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

Academic Program and Course

2024 – 2025

Introduction:

The educational program is a coordinated and organized package of courses that include procedures and experiences that are organized in the form of study vocabulary, the main purpose of which is to build and refine the skills of graduates, which makes them qualified to meet the requirements of the labor market, which is reviewed and evaluated annually through internal or external audit procedures and programs such as the external examiner program.

The description of the academic program provides a brief summary of the main features of the program and its courses, indicating the skills that are being acquired for students based on the objectives of the academic program, and the importance of this description is evident because it represents the cornerstone of obtaining program accreditation and is co-written by the teaching staff under the supervision of the scientific committees in the scientific departments.

This guide, in its second edition, includes a description of the academic program after updating the vocabulary and paragraphs of the previous manual in light of the developments 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 description of the academic program circulated under the letter of the Department of Studies TM3/2906 on 3/5/2023 with regard to the programs that adopt the Bologna Track as the basis for their work.

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

Concepts and Terms:

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 course features and the learning outcomes expected of the student to achieve, demonstrating whether they have made the most of the available learning opportunities. It is derived from the description of the program.

Program Vision: An ambitious picture of the future of the academic program to be an advanced, inspiring, stimulating, realistic, and viable program.

Program Mission: Briefly outlines the objectives and activities needed to achieve them, as well as outlines the program's development paths and directions.

Program Objectives: These 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 (semester, yearly, Bologna track), whether they are required (ministry, university, college, and scientific department) with the number of credits.

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

Teaching and Learning Strategies: These are the strategies used by the faculty member to develop the student's teaching and learning, and they are plans that are followed to reach the learning goals. That is,it describes all classroom and extra–curricular activities to achieve the learning outcomes of the program.

Academic Program Description Form

University Name: Al-Furat Al-Awsat Technical University

College/Institute: Engineering Technical College of Najaf

Scientific Department: Department of Laser Technologies and Optics Electronics Engineering

Academic or Professional Program Name: Bachelor of Engineering Laser Technologies and Optics Electronics

Final Certificate Name: Bachelor of Engineering in Laser Technologies and Optics Electronics

Academic System: Semester System

Date of preparation of description: 20/2/2024

File Filling Date : 20/2/2024

Signature

Name of Scientific Assistant:

Dr. Bassel Nouri Abed

Date:

Signature :

Name of Head of Department:

Dr. Abdullah Ali Qasim

Date:

File Checked by

Division of Quality Assurance and University Performance

Signature

Name of Director of the Quality Assurance and University Performance Division: Dr. Bassam Abdusaheb Al-Hilali

Date

Endorsement of the Dean

1. Program Vision

The Department of Laser and Electro-Optics Engineering at Al-Furat Al-Awsat Technical University/ College of Engineering Technology / Najaf seeks to be a major tributary in preparing specialized cadres with high efficiency in the engineering of laser and electro-optics technologies that will cover wide sectors of work in the industrial, engineering and medical fields in the public and private sectors . Year.

2. Program Mission

Preparing distinguished engineers in the fields of laser and electro-optical engineering technologies to help build and develop graduates and emerging engineering cadres in the same field in the future, and contribute to providing the community with applied scientific research and studies that aim to solve developmental and developmental issues, as well as seeking to enhance the role of the college in building institutions and developing engineering work in order to achieve the concept of comprehensive development within the framework of human and scientific engineering values and concepts.Finally, building and consolidating cooperation relations with all entities working in the engineering and medical fields , which are in harmony with the aspirations of the labor market locally and globally.

3. Program Objectives

1. **The department seeks to graduate qualified engineers in the specializations of laser and optoelectronics who have the ability to design, analyze, find appropriate solutions to practical problems and deal with advanced technology with high skill .**

2. **Preparing qualified graduates to participate in conferences, workshops, and development seminars inside and outside Iraq, and working in research centers.**

3. **Engage in the preparation of practical research in the field of lasers and electro-optics to develop a solution to practical problems and contribute to community service by integrating graduates into the labor market and refining their practical skills according to local requirements.**

4. **Active participation in the development of the community, promotion of the organization of conferences and seminars, as well as continuing education in the field of technical engineering, and the adoption of a methodology for continuous improvement in all activities.**

4. Program Accreditation

All of it

5. Other External Influences

There is no third-party sponsor of the study program. The only official sponsor of the program is the Middle Euphrates Technical University, a public university and one of the formations of the Iraqi Ministry of Higher Education and Scientific Research.

