description Form

1. Course Name:
Arabic Language
Course Code:
UOB104
Semester / Year:
2/2024
Description Preparation Date:
Available Attendance Forms:
Number of Credit Hours (Total) / Number of Units (Total)
ECTS Credits 2 SWL (hr/sem) 50
Course administrator's name (mention all, if more than one name)
Name: Lecturer Wjdan Sadiq Email:
Course Objectives

Course Objectives	إكتساب الطالب مهارة معرفية عن المفاهيم اللغوية . صون اللسان من الوقوع في الخطأ في نطق الكلمة . تنمية قدرات الطالب التعبيرية . تعليم الطلبة على تحليل منظومة الكلام . تعليم الطلبة على التمييز بين أصول الكلمة أو الزيادة وما تؤديه في زيادة المعنى . تعليم الطلبة على أساليب وقواعد ضبط المفردات وصياغتها . تمكين الطالب على استعمال المفردات اللغوية بالموقع السليم . تقديم تدريبات لتقوية ملكة الطالب وتنمية مقدرته في الممارسة اللغوية والبلاغة المؤثره مع الافادة من الخبرات والتدريبات . تمكين الطلبة من قراءة وتحليل النصوص الادبية وفهمها والقدرة على حفظها. تعليم الطلبة القراءة الصحيحة لايات القرآن الكريم ومعرفة معانيه وتنمية قدرة الطلبة على الحفظ والنطق السليم

Teaching and Learning Strategies	
Strategy	-1- تقديم المحاضرة بشكل منسق ووفقا للوقت المحدد. 2ـ إعطاء الطلبة واجبات صفية وتكليفهم بتقديمها على المنصة. 3ـ إعطاء نسبة من الدرجة للانشطة المقدمة من قبل الطلبة.

Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1			حو- أقسام الكلام (اسم ,فعل,حرف)		
2			المبتدأ وانواعه		
3			الخبر وانواعه		
4			كان واخواتها		
5			ان واخواتها		
6			المثنى والملحق به		
7			جمع المذكر السالم والملحق به		
8			جمع المؤنث السالم والملحق به		
9			الاسماء الخمسة		
10			بناء الفعل الماضي		
11			بناء الفعل الامر		
12			الفعل المضارع بناؤه واعرابه		
13			ماء المنصوبة (المفعول به -المفعول لق-المفعول لأجله-المفعول فيه - المفعول لأجله)		
14			الشعر -نازك الملائكة		
15			الشعر - محمد مهدي الجواهري		
16			Preparatory week before final Exam		

. Course Evaluation

		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)		

Learning and Teaching Resources

	Text
Required Texts	التعبير والإنشاء والرسم الكتابي والإملاء الخطي / أ.د. عبد الرحمن مطلك الجبوري
Recommended Texts	النحو الوافي / عباس حسن. قواعد الاملاء في عشرة دروس سهلة / د. فهمي النجار في الادب الحديث / أ.د. فائق مصطفى في الادب المعاصر/ د. بشير عيسوي الادب العربي في العصر الحديث / د. مصطفى السحرتي
Websites	

Course Description Form

1. Course Name:
Physics
Course Code:
E106
Semester / Year:
1/2024
Description Preparation Date:
Available Attendance Forms:
Number of Credit Hours (Total) / Number of Units (Total)
ECTS Credits 5 SWL (hr/sem) 125
Course administrator's name (mention all, if more than one name)
Name: Assistant Lecturer Anwer Musa Email:
Course Objectives

Course Objectives	**Diodes circuits:** Diode operation and i-v characteristics, Regions of operation, models, and limitations, Tunnel, Zener, Varicap, LED, Photo, Laser, Microwave diodes, Single diode circuits, the load line, Multi-diode circuits, Rectifiers, dc-dc converters, Clipping and clamping, Electronic gates, Diode logic (AND & OR functions). **Bipolar transistors and logic families:** NPN and PNP transistor operation, i-v characteristics, Regions of operation, models, and limitation, Transfer characteristic of BJT with load resistor, Biasing for logic and amplifier applications, Logic level definitions, The differential pair as a current switch, Transistor-transistor logic – inverters, NAND, other functions, Emitter-coupled logic – OR/NOR gate, other functions, Low voltage bipolar logic families. **MOS transistors and biasing:** Field-effect transistor operation, i-v characteristics NMOS, Regions of operation, models, and limitations, Enhancement and depletion-mode devices, PMOS devices, Transfer characteristic of FET with load resistor, Biasing for logic and amplifier

	applications. MOSFETS, MESFET, and BIMOS transistors.

Teaching and Learning Strategies

Strategy	

Course Structure

Week	**Hours**	**Required Learning Outcomes**	**Unit or subject name**	**Learning method**	**Evaluation method**
1			Week 1: Diode Operation a Characteristics		
2			Week 2: Diode Circuit Analysis and Rectifiers		
3			Week 3: Diode Application Clippers, Clampers, and Logic Gates		
4			Week 4: Introduction to Bipolar Junction Transistor (BJTs)		
5			Week 5: BJT Biasing and Operation Regions		
6			Week 6: BJT as a Switch a Logic Inverters		
7			Week 7: Transistor-Transis Logic (TTL) and Logic Families		

8			Week 8: Emitter-Coupled Logic (ECL) and Low-Voltage Bipolar Logic		
9			Week 9: Introduction to Fie Effect Transistors (FETs)		
10			Week 10: MOSFET Operation and Characteristi (NMOS & PMOS)		
11			Week 11: MOSFET Biasin and Operating Regions		
12			Week 12: MOSFET as a Switch and Digital Logic		
13			Week 13: Comparison of B and MOSFET Devices		
14			Week 14: Special Devices: Tunnel, Zener, and Other Diodes		
15			Week 15: Special Devic MESFET and BIM Transistors		

. Course Evaluation

		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)		

. Learning and Teaching Resources

	Text
Required Texts	
Recommended Texts	
Websites	

Course Description Form

1. Course Name:
Engineering Drawings-II
Course Code:
E102
Semester / Year:
2/2024
Description Preparation Date:
Available Attendance Forms:
Number of Credit Hours (Total) / Number of Units (Total)
ECTS Credits 4 SWL (hr/sem) 100
Course administrator's name (mention all, if more than one name)
Name: Lecturer Hanan Majeed Hameed Al Shaabani Email:
Course Objectives

Course Objectives	Introduction Graphic Instruments and Their Use Lettering Graphic Geometry Multi View Ortho Graphic Projection in First and Third Angle Projection Dimensions Third View Isometric Drawing and Sketching Oblique Drawing Section of Isometric Drawing Sectional View
Teaching and Learning Strategies	
Strategy	
Course Structure	

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1			GettingStarted AutoC 2021 User Interface , Drawing Units and Limits		
2			**Basic Drawing Skills** Drawings , Draw Lines a Rectangles , Draw Circ Arcs, and Polygons		
3			**Shaping Curves** Draw a Edit Curved Polylines Dr Ellipses Shape Splines		
4			**Editing Entities1** Can Erase, and Undo , U Coordinate Systems , U Fillet and Chamfer		
5			**Editing Entities2** Cre Selection Sets Move a Copy Work with Arrays U Trim and Extend		
6			**Editing Entities3** U Lengthen and Stretch U Offset and Mirror Edit w Grips		
7			**Drawing Aids** Use Grid a Snap , Employ Ortho a Polar Tracking , Use Po		
8			Snap , Select Running Obj Snaps , Apply Object Sn		
9			Tracking **Dimensioning** St Dimensions , A Dimensions , E Dimensions		
10			**Object Visibility a Appearance** Change Obj Properties Set the Curr Layer Manage La		
11			Properties Control La Visibility Apply Linetype		

12 13 14 15 16			**Hatching and Gradie** Specify Hatch Areas . Ha with Patterns . or Gradier **Organizing Objects** Def Blocks Insert Blocks E Blocks Work with Groups **Creating and Editing T** Style Text , Write Lines Text , Write and Forr Paragraphs Using MTEX Edit Text **Working with Data** Imp Sketch Up Models , Ins Attributed Blocks , E Table Styles and Cre Tables **Modeling in 3D** Create a Edit Surface Models , Cre Solid Models , Cre Renderings **Navigating 3D Models** Visual Styles , Navigate w the View Cube , Use Came , Navigate w SteeringWheels Preparatory week before final Exam		

. Course Evaluation

		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
	Midterm Exam	2 hr	10% (10)	7	LO # 1-7

	Summative assessment	**Final Exam**	2hr	50% (50)	16	All
	Total assessment			100% (100 Marks)		

Learning and Teaching Resources

	Text
Required Texts	AutoCAD 2022 Tutorial First Level 2D Fundamentals
Recommended Texts	AutoCAD® 2018 and AutoCAD LT 2018ss
Websites	https://www.youtube.com/watch?v=ewhcG-tUNzk&list=PLrOFa8sDv6jfBKw11Ez9hXbCZ17ir-Na5

Course Description Form

1. Course Name:
Electrical Circuits Analysis
2. Course Code:
EE202
3. Semester / Year:
3/2024
4. Description Preparation Date:
5. Available Attendance Forms:
6. Number of Credit Hours (Total) / Number of Units (Total)
ECTS Credits 5 SWL (hr/sem) 125
7. Course administrator's name (mention all, if more than one name)
Name: Professor Haider M. AlSabbagh Email: haider.alsabbagh@uobasrah.edu.iq
8. Course Objectives

Course Objectives	1- Understand and analyze resistive circ containing dependent and independent sources. chapter focuses on various circuit analysis techniqu including mesh analysis, super mesh, nodal analy and super node. It also covers Thevenin and No equivalent circuits, superposition analysis, maximum power transfer to develop skills simplifying and solving complex electrical network 2- To explore the transient response of diffe structures of electrical circuits: RL, RC, and R circuits in series and parallel configurations. This a to provide a thorough understanding of the tir dependent behavior of these circuits and mathematical tools required to analyze their comp response over time. 3- To introduce and apply sinusoidal steady-s analysis to AC circuits. The chapter focuses on pha representation, mesh and nodal analysis for

	circuits, and the application of Thevenin and No equivalents in AC scenarios. It also cov superposition analysis and the calculation of power, aiming to provide a comprehensive appro to analyzing and solving AC circuit problems. To understand the principles and applications of p phase circuits, particularly focusing on single-ph three-wire systems and three-phase systems (b balanced and unbalanced) with star and d connections. The chapter aims to develop skills analyzing power distribution and consumption three-phase circuits, which are essential in pract electrical engineering and power systems.

