Ministry of Higher Education and Scientific Research, Scientific Supervision and Evaluation Authority
Quality Assurance and Academic Accreditation Department,
Accreditation Section

Academic Program and Course Description Guide

2026

Uruk University

URUK UNIVERSITY
جامعة اوروك

Bachelor's Degree (B.Sc.)

Department of Laser & Optoelectronic Engineering



Introduction:

The educational program is a structured and organized package of courses that includes procedures and experiences organized into course syllabi. Its primary purpose is to build and refine graduates' skills, making them qualified to meet the demands of the job market. It is reviewed and evaluated annually through internal and external audit procedures and programs, such as the external examiner program.

The academic program description provides a concise summary of the program's main features and courses, outlining the skills students are designed to acquire based on the program's objectives. The importance of this description lies in its role as the cornerstone for obtaining program accreditation. It is written collaboratively by faculty members under the supervision of the academic committees in the academic departments.

This second edition of the guide includes a description of the academic program, updated with the vocabulary and paragraphs of the previous guide, reflecting the latest developments in the Iraqi education system. This includes a description of the academic program in its traditional form (annual or semester-based), as well as the standardized academic program description issued by the Department of Studies, document T M2906/3, dated May 3, 2023, specifically for programs based on the Bologna Process. In this context, we must emphasize the importance of documenting academic program and course descriptions to ensure the smooth operation of the educational process.

Concepts and terminology:

Academic Program Description: **The academic program description provides a concise summary of its vision, mission, and objectives, including a detailed description of the intended learning outcomes according to specific learning strategies.**

Course Description: **This provides a concise summary of the course's key characteristics and the expected learning outcomes for students, demonstrating whether they have made the most of the available learning opportunities. It is derived from the program description.**

Program Vision: **An ambitious vision for the future of the academic program, aiming to be advanced, inspiring, motivating, realistic, and applicable.**

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

Program Objectives: **These are statements describing what the academic program intends to achieve within a specific timeframe and are measurable and observable.**

Curriculum Structure: **All courses/subjects included in the academic program, according to the approved learning system (semester, annual, Bologna Process), whether required by the Ministry, University, College, or Department, along with the number of credit hours.**

Learning Outcomes: **A coherent set of knowledge, skills, and values acquired by the student upon successful completion of the academic program. The learning outcomes for each course must be defined in a way that achieves the program objectives.**

Teaching and Learning Strategies: **These are the strategies used by faculty members to enhance student teaching and learning. They are plans implemented to achieve learning objectives. They describe all classroom and extracurricular activities designed to achieve the program's learning outcomes.**

نموذج وصف البرنامج الأكاديمي

اسم الجامعة: جامعة أوروك

الكلية/ المعهد: كلية الهندسة / قسم هندسة الليزر والالكترونيات البصرية

البرنامج الأكاديمي او المهني: هندسة الليزر والإلكترونيات البصرية

اسم الشهادة النهائية: بكالوريوس في علوم هندسة الليزر

النظام الدراسي: المرحلة الأولى الى الثالثة (نظام بولونيا)

تاريخ اعداد الوصف: ١ / 12 / ٢٠٢٥

تاريخ ملء الملف: ١ / 12 / ٢٠٢٥

التوقيع:

اسم رئيس القسم: م.د. سمير

التاريخ: ٢٠٢٥/١٢/١

جامعة أوروك | كلية الهندسة
قسم هندسة الليزر والالكترونيات البصرية

دقق الملف من قبل

شعبة ضمان الجودة الأداء الجامعي

اسم مدير شعبة الجودة والأداء الجامعي:

الأستاذ المساعد الدكتور
سعد عبد الحسين الحسيني

مصادقة السيد العميد

أ.د. عوني كامل شعبان

مسؤول الجودة في كلية الهندسة

1. Program Vision

"To be one of the leading engineering colleges in the region in both academic and research fields, contributing to the development of the local and regional community."

2. Program Message

Teaching undergraduate and graduate students the concepts and knowledge of optoelectronic engineering, disseminating knowledge of the discipline, conducting high-quality scientific research, and graduating students to lead and serve our community.

3. Department Objectives

Objective 1: To successfully practice laser engineering disciplines.
Objective 2: To build a rapidly growing workforce in this technology by fostering collaborative activities through the provision of courses of varying durations for engineers from industry (graduate studies) and undergraduate students.
Objective 3: To participate in lifelong learning for professional advancement through continuing education and training. Objective 4: To implement a research program for the development of laser systems, sub-components, and process design.

4. Program Accreditation

nothing

5. Other external influences

nothing

6. Program Structure

comments *	Percentage	Study unit	Number of courses	Program structure
Core course	12.7%	22units (30 hours)	9	Institutional requirements
nothing				College requirements
Core course	87.3%	150units (197 hours)	52	Department requirements
Two-month summer training				Summer training
nothing				Other

7. Program Description

Credit Hours		Course name	Course code	Year / Level
practical	theoretical			
2	4	Electrical Circuits I	LOEC111	First Year / Semester 1
3	2	Eng. Physics	LOEC112	First Year / Semester 1
	2	Math I	LOEC113	First Year / Semester 1
	2	Chemistry	LOEC114	First Year / Semester 1
6		Workshops	WSHE106	First Year / Semester 1
	2	English Lang. I	ENLA	First Year / Semester 1
	2	Democracy	LOEC117	First Year / Semester 2
2	1	Eng. Drawing	LOEC121	First Year / Semester 2
	2	Math II	LOEC122	First Year / Semester 2
2	2	Medical Physics	LOEC123	First Year / Semester 2
2	1	Computer	LCOSC108	First Year / Semester 2
	4	Eng. Mechanics	LOEC125	First Year / Semester 2
2	2	Electrical Circuits II	LOEC126	First Year / Semester 2
6		Workshops	WSHE106	First Year / Semester 2
2	4	Electronic Circuits I	LOEC211	Second Year / Semester 1
3	2	Engineering Optics	LOEC212	Second Year / Semester 1
	3	Mathematics III	LOEC213	Second Year / Semester 1