6. Program Structure

Reviews*	Percentage	Module	Number of Courses	Program Structure
fundamental	0.0166%	4	4	Enterprise Requirements
elective	0.075%	18	4	College Requirements
	68.8%	164	32	Department Requirements
				Summer Training
				Other

* It can include observations on whether the course is basic or optional.

7. Program Description

Third Year

❖ First Semester

No.	Type	CODE	SUBJECT	Hrs Per Week			Units
				Th	App	Tut	
1	Gen.	UREQ 310	English Language III	1			1
2	Ass.	UREQ 311	Computer Applications	1	3		2
3	Spc.	LAER 310	Digital Techniques II	2	3	1	3
4	Spc.	LAER 311	Electronic Circuits	2	3		3
5	Spc.	LAER 312	Optoelectronics	2	3		3
6	Ass.	LAER 313	Engineering Analysis	3			3
7	Ass.	LAER 314	Communication Theory	2			3
8	Ass.	LAER 315	Computer Architecture & Microprocessor	2	3		3
9	Spc.	LAER 311	Quantum Mechanics	2			2
Total				16	18	1	23
				35			

❖ Second Semester

No.	Type	CODE	SUBJECT	Hrs Per Week			Units
				Th	App	Tut	
1	Gen.	UREQ 320	Summer Training				Pass
2	Gen.	CREQ 320		1			1
3	Ass.	CREQ 321	Engineering Statistics	2	3		3
4	Gen.	LAER 323	Industrial Management	2			2
5	Ass.	LAER 320	Control Theory	2	3		3
6	Spc.	LAER 321	Wave Propagation	2			2
7	Ass.	LAER 322	Numerical Analysis	2	3		3
8	Spc.	LAER 324	Spectroscopy	2	2		3
9	Ass.	LAER 325	Communication Circuits & Networks	2	3		3
10	Spc.	LAER 316	Laser Applications I	2	2		3
Total				17	16		22
				31			

	First Semester	Second Semester
Th. / Total (%)	48 %	54 %
App. / Total (%)	52 %	46 %
Spc. Hours	50 %	37 %
Ass. Hours	48 %	47 %
Gen. Hours	2 %	16 %

Fourth Year

❖ First Semester

No.		CODE	SUBJECT	Hrs Per Week			Units
				Th	App	Tut	
1	Gen.	UREQ 410	Professional Ethics	1			1
2	Ass.	CREQ 420	Project		4		2
3	Spc.	LAER 410	Optical Fibers	2	2		3
4	Spc.	LAER 411	Control Engineering	2	3		3
5	Spc.	LAER 412	Digital Signal & Image Processing	2	3		3
6	Spc.	LAER 413	Laser Applications II	2	3		3
7	Spc.		Laser Design Technology	2			3
8	Spc.	LAER 414	Elective I	2			2
9	Spc.	LAER 415	Elective II	2			2
Total				15	18		22
				33			

❖ Second Semester

No.	Type	CODE	SUBJECT	Hrs Per Week			Units
				Th	App	Tut	
	Gen.	UREQ 410	English Language IV	1			1
1	Ass.	CREQ 420	Project		4		2
2	Spc.	LAER 420	High power Laser Techniques	2	3		3
3	Spc.	LAER 421	Optical Communications	2	3		3
4	Spc.	LAER 422	Optical System Engineering	2			2
5	Spc.	LAER 423	Computer Interface & Networks	2	3		3
6	Spc.		Photonics	2			2

7	Spc.	LAER 424	Seminar		1		1
8	Spc.	LAER 425	Elective IV	2			2
9	Spc.	LAER 426	Elective IV	2			2
Total				15	14		20
				29			