9. Teaching and Learning Strategies

Strategy	The basic strategy adopted in understanding this subject is to link the theoretical material and theoretical issues with the practical reality of that theoretical aspect.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1			Resistive circ with depende sources:		
2			Nodal analysis		
3			Linearity a Superposition:		
4			Basic RC and Circuits:		
5			Driven RC circui		
6			Driven RL circui		

7			The RLC Circuit:		
8			Sinusoidal stea state analysis:		
9			The compl forcing function		
10			Nodal and me analysis		
11			Superposition analysis		
12			Poly-phase Circuits:		
13			Three-phase Y connection		
14			Power in 3-pha circuits Tutorial about the studi subjects		
15					
16			Preparatory we before the fi Exam		

11. Course Evaluation

As		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	5% (5)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	20% (20)	Continuous	All

	Report	1	5% (5)	13	LO # 5, 8 and 10
Summative assessment	**Midterm Exam**	1 hr	10% (10)	7	LO # 1-7
	Final Exam	2 hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

12. Learning and Teaching Resources

	Text
Required Texts	Electrical Circuits Analysis
Recommended Texts	Electrical Circuits Analysis
Websites	

Course Description Form

1. Course Name:
Comprehensive Vector and Multivariable Calculus
2. Course Code:
EE201
3. Semester / Year:
3/2024
4. Description Preparation Date:
5. Available Attendance Forms:
6. Number of Credit Hours (Total) / Number of Units (Total)
ECTS Credits 6 SWL (hr/sem) 150
7. Course administrator's name (mention all, if more than one name)
Name: Assistant Prof. Ali K. Marzook Email: ali.marzook@uobasrah.edu.iq
8. Course Objectives

Course Objectives	1.To develop problem-solving skills understanding of vectors, partial derivatives, multiple integrals through examples and sol problems. 2.To understand the three-Dimensic Coordinate Systems and vector functions. 3.To study functions depending on more than independent variable, especially partial derivativ 4.To introduce Tangent Planes and Normal Lin 5.To understand Double Integrals over gen regions. 6.To understand Triple Integrals in rectangu cylindrical, and spherical coordinates.

9. Teaching and Learning Strategies

Strategy	Type something like: The main strategy that will be adopted delivering this module is to encourage students' participation in t exercises, while at the same time refining and expanding their criti thinking skills. This will be achieved through classes, interacti

	tutorials and by considering type of simple experiments involvi some sampling activities that are interesting to the students.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1			vector; scalars and vecto component of a vect rules of vector arithmeti		
2			norm of a vect normalizing of vectors, c product, cross product.		
3			product of three or mo vectors, equations of lir in space, planes in 3-spac		
4			Vector-valued functio limits and continui derivatives.		
5			forms of a curve equation in space, parametric representation, unit tangent and normal vectors.		
6			curvature, radius of curvature, motion along a curve.		
7			velocity, acceleration and speed.		
8			normal and tangential components of acceleration.		

9 10 11 12 13 14 15 16			Partial differentiation: Function of two or more variables, limits and continuity, partial derivatives, partial derivatives of functions of two variables, partial derivatives of functions with more than two variables. the chain rule, the chain rule for derivatives, the chain rule for partial derivatives, directional derivatives and gradients, directional derivatives, the gradient, tangent plans and normal vectors. maxima and minima of functions of two variables, Lagrange multipliers. Multiple integrals: Double integral, areas and volumes double integral in polar coordinates, parametric surfaces. surface area, surface integrals. evaluation of volume and triple integral. Preparatory week before the final Exam		

11. Course Evaluation

As		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	5% (5)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	20% (20)	Continuous	All
	Report	1	5% (5)	13	LO # 5, 8 and 10
Summative assessment	**Midterm Exam**	1 hr	10% (10)	7	LO # 1-7
	Final Exam	2 hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

12. Learning and Teaching Resources

	Text
Required Texts	Thomas' Calculus
Recommended Texts	Calculus
Websites	

Course Description Form

1. Course Name:
DC Machines
2. Course Code:
EE204
3. Semester / Year:
3/2024
4. Description Preparation Date:
5. Available Attendance Forms:
6. Number of Credit Hours (Total) / Number of Units (Total)
ECTS Credits 5 SWL (hr/sem) 125
7. Course administrator's name (mention all, if more than one name)
Name: Assistant Prof. Khalid M. Abdul Hassan Email:
8. Course Objectives

Course Objectives	1.Introduction to the importance of electrical machines and their classification. 2-Learn about the installation of a direct curren machine. 3-Knowing the types of windings used in DC machines 4-Knowing the magnetic performance of the machine from a magnetic circuit, the reaction o the production arm, and the flux of the main ar auxiliary poles 5-Know the types of direct current generators motors, the characteristics of each, their uses a applications. 6-Acquire the skill in conducting calculations related to the electrical and mechanical loads c direct current machines, as well as calculations the machine's electrical and magnetic characteristics.

9. Teaching and Learning Strategies

Strategy	The basic strategy adopted in understanding this subject is to link the theoretical material and theoretical issues with the practical reality of that theoretical aspect.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1			General principle of rotat electrical machines, a calculation of induced e energy		
2			power, and torque in machines, constriction of machines		
3			function of commutator, type armature windings calculat of mmf per pole, type excitation		
4			connections, armature reacti commutation		
5			, type and characteristics of DC generators.		
6			parallel operation of DC generators.		
7			losses and efficiency of DC machines		
8			Principle of operation of DC motors		
9			calculation of speed, calculation of torque		
10			starting of DC motors		

11			characteristics of DC motors and their type		
12			speed control of DC motors		
13			Electric breaking,		
14			testing of a DC machines . Preparatory week before the final Exam		

11. Course Evaluation

As		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	5% (5)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	20% (20)	Continuous	All
	Report	1	5% (5)	13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	1 hr	10% (10)	7	LO # 1-7
	Final Exam	2 hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

12. Learning and Teaching Resources

	Text
Required Texts	Principle of electrical Machines and their applications
Recommended Texts	Electrical technology
Websites	

Course Description Form

1. Course Name:
Electronic Circuits
2. Course Code:
EE201
3. Semester / Year:
3/2024
4. Description Preparation Date:
5. Available Attendance Forms:
6. Number of Credit Hours (Total) / Number of Units (Total)
ECTS Credits 9 SWL (hr/sem) 225
7. Course administrator's name (mention all, if more than one name)
Name: Assistant Prof.Abdul-Basset A. Al-Hussein Email: abdulbasset.jasim@uobasrah.edu.iq
8. Course Objectives

Course Objectives	The Electronic Circuits module aims to: 1.Provide foundational knowledge in electr components, including different types of transis (BJT, FET) and their operation. 2.Develop skills in circuit analysis, transi modeling, and design, including small-signal large-signal analysis. 3.Enhance practical abilities through hands-on work, focusing on RLC and Diodes circuits testing. 4.Prepare students for advanced topics electronics and related fields. 5.Introduce industry practices relevant to electr circuit design and applications.

9. Teaching and Learning Strategies	
Strategy	The basic strategy adopted in understanding this subject is to link t theoretical material and theoretical issues with the practical reality that theoretical aspect.

10. Course Structure					
Week	**Hours**	**Required Learning Outcomes**	**Unit or subject name**	**Learning method**	**Evaluation method**
1			Introduction Amplifier des (DC analysis)		
2			AC analysis: voltage ga current gain, power gain, scale, frequency dom characteristics		
3			Definition of small signal transistor, Bias circuits linear amplification, volta current, power gain		
4			Amplifier configurations		
5			Multistage Amplifiers cascade		
6			Driven RL circuits		
7			Mid-term Exam +Types of multistage FET's amplifiers (cascade, Cascode)		
8			Differential Amplifiers		
9			Frequency Response: Low frequency response of the CS and CE amplifiers, internal capacitive effects and the high frequency model of the FET and the BJT		
10			Review of high frequency response of CS and CE amplifiers, high frequency		

11 12 13 14 15 16			response of the CG and cascade amplifiers, high frequency response of source and emitter followers. Introduction of Feedback Amplifier: types, effects and topologies, feedback analysis Topologies: voltage-series, voltage shunt, current – series, and current-shunt Introduction of Power Amplifiers: Series-fed class A amplifier Transformer-coupled Class A amplifier, class B amplifier Amplifier distortion, power transistor heat sinking, class AB and push-pull amplifiers, class C Preparatory week before the final Exam		

11. Course Evaluation

As		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	5% (5)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	20% (20)	Continuous	All
	Report	1	5% (5)	13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	1 hr	10% (10)	7	LO # 1-7
	Final Exam	2 hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

12. Learning and Teaching Resources

	Text
Required Texts	Electronic Devices and Circuit Theory
Recommended Texts	Floyd - DIGITAL FUNDAMENTALS

Course Description Form

1. Course Name:
Microprocessors and Microcontrollers
2. Course Code:
EE203
3. Semester / Year:
3/2024
4. Description Preparation Date:
5. Available Attendance Forms:
6. Number of Credit Hours (Total) / Number of Units (Total)
ECTS Credits 5 SWL (hr/sem) 125
7. Course administrator's name (mention all, if more than one name)
Name:Assistant.Prof.IsraaS.AlFurati Email: israa.sabri@uobasrah.edu.iq
8. Course Objectives

Course Objectives	1.To understand the basics of microprocessors microcontrollers architectures and functionalities. 2.To develop an in-depth understanding of operation of microprocessors and microcontroll machine language programming & interfac techniques. 3.To design and develop Microproces microcontroller based systems for real t applications using low level language like ALP. To understand the concepts of processor.

