University of Mosul
College of Engineering

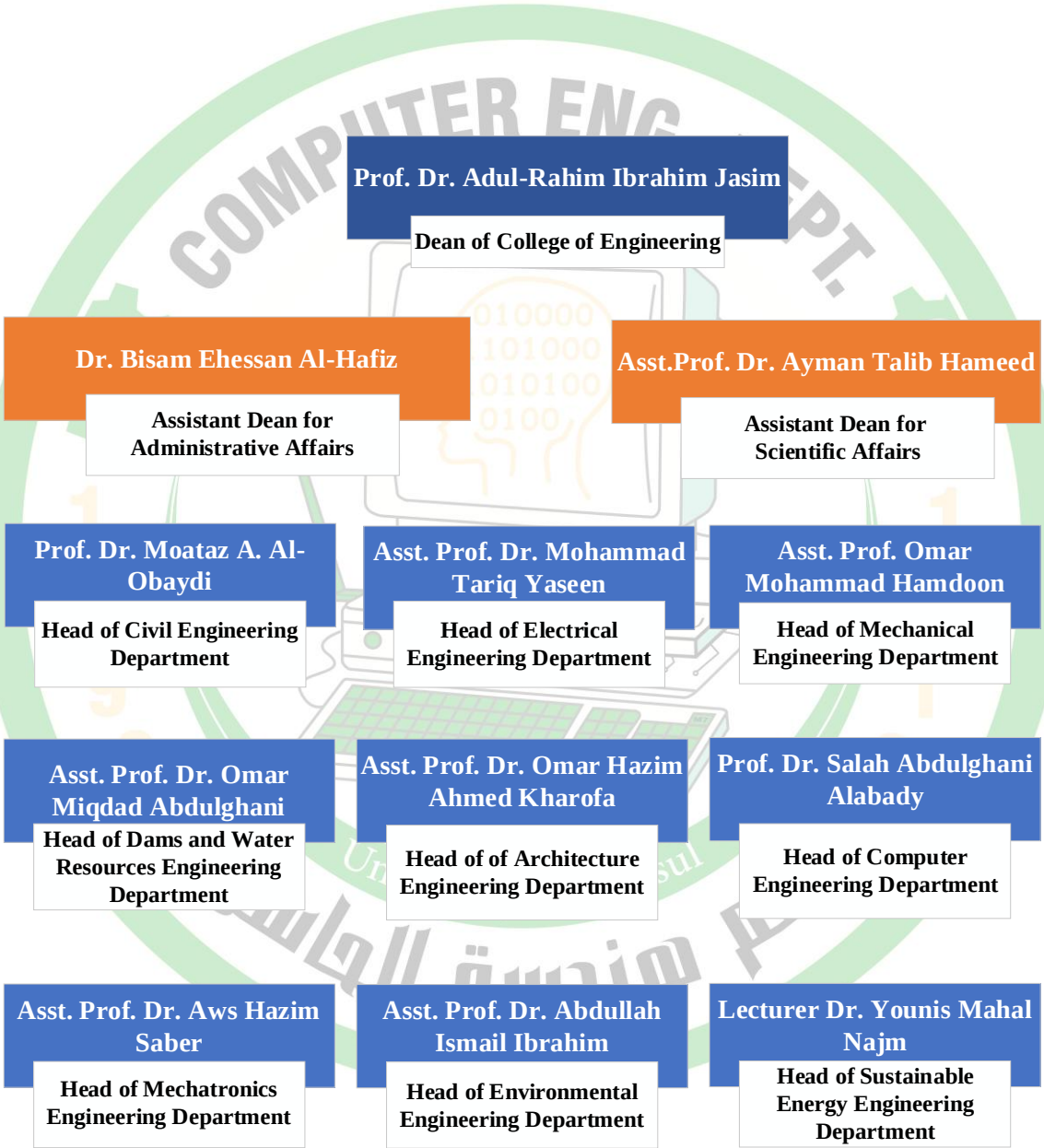
Guide of Department of Computer Engineering

9 الصناعة والابتكار والبنية التحتية

2025 Edition

Uomosul.edu.iq/engineering/ Iraq-Mosul-Al Majmoaa Street

College of Engineering



Introduction

The Computer Engineering Department was established in 1998 with the mission of preparing highly skilled professionals equipped to meet the demands of the rapidly evolving field of computer engineering. The department's curriculum emphasizes key areas such as the design of computing circuits, the development of interfaces for integrating computers with external devices, and the creation of software essential for operating these systems. Additionally, the department covers advanced topics, including computer networks, control systems, and real-time signal processing, ensuring a comprehensive and cutting-edge educational experience.