	First Semester	Second Semester
Th. / Total (%)	45 %	51 %
App. / Total (%)	55 %	49 %
Spc. Hours	93 %	93 %
Ass. Hours	0 %	0 %
Gen. Hours	7 %	7 %

Program Skills Map

Year / Level	Course Code	Course Title	Elective or Selective	Porgram Learning Outcomes											
				Knowledge				Skills				Evaluation			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4
Third Level – First Semester	UREQ 310	English Language II	General University Req.				●								
	UREQ 311	Computer Applications	General Collage Req.		●				●			●			
	LAER 310	Digital Techniques	Core Department Req.	●				●					●		
	LAER 311	Electronic Circuits	Core Department Req.		●				●			●			
	LAER 312	Optoelectronics	Core Department Req.	●				●				●			
	LAER 313	Engineering Analysis	Core Department Req.				●								●
	LAER 314	Communication Theory	Core Department Req.			●			●					●	
	LAER 315	Computer Architecture and Microprocessor	Core Department Req.				●				●				●
	LAER 311	Quantum Mechanics	Core Department Req.	●				●				●			

Program Skills Map

Year - Level	Corse Code	Course Title	Elective or selective	Program Learning Outcomes											
				Knowledge				Skills				Evaluation			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4
Third Level – Second Semester	UREQ 320	Summer Training	Core – Collage Req.				●								
	CREQ 320		Core – Collage Req.		●				●			●			
	CREQ 321	Engineering Statistics	Core – Department Req.			●				●			●		
	LAER 323	Engineering Management	Core – Collage Req.			●				●		●			
	LAER 320	Control Theory	Core – Department Req.	●				●				●			
	LAER 321	Wave Propagation	Core – Department Req.	●				●				●			
	LAER 322	Numerical Analysis	Core – Department Req.			●			●					●	
	LAER 324	Spectrums	Core – Department Req.	●							●				●
	LAER 325	Communication Circuits & Networks	Core – Department Req.		●					●				●	
	LAER 316	Laser Applications	Core – Department Req.	●				●				●			

Program Skills Map

				Program Learning Outcomes											
Year - Level	Course Code	Course Title	Selective or Elective	Knowledge				Skills				Evaluation			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4
Fourth Level – First Semester	UREQ 410	Professional Ethics	Core – University Req.				●								
	CREQ 420	Graduation Subj.	Core – Collage Req.		●				●			●			
	LAER 410	Optical Fibers	Core – Department Req.			●				●			●		
	LAER 411	Eng. Control	Core – Department Req.			●				●		●			
	LAER 412	Digital Signals & Image process.	Core – Department Req.	●				●				●			
	LAER 413	Laser Applications	Core – Department Req.	●				●				●			
		Laser Design Technologies	Core – Department Req.			●			●					●	

program Skills Map

Year – Level	Course Code	Course Title	Elective or Selective	Program Learning Outcomes											
				Knowledge				Skills				Evaluations			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4
Fourth Level – Second Semester	UREQ 410	English Language	Core – University Req.				●								
	CREQ 420	Graduation Subj.	Core – Collage Req.			●				●			●		
	LAER 420	High power lasers	Core – Department Req.	●				●				●			
	LAER 421	Optical Communication	Core – Department Req.		●				●			●			
	LAER 422	Engineering Optical Systems	Core – Department Req.	●				●				●			
	LAER 423	Networks	Core – Department Req.			●				●				●	
		Photonics	Core – Department Req.	●				●				●			

8. Expected Learning Outcomes of the Program	
Knowledge	
– Training students to increase intellectual awareness and the correct way in practical and scientific thinking.	Learning Outcomes 1
Skills	