9. Teaching and Learning Strategies	
Strategy	We will try to use good learning strategies to engage students in acti learning by using a variety of activities such as visualizati discussion, thinking or problem-solving. These activities promo analysis, synthesis, and the evaluation of class content. Equa important, they provide students with opportunities for feedback

	how well they understand course material, ensuring they are maki meaningful progress toward achieving course objectives.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1			Introduction Microprocessors		
2			8086 Architecture		
3			Programming model		
4			Memory Organization		
5			Instruction Set and Assembly Language Programming Of 8086		
6			Arithmetic Expressions		
7			Stack of 8086		
8			Interrupts of 8086		
9			MS-DOS Function Calls (INT 21h)		
10			Examples		
11			Introduction to Microcontrollers		

12			Microprocessor via Microcontroller		
13			Overview of 8051 Microcontroller		
14			Architecture of 8051 Microcontroller		
15			ARM Processor		
16			Preparatory week before the final Exam		

11. Course Evaluation

As		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	5% (5)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	20% (20)	Continuous	All
	Report	1	5% (5)	13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	1 hr	10% (10)	7	LO # 1-7
	Final Exam	2 hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

12. Learning and Teaching Resources

	Text
Required Texts	Microprocessor and Microcontrollers
Recommended Texts	The 8088 and 8086 microprocessors programm interfacing, hardware
Websites	

Course Description Form

1. Course Name:
Arabic Language
2. Course Code:
UOB107
3. Semester / Year:
4/2024
4. Description Preparation Date:
5. Available Attendance Forms:
6. Number of Credit Hours (Total) / Number of Units (Total)
ECTS Credits 2 SWL (hr/sem) 50
7. Course administrator's name (mention all, if more than one name)
Name: Dr. Wjdan Sadiq Email:
8. Course Objectives

Course Objectives	**إكتساب الطالب مهارة معرفية عن المفاهيم اللغوية .** **صون اللسان من الوقوع في الخطأ في نطق الكلمة .** **تنمية قدرات الطالب التعبيرية .** **تعليم الطلبة على تحليل منظومة الكلام .** **تعليم الطلبة على التمييز بين أصول الكلمة أو الزيادة وما تؤديه زيادة المعنى .** **تعليم الطلبة على أساليب وقواعد ضبط المفردات وصياغتها.** **تمكين الطالب على استعمال المفردات اللغوية بالموقع السليم.** **تقديم تدريبات لتقوية ملكة الطالب وتنمية مقدرته في الممارس اللغوية والبلاغة المؤثره مع الافادة من الخبرات والتدريبات.** **تمكين الطلبة من قراءة وتحليل النصوص الادبية وفهمها والقدرة على حفظها.** **تعليم الطلبة القراءة الصحيحة لايات القرآن الكريم ومعرفة معانيه وتنمية قدرة الطلبة على الحفظ والنطق السليم**

9. Teaching and Learning Strategies

Strategy	1ـ تقديم المحاضرة بشكل منسق ووفقا للوقت المحدد. 2ـ إعطاء الطلبة واجبات صفية وتكليفهم بتقديمها على المنصة. 3ـ إعطاء نسبة من الدرجة للأنشطة المقدمة من قبل الطلبة.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1			االنحو - اقسام الكلام (وفعل وحرف)		
2			المبتدأ وانواعه		
3			الخبر وانواعه		
4			كان واخواتها		
5			إن واخواتها		
6			المثنى والملحق به		
7			جمع المذكر الس والملحق به		
8			جمع المؤنث الس والملحق به		
9			الاسماء الخمسة		
10			بناء الفعل الماضي		
11			بناء الفعل الامر		
12			الفعل المضارع ب واعرابه		
13			الاسماء المنص (المفعول به – المف		

14			المطلق – المفعول لاجل المفعول فيه – المفعول معه) الشعر – نازك الملائكة		
15			الشعر – محمد مهدي الجواهري		
16			Preparatory week before the final Exam		

11. Course Evaluation

As		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	5% (5)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	20% (20)	Continuous	All
	Report	1	5% (5)	13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	1 hr	10% (10)	7	LO # 1-7
	Final Exam	2 hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

12. Learning and Teaching Resources

	Text
Required Texts	التعبير والإنشاء والرسم الكتابي والإملاء الخطي / أ.د. عبد الرحمن مطلك الجبوري
Recommended Texts	القرآن الكريم النحو الوافي / عباس حسن. قواعد الاملاء في عشرة دروس سهلة / د. فهمي النجار في الادب الحديث / أ.د. فائق مصطفى في الادب المعاصر/ د. بشير عيسوي الادب العربي في العصر الحديث / د. مصطفى السحرتي
Websites	

Course Description Form

1. Course Name:
Baath Party crimes
2. Course Code:
UOB105
3. Semester / Year:
4/2024
4. Description Preparation Date:
5. Available Attendance Forms:
6. Number of Credit Hours (Total) / Number of Units (Total)
ECTS Credits 2 SWL (hr/sem) 50
7. Course administrator's name (mention all, if more than one name)
Name: Hussain Jasim Email:
8. Course Objectives

Course Objectives	**أن مادة جرائم حزب البعث البائد من المواد الهامة والضرورية للطلبة لكونها تعرفهم بالاحداث والظروف والانتهاكات التي شهدها العراق منذ عام 1968 حتى عام 2003.** **حيث توضح المادة للطلبة وتعرفهم على اثار سلوكيات نظام البعث البائد على المجتمع العراقي**

9. Teaching and Learning Strategies

Strategy	القدرة على معرفة جرائم حزب البعث البائد

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1 2			انتهاكات الحقوق والحريات نبذة وصفية عن الانظمة السياسية العراق(1921-2003)		

3			انتهاكات النظام البعثي للحق والحريات العامة		
4			اثر سلوكيات النظام البعثي في المج وتسلطه على الدولة		
5			اثر المرحلة الانتقالية في محا السياسة الاستبدادية		
6			الميدان النفسي		
7			الميدان الاجتماعي		
8			الدين والدولة		
9			الثقافة والاعلام وعسكرة المجتمع		
10			اثر القمع والحروب على ال والسكان		
11			استعمال الاسلحة المحرمة د والتلوث البيئي		
12			سياسة الارض المحروقة		
13			تجفيف الاهوار والهجرة القسرية		
14			تدمير البيئة الزراعية والحيو والتلوث الاشعاعي		
15			المقابر الجماعية وقصف دور العب		
16			Preparatory week before the final Exam		

11. Course Evaluation

As		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	5% (5)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	20% (20)	Continuous	All
	Report	1	5% (5)	13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-7
	Final Exam	2 hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

12. Learning and Teaching Resources

	Text
Required Texts	منهاج جرائم حزب البعث البائد 2023
Recommended Texts	منهاج جرائم حزب البعث البائد 2023
Websites	

Course Description Form

1. Course Name:
Electrical Transformers
2. Course Code:
EE208
3. Semester / Year:
4/2024
4. Description Preparation Date:
5. Available Attendance Forms:
6. Number of Credit Hours (Total) / Number of Units (Total)
ECTS Credits 5 SWL (hr/sem) 125
7. Course administrator's name (mention all, if more than one name)
Name: Assistant Prof. Khalid M. Abdul Hassan Email:

8. Course Objectives	
Course Objectives	1. To understand the principle of transformers, E.M.F and transformer construction. 2. To understand and study transformer on no load and on load. 3. To understand the transformer equivalent circuit and Separation of core losses. 4. To study the Regulation of transformer, Loss and efficiency. 5. To study the Parallel operation of transforme Three–phase transformer, connections and cooling of transformers.

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

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1			Transformers working, principle of transformers		
2			Transformer constructi E.M.F equation.		
3			Transformer on no lo and on load (R load, load, RC load).		
4			equivalent circuit a phasor diagram Transformers.		
5			Open and short circuit te		
6			Separation of core losses		
7			Regulation of transforme		
8			Mid-term Exam		
9			Losses and efficiency		
10			All-Day efficiency		
11			Auto transformer		
12			Parallel operation		

13			Three-phase transform connections		
14			Open-Delta-Scoot connection		
15			cooling of transformers		
16			Preparatory week before the final Exam		

11. Course Evaluation

As		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	5% (5)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	20% (20)	Continuous	All
	Report	1	5% (5)	13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	1 hr	10% (10)	7	LO # 1-7
	Final Exam	2 hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

12. Learning and Teaching Resources

	Text
Required Texts	Principle of electrical Machines and their applications
Recommended Texts	Electrical technology
Websites	

Course Description Form

1. Course Name:
Electromagnetic Fields
2. Course Code:
EE206
3. Semester / Year:
4/2024
4. Description Preparation Date:
5. Available Attendance Forms:
6. Number of Credit Hours (Total) / Number of Units (Total)
ECTS Credits 7 SWL (hr/sem) 175
7. Course administrator's name (mention all, if more than one name)
Name: Prof. Ali Amin Abduljabar Email: ali.abduljabar@uobasrah.edu.iq
8. Course Objectives

Course Objectives	• Develop a Fundamental Understanding To provide students with a solid foundation in theory and principles of electric and magn fields, including their mathematical representati and physical interpretations. • Apply Maxwell's Equations To enable students to understand, derive, apply Maxwell's equations in both differential integral forms to describe electromagn phenomena. • Bridge Theory and Practical Application To relate theoretical electromagnetic concepts real-world applications in engineering, such antennas, transmission lines, wave propagat and electromagnetic compatibility. • Enhance Analytical Skills To cultivate analytical problem-solving s through the use of vector calculus and differer

	equations in the analysis of static and dyna electromagnetic fields. • Use Computational Tools To introduce students to computational meth and simulation tools (e.g., MATLAB, COMSOL ANSYS) for modeling and visualiz electromagnetic field distributions. • Foster Independent Learning and Research To encourage critical thinking, self-direc learning, and the ability to research current tre and advancements in electromagnetic field the and applications.