	2	Biology	LOEC214	Second Year / Semester 1
2	2	Digital Electronics	LOEC215	Second Year / Semester 1

1	1	Computer	COMP208	Second Year / Semester 1
	2	Crimes of Baath Regime in Iraq	CBRI201	Second Year / Semester 1
3	4	Electronic Circuits II	LOEC221	Second Year / Semester 2
3	4	Laser Physics	LOEC222	Second Year / Semester 2
	3	Electromagnetic Fields	LOEC223	Second Year / Semester 2
	2	Probability and Statistics	LOEC224	Second Year / Semester 2
	2	Heat Transfer	LOEC225	Second Year / Semester 2
	2	Arabic Language	ARLA204	Second Year / Semester 2
	2	English Language	ENLA207	Second Year / Semester 2
	4	Engineering Analysis I	LASE311	Third Year / Semester 1
3	4	Power Electronics	LASE312	Third Year / Semester 1
3	2	Solid State Lasers	LASE313	Third Year / Semester 1
	2	Gas Lasers	LASE314	Third Year / Semester 1
	2	Laser Spectroscopy	LASE315	Third Year / Semester 1
	4	Engineering Analysis II	LASE321	Third Year / Semester 1
4	2	Optical Fiber Technology	LASE322	Third Year / Semester 1
	2	Semiconductor Devices	LASE323	Third Year / Semester 1
2	2	Laser Power Supplies	LASE324	Third Year / Semester 2
	2	Laser Tissue Interaction	LASE325	Third Year / Semester 2
	2	Arabic Language	ARLA304	Third Year / Semester 2
	4	Optical Communications	LOPC411	Fourth Year / Semester 1
	4	Optoelectronics Eng.	LOC412	Fourth Year / Semester 1
	2	Laser System Design I	LE413	Fourth Year / Semester 1
	2	Digital Electronics	LE414	Fourth Year / Semester 1
	2	Laser Med. & Sci. App.	LE415	Fourth Year / Semester 1
3		Laboratories	LEL411	Fourth Year / Semester 1
	2	Laser Industrial App.	LE421	Fourth Year / Semester 1
	2	Laser System Design II	LE422	Fourth Year / Semester 2
4		Final Year Project	LOPCL421	Fourth Year / Semester 2
	4	Gas Lasers	LE423	Fourth Year / Semester 2
	2	Microprocessor Archit.	LOPC424	Fourth Year / Semester 2

	2	**Semiconductor Lasers**	**LE425**	Fourth Year / Semester 2
3		**Laboratories**	**LEL422**	Fourth Year / Semester 2

Program Expected Learning Outcomes

(1) The ability to distinguish, define, formulate, and solve engineering problems related to laser engineering by applying principles of engineering, science, and mathematics

(2) The ability to produce and apply engineering designs that meet the required needs within the constraints of public health and safety, and other global, cultural, environmental, social, economic, and other factors relevant to the specialization.

(3) The ability to conduct and implement appropriate measurements, experiments, and tests with quality assurance, and the sufficient ability to analyze and interpret their results and use them to make engineering judgments and reach conclusions.

(4) The ability to communicate effectively with people at various administrative levels, both orally and in writing.

(5) The ability to understand and be aware of the ethical and professional responsibilities related to engineering issues and to make sound judgments, considering the consequences and impact of engineering solutions in global financial, environmental, and societal contexts.

(6) The ability to recognize the need for continuous self-development to acquire professional knowledge and how to find, access, and apply it correctly.

(7) The ability to work effectively in a team, set goals, plan tasks, meet deadlines, and manage risk and uncertainty.

Knowledge	
The ability to distinguish, define, formulate, and solve engineering problems related to laser engineering by applying principles of engineering, science, and mathematics	**First learning output (Go1)**
The ability to produce and apply engineering designs that meet the required needs within the constraints of public health and safety, and other global, cultural, environmental, social, economic, and other factors relevant to the specialization.	**Second learning output (Go2)**

The ability to conduct and implement appropriate measurements, experiments, and tests with quality assurance, and the sufficient ability to analyze and interpret their results and use them to make engineering judgments and reach conclusions.	**Third learning output (Go3)**
The ability to recognize the need for continuous self-development to acquire professional knowledge and how to find, access, and apply it correctly.	**Sixth Learning Output (Go6)**

Skills	
The ability to communicate effectively with people at various administrative levels, both orally and in writing.	**Fourth Learning Output (Go4)**
The ability to work effectively in a team, set goals, plan tasks, meet deadlines, and manage risk and uncertainty.	**Seventh Learning Output (Go7)**

Values	
The ability to understand and comprehend ethical and professional responsibilities related to engineering issues and to make sound judgments, taking into account the consequences and impact of engineering solutions in global financial, environmental, and societal contexts.	**Learning Output 5 (Go5)**

9 .Teaching and Learning Strategies

1. Lecture-Based Instruction: Traditional lecture-based instruction is often used in the Optical and Electronic Engineering department, where lecturers deliver course content to large groups of students.

2. Interactive Teaching Methods: To enhance student engagement and learning outcomes, these methods may include discussions, group activities, role-playing, and practical demonstrations to encourage active participation and a deeper understanding of the subject matter.

3. Practical Training and Laboratories: Practical experiments, laboratory sessions, and summer internships provide students with opportunities to apply theoretical knowledge, develop technical skills, and gain practical experience in their field of study.

4. Final Year Projects: These contribute to the creation and dissemination of knowledge.

10. Assessment Methods

Assessment methods in the department include a combination of exams, quizzes, assignments, presentations, practical assessments, term exams, and annual exams. There is a growing emphasis on providing constructive and timely feedback to students to help them identify areas for improvement and enhance their learning experience.

11. Faculty

Faculty members					
Faculty preparation		Special Requirements /Skills	Specialization		Academic rank
lecturer	stuff		private	general	

	X			Nanotechnology	Physics	Dr. Samar Abdul Tarish
	X			Solid States Crystallography	Physics	Israa Muwafaq
	X			Lasers and Optoelectronics	Engineering	ALHassan Majid
X				Laser applications	Electronic Engineering	Dr. Sura Hussein
X				Optical communications	Electrical Engineering	Dr. Thamer Fahd

Professional Development

Orienting new faculty members

1. Begins by clarifying the roles, responsibilities, and expectations of a new faculty member. Provides a detailed overview of the department's mission, goals, and policies, as well as their specific duties, teaching assignments, and research expectations.

2. Connects a new faculty member with an experienced mentor who can provide guidance, support, and advice throughout their transition. The mentor should be someone familiar with the department, understand the academic culture, and be willing to invest time and effort in the mentoring relationship.

3. Helps new faculty members develop their teaching skills and strategies. Provides guidance on course design, curriculum development, assessment methods, and classroom management techniques. Encourages them to observe experienced faculty members teaching classes and provide constructive feedback.

4. Supports new faculty members in developing a research agenda and securing funding for their projects. Connects them with potential partners, research mentors, and interdisciplinary research centers within the university. Encourages them to attend conferences, publish research papers, and participate in scholarly activities.

Professional development of faculty members

1. Encourage participation in workshops, seminars, and training sessions on topics related to teaching, research, and professional development. These sessions may cover areas such as educational psychology, instructional design, assessment methods, research methodologies, grant writing, academic publishing, and career advancement.
2. Provide funding or grants to support faculty research activities in scholarly journals. Participation in academic conferences allows faculty to stay abreast of the latest research trends, network with colleagues, and present their work to a wider audience.
3. Provide assistance and resources to support faculty research efforts. This support may include access to research facilities, laboratories, equipment, and software, as well as assistance with literature reviews, data analysis, and grant proposal writing. Training on research ethics, compliance, and regulatory requirements is also provided.

12. Admission Criteria
Central admission regulations of the Ministry of Higher Education and Scientific Research for graduates of preparatory schools and higher institutes

13. Key sources of information about the program
https://uotechnology.edu.iq/index.php/

14.Program Development Plan
The planning and development process is carried out through feedback from the Council of Experts and the Scientific Curriculum Committees. The expert committee of the laboratory committees operates according to the Ministry's requirements.