Increasing students' practical skills through training in laboratories on the use of the required tools to solve experimental problems.	**Learning Outcomes 2**
- **Increasing theoretical skills, mechanisms and theories used to solve theoretical problems and training students on the correct methods for solving mathematical problems.** - **Training students on the correct way to turn the problem into a logical problem and thinking correctly to solve the logical problems presented.**	**Learning Outcomes 3**
Values	
- **Increasing students' cognitive awareness and supporting them in the mechanisms used to evaluate results and determine their knowledge level.** - **Training the teaching and technical staff on the methodology followed and the effective mechanisms in the success of the knowledge outputs.**	**Learning Outcomes 4**
- **Enabling students to work under conditions of high pressure and brainstorming while maintaining the required calm in the educational process.** - **Enabling teaching staff to work under conditions of high pressure and to adopt accurate scientific and educational outputs for them.**	**Learning Outcomes 5**

9. Teaching and Learning Strategies

- Using modern means that are renewed in the amount required by the Presidency of the Scientific Department and the Deanship of the College according to the available material resources.
- The use of the traditional classical method in the educational process and according to the opinion of some of the teachers as well as according to the requirements of the knowledge material (pen and board method).

- Using the method of brainstorming, surprising questioning, and impromptu answer to train the student to solve the problems presented to him, so that he can make a quick decision with the least possible error rate.

10. Evaluation methods

Several methods are used in evaluating students, including:

- Surprise exam method.
- Daily duties style.
- Periodic weekly reporting style.
- The method of presenting lectures by students to assess their level of understanding and comprehension.
- Simplified explanation style.
- Whiteboard Example Solving Technique.

11. Faculty

Faculty Members

Preparation of the Teaching Staff		Special Requirements/Skills (if applicable)		Specialization		Academic Rank
lecturer	angel			special	year	
	Yes			Optical Communications	Laser Engineering	teacher
	Yes			Applications of Lasers and Nanotechnology	Laser Physics Technologies	
	Yes			Microcommunications	Communication Engineering	
	Yes			Plasma	Laser Physics	
	Yes			Optical Communications	Laser Applications	Assistant Lecturer

	Yes			Wave motion and plasmon	Electro-Optics	
	Yes			Micro Communications	Communication Technologies	
	Yes			Solid state	physics	
Yes				Theoretical physics	physics	

Professional Development

Mentoring new faculty members

The faculty members are directed to the staff of the department (staff, lecturers, and permanent contractors) through several axes:

The first axis: Guidance in the sessions of the department council. Periodic sessions of the department council are held, through which the teachers are introduced to the required guidance and informed on the ways to apply it.

The second axis: personal guidance. In this axis, based on the results of the analysis of the data obtained through the questionnaires of the students, or through the personal review of the head of the department in his usual tours, or through the field tours conducted by the Dean of the College, the Assistant Dean for Scientific Affairs, Graduate Studies and Student Affairs, and the Head of the Department.

Professional Development of Faculty Members

The faculty members in the department are developed on two axes:

Vertical Axis: Where their teaching and training skills are raised by involving them in the various courses held by the Continuing Education Center at the University Presidency or the Continuing Education Unit at the College to build a scientific teaching base according to the correct theoretical scientific foundations based on the latest rules in the teaching and learning processes acquired by the old teachers in the department and transferring them to the new teachers.

Horizontal Axis: In this axis, the faculty members are asked to increase their personal scientific space by publishing scientific research in reputable international journals, providing them with all means of moral support, increasing their access to modern software and keeping pace with developments.

12. Acceptance Criterion

The admission system in the department follows the systems and strategies followed by the Iraqi Ministry of Higher Education by following the regulations and laws that are published in the Central Admission Guide. The relevant legal regulations are applied to the various categories of students and the various admission channels, and these instructions, regulations and regulations are followed on both the morning and evening study programs.

13. Top sources of information about the program

The procedures followed by the Iraqi Ministry of Higher Education and Scientific Research. The Iraqi Technical Education Quality Assurance Council and the procedures issued by the Scientific Supervision and Evaluation Authority/ Quality Assurance and Academic Accreditation Department – Accreditation Section. As well as the Presidency of the Middle Euphrates Technical University/ Quality Assurance and University Performance Department.