9. Teaching and Learning Strategies

Strategy	The module employs a range of teaching and learning strategies to develop both theoretical understanding and practical competence i electromagnetic field theory and its applications. 1. Lectures o Delivered weekly to introduce and explain key principles, law and mathematical frameworks. o Use of visualizations, demonstrations, and real-world exampl to enhance conceptual clarity. 2. Interactive Tutorials o Problem-solving sessions focused on applying theoretical concepts to practical problems. o Encourages analytical thinking, peer collaboration, and active engagement with course material. 3. Laboratory and Simulation-Based Learning o Practical experiments and software-based simulations (e.g., MATLAB, COMSOL, ANSYS HFSS) to investigate electromagnetic fie behavior. o Reinforces theoretical learning and develops computational modeling skills. 4. Self-Directed Learning o Guided reading materials, videos, and online resources provided through the Virtual Learning Environment (VLE). o Encourages independent study and deeper exploration of challenging concepts. 5. Project-Based Learning

	o Application-oriented projects or case studies allowing studer to investigate real-world electromagnetic systems (e.g., antenna analysis, waveguide modeling). o Develops problem-solving, teamwork, and communication skills. 6. Formative Assessments and Feedback o Regular quizzes, assignments, and in-class activities to assess understanding and provide continuous feedback. o Helps identify misconceptions and target areas for improvement early in the learning process. 7. Blended Learning Approach (where applicable) o Integration of online modules or flipped classroom technique to support flexible and active learning. o Pre-recorded content and digital exercises supplement in-person teaching. 8. Academic Support and Office Hours o Dedicated time for individual consultations, addressing speci academic queries and supporting student progress.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1			coordinate systems		
2			Vector analysis		
3			Electric field intensity		
4			Electric flux density a gauss's law		
5			Electric flux density a gauss's law: gauss's l application on a surfa charge		

6			Work, potential & potent difference		
7			dielectric – dielect boundary conditio conductor		
8			Magneto-statics: the sta magnetic fields		
9			Magneto-statics		
10			Magnetic forces, work power		
11			Magnetic forces, work power: power. ti varying fields		
12			Maxwell's equations: t vector operator		
13			Maxwell's equatio derivation of Maxwe equations		
14			Maxwell's equations: t uniform plane wave		
15			Maxwell's equations: wa propagation in free space		
16			Preparatory week before the final Exam		

11. Course Evaluation

As		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	5% (5)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	20% (20)	Continuous	All
	Report	1	5% (5)	13	LO # 5, 8 and 10
Summative assessment	**Midterm Exam**	2 hr	10% (10)	7	LO # 1-7
	Final Exam	2 hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

12. Learning and Teaching Resources

	Text
Required Texts	Engineering electromagnetic fields and waves." New York (1975)
Recommended Texts	Electromagnetic fields and Waves.
Websites	

Course Description Form

1. Course Name:
English Language II
2. Course Code:
UOB106
3. Semester / Year:
4/2024
4. Description Preparation Date:
5. Available Attendance Forms:
6. Number of Credit Hours (Total) / Number of Units (Total)
ECTS Credits 2 SWL (hr/sem) 50
7. Course administrator's name (mention all, if more than one name)
Name: Ali A. Al-Azza Email: ail.noaman@uobasarah.edu.iq
8. Course Objectives

Course Objectives	1.Provide students with essential information in English language in association with read writing and speaking skills, and knowing m English vocabulary. 2.To understand sentences, tenses, and practic writing. 3.This module works towards enhancing stude English language competencies along with t technical or professional knowledge. 4.Enhancing students' communication skills English can result in better job opportunities in future

9. Teaching and Learning Strategies

Strategy	The main strategies that will be adopted in delivering this module a - Allow students to actively participate in the learning process w class discussions and exercises that support the initiative. - Use didactic questioning through questions to determine stude understanding of the material.

	- Writing an assignment and report that encourages students clarify and organize their thinking and independently research a present on a topic.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1			Tenses (Present, Past, a Future), Questio Questions word		
2			Present Tenses (Prese Simple, Prese Continuous) Te		
3			have/have got Past Tenses (Past Simp Past Continuous)		
4			Vocabulary: Buyi Things		
5			Verb Patterns 1, Futu intentions		
6			What 'sit like? Comparati and superlative adjective		
7			Present Perfect and P Simple, for and since, Ter revision		
8			Have (got) to, Should, Mu		
9			Time and Condition Clauses, What if?		
10			Verb Patterns 2, Infinitiv Purpose, (What, et		

11			infinitive), (somethi etc.+ infinitive) Active and Passive Voice		
12			Second conditional, migh : Present Perf Continuous, Present		
13			Perfect Simple vers Continuous		
14			Past Perfect, Report statements		
15			Distinguish make and will and would, like, ali unlike, and dislike, a other, another, and other		
16			Preparatory week before the final Exam		

11. Course Evaluation

As		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	5% (5)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	20% (20)	Continuous	All
	Report	1	5% (5)	13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	1 hr	10% (10)	7	LO # 1-7
	Final Exam	2 hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

12. Learning and Teaching Resources

	Text
Required Texts	New Headway Plus/ Pre-Intermediate, John and Liz So Oxford University Press
Recommended Texts	Understanding and Using English Grammar, 5th Edit Betty S. Azar Stacy A. Hagen

Course Description Form

1. Course Name:
Introduction to Electrical Networks
2. Course Code:
EE205
3. Semester / Year:
4/2024
4. Description Preparation Date:
5. Available Attendance Forms:
6. Number of Credit Hours (Total) / Number of Units (Total)
ECTS Credits 7 SWL (hr/sem) 175
7. Course administrator's name (mention all, if more than one name)
Name: Prof.Haider M. AlSabbagh Email: haider.alsabbagh@uobasrah.edu.iq
8. Course Objectives

Course Objectives	1. Ability to understand the AC Circuit Po Analysis and Poly-phase Circuits 2. Ability to determine the Transient Response RL /RC Circuit and the Transient Response of F Circuit 3. Ability to analysis Magnetically Coupled Circ and Ideal Transformers 4. Ability to solve the mathematical equations Complex Frequency, Laplace Transfo Frequency Response and Fourier Circuit Analy 5. Ability to synthesize the Circuit Analysis in s-Domain and Two-Port Networks

9. Teaching and Learning Strategies	
Strategy	The main strategy that will be adopted in delivering this module is encourage students' participation in the exercises, while at the sa time refining and expanding their critical thinking skills. This will achieved through classes, interactive tutorials and by considering ty

	of simple experiments involving some sampling activities that a interesting to the students.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1			Introduction; syllab Advantages a Disadvantages of Electri Networks as a differe circuits .		
2			Two-Port Networks : Or pot networks		
3			Two-Port Networks : y-z g parameters		
4			Two-Port Networks : AB parameters		
5			Complex Frequency		
6			Circuit Analysis in the Domain		
7			Frequency Response		
8			Bode Diagrams		
9			Mid-term Exam		
10			Filters: Constant k-filte Low pass and high pass		
11					

12			Filters: modern fil design, Butterworth a filters		
13			Filters: Netwo transformations All pass filter		
14			Active filter		
15			Fourier circuit analysis		
16			Preparatory week before the final Exam		

11. Course Evaluation

As		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	5% (5)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	20% (20)	Continuous	All
	Report	1	5% (5)	13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	1 hr	10% (10)	7	LO # 1-7
	Final Exam	2 hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

12. Learning and Teaching Resources

	Text
Required Texts	Engineering Circuit Analysis Eight Edition
Recommended Texts	Electric Circuits Tenth Edition
Websites	

Course Description Form

1. Course Name:
Mathematical Analysis and Transform Techniques
2. Course Code:
E202
3. Semester / Year:
4/2024
4. Description Preparation Date:
5. Available Attendance Forms:
6. Number of Credit Hours (Total) / Number of Units (Total)
ECTS Credits 5 SWL (hr/sem) 125
7. Course administrator's name (mention all, if more than one name)
Name: Assist.Prof. Ali K. Marzook Email:
8. Course Objectives

Course Objectives	1.To develop problem solving skills understanding of related engineering mathema topics 2.To develop skills in evaluating multiple integ different coordinate systems covering phys applications. 3.To perform integration of vectors. 4.To understand Laplace transform and properties. 5.To understand Fourier analysis and transforr signal analysis and spectral measure.