Program Skills Plan											
Learning outcomes required from the program											
Values		Skills			Knowledge			Essential or optional	Course Name	Course code	Year / Level
ج2	ج1	ب3	ب2	ب1	أ3	أ2	أ1				
					x	x	x	Basic	Electrical Circuits I	LOEC111	Level One
					x	x	x	Basic	Eng. Physics	LOEC112	
							x	Basic	Math I	LOEC113	
						x		Basic	Chemistry	LOEC114	
			x					Basic	Workshops	WSHE106	
			x					Basic	English Lang. I	ENLA108	
	x							Basic	Democracy	LOEC117	
				x				Basic	Eng. Drawing	LOEC121	
							x	Basic	Math II	LOEC122	
					x	x	x	Basic	Medical Physics	LOEC123	

		X		X				Basic	Computer	LCOSC108	
						X	X	Basic	Eng. Mechanics	LOEC125	
				X			X	Basic	Electrical Circuits II	LOEC126	
	X							Basic	Workshops	WSHE106	
							X	Basic	Electronic Circuits I	LOEC211	Level Two
					X	X	X	Basic	Engineering Optics	LOEC212	
			X		X			Basic	Mathematics III	LOEC213	
					X			Basic	Biology	LOEC214	
					X	X	X	Basic	Digital Electronics	LOEC215	
				X		X		Basic	Computer	COMP208	
	X							Basic	Crimes of Baath Regime in Iraq	CBRI201	
					X		X	Basic	Electronic Circuits II	LOEC221	
					X			Basic	Laser Physics	LOEC222	
						X	X	Basic	Electromagnetic Fields	LOEC223	
						X	X	Basic	Probability and Statistics	LOEC224	

							x	Basic	Heat Transfer	LOEC225	
		x						Basic	Arabic Language	ARLA204	
x								Basic	English Language	ENLA207	
	X				x	X	x	Basic	Engineering Analysis I	LASE311	
				x			x	Basic	Power Electronics	LASE312	
					x		x	Basic	Solid State Lasers	LASE313	
						x	x	Basic	Gas Lasers	LASE314	
						x	x	Basic	Laser Spectroscopy	LASE315	
					x		x	Basic	Engineering Analysis II	LASE321	Level Three
							x	Basic	Optical Fiber Technology	LASE322	
					x	x		Basic	Semiconductor Devices	LASE323	
			x		x			Basic	Laser Power Supplies	LASE324	
						x	x	Basic	Laser Tissue Interaction	LASE325	
x	x							Basic	Arabic Language	ARLA304	
			x	x	x	x		Basic	Optical Communications	LOPC411	Level Four
						x		Basic	Optoelectronics Eng.	LOC412	

					X			Basic	Laser System Design I	LE413	
			X		X		X	Basic	Digital Electronics	LE414	
							X	Basic	Laser Med. & Sci. App.	LE415	
			X	X	X			Basic	Laboratories	LEL411	
			X	X	X			Basic	Laser Industrial App.	LE421	
					X	X		Basic	Laser System Design II	LE422	
X	X		X	X				Basic	Final Year Project	LOPCL421	
						X		Basic	Gas Lasers	LE423	
				X	X		X	Basic	Microprocessor Archit.	LOPC424	
						X		Basic	Semiconductor Lasers	LE425	
			X	X	X			Basic	Laboratories	LEL422	

University of Technology	الجامعة التكنولوجية
Bachelor's level (First cycle) - Honors Bachelor degree in Laser Engineering	مستوى البكالوريوس (الدورة الأولى) - بكالوريوس مع مرتبة الشرف في هندسة الليزر
Four years (Eight semesters) - 240 ECTS credits - 1 ECTS = 25hr	أربع سنوات (ثمانية فصول دراسية) - ٢٤٠ وحدة اوربية - كل وحدة اوربية = ٢٥ ساعة
Program Curriculum (2023 - 2024)	المنهاج الدراسي للعام ٢٠٢٣-٢٠٢٤

Level	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w)						Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
							CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Sem (hr/w)							
UGI	One	1	LOEC111	Electrical Circuits I	الدوائر الكهربائية I	English	4		2				3	93	82	175	7.00	C	
		2	LOEC112	Engineering Physics	الفيزياء الهندسية	English	2		3				3	78	97	175	7.00	S	
		3	LOEC113	Mathematics I	الرياضيات I	English	2						3	33	67	100	4.00	S	
		4	LOEC114	Chemistry	الكيمياء	English	2						3	33	67	100	4.00	S	
		5	WSHE106	Workshops	المعامل	Arabic				6				90	10	100	4.00	B	
		6	ENLA107	English Language	اللغة الانكليزية	English	2						3	33	17	50	2.00	B	
		7	DEHR105	Democracy and Human Rights	الديمقراطية و حقوق الانسان	Arabic	2						3	33	17	50	2.00	B	
						Total	14	0	5	6	0	0	18	393	357	750	30.00		

Level	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w)						Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
							CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Sem (hr/w)							
UGI	Two	1	LOEC121	Engineering Drawing	الرسم الهندسي	English	1			2			3	48	52	100	4.00	C	
		2	LOEC122	Mathematics II	الرياضيات II	English	2						3	33	67	100	4.00	S	
		3	LOEC123	Medical Physics	الفيزياء الطبية	English	2		2				3	63	62	125	5.00	S	
		4	COMP108	Computer	الحاسوب	English	1		2				3	48	27	75	3.00	B	
		5	LOEC125	Engineering Mechanics	الميكانيك الهندسي	English	3						3	48	52	100	4.00	C	
		6	LOEC126	Electrical Circuits II	الدوائر الكهربائية II	English	2		2				3	63	87	150	6.00	C	
		7	WSHE106	Workshops	المعامل	Arabic				6				90	10	100	4.00	B	
						Total	11	0	6	8	0	0	18	393	357	750	30.00		

Level	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w)						Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
							CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Sem (hr/w)							
UGII	Three	1	LOEC211	Electronic Circuits I	الدوائر الإلكترونية I	English	4		2				3	93	82	175	7.00	C	
		2	LOEC212	Engineering Optics	البصريات الهندسية	English	2		3				3	78	72	150	6.00	C	
		3	LOEC213	Mathematics III	الرياضيات III	English	3						3	48	52	100	4.00	S	
		4	LOEC214	Biology	علم الحياة	English	2						3	33	67	100	4.00	S	
		5	LOEC215	Digital Electronic	الالكترونيات الرقمي	English	2		3				3	63	37	100	4.00	C	
		6	COMP208	Computer	الحاسوب	English	1		1				3	33	42	75	3.00	S	
		7	CBIR201	Crimes of Baath Regime in Iraq	جرائم نظام البعث في العراق	Arabic	2						3	33	17	50	2.00	B	
						Total	16	0	8	0	0	0	21	381	369	750	30.00		

Level	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w)						Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
							CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Sem (hr/w)							
UGII	Four	1	LOEC221	Electronic Circuits II	الدوائر الإلكترونية II	English	4		3				3	108	67	175	7.00	C	
		2	LOEC222	Laser Physics	فيزياء الليزر	English	4		3				3	108	92	200	8.00	C	
		3	LOEC223	Electromagnetic Fields	المجالات الكهرومغناطيسية	English	3						3	48	77	125	5.00	C	
		4	LOEC224	Probability and Statistic	الاحتمالية والاحصاء	English	2						3	33	42	75	3.00	S	
		5	LOEC225	Heat Transfer	انتقال الحرارة	English	2						3	33	42	75	3.00	S	
		6	ARLA204	Arabic language	اللغة العربية	Arabic	2						3	33	17	50	2.00	B	
		7	ENLA207	English Language	اللغة الانكليزية	English	2						3	33	17	50	2.00	B	
						Total	19	0	6	0	0	0	21	396	354	750	30.00		