14. Program Development Plan

- Updating the study program in line with practical knowledge that is in line with the requirements of the labor market.

- Training the technical cadres in the department to increase scientific, cultural and psychological awareness so that the educational process is adjusted in harmony with the outcomes of science and learning.
- Increasing cultural awareness and brainstorming for students.
- Initiating intensive courses for teaching staff to increase cognitive awareness about brainstorming mechanisms.

Program Skills Chart

Learning outcomes required from the program

			Skills				Knowledge				Standard or Optional	Course Name	Course Code
C3	C2	C1	B4	B3	B2	B1	A4	A3	A2	A1			
							●				Basic – College Requirements Requirements	Summer English III Internship	UREQ 310
		●			●				●		Basic – College Requirements	Computer Applications	CREQ 320
	●			●				●			Basic – Department Requirements	Engineering Statistics	UREQ 311 CREQ 321
		●		●				●			Basic – College Requirements	Digital Engineering Technologies II	LAER 310 LAER 323
		●			●	●			●	●	Basic – Department Requirements	Management Electronic Circuits Control theory	LAER 316 LAER 326
		●				●				●	Basic – Department Requirements	Electromagnetic waves	LAER 312 LAER 321
●					●		●	●			Basic – Department Requirements	Engineering Numerical analysis	LAER 313 LAER 322
●			●		●			●		●	Basic – Department Requirements	Communication Spectra Theory	LAER 324 LAER 314
●			●	●			●		●		Basic – Department Requirements	Communication and Networking Computer and microprocessor Laser architecture	LAER 325 LAER 315 LAER 316
		●				●				●	Basic – Department Requirements	Departments Applications	
		●				●				●	Basic – Department Requirements	Quantum Mechanics	LAER 311

- Please tick the boxes corresponding to the individual learning outcomes from the programme under assessment

Program Skills Chart

Learning outcomes required from the program

			Skills				Knowledge						
C3	C2	C1	B4	B3	B2	B1	A4	A3	A2	A1	Standard or Optional	Course Name	Course Code
							●				Basic – University Requirements	Ethics	UREQ 410
		●			●				●		Basic – College Requirements	Graduation Project	CREQ 420
	●			●				●			Basic – Department Requirements	Optical Fiber	LAER 410
		●		●				●			Basic – Department Requirements	Engineering control	LAER 411
		●				●				●	Basic – Department Requirements	Digital Signage and Image Processing	LAER 412
		●				●				●	Basic – Department Requirements	Laser Applications	LAER 413
●					●			●			Basic – Department Requirements	Laser Design Technology	

Program Skills Chart

Learning outcomes required from the program

			Skills				Knowledge						
C3	C2	C1	B4	B3	B2	B1	A4	A3	A2	A1	Standard or Optional	Course Name	Course Code
							●				Basic – University Requirements	English	UREQ 410
	●			●				●			Basic – College Requirements	Graduation Project	CREQ 420
		●				●				●	Basic – Department Requirements	High-power laser technologies	LAER 420
		●			●				●		Basic – Department Requirements	Optical Communications	LAER 421
		●				●				●	Basic – Department Requirements	Optical Engineering Systems	LAER 422
●				●				●			Basic – Department Requirements	Computer Networks	LAER 423
		●				●				●	Basic – Department Requirements	Photonics	

Course Description Template

1. Course Name
2. Course Code
3. Semester/ Year
4. Date of this description
5. Available Forms of Attendance
6. Number of Credit Hours (Total) / Number of Units (Total)
7. Name of the course administrator (if more than one name is mentioned)
Name: Email :
8. Course Objectives

• ..... • ..... •	**Course Objectives**

9. Teaching and Learning Strategies	
	Strategy

10. Course Structure					
Evaluation Method	**Learning Method**	**Name of Unit or Topic**	**Required Learning Outcomes**	**Hours**	**The week**

11. Course Evaluation

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

12. Learning and Teaching Resources

	Required Textbooks (Methodology, if any)
	Main References (Sources)
	Recommended books and supporting references (scientific journals, reports…)
	Electronic References, Websites