9. Teaching and Learning Strategies

Strategy	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 group based solving problems.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1			Basic Definitions, Physi applications		
2			Triple integral, cylindri coordinates, Spheri coordinates.		
3			Line Integrals, Doul Integrals,		
4			Green's Theorem, Surfa area and surface Integral		
5			Stokes's Theorem, Divergence Theorem.		
6			Laplace Transfor Linearity. First Shifti Theorem (s-Shiftin Transforms of Derivativ and Integrals		
7			Unit Step Function, Seco Shifting Theorem Shifting), Short Impuls Dirac's Delta Functi Partial Fractions, Gam functions		
8			Other useful properti Convolution. Integ Equations, Differentiati and Integration Transforms, Systems ODEs		

9			Inverse Laplace Transfor General Formulas a Applications		
10			Solution of PDEs by Lapla Transform		
11			Arbitrary Period. Even a Odd Functions. Half-Ran Expansions, Forc Oscillations		
12			Approximation by Trigonometric Polynomial Sturm–Liouville Problems Orthogonal Functions, Orthogonal Series.		
13			Generalized Fourier Seri The use of Fourier Series spectral analysis		
14			Fourier Integral, Four Cosine and Si Transforms, Four Transform.		
15			Fourier Transfo properties, Four Transform of some use functions		
16			Preparatory week before the final Exam		

11. Course Evaluation

As		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	5% (5)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	20% (20)	Continuous	All
	Report	1	5% (5)	13	LO # 5, 8 and 10
Summative assessment	**Midterm Exam**	1 hr	10% (10)	7	LO # 1-7
	Final Exam	2 hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

12. Learning and Teaching Resources

	Text
Required Texts	Thomas Jr GB, Weir MD, Hass J, Heil C, "Thomas' Calcu Early Transcendentals", Pearson, 13th Edition 2014.
Recommended Texts	[1] Erwin Kreyszig, "Advanced Engineering Mathemati John Wiley & Sons Inc, 10th Ed. 2011 [2] Thomas and Finney, "Calculus and Analytic Geomet Pearson Education Inc, 9th
Websites	

Course Description Form

1. Course Name:
Communication Theory
2. Course Code:
EE304
3. Semester / Year:
5/2024
4. Description Preparation Date:
5. Available Attendance Forms:
6. Number of Credit Hours (Total) / Number of Units (Total)
ECTS Credits 5 SWL (hr/sem) 125
7. Course administrator's name (mention all, if more than one name)
Name: Assistant Professor Falih M. Mussa Email:
8. Course Objectives

Course Objectives	The aim of this module is to provide students with a s foundation in the principles and mathematical framewo underlying modern communication systems. It focuses the analysis and design of analog and dig communication techniques used in wired and wirel systems. Specifically, the module aims to: 1. Introduce the fundamental concepts of informa transmission, signal modulation, and noise analysis. 2. Develop mathematical tools and models analyzing the performance of communication syste under various channel conditions. 3. Explore analog and digital modulation schem bandwidth efficiency, and power considerations. 4. Examine the impact of noise, distortion, interference on communication system reliability quality.

	5. Prepare students for advanced study or career telecommunications, wireless communications, sig processing, and related areas.

9. Teaching and Learning Strategies

Strategy	• Lectures with Conceptual Emphasis • Present foundational theory with clear derivations and practi examples. • Use visual aids such as signal waveforms, spectra, and blo diagrams. • Integrate periodic concept checks or quick quizzes to enhan engagement. • Tutorials and Problem-Solving Sessions • Provide guided exercises on information theory calculatio modulation/demodulation, and noise analysis. • Encourage group discussions and peer-to-peer learning for tackli complex problems. • Use step-by-step approaches to build problem-solving confidence • Simulation and Laboratory Work • Incorporate MATLAB or Python-based labs for signal generati modulation, noise addition, and demodulation. • Allow hands-on exploration of BER curves and system performan under varying conditions. • Use real hardware or software-defined radio kits (if available) demonstrate concepts practically. • Blended Learning Approaches • Supplement lectures with online video tutorials, animations, a interactive applets for visualization. • Use platforms like Coursera, MIT OpenCourseWare, or Kh Academy for self-paced reinforcement. • Case Studies and Real-World Examples • Discuss communication standards (e.g., GSM, LTE, WiFi) contextualize theoretical concepts. • Analyze recent developments in wireless communications or digi broadcasting to inspire interest. • Formative Assessments and Feedback • Conduct quizzes, mini-projects, or assignments to provide tim feedback. • Use peer assessment and self-assessment tools to promote reflecti learning. • Group Projects or Presentations (optional) • Assign collaborative projects on designing basic communicati systems or analyzing communication channels.

	• Encourage presentations to build communication skills a technical confidence.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1			Introduction Communication Systems		
2			Information Theo Basics		
3			Channel Capacity a Mutual Information		
4			Signal Representati and Noise		
5			Analog Modulati Techniques I		
6			Analog Modulati Techniques II		
7			Demodulation a Detection		
8			Digital Communication Fundamentals		
9			Digital Modulati Techniques I		
10			Digital Modulati Techniques II		
11			Noise and Syste Performance		

12			Multiplexing Techniques		
13			Communication System Desi Considerations		
14			Simulation a Practical Labs		
15			Revision and Exa Preparation		
16			Preparatory we before the final Exa		

11. Course Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	5, 10	
	Assignments	2	10% (10)	2, 12	
	Projects / Lab.	1	10% (10)	Continuous	
	Report	1	10% (10)	13	
Summative assessment	**Midterm Exam**	2 hr	10% (10)	7	
	Final Exam	2hr	50% (50)	16	
Total assessment			100% (100 Marks)		

12. Learning and Teaching Resources

	Text
Required Texts	Communication Systems
Recommended Texts	Communication Systems
Websites	

Course Description Form

1. Course Name:
Engineering Analysis
2. Course Code:
EE301
3. Semester / Year:
5/2024
4. Description Preparation Date:
5. Available Attendance Forms:
6. Number of Credit Hours (Total) / Number of Units (Total)
ECTS Credits 6 SWL (hr/sem) 150
7. Course administrator's name (mention all, if more than one name)
Name: Assistant Professor Hisham L. Swadi Email:
8. Course Objectives

Course Objectives	The aim of this module is to develop students' ability apply mathematical, analytical, and computational meth to solve fundamental engineering problems. It equ students with the tools and techniques required modeling, analyzing, and interpreting engineering syste and data across various disciplines. Specifically, the module aims to: 1. Introduce core mathematical methods used engineering analysis, including algebra, calculus, lin algebra, and differential equations. 2. Develop students' problem-solving skills applying these methods to mechanical, electrical, and engineering problems. 3. Promote the use of computational tools (e MATLAB, Excel) to model and simulate enginee systems. 4. Strengthen analytical thinking and logical reason in the context of physical systems and techn challenges.

	5. Provide a foundation for advanced topics engineering mathematics, control systems, sig processing, fluid dynamics, and thermodynamics.

9. Teaching and Learning Strategies

Strategy	1. **Lectures** o Deliver core theoretical concepts using visual aids and real-world examples. o Use step-by-step problem walkthroughs to model analytical thinking. 2. **Tutorial Sessions** o Facilitate guided practice through problem-solving exercises. o Encourage peer discussion and collaborative learning. 3. **Laboratory and Computing Workshops** o Provide hands-on experience with MATLAB, Python, or Excel for numerical analysis and modeling. o Reinforce abstract concepts with simulations and data visualization. 4. **Blended Learning / Online Resources** o Supplement in-class teaching with online videos, quizzes, and interactive tools. o Use platforms like NPTEL, Khan Academy, or institutional LMS for self-paced learning. 5. **Problem-Based Learning (PBL)** o Use real-world engineering scenarios to promote critical thinking and applied mathematics. o Encourage students to identify appropriate analytical techniques to solve open-ended problems. 6. **Formative Assessment and Feedback** o Incorporate low-stakes quizzes and in-class polls to check understanding. o Provide prompt and constructive feedback on assignments and lab tasks. 7. **Group Work and Peer Learning** o Promote teamwork on problem sets and projects to enhance communication and collaborative skills. o Use peer instruction methods to deepen understanding. 8. **Self-Directed Learning** o Encourage the use of additional textbooks, online resources, and tutorials. o Assign independent study tasks that challenge students to extend their knowledge beyond the syllabus. 9. **Scaffolded Learning Progression** o Structure content from basic to advanced levels, reinforcing prerequisite knowledge. o Revisit key concepts in different contexts to promote retention and application. 10. **Integration with Other Modules**

	• Show links between mathematical techniques and applications in mechanics, electronics, thermodynamics, etc. • Encourage transfer of skills to design, simulation, and research projects.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1			Introduction a Review of Algebra Complex Numbers		
2			Complex Numbers		
3			Integration Techniques		
4			Ordinary Different Equations (ODEs) Part 1		
5					
6			Ordinary Different Equations (ODEs) Part 2		
7			Matrices a Determinants		
8			Eigenvalues a Eigenvectors		
9			Vector Analysis		
10			Numerical Method Root Finding		
			Numerical Method Integration and OD		

11			Data Analysis a Statistics		
12			Fourier and Lapla Transforms (Intro)		
13			Engineering Computation		
14			Review and Ex Preparation		
15			Preparatory we before the final Exa		

11. Course Evaluation

		As	Time/Number	Weight (Marks)	Week Due
Formative assessment	**Formative assessment**	**Quizzes**	2	10% (10)	5, 10
	Assignments	**Assignments**	2	10% (10)	2, 12
	Projects / Lab.	**Projects / Lab.**	1	10% (10)	Continuous
	Report	**Report**	1	10% (10)	13
Summative assessment	**Summative assessment**	**Midterm Exam**	2 hr	10% (10)	7
	Final Exam	**Final Exam**	2hr	50% (50)	16
Total assessment			**Total assessment**	100% (100 Marks)	

12. Learning and Teaching Resources

	Text
Required Texts	Advanced Engineering Mathematics
Recommended Texts	Differential Equations & Linear Algebra

Course Description Form

1. Course Name:
Analog Electronics
2. Course Code:
EE311
3. Semester / Year:
5/2024
4. Description Preparation Date:
5. Available Attendance Forms:
6. Number of Credit Hours (Total) / Number of Units (Total)
ECTS Credits 5 SWL (hr/sem) 125
7. Course administrator's name (mention all, if more than one name)
Name: Assistant Professor Abdul Basit A. Jasim Email:
8. Course Objectives