Level	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w)						Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
							CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Sems (hr/w)							
UGIII	Five	1	LASE311	Engineering Analysis I	التحليلات الهندسية I	English	2				2		3	59	91	150	6.00	C	
		2	LASE312	Power Electronics	الكترونيات القدرة	English	2		3		2		3	101	49	150	6.00	C	
		3	LASE313	Solid State Lasers	ليزرات الحالة الصلبة	English	2		3				3	73	77	150	6.00	C	
		4	LASE314	Gas Lasers	الليزرات الغازية	English	2						3	31	119	150	6.00	C	
		5	LASE315	Laser Spectroscopy	أطياف الليزر	English	2						3	31	119	150	6.00	C	
						Total	10	0	8	0	4	0	15	295	455	750	30.00		

Level	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w)						Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
							CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Sems (hr/w)							
UGIII	Six	1	LASE321	Engineering Analysis II	التحليلات الهندسية II	English	2				2		3	59	66	125	5.00	C	
		2	LASE322	Optical Fiber Technology	تقنيات الالياف الضوئية	English	2		4				3	87	63	150	6.00	C	
		3	LASE323	Semiconductor Devices	نواظم اشباه الموصلات	English	2						3	31	94	125	5.00	B	
		4	LASE324	Laser Power Supplies	مجهزات القدرة الليزرية	English	2		2				3	59	91	150	6.00	C	
		5	LASE325	Laser Tissue Interaction	تفاعل الليزر مع الانسجة	English	2						3	31	119	150	6.00	C	
		6	ARLA304	Arabic Language	اللغة العربية	Arabic	2						3	31	19	50	2.00	B	
						Total	12	0	6	0	2	0	18	293	452	750	30.00		

Level	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w)						Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
							CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Sems (hr/w)							
UGIV	Seven	1	LASE411	Laser Systems Design	تصميم منظومات الليزر	English	2		4				3	87	88	175	7.00	C	
		2	LASE412	Industrial Laser applications	تطبيقات الليزر الصناعية	English	2		4				3	87	113	200	8.00	C	
		3	LASE413	Final Year Project	مشروع التخرج	English				4			2	58	117	175	7.00	C	
		4	LASE414	Medical Laser Systems	منظومات الليزر الطبية	English	2						3	31	119	150	6.00	C	
		5	PRED411	Professional Ethics and Enterpreneurship	اخلاقيات المهنة وريادة الاعمال	Arabic	2						3	31	19	50	2.00	B	
						Total	8	0	8	4	0	0	14	294	456	750	30.0		

Level	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w)						Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
							CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Sems (hr/w)							
UGIV	Eight	1	LASE421	Medical Laser Applications	تطبيقات الليزر الطبية	English	2						3	31	119	150	6.00	C	
		2	LASE422	Microcontroller Applications	تطبيقات المعالج الدقيق	English	2		4				3	87	88	175	7.00	B	
		3	LASE423	Final Year Project	مشروع التخرج	English				4			2	58	117	175	7.00	C	
		4	LASE424	Optical Communication Systems	انظمة الاتصالات الضوئية	English	2		4				3	87	88	175	7.00	C	
		5	COMP408	Computer	الحاسوب	English			2				3	31	44	75	3.00	B	
						Total	8	0	10	4	0	0	14	294	456	750	30.0		

						Total	96	0	55	22	8	0	136	2744	3256	6000	240.0		Must be 240 ECTS

Note: The student should complete 4 weeks of Summer Internships to fulfill the requirements of the Bachelor of Science degree.

Structured SWL (hr/w) type		
	CL	Class Lecture
	Lab	Laboratory
	Pr	Practical Training
	Tut	Tutorial
	Lect	Online lecture
	Sem	Seminar

Module type	
B	Basic learning activities
C	Core learning activity
S	Support or related learning activity
E	Elective learning activity

SWL:	Student Workload
SSWL:	Structured SWL
USSWL:	Unstructured SWL

	Ministry of Higher Education and Scientific Research - Iraq University of Technology Department of Laser and Optoelectronics Engineering	

MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	CHEMISTRY			**Module Delivery**	
Module Type	SUPLEMENT			**Theoretical Lectures**	
Module Code	LOEC114				
ECTS Credits	4				
SWL (hr/sem)	100				
Module Level	1		**Semester of Delivery**	1	
Administering Department	Laser & Optoelectronics		**College**	LOE	
Module Leader	Wasan A.Hekmat		**e-mail**	Wasan.A.Hekmat@uotechnology.edu.iq	
Module Leader's Acad. Title	Lecturer		**Module Leader's Qualification**	M.Sc.	
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Review Committee Approval			**Version Number**	1.0	

Relation with Other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	Analytical chemistry is important for chemical engineers because it helps them to identify the composition of a substance. Analytical chemistry, as the component of chemistry most closely related to engineering, most involved in the development of new instrumentation and new technology, and most concerned with the practical applications of chemistry, has seen increased interest with the emergence of the mega-interdisciplinary areas of nanotechnology and systems biology.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Students able to know the meaning of the modern Analytics chemistry 2. Summarize the tools of analytics methods 3. Explain the sample preparation. 4. How the sample collection. 5. Identify the Chemical Equilibrium 6. Explain the electrochemical methods 7. Discuss the operation of the Molecular Absorption Spectrometry, Molecular Fluorescence Spectroscopy, Atomic Spectroscopy
Indicative Contents المحتويات الإرشادية	**Unit one: Introduction to Analytical Chemistry** 1. The Nature of Analytical Chemistry 1.2 The Role of Analytical Chemistry 1.3 Quantitative Analytical Methods 1.4Typical Quantitative Analysis **Unit Two: Tools of Analytical Chemistry** 2.1 Numbers in Analytical Chemistry 2.2 Fundamental Units of Measure 2.3 Units for Expressing Concentration 2.3.1 Molarity and Formality 2.3.2 Normality 2.3.3 Molality 2.3.4 Weight, Volume, and Weight-to-Volume 2.3.5Ratios **Unit Three: Stoichiometric Calculations** 3.1Conservation of Mass

	3.2 Conservation of Charge 3,3 Conservation of Protons 3.4 Conservation of Electron Pairs 3.5 Conservation of Electrons **Unit Four: Chemical Equilibrium** 4.1 Basic Analytical Properties 4.2 Precision 4.3 Sensitivity 4.4 Selectivity **Unit Five: Chemical Equilibrium** 5.1 Aqueous Solutions and Chemical Equilibrium 5.2 Effect of Electrolytes on Chemical Equilibrium **Unit Six: Obtaining and Preparing Samples for Analysis** 6.1 Designing A Sampling Plan 6.2 Sample Collection **Unit Seven: Gravimetric Methods of Analysis** 7.1Overview of Gravimetric 7.2 Types of Gravimetric Methods 7.3 Why Gravimetric Is Important **Unit Eight: Titrations in Analytical Chemistry** 8.1 Some Terms Used in Volumetric Titrations 8.2 Standard Solutions 8.3 Volumetric Calculations **Unit Nine: The Measurement Process in Chemistry** 9.1 Definition of Chemical Measurement Process 9.2 General Steps of a Chemical Measurement Process **Unit Ten: Effect of Electrolytes on Chemical Equilibrium** 10.1 The Effect of Electrolytes on Chemical Equilibrium 10.2 Activity Coefficients **Unit Eleven: Electrochemical Methods** 11.1 Electrochemical Methods definition 11.2 Introduction to Electrochemistry 11.3 Characterizing Oxidation/Reduction Reactions **Unit Twelve: Spectrochemical Analysis** 12.1 Introduction to Spectrochemical Methods 12.2 Properties of Electromagnetic Radiation 12.3 Interaction of Radiation and Matter **Unit Thirteen: Molecular Absorption Spectrometry** 13.1 Ultraviolet and Visible Molecular Absorption Spectroscopy **Unit Fourteen: Molecular Fluorescence Spectroscopy, Atomic Spectroscopy**