The department has demonstrated significant growth in its academic programs, launching its master's program in 1998 and its doctoral program in 2001. Since its inception, the department has successfully graduated approximately 700 undergraduate students and 80 postgraduate students, including those with masters and doctoral degrees.

Currently, the department is supported by a team of 57 faculty and administrative staff members who are dedicated to achieving excellence in education, advancing scientific research, and contributing to community development. Through their efforts, the department continues to uphold its commitment to fostering innovation and excellence in the field of computer engineering.

Department Management

Prof. Dr. Salah Abdulghani Jaro Hayawi Al-Abadi

- **Head of the Computer Engineering Department**
  Specialization: Computer Networks

Assist. Prof. Dr. Shawkat Sabah Khairallah Jassim Al-Rubaie

- **Rapporteur of the Computer Engineering Department**
  Specialization: Computer Architecture and Embedded Systems

Department Laboratories

Electrical and Electronic Circuits Laboratory

Location: First Floor, Laboratory No. 113

- **Laboratory Supervisor: Senior Engineer Ahmed Abdullah**

Control and Logic Laboratory

Location: Second Floor, Laboratory No. 210

- **Laboratory Supervisor: Chief Senior Engineer Rounaq Jameel Hammad**

Processors and Real-Time Systems Laboratory

Location: Second Floor, Lab No. 211

- **Lab Supervisor: Assistant Engineer Abdullah Qais Mahmoud**

Computer Networks and Systems Laboratory

Location: Third Floor, Lab No. 312

- **Lab Supervisor: Assistant Engineer Ahmed Ibrahim Ahmed**

Vision:

To establish the Computer Engineering Department as a distinguished entity through the preparation of competent engineers and researchers equipped with up-to-date knowledge to meet societal needs, while producing scientific research that aligns with advancements in computer engineering and its applications.

Mission:

Excellence in education, rigorous scientific research, and community service.

Objectives:

1. **Prepare highly skilled engineering professionals capable of designing, analyzing, and developing computer systems, while maintaining connections with graduates to ensure their continuous development.**
2. **Regularly update the curriculum to align with scientific advancements and market needs by adopting quality standards and employing the latest teaching methodologies.**
3. **Stay abreast of cutting-edge research across various specializations through faculty studies and the theses and dissertations of postgraduate students.**
4. **Organize seminars, scientific conferences, and workshops in collaboration with other colleges, governmental institutions, and the private sector to solve problems and enhance the operations of these entities.**
5. **Provide technical and academic consultancy in computer engineering to both public and private sectors.**
6. **Foster teamwork among students, encourage self-motivation, and ensure they acquire and comprehend the knowledge necessary to succeed in their future roles while striving to emulate the highest standards in the field of computer engineering, adhering to professional ethics.**

Community Service

The Computer Engineering Department plays a significant role in providing academic, technical, and scientific consultancy in various fields of computer engineering to both public and private sectors. This is achieved through collaboration with ministries and government departments via:

- **Cooperation mechanisms**
- **Memoranda of understanding**
- **Various consultancy agreements**

These efforts involve contributions from:

1. **Faculty members**
2. **Postgraduate students**
3. **Undergraduate students**

The department has established joint projects with several government ministries and institutions, including:

1. **Ministry of Electricity**
2. **Ministry of Health**
3. **Ministry of Higher Education and Scientific Research**
4. **Ministry of Finance**
5. **Ministry of Transport**


General Structure of the Department
Head of Department
Department Committees
Department Council
Scientific Committee
Examination Committee
Examination Audit Committee
Postgraduate Committee
Plagiarism Audit Committee
Bologna Process Committee
Quality Committee
Information Committee
Projects Committee
Thesis and Dissertation Audit Committee
Eng. Education Accred. Committee
Timetable Committee
Registration Committee
Summer Training Committee
Media Committee
Continuing Education Committee
Course Supervision Committee
Quality Committee
Student Activities Committee
Laboratories Committee
Infrastructure Monitoring Committee
Department Administration Office
Secretariat
Follow-up Office
Registration Office
Library
Scientific Laboratories
Electrical Laboratory
Electronics Laboratory
Control Laboratory
Logic Laboratory
Real-Time Laboratory
Processors Laboratory
Computer Networks Laboratory
Computer Laboratory
Postgraduate Laboratory
Department Rapporteur
Student Affairs
Technical, Administrative, Staff, and Labor Affairs

Responsibilities