Course Objectives	Operational Amplifiers The ideal OP amplifier, the inverting configuration, non−inverting configuration, difference amplifi integrators and differentiators, DC imperfectio effect of finite open loop gain and bandwidth on cir performance, large signal operation of OP Amps, 741 OP−Amp circuit, some OP Amp applications. Active Filters Filters concept, types, direct realization approa simulated inductance methods, variable frequer scaling methods, state variable filter, cascad realization approach, single operation ampl structures, voltage controlled voltage source circu multiple loop feedback circuits. Oscillators Oscillator concepts, Low frequency oscillators, F phase shift oscillators, Wien−bridge oscillators, H frequency oscillators, Hartley oscillators, Colp

	oscillators, Clapp and Meissner oscillators, Nega resistance oscillators, Crystal oscillators. Voltage and Current Regulators Zener diode stabilizers, line regulation, volt regulators, series regulators, shunt regulat switching regulators, current regulators, typ current, grounded load C.R. Analogue Multiplexers Analogue multiplier operation, characteristics applications. Analogue Multipliers Logarithmic multiplier, quainter–square multip triangle–averaging multiplier, time division multip current rationing multiplier.
9. Teaching and Learning Strategies	
Strategy	11. **Lectures** o Deliver core theoretical concepts using visual aids and real-world examples. o Use step-by-step problem walkthroughs to model analytical thinking. 12. **Tutorial Sessions** o Facilitate guided practice through problem-solving exercises. o Encourage peer discussion and collaborative learning. 13. **Laboratory and Computing Workshops** 14. **Blended Learning / Online Resources** 15. **Problem-Based Learning (PBL)** 16. **Formative Assessment and Feedback** o Incorporate low-stakes quizzes and in-class polls to check understanding. o Provide prompt and constructive feedback on assignments and lab tasks. 17. **Group Work and Peer Learning** o Promote teamwork on problem sets and projects to enhance communication and collaborative skills. o Use peer instruction methods to deepen understanding. 18. **Self-Directed Learning** o Encourage the use of additional textbooks, online resources, and tutorials. o Assign independent study tasks that challenge students to extend their knowledge beyond the syllabus. 19. **Scaffolded Learning Progression** o Structure content from basic to advanced levels, reinforcing prerequisite knowledge.

	○ Revisit key concepts in different contexts to promote retention and application. 20. **Integration with Other Modules** • Show links between mathematical techniques and applications in mechanics, electronics, thermodynamics, etc. • Encourage transfer of skills to design, simulation, and research projects.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1			Introduction a Review of Algebra Complex Number		
2			Complex Number		
3			Integration Techniques		
4			Ordinary Differential Equations (ODEs Part 1		
5			Ordinary Differential Equations (ODEs Part 2		
6			Matrices a Determinants		
7			Eigenvalues a Eigenvectors		
8			Vector Analysis		
9			Numerical Metho – Root Finding		

10			Numerical Metho – Integration a ODEs		
11			Data Analysis a Statistics		
12			Fourier and Lapla Transforms (Intr		
13			Engineering Computation		
14			Review and Exa Preparation		
15			Preparatory we before the fi Exam		

11. Course Evaluation

		Time/Number	Weight (Marks)	Week Due
Formative assessment	**Quizzes**	2	10% (10)	5, 10
	Assignments	2	10% (10)	2, 12
	Projects / Lab.	1	10% (10)	Continuous
	Report	1	10% (10)	13
Summative assessment	**Midterm Exam**	2 hr	10% (10)	7
	Final Exam	2hr	50% (50)	16
Total assessment			100% (100 Marks)	

12. Learning and Teaching Resources

	Text
Required Texts	
Recommended Texts	

Course Description Form

1. Course Name:
AC Machines-I
2. Course Code:
EE303
3. Semester / Year:
5/2024
4. Description Preparation Date:
5. Available Attendance Forms:
6. Number of Credit Hours (Total) / Number of Units (Total)
ECTS Credits 5 SWL (hr/sem) 125
7. Course administrator's name (mention all, if more than one name)
Name: Assistant Professor Kharia A Mohammed Email:
8. Course Objectives

Course Objectives	–Three–Phase Induction Motors –Single Phase Induction Motor –Synchronous Machines –Special Machines –Introduction to power electronics –Rectifiers –Converter Operation –Choppers –Inverters
9. Teaching and Learning Strategies	
Strategy	21. **Lectures** o Deliver core theoretical concepts using visual aids and real-world examples. o Use step-by-step problem walkthroughs to model analytical thinking. 22. **Tutorial Sessions** o Facilitate guided practice through problem-solving exercises. o Encourage peer discussion and collaborative learning. 23. **Laboratory and Computing Workshops**

24. **Blended Learning / Online Resources**
25. **Problem-Based Learning (PBL)**
    - Use real-world engineering scenarios to promote critical thinking and applied mathematics.
    - Encourage students to identify appropriate analytical techniques to solve open-ended problems.
26. **Formative Assessment and Feedback**
    - Incorporate low-stakes quizzes and in-class polls to check understanding.
    - Provide prompt and constructive feedback on assignments and lab tasks.
27. **Group Work and Peer Learning**
    - Promote teamwork on problem sets and projects to enhance communication and collaborative skills.
    - Use peer instruction methods to deepen understanding.
28. **Self-Directed Learning**
    - Encourage the use of additional textbooks, online resources, and tutorials.
    - Assign independent study tasks that challenge students to extend their knowledge beyond the syllabus.
29. **Scaffolded Learning Progression**
    - Structure content from basic to advanced levels, reinforcing prerequisite knowledge.
    - Revisit key concepts in different contexts to promote retention and application.
30. **Integration with Other Modules**

- Show links between mathematical techniques and applications in mechanics, electronics, thermodynamics, etc.
- Encourage transfer of skills to design, simulation, and research projects.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1			-Three-Phase Induction Motor		
2			Single Pha Induction Motor		
3			Synchronous Machines		

4			Special Machine		
5			Introduction power electroni		
6			Rectifiers		
7			Converter Operation		
8			Choppers		
9			Inverters		

11. Course Evaluation

		As	Time/Number	Weight (Marks)	Week Due
Formative assessment	**Formative assessment**	**Quizzes**	2	10% (10)	5, 10
	Assignments	**Assignments**	2	10% (10)	2, 12
	Projects / Lab.	**Projects / Lab.**	1	10% (10)	Continuous
	Report	**Report**	1	10% (10)	13
Summative assessment	**Summative assessment**	**Midterm Exam**	2 hr	10% (10)	7
	Final Exam	**Final Exam**	2hr	50% (50)	16
Total assessment			**Total assessment**	100% (100 Marks)	

12. Learning and Teaching Resources

	Text
Required Texts	Advanced Engineering Mathematics
Recommended Texts	Differential Equations & Linear Algebra

Course Description Form

1. Course Name:
Control Theory and Systems-I
2. Course Code:
EE305
3. Semester / Year:
5/2024
4. Description Preparation Date:
5. Available Attendance Forms:
6. Number of Credit Hours (Total) / Number of Units (Total)
ECTS Credits 6 SWL (hr/sem) 150
7. Course administrator's name (mention all, if more than one name)
Name: Professor Fadhil R. Tahir Email:
8. Course Objectives

Course Objectives	1-Introduction and revi (4 hrs) Systems, plant, linear dynamical systems, open l and closed loop (feedback) systems. 2-Modeling of Control Syste (10 hrs) Mathematical model of electrical syste electromechanical systems, block diagrams, sig flow graph, Mason's rule. Mathematical model of electrical syste electromechanical systems, block diagrams, sig flow graph, Mason's rule. 3-Time domain analy (10 hrs) Response of 1St order systems, response of order systems, step response analysis performance specifications, static and dynamic e coefficient.

	4−Stability Analy (10 hrs) Stability of dynamical systems, the Routh−Hur stability criterion, root locus analysis 5− Frequency domain Analy (10 hrs) Frequency domain analysis, the Bode diagram, stability in frequency domain, the Nyquist stab criterion. 5. Provide a foundation for advanced topics engineering mathematics, control systems, sig processing, fluid dynamics, and thermodynamics

9. Teaching and Learning Strategies

Strategy	31. **Lectures** 32. **Tutorial Sessions** o Facilitate guided practice through problem-solving exercises. o Encourage peer discussion and collaborative learning. 33. **Laboratory and Computing Workshops** 34. **Problem-Based Learning (PBL)** o Use real-world engineering scenarios to promote critical thinking and applied mathematics. o Encourage students to identify appropriate analytical techniques to solve open-ended problems. 35. **Formative Assessment and Feedback** o Incorporate low-stakes quizzes and in-class polls to check understanding. o Provide prompt and constructive feedback on assignments and lab tasks. 36. **Group Work and Peer Learning** o Promote teamwork on problem sets and projects to enhance communication and collaborative skills. o Use peer instruction methods to deepen understanding. 37. **Self-Directed Learning** o Encourage the use of additional textbooks, online resources, and tutorials. o Assign independent study tasks that challenge students to extend their knowledge beyond the syllabus. 38. **Scaffolded Learning Progression** o Structure content from basic to advanced levels, reinforcing prerequisite knowledge. o Revisit key concepts in different contexts to promote retention and application. 39. **Integration with Other Modules**

	• Show links between mathematical techniques and applications in mechanics, electronics, thermodynamics, etc. • Encourage transfer of skills to design, simulation, and research projects.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1 2 3 4 5 6 7 8 9			1-Introduction a review: (4 hrs) Systems, plant, line dynamical syster open loop and clos loop (feedbac systems. 2-Modeling of Cont Systems: (10 hrs) Mathematical moc of electrical syster electromechanical systems, blo diagrams, signal fl graph, Mason's rule Mathematical moc of electrical syster electromechanical systems, blo diagrams, signal fl graph, Mason's rule 3-Time doma analysis: (10 hrs) Response of 1St orc systems, response 2nd order syster step respor analysis a performance specifications, sta		

10 11 12 13 14 15			and dynamic err coefficient. 4-Stability Analys (10 hrs) Stability of dynami systems, the Rou Hurwitz stabil criterion, root loc analysis 5- Frequency doma Analysis: (10 hrs) Frequency doma analysis, the Bo diagram, the stabil in frequency doma the Nyquist stabil criterion. 5. Provide foundation advanced topics engineering mathematics, cont systems, sig processing, flu dynamics, a thermodynamics.		