	14.1 Theory of Molecular Fluorescence 14.2 Atomic Emission Spectrometry 14.3 Atomic Absorption Spectrometry
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The important strategy is to teach the student how to deal with materials, how to prepare and store them, as well as how to preserve samples in a suitable environment. Encourage the students to participate in the daily activities and discussions.

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	33	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	67	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	100		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	4	20% (20)	2, 5, 7, 9	LO #1, 2, 10 and 11
	Assignments	1	10% (10)	4	LO # 3
	Projects	1	5% (5)	3	LO#2
	Report	1	5% (5)	13	LO # 5
Summative assessment	**Midterm Exam**	1 hr.	10% (10)	7	LO # 1-7
	Final Exam	3 hr.	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبو عي النظري	
	Material Covered
Week 1	Unit one: Introduction to Analytical Chemistry
Week 2	Unit Two: Tools of Analytical Chemistry
Week 3	Unit Three: Stoichiometric Calculations
Week 4	Unit Four: Chemical Equilibrium
Week 5	Unit Five: Chemical Equilibrium
Week 6	Unit Six: Obtaining and Preparing Samples for Analysis
Week 7	**Mid-term exam**
Week 8	Unit Seven: Gravimetric Methods of Analysis
Week 9	Unit Eight: Titrations in Analytical Chemistry
Week 10	Unit Nine: The Measurement Process in Chemistry
Week 11	Unit Ten: Effect of Electrolytes on Chemical Equilibrium
Week 12	Unit Eleven: Electrochemical Methods
Week 13	Unit Twelve: Spectrochemical Analysis
Week 14	Unit Thirteen: Molecular Absorption Spectrometry
Week 15	Unit Fourteen: Molecular Fluorescence Spectroscopy, Atomic Spectroscopy
Week 16	**Final Exam**

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

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts		Yes
Recommended Texts	1- Modern Analytical Chemistry: David Harvey, McGraw-Hill Companies, 2000. 2- Fundamentals of Analytical Chemistry: F. James Holler, Stanley R. Crouch,2021	Yes
	3- Principles of analytical chemistry : a textbook, Miguel Valcarcel	Yes

APPENDIX:

GRADING SCHEME مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A** - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX** – Fail	مقبول بقرار	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note:

NB Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

	Ministry of Higher Education and Scientific Research - Iraq University of Technology Department of Laser and Optoelectronics Engineering	

MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	ENGLISH LANGUAGE			**Module Delivery**	
Module Type	BASIC			**Theory: Lectures** **Seminar**	
Module Code	ENLA107				
ECTS Credits	2				
SWL (hr/sem)	75				
Module Level	1		**Semester of Delivery**	1	
Administering Department	Type Dept. Code		**College**	LOE	
Module Leader	Nebras Essam Mohammed		**e-mail**	Nebras.e.alattar@uotechnology.edu.iq	
Module Leader's Acad. Title	Lecturer		**Module Leader's Qualification**	PhD	
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Review Committee Approval			**Version Number**	1.0	

Relation with Other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	**Semester**	None
Co-requisites module	None	**Semester**	None

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	The objective of teaching English has two main aspects: 1. Language aspect: Words, sentences, pronunciation, spelling and grammar. 2. Literature aspect: Words, sentences, expressing ideas, feelings and experiences.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. To develop the skill of speaking, reading, writing and listening 2. To enable the students for the use of grammar correctly, 3. To enable the students to analyze the element of language and establish the appropriate relationship among linguistic components 4. Improving students' oral communication and presentation skills. To enhance students' speech delivery and presentation skills
Indicative Contents المحتويات الإرشادية	Part of speech Questions with question words Pronouns Possessive adjectives A, an & Plural nouns + Vocabulary Auxiliary verbs + reading skill Tenses: Simple present Tenses: Past Simple 1+Past Simple 2 writing skill+ reading skill There is/ There are Some & any + that & this Past Simple - irregular verbs Modal verbs Adverbs + like and would like
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	1. Audio-lingual: The theory behind this method is that learning a language means acquiring habits. There is much practice of dialogues of every situation. New language is first heard and extensively drilled before being seen in its written form. 2. The Silent Way emphasizes learner autonomy. The teacher acts merely as a facilitator trying to encourage students to be more active in their learning. The main of this way of teaching is for the teacher to say very little, so students can take control of their learning. There's a big emphasis on pronunciation and a large chunk of the lesson focuses on it. This method of learning English follows a structural syllabus and grammar, vocabulary and pronunciation are constantly drilled and recycled for reinforcement. The teacher evaluates their students through careful observation, and it's even possible that they may never set a formal test as learners are encouraged to correct their own language errors. 3. Online assessment as (assignments, open discussion, quizzes via Canvas).

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	32	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	43	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	3
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	75		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	3	20% (10)	3, 7, 14	1-4
	Assignments	10	10% (10)	3,5,8,11,13, 14	1-2
	Projects	5	5%(5)		1-2
	Report	5	5%(5)		1-2
Summative assessment	**Midterm Exam**	2 hr	10% (10)	7	all
	Final Exam	2 hr	50% (50)	16	all
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Part of speech
Week 2	Questions with question words
Week 3	Pronouns
Week 4	Possessive adjectives
Week 5	A, an & Plural nouns + Vocabulary
Week 6	Auxiliary verbs + reading skill
Week 7	Tenses : Simple present
Week 8	**Mid-term exam**
Week 9	Tenses: Past Simple 1+Past Simple 2

Week 10	writing skill+ reading skill
Week 11	There is/ There are
Week 12	Some & any + that & this
Week 13	Past Simple - irregular verbs
Week 14	Modal verbs
Week 15	Adverbs + like and would like
Week 16	Final Exam

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبو عي للمختبر	
	Material Covered
Week 1	None
Week 2	None
Week 3	None
Week 4	None
Week 5	None
Week 6	None
Week 7	None

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	New headway plus/ John and Liz Soars – Beginner	Yes
Recommended Texts	Fundamentals of English grammar, Betty Schrampfer Azar, Edition: 3rd full edition with answer keys	No
Website	https://learnenglish.britishcouncil.org/general-english/word-on-the-street/oxford/oxford-university Oxford guide to English grammer by John Eastwood	

APPENDIX:

GRADING SCHEME مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A** - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX** – Fail	مقبول بقرار	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note:

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	Ministry of Higher Education and Scientific Research - Iraq University of Technology Department of Laser and Optoelectronics Engineering	

MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	ENGINEERING PHYSICS			**Module Delivery**	
Module Type	SUPLEMENT			**Theory** **Lecture** **Lab.**	
Module Code	LOEC112				
ECTS Credits	7				
SWL (hr/sem)	150				
Module Level	1		**Semester of Delivery**	1	
Administering Department	Laser & Optoelectronics		**College**	LOE	
Module Leader	Dr.Suad.M.Kadhim		**e-mail**	suad.m.kadhim@uotechnology.edu.iq	
Module Leader's Acad. Title			**Module Leader's Qualification**		
Module Tutor	None		**e-mail**	None	
Peer Reviewer Name			**e-mail**		
Review Committee Approval			**Version Number**	1.0	

Relation With Other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	**Semester**	

Co-requisites module	None	Semester	
Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية			
Module Aims أهداف المادة الدراسية	1. To introduce students with the concepts of light. 2. To familiarize the students with the classical and quantum concepts and wide range of its applications. 3. To make students familiar with the concept of electromagnetic waves propagation in different mediums. 4. This is the basic subject for all electrical and optical devices.		
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. To introduce students with the principles of light laws and the equations. 2. To make students familiar with the principles of classical and quantum laws and applications. 3. To familiarize the students with the knowledge of polarization, lenses and mirrors equations. 4. Prefacing to various applications of physical devices. 5. Describe the basic parts of Michelson's interferometer. 6. Define Brewster's law. 7. Identify the basic elements Young's Double Slit Experiment. 8. Discuss the principle work in photoelectric effect. 9. Discuss the various properties energy level in Hydrogen atom. 10. Explain the continuous and lines spectra.		
Indicative Contents المحتويات الإرشادية			
Learning and Teaching Strategies استراتيجيات التعلم والتعليم			
Strategies	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.		

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	87	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5.8
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	3	15% (15)	2, 5, 7,	LO #1-3, 5-7
	Assignments	1	5% (5)	2, 5, 9	LO # 3, 4, 6 and 7
	Lab.	1	15% (15)	continuous	-
	Report	1	5% (5)	-	-
Summative assessment	**Midterm Exam**	1 hr	10% (10)	7	LO # 1-7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	The nature and propagation of light 1-1 The nature of light 1-2 Sources of light 1-3 Reflection and refraction 1-4 Index of Refraction and the Wave Aspects of Light
Week 2	Reflation and Refraction at Plane Surfaces 2-1 Huygens Principle 2-2 Total internal reflection 2-3 Refraction by Prims 2-4 Absorption 2-5 Dispersion
Week 3	Mirrors 3-1 Image Formation by a Plane Mirror 3-2 Sign Rules

	3-3 Image of an Extended Object plane Mirror
Week 4	4-1 Reflection at a Spherical Surface 4-2 Concave Mirrors 4-3 Convex Mirrors
Week 5	Lenses and Optical Instrument 5-1 Converging and Diverging lenses 5-2 Image as Object for Lenses 5-3 The lensmarker's equation
Week 6	5-4 Cameras 5-5 The Magnifier 5-6 Microscopes 5-7 Telescopes
Week 7	Mid-term Exam
Week 8	Polarization 8-1 Polarization by Reflection 8-2 Circular and Elliptical Polarization 8-3 Polarizing Filters
Week 9	8-4 Using Polarizing Filters 8-5 Photoelasticity
Week 10	Interference 9-1 Principle of Interference 9-2 Constructive and Destructive Interference 9-3 Young's Double Slit Experiment
Week 11	9-4 Intensity Distribution in Interference Fringes 9-5 Intensity Related to the Phase Difference and Path Difference 9-6 Interference in Thin Films
Week 12	10-1 Newton's Rings 10-2 Thin Coating on Glass 10-3 -9 The Michelson Interferometer
Week 13	Diffraction 11-1 Fresnel and Fraunhofer Diffraction by single slit 11-2 The Plane Diffraction Crating 11-3 The Resolving Power of Optical Instruments
Week 14	Photons, Electrons, and Atoms 12-1 Thermionic Emission 12-2 The Photoelectric Effect 12-3 Threshold Frequency and Stopping Potential 12-4 Line Spectra 12-5 Einstein's Photon Explanation
Week 15	13-1 Absorption Spectra 13-2 The Bohr Mode 13-3 The Hydrogen Spectrum
Week 16	**Final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	**Lab1: The law of Reflection and Refraction**
Week 2	**Lab2: Mirrors**
Week 3	**Lab3: Lenses**
Week 4	**Lab4: Determination of the refractive index of a liquid by a liquid lens method**
Week 5	**Lab5: Laser beam divergence angle**
Week 6	**Lab6: Laser Wavelength Measurement with a Simple Ruler**
Week 7	**Lab7: Michelson Interferometer**
Week 8	**Lab8: The Photoelectric Effect**

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	University Physics 12Th Edition, Sears And Zemansky's With Modern Physics, , Hugh D. Young, Carnegie Mellon University, Roger A. Freedman, University Of California, Santa Barbara.	No
Recommended Texts		
Websites		

APPENDIX:

GRADING SCHEME مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A** - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX** – Fail	مقبول بقرار	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note:

NB Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

	Ministry of Higher Education and Scientific Research - Iraq University of Technology Department of Laser and Optoelectronics Engineering	

MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	DEMOCRACY AND HUMAN RIGHTS			**Module Delivery**	
Module Type	BASIC			**Theory** **Lecture** **Seminar**	
Module Code	DEHR105				
ECTS Credits	2				
SWL (hr/sem)	50				
Module Level		1	**Semester of Delivery**		1
Administering Department		Type Dept. Code	**College**	Type College Code	
Module Leader	Dr. Moayad Y. khudhair		**e-mail**	Moayad.y.khudhair@uobaghdad.edu.iq	
Module Leader's Acad. Title		Professor	**Module Leader's Qualification**		Ph.D.
Module Tutor	None		**e-mail**	None	
Peer Reviewer Name		None	**e-mail**	None	
Review Committee Approval		01/06/2023	**Version Number**		1.0