11. Course Evaluation

As	Time/Number		Weight (Marks)	Week Due
Formative assessment	Quizzes	2	10% (10)	5, 10
	Assignments	2	10% (10)	2, 12
	Projects / Lab.	1	10% (10)	Continuous
	Report	1	10% (10)	13
Summative assessment	Midterm Exam	2 hr	10% (10)	7
	Final Exam	2hr	50% (50)	16
Total assessment	100% (100 Marks)			

12. Learning and Teaching Resources

	Text
Required Texts	

Course Description Form

1. Course Name:
Power Systems-I
2. Course Code:
EE309
3. Semester / Year:
5/2024
4. Description Preparation Date:
5. Available Attendance Forms:
6. Number of Credit Hours (Total) / Number of Units (Total)
ECTS Credits 4 SWL (hr/sem) 100
7. Course administrator's name (mention all, if more than one name)
Name: Lecturer Hamid Wasfi Email:
8. Course Objectives

Course Objectives	Sources of Electrical Energy Structure of power system and its elements, m sources of primary energy, power stations, ste hydro, gas turbines, nuclear, M.H.D generat renewable energy sources, solar energy, w generators, other renewable sources, AC and single and 3-phase transmission, development electric power in Iraq. Economical Aspects of Power Systems Economics of generation, load curves, choice of s and number of generator units, effect of syst voltage on transmission efficiency of power sup system, choice of transmission voltage, condu size and Kelvin's law, power factor improvem most economical power factor, tariffs. Mechanical Design of Transmission Lines Conductor materials, line supports, sag, calculatio sag, effect of wind and ice, insulators, volt

	distribution over an insulator string, string efficien improving string efficiency. Transmission Line Parameters Line resistance, line inductance, single-phase with multi-conductors, bundling, line inductance three-phase transmission systems, single-ph and three-phase capacitance. Electrical Characteristics of Overhead Transmiss Lines Representation of lines, short, medium, long T.L., equivalent circuit of a long transmission line, po factor flow through a transmission line, power ci diagram, line regulation, reactive compensation transmission line. Corona Phenomenon, disruptive critical voltage, vis critical voltage, corona losses, factor and conditi affecting corona losses. Underground Cables Conductor materials, insulating materials, sheath end armouring materials, types of cables, insula resistance, stress and capacitance, use intersheaths, capacitance grading, power factor cables, capacitance in three core cables, ther characteristics, comparison between overhead li and underground cables.
9. Teaching and Learning Strategies	
Strategy	• Lectures with Conceptual Emphasis • Tutorials and Problem-Solving Sessions • Blended Learning Approaches • Supplement lectures with online video tutorials, animatio and interactive applets for visualization. • Case Studies and Real-World Examples • Formative Assessments and Feedback • Conduct quizzes, mini-projects, or assignments to provi timely feedback. • Use peer assessment and self-assessment tools to promo reflective learning. • Group Projects or Presentations (optional)

	• Assign collaborative projects on designing basic communicati systems or analyzing communication channels. • Encourage presentations to build communication skills a technical confidence.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1 2 3 4 5 6 7			Sources Electrical Energy Structure of pow system and elements, ma sources of prima energy, pow stations, stea hydro, gas turbin nuclear, M.H generation, renewable ener sources, so energy, wi generators, oth renewable sourc AC and DC sin and 3-pha transmission, development electric power Iraq. Economical Aspects of Pow Systems Economics generation, lo curves, choice size and number generator uni effect of syste voltage transmission efficiency of pow		

8 9 10 11 12 13 14 15 16			supply syste choice transmission voltage, conduct size and Kelvi law, power fact improvement, m economical pow factor, tariffs. Mechanical Desi of Transmissi Lines Conductor materials, li supports, s calculation of s effect of wind a ice, insulato voltage distribution ov an insulator stri string efficien improving stri efficiency. Transmission Li Parameters Line resistance, li inductance, sing phase line w multi-conductors bundling, li inductance three-phase transmission systems, sing phase and thr phase capacitanc Electrical Characteristics Overhead Transmission Lin Representation lines, sho		

			medium, long T the equivale circuit of a lo transmission li power factor fl through transmission li power cir diagram, li regulation, reacti compensation transmission line Corona Phenomenon, disruptive criti voltage, visu critical volta, corona loss factor a conditions affecti corona losses. Underground Cables Conductor materials, insulating materials, sheathing e armouring materials, types cables, insulati resistance, stre and capacitan use of intersheat capacitance grading, pow factor in cabl capacitance three core cabl thermal characteristics, comparison between overhe		

			lines a underground cables.		

11. Course Evaluation

		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)		

12. Learning and Teaching Resources

	Text
Required Texts	
Recommended Texts	
Websites	

Course Description Form

1. Course Name:
Linear Systems Theory
2. Course Code:
EE303
3. Semester / Year:
5/2024
4. Description Preparation Date:
5. Available Attendance Forms:
6. Number of Credit Hours (Total) / Number of Units (Total)
ECTS Credits 6 SWL (hr/sem) 150
7. Course administrator's name (mention all, if more than one name)
Name: Professor Fadhil R. Tahir Email:
8. Course Objectives

Course Objectives	The aim of this module is to develop a rigor understanding of linear systems and their behavic both time and frequency domains. It provides theoretical foundation and analytical tools neede model, analyze, and design linear time-invariant (**l** systems, which are central to control systems, sig processing, and communications engineering. Specifically, the module aims to: 1. Introduce the mathematical representatio linear systems using differential equations, tran functions, and state-space models. 2. Develop the ability to analyze the stabi controllability, and observability of dynamic syste 3. Explore system response characteris through time-domain and frequency-dom techniques. 4. Provide foundational knowledge for cor system design and digital signal processing.

	5. Equip students with the skills to use softw tools (e.g., MATLAB) for simulating and analyz linear systems.

9. Teaching and Learning Strategies

Strategy	1. **Lectures with Active Learning Integration** o Deliver core theoretical concepts using derivations, worked examples, and system diagrams. o Incorporate in-class questions, polling, and brief problem-solving to promote engagement. 2. **Tutorial Sessions and Problem-Solving Workshops** o Provide structured opportunities for students to practice analytical techniques (e.g., Laplace transforms, Bode plots). o Encourage group work and peer learning to solve complex, multi-step problems. 3. **Laboratory and Simulation-Based Learning** o Use MATLAB/Simulink to reinforce concepts such as state-space modeling, time/frequency response, and stability. o Provide hands-on experience with system simulation, model validation, and graphical analysis. 4. **Blended Learning and Online Resources** o Supplement in-person teaching with video lectures, animations, and interactive simulations. o Recommend platforms like MATLAB Online, MIT OpenCourseWare, or NPTEL for deeper exploration. 5. **Problem-Based Learning (PBL)** o Present real-world engineering scenarios (e.g., motor control, aircraft dynamics, circuit response) that require modeling and analysis. o Encourage students to identify suitable system representations and analytical methods. 6. **Scaffolded Learning Progression** o Build content progressively from basic to advanced topics (e.g., from transfer functions to state-space analysis). o Reinforce earlier material through cumulative examples and assessments. 7. **Formative Feedback and Continuous Assessment** o Use weekly quizzes, diagnostic tasks, and feedback sessions to monitor progress and clarify misconceptions. o Allow opportunities for self-assessment and reflection. 8. **Capstone Mini-Project or Simulation Task** *(optional)* o Allow students to apply modeling and analysis tools to a complete system (e.g., control system, RLC circuit). o Promote integration of theory, simulation, and reporting skills. 9. **Office Hours and Peer Support** o Offer structured time for one-on-one or small group support. o Encourage student-led study groups or forums for discussion.

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10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1			Introduction Linear Systems		
2			Mathematical Modeling		
3			Laplace Transfo Fundamentals Applications Laplace Transforms		
4			Time-Domain Analysis of L Systems		
5			Transfer Functio and Stability		
6			State-Space Representation		
7			Solution of Sta Equations		
8			System Stabil Analysis		
9					

10			Controllability a Observability Frequency Response Analy – Bode Plots		
11			Frequency Response – Nyqu & Nichols		
12			System Realizati and Mo Reduction		
13			Simulation a Computational Tools		
14			Module Review a Exam Preparatio		
15			Preparatory we before the fi Exam		

11. Course Evaluation

		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
	Midterm Exam	2 hr	10% (10)	7	LO # 1-7

Summative assessment	**Final Exam**	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

12. Learning and Teaching Resources

	Text
Required Texts	Linear System Theory and Design
Recommended Texts	Modern control System
Websites	

Course Description Form

1. Course Name:
Programmable Logic Controller
2. Course Code:
CS401
3. Semester / Year:
7/2024
4. Description Preparation Date:
5. Available Attendance Forms:
6. Number of Credit Hours (Total) / Number of Units (Total)
7. Course administrator's name (mention all, if more than one name)
Name: Assistant Professor Jawad Radi Email:
8. Course Objectives

Course Objectives	The aim of this course is to provide students wit comprehensive understanding of Programma Logic Controllers (PLCs), their architect programming, and practical applications in indus automation. Students will gain the knowledge skills to design, implement, troubleshoot, maintain PLC-based control systems for vari industrial processes.