Relation With Other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	
Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية			
Module Aims أهداف المادة الدراسية	1. يهدف المنهج الى توفير شامل لمفهوم حقوق الانسان ، بما في ذلك تطورها التاريخي والاسس الفلسفية والاطار القانوني الدولي الذي يحكم الانسان. 2. توضيح مفاهيم حقوق الانسان في كافة الجوانب التي تتعلق بالانسان وشروط الحرية والديمقراطية التي يتوجب ان يتعلم ويعرفها الطالب في كافة مجالات الحياة اليومية. 3. يُمكن الطلاب من امتلاك القدرة على تحديد وتحليل الاشكال المختلفة لانتهاكات حقوق الانسان التي تحدث عالميا ومحليا 4. تعريف الطالب بالمواثيق الدولية الرئيسية لحقوق الانسان مثل الاعلان العالمي لحقوق الانسان والاتفاقيات والمعاهدات الاقليمية لحقوق الانسان		
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. سوف يكتشف الطلاب تطبيق مبادئ حقوق الانسان في سياقات مختلفة بما في ذلك المجالات الاجتماعية والثقافية والاقتصادية والسياسية مثل المساواة بين الجنسين والتمييز العنصري وحقوق اللاجئين والمهاجرين 2. فهم دور المؤسسات الدولية مثل الامم المتحدة والهيئات الاقليمية في تعزيز حقوق الانسان وحمايتها .سيقوم الطلاب بتقييم لفعالية هذه المؤسسات واليتها لمعالجة انتهاكات حقوق الانسان وضمان المساءلة. 3. تطوير مهارات الطلاب في الدفاع عن حقوق الانسان ومناصرة حقوق الانسان بما في ذلك البحث عن انتهاكات حقوق الانسان وتوثيقها وكتابة التقارير والدعوة لتغيير السياسات والمشاركة في حملات التوعية العامة .		
Indicative Contents المحتويات الإرشادية	يتضمن المحتوى الارشادي المحاور الموضوعية الاساسية وكما يلي المبادئ العامة لحقوق الانسان مواثيق حقوق الانسان الحقوق المدنية والسياسية والحقوق الاجتماعية والاقتصادية والثقافية الحق في الحياة والحرية والامن والحق في محاكمة عادلة وحرية الفكر والضمير والدين وعدم التعرض للتعذيب حرية التجمع وتكوين الجمعيات وحرية الحركة والحق في التعليم والصحة مراقبة حقوق الانسان وتوثيق حقوق الانسان ونشاط حقوق الانسان والتربية على حقوق الانسان		
Learning and Teaching Strategies استراتيجيات التعلم والتعليم			
Strategies	تعتبر حضارات وادي الرافدين اقدم الحضارات البشرية وأولها اهتماما بحقوق الانسان "وان اقدم وثيقة لحقوق الانسان كانت سومرية" ان القانون والعدالة والحرية كانت من اساسيات الفكر العراقي القديم ومنذ بدء التدوين في الالف الثالث قبل الميلاد ، وكان العراقيون يطالبون عاهليهم دوما في مختلف العصور التاريخية بوضع قواعد وتطبيق اجراءات تضمن للجميع الحرية والعدالة الاجتماعية والمساواة، وبهذا يكون قدماء العراقيين قد سبقوا غيرهم من		

	شعوب المنطقة بحوالي الف سنه في وضع الاصطلاحات والقوانين التي تحفظ للفرد حريته وحقوقه وامنه لذلك يتعرف الطالب ضمن حقوق الانسان في التعلم والتعليم بان هناك ضمانات حقوق الانسان على الصعيد الوطني منها ضمانات الدستورية والقضائية وضمانات سياسية التي هي النظام الديمقراطي وهما الرقابة البرلمانية ورقابة الرأي العام ، ومعرفة وتعلم تداول السلطة داخل المؤسسات وذلك على اساس حكم الاغلبية مع حفظ حقوق الاقلية ، وان حقوق الانسان في التعليم بانها المعايير الاساسية التي لا يمكن للناس من دونها ان يعيشوا بكرامة كبشر كونها هي اساس الحرية واعدالة والسلام وان من شان احترام حقوق الانسان ان يتيح امكانية تنمية الفرد والمجتمع تنمية كاملة .

Student Workload (SWL)
الحمل الدراسي للطالب

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	33	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	17	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	1.1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	50		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	1	20% (20)	5	LO #1, 2, 10 and 11
	Assignments	1	5% (5)	2	LO # 3, 4, 6 and 7
	Projects	1	10% (10)	Continuous	
	Report	1	5% (10)	13	LO # 5, 8 and 10
Summative assessment	**Midterm Exam**	1 hr	10% (10)	7	LO # 7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	الاعلان العالمي لحقوق الانسان/ الديباجة ، وتكليف كل طالب بكتابة بحث عن مادة يختارها تتعلق بحقوق الانسان
Week 2	الاعلان العالمي لحقوق الانسان / ثلاثون مادة / تقدم شرح عن 10 مواد
Week 3	الاعلان العالمي لحقوق الانسان / ثلاثون مادة / تقدم شرح عن 10 مواد اخرى
Week 4	الاعلان العالمي لحقوق الانسان / ثلاثون مادة / تقدم شرح عن 10 مواد اخرى
Week 5	مفهوم الديمقراطية لغة واصطلاحا مع تاريخ الديمقراطية تفصيليا

Week 6	انواع الديمقراطية
Week 7	اركان الديمقراطية
Week 8	النزاهة ومفهوم الانتخابات وتقسيم المواطنين للمفهوم
Week 9	معايير الانتخابات النزيهه
Week 10	مفهوم العمل التطوعي
Week 11	مميزات العمل التطوعي وتطوير العمل التطوعي
Week 12	حقوق المتطوعين وتاثير العمل التطوعي على المجتمع
Week 13	كل طالب يقرأ جزء من البحث امام الطلبة ويناقش من قبل باقي الطلبة كتقييم له ولمن يسأل
Week 14	كل طالب يقرأ جزء من البحث امام الطلبة ويناقش من قبل باقي الطلبة كتقييم له ولمن يسأل
Week 15	مراجعة للمادة مع اكمال متطلبات البحوث
Week 16	امتحان نهائي

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	التربية على حقوق الانسان ، وليد الشهيب الحلي و عاشور الزبيدي ، بغداد: مطبعة الاحمد، 2007، 406ص.	نعم
Recommended Texts	حقوق الانسان:تطورها -مضامينهاحمايتها-: رياض عزيز هادي ، بغداد، المكتبة القانونية ، 2011، 149ص.	نعم
Websites		

APPENDIX:

GRADING SCHEME مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A** - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX** – Fail	مقبول بقرار	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note:

NB Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

	Ministry of Higher Education and Scientific Research - Iraq University of Technology Department of Laser and Optoelectronics Engineering	

MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	ELECTRICAL CIRCUITS			**Module Delivery**	
Module Type	CORE			**Theory** **Lecture** **Lab.**	
Module Code	LOEC111				
ECTS Credits	7				
SWL (hr/sem)	175				
Module Level	1		**Semester of Delivery**	1	
Administering Department	Laser & Optoelectronics		**College**	LOE	
Module Leader			**e-mail**		
Module Leader's Acad. Title			**Module Leader's Qualification**	Ph.D.	
Module Tutor	None		**e-mail**	None	
Peer Reviewer Name			**e-mail**		
Review Committee Approval			**Version Number**	1.0	

Relation With Other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Aims أهداف المادة الدراسية	1. To develop problem solving skills and understanding of circuit theory through the application of techniques. 2. This course deals with the basic concept of electrical circuits. 3. This is the basic subject for all electrical. 4. To understand Kirchhoff's current and voltage Laws problems. 5. To perform mesh and Nodal analysis. 6. To understand the sinusoidal waveforms and phasors. 7. To analyze the electrical circuits under ac currents. 8. To study the rms and average power. 9. To study the resonance and filters circuits.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Recognize how electricity works in electrical circuits. 2. List the various terms associated with electrical circuits. 3. Summarize what is meant by a basic electric circuit. 4. Describe electrical power, charge, and current. 5. Define Ohm's law. 6. Identify the basic circuit elements and their applications. 7. Discuss the operations of sinusoid and phasors in an electric circuit. 8. Discuss the various properties of resistors, capacitors, and inductors. 9. Explain the two Kirchoff's laws used in circuit analysis. 10. Identify the capacitor and inductor phasor relationship with respect to voltage and current.
Indicative Contents المحتويات الإرشادية	
Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	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.