9. Teaching and Learning Strategies	
Strategy	• Lectures with Conceptual Emphasis • Present foundational theory with clear derivations and practi examples. • Use visual aids such as signal waveforms, spectra, and blo diagrams. • Integrate periodic concept checks or quick quizzes to enhan engagement. • Tutorials and Problem-Solving Sessions • Provide guided exercises on information theory calculatio modulation/demodulation, and noise analysis. • Encourage group discussions and peer-to-peer learning tackling complex problems.

	• Use step-by-step approaches to build problem-solvi confidence. • Simulation and Laboratory Work • Incorporate MATLAB or Python-based labs for sig generation, modulation, noise addition, and demodulation. • Allow hands-on exploration of BER curves and syst performance under varying conditions. • Use real hardware or software-defined radio kits (if availab to demonstrate concepts practically. • Blended Learning Approaches • Supplement lectures with online video tutorials, animatio and interactive applets for visualization. • Use platforms like Coursera, MIT OpenCourseWare, or Kh Academy for self-paced reinforcement. • Case Studies and Real-World Examples • Discuss communication standards (e.g., GSM, LTE, WiFi) contextualize theoretical concepts. • Analyze recent developments in wireless communications digital broadcasting to inspire interest. • Formative Assessments and Feedback • Conduct quizzes, mini-projects, or assignments to provi timely feedback. • Use peer assessment and self-assessment tools to promo reflective learning. • Group Projects or Presentations (optional) • Assign collaborative projects on designing basic communicati systems or analyzing communication channels. • Encourage presentations to build communication skills a technical confidence.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1 2			Week 1: Introduction to PLCs Week 2: PLC Hardware and Components		

3 4 5 6 7 8 9 10 11 12 13 14			Week 3: Number Systems and Digit Logic Week 4: Ladder Logic Programmi Fundamentals Week 5: Basic PL Instructions: Timers and Counters Week 6: Advance PLC Instructions: Data Manipulatio Week 7: Analog Inputs and Outpu Week 8: PLC Installation and Wiring Week 9: Human-Machine Interface (HMIs) and SCAD Week 10: Industr Communication Protocols Week 11: PLC Troubleshooting and Maintenance Week 12: Motor Control with PLCs Week 13: PID Control and Close Loop Systems		

15			Week 14: PLC Applications and Case Studies Week 15: Revi and Fi Project/Exam		

11. Course Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	5, 10	
	Assignments	2	10% (10)	2, 12	
	Projects / Lab.	1	10% (10)	Continuous	
	Report	1	10% (10)	13	
Summative assessment	**Midterm Exam**	2 hr	10% (10)	7	
	Final Exam	2hr	50% (50)	16	
Total assessment			100% (100 Marks)		

12. Learning and Teaching Resources

	Text
Required Texts	
Recommended Texts	
Websites	

Course Description Form

1. Course Name:
Power System Analysis I
2. Course Code:
PM403
3. Semester / Year:
7/2024
4. Description Preparation Date:
5. Available Attendance Forms:
6. Number of Credit Hours (Total) / Number of Units (Total)
7. Course administrator's name (mention all, if more than one name)
Name: Assistant Professor Abbas H. Abbas Email:
8. Course Objectives

Course Objectives	The primary aim of a Power System Analysis I cou is to provide students with a foundatio understanding of how modern electric power syste are analyzed. This includes learning to mo different components of the system, perf calculations related to power flow and fault conditio and understand the basic principles of sys operation and control.
9. Teaching and Learning Strategies	
Strategy	• Lectures with Conceptual Emphasis • Present foundational theory with clear derivations and practi examples. • Use visual aids such as signal waveforms, spectra, and blo diagrams. • Integrate periodic concept checks or quick quizzes to enhan engagement. • Tutorials and Problem-Solving Sessions • Provide guided exercises on information theory calculatio modulation/demodulation, and noise analysis. • Encourage group discussions and peer-to-peer learning tackling complex problems.

	• Use step-by-step approaches to build problem-solvi confidence. • Simulation and Laboratory Work • Incorporate MATLAB or Python-based labs for sig generation, modulation, noise addition, and demodulation. • Allow hands-on exploration of BER curves and syst performance under varying conditions. • Use real hardware or software-defined radio kits (if availab to demonstrate concepts practically. • Blended Learning Approaches • Supplement lectures with online video tutorials, animatio and interactive applets for visualization. • Use platforms like Coursera, MIT OpenCourseWare, or Kh Academy for self-paced reinforcement. • Case Studies and Real-World Examples • Discuss communication standards (e.g., GSM, LTE, WiFi) contextualize theoretical concepts. • Analyze recent developments in wireless communications digital broadcasting to inspire interest. • Formative Assessments and Feedback • Conduct quizzes, mini-projects, or assignments to provi timely feedback. • Use peer assessment and self-assessment tools to promo reflective learning. • Group Projects or Presentations (optional) • Assign collaborative projects on designing basic communicati systems or analyzing communication channels. • Encourage presentations to build communication skills a technical confidence.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1 2			Week 1: Introduction to Electric Power Systems Week 2: Review Circuit Theory ar Single-Phase AC Circuits		

3			Week 3: Three-Phase Circuits an Per-Unit System		
4			Week 4: Modelin of Transmission Lines		
5			Week 5: Modelin of Transformers		
6			Week 6: Modelin of Generators an Loads		
7			Week 7: Bus Admittance and Impedance Matrices		
8			Week 8: Power Flow Studies: Gauss-Seidel Method		
9			Week 9: Power Flow Studies: Newton-Raphsor Method		
10			Week 10: Symmetrical Components		
11			Week 11: Symmetrical Fau Analysis		
12			Week 12: Unsymmetrical Fault Analysis:		

13 14 15			Single Line-to-Ground Fault Week 13: Unsymmetrical Fault Analysis: Double Line-to-Ground and Line-to-Line Faults Week 14: Economic Dispat and Control Week 15: Pow System Stabil and Introduction Transient Stabili		

11. Course Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	5, 10	
	Assignments	2	10% (10)	2, 12	
	Projects / Lab.	1	10% (10)	Continuous	
	Report	1	10% (10)	13	
Summative assessment	**Midterm Exam**	2 hr	10% (10)	7	
	Final Exam	2hr	50% (50)	16	
Total assessment			100% (100 Marks)		

12. Learning and Teaching Resources

	Text
Required Texts	
Recommended Texts	"Elements of Power Syste Analysis" by William D. Stevenson
Websites	

Course Description Form

1. Course Name:
Power Electronics
2. Course Code:
PM401
3. Semester / Year:
7/2024
4. Description Preparation Date:
5. Available Attendance Forms:
6. Number of Credit Hours (Total) / Number of Units (Total)
7. Course administrator's name (mention all, if more than one name)
Name: Assistant Professor Ali K. abdulabbas Email:
8. Course Objectives

Course Objectives	The primary aim of a Power Electronics course i provide students with a comprehens understanding of the principles, design, applications of electronic circuits and devices u for power conversion and control. This inclu mastering the analysis of various power electr converters, understanding the characteristics selection of power semiconductor devices, applying these concepts to real-world systems s as motor drives, power supplies, and renewa energy integration.

9. Teaching and Learning Strategies

Strategy	• Lectures with Conceptual Emphasis • Tutorials and Problem-Solving Sessions • Laboratory Work • Blended Learning Approaches • Supplement lectures with online video tutorials, animatio and interactive applets for visualization. • Use platforms like Coursera, MIT OpenCourseWare, or Kh Academy for self-paced reinforcement. • Case Studies and Real-World Examples

	• Discuss communication standards (e.g., GSM, LTE, WiFi) contextualize theoretical concepts. • Analyze recent developments in wireless communications digital broadcasting to inspire interest. • Formative Assessments and Feedback • Conduct quizzes, mini-projects, or assignments to provi timely feedback. • Use peer assessment and self-assessment tools to promo reflective learning. • Group Projects or Presentations (optional) • Assign collaborative projects on designing basic communicati systems or analyzing communication channels. • Encourage presentations to build communication skills a technical confidence.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1			Week 1: Introduction to Power Electronic and Power Semiconductor Devices		
2			Week 2: Diodes a Transistors in Power Electronic		
3			Week 3: Thyristo and Triacs		
4			Week 4: Switchin Regulators: Buck Converters		
5			Week 5: Switchin Regulators: Boost and Buck-Boost Converters		

6 7 8 9 10 11 12 13 14			Week 6: Switchin Regulators: Buck-Boost and Other Topologies Week 7: DC-DC Converters: Isolated Topologi Week 8: AC-DC Converters: Controlled Rectifiers (Half-wave and Full-wave) Week 9: AC-DC Converters: Uncontrolled Rectifiers and Cycloconverters Week 10: DC-AC Converters: Inverters (Voltag Source and Curre Source) Week 11: PWM Control Techniqu for Inverters Week 12: AC-AC Converters: AC Voltage Controlle Week 13: Power Electronics Applications: Mot Drives Week 14: Power Electronics		

15			Applications: Renewable Energ Systems and Pow Supplies Week 15: Desi Considerations, EMI, and Therm Management		

11. Course Evaluation

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	5, 10	
	Assignments	2	10% (10)	2, 12	
	Projects / Lab.	1	10% (10)	Continuous	
	Report	1	10% (10)	13	
Summative assessment	**Midterm Exam**	2 hr	10% (10)	7	
	Final Exam	2hr	50% (50)	16	
Total assessment			100% (100 Marks)		

12. Learning and Teaching Resources

	Text
Required Texts	
Recommended Texts	
Websites	