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	123	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	8
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	102	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6.8
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	225		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	3	15% (15)	3, 6, 9	LO #1, 2, 3, 6 and 7
	Assignments	1	5% (5)	2	LO # 1-4, 6 and 8
	Lab.	1	15% (15)	Continuous	
	Report	1	5% (5)	13	One of LO #1-8
Summative assessment	**Midterm Exam**	1 hr	10% (10)	7	LO # 1-3
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	**DC Electrical Analysis** - Basics of electrical circuits- Ohms law - Series- parallel- complex connection
Week 2	- Kirchhoff's Laws - divider rules
Week 3	- Delta-star connection - Techniques of circuit analysis- Determinants
Week 4	- Techniques of circuit analysis- Loop (mesh) current method - Special cases of mesh current method
Week 5	- Techniques of circuit analysis- Nodal (voltage method) - Superposition Theorem
Week 6	- Thevenin's Theorem - Norton's Theorem
Week 7	- Maximum Power Transfer - Reciprocity Theorem
Week 8	**MidTerm Exam**

Week 9	**AC Electrical Analysis** - Sinusoidal Alternating Waveforms - Average and RMS Values
Week 10	- The Basic Elements and Phasors (response of the R, L, and C to a sinusoidal voltage and current. - Average power & power factor
Week 11	- Complex Numbers - Phasors
Week 12	- Series ac Circuits - Parallel ac Circuits - Series -Parallel ac Circuits
Week 13	- Power (ac) - Series resonant circuit
Week 14	Parallel Resonant circuit
Week 15	Filters - R-C low pass filters - R-C high pass filters - Pass band filters. - Stop band filters
Week 16	**Final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Ohm's Law
Week 2	Series, parallel and complex connection
Week 3	Circuits analysis - Divider Rules - Kirchhoff's Laws
Week 4	Delta – Star connection
Week 5	Thevenin's Theorem
Week 6	Norton's Theorem
Week 7	Mid Term
Week 8	Superposition Theorem
Week 9	Transient Responses of (R, L, C) circuits
Week 10	Power
Week 11	Phasors

Week 12	Resonance Circuits - Series Resonance Circuits - Parallel Resonance Circuits
Week 13	Filters - Low Pass Filter - High Pass Filter
Week 14	Filters - Band Pass Filter - Stop Pass Filter
Week 15	Final Exam

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	- Electric Circuits, Nilsson. Riedel, ninth edition. - Introductory Circuit Analysis, Robert L Boylestad, Twelfth Edition, 2014.	
Recommended Texts	Introductory AC circuit theory by K. mann and G. I. Russel.	
Websites		

APPENDIX:

GRADING SCHEME مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A** - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX** – Fail	مقبول بقرار	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note:				

NB Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

Ministry of Higher Education and
Scientific Research - Iraq
University of Technology
Department of Laser & Optoelectronic Engineering

MODULE DESCRIPTOR FORM
نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	MATHEMATICS I			**Module Delivery**	
Module Type	SUPLEMENT			**Theory Lecture**	
Module Code	LOEC113				
ECTS Credits	4				
SWL (hr/sem)	100				
Module Level	1		**Semester of Delivery**	1	
Administering Department	Laser & Optoelectronics		**College**	LOE	
Module Leader	ahmed.w.abdulwahhab		**e-mail**	ahmed.w.abdulwahhab@uotechnology.edu.iq	
Module Leader's Acad. Title	Assist.Prof.		**Module Leader's Qualification**	M.Sc.	
Module Tutor	None		**e-mail**	None	
Peer Reviewer Name			**e-mail**		
Review Committee Approval	01/06/2023		**Version Number**	1.0	

Relation with Other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	**Semester**	

Co-requisites module	None	Semester	
Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية			
Module Aims أهداف المادة الدراسية	The objective of teaching Mathematics has some main aspects: 1. The aims of teaching and learning mathematics are to encourage and enable students to: recognize that mathematics permeates the world around us. appreciate the usefulness, power, and beauty of mathematics. enjoy mathematics and develop patience and persistence when solving problems. 2. The following prominent methods for effective instruction in mathematics include the Problem-solving method, Lecture method, Questioning method, and Discovery method. Problem-solving is the most independent learning method used in teaching mathematics.		
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Students will recognize problem-solving techniques appropriate to a given situation, including the development of mathematical models, the identification of assumptions, the understanding of the limitations of models, and the use of both graphical and numerical methods. 2. Comprehend, analyze, synthesize, evaluate, and make generalizations so as to solve mathematical problems. 3. Collect, organize, represent, analyze, interpret data, and make conclusions and predictions from its results. 4. Apply mathematical knowledge and skills to familiar and unfamiliar situations. 5. Recognize the basic of mathematics. 6. Define the functions, domain, range, and graph of functions. 7. Recognize how combining functions; shifting and scaling graphs. 8. Study the inverse functions and logarithms. 9. Recognize limits and continuity. 10. Study the trigonometric and inverse trigonometric functions. 11. Define differentiation, the basic rule of differentiation, and the application of differentiation. 12. Study the Integration; Indefinite integral and the basic rule of -integrations. 13. Identify the standard method of integration. 14. Study the definite integral and their applications in calculating the area under the curves. 15. Study the integration by substitution. 16. Study the integration by parts.		
Indicative Contents المحتويات الإرشادية			

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

Student Workload (SWL) الحمل الدراسي للطالب			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	87	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5.8
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation تقييم المادة الدراسية					
		Time/ Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	1	20 % (20)	3, 5, 7, 13, 14, 15	LO # 8, 9, 11, 14, 15 and 16
	Assignments	1	10 % (10)	5, 7, 14, 15	LO # 9, 11, 15 and 16
	Projects	5	5%(5)		
	Report	1	5%(5)		
Summative assessment	**Midterm Exam**	1 hr	10 % (10)		LO # 5 – 11
	Final Exam	3 hr	50 % (50)		All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	- Review of basic mathematics - Definition of functions, domain, range, and graph of functions
Week 2	- Definition of functions, domain, range, and graph of functions - Combining functions; shifting and scaling graphs
Week 3	- Inverse functions and logarithms - Limits and continuity
Week 4	- Limits and continuity - Trigonometric and inverse trigonometric functions
Week 5	- Trigonometric and inverse trigonometric functions - Differentiation; definition of differentiation
Week 6	- Basic rule of differentiation - Basic rule of differentiation
Week 7	- Application of differentiation - Application of differentiation
Week 8	**Mid Term Exam**
Week 9	- Integration; Indefinite integral - Integration; Indefinite integral
Week 10	- Basic rule of integrations - Standard Method of integration
Week 11	- Standard Method of integration
Week 12	- Definite integral - Definite integral
Week 13	- Application of integration; calculation area under the curves - Application of integration; calculation area under the curves
Week 14	- Integration by substitution - Integration by substitution
Week 15	- Integration by parts - Integration by parts
Week 16	**Final Exam**

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	- Thomas, Calculus, 12th Edition, 2010.	
Recommended Texts		
Websites		

APPENDIX:

GRADING SCHEME مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**
Success Group (50 - 100)	**A** - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
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	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
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Fail Group (0 – 49)	**FX** – Fail	مقبول بقرار	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
Note:				

NB Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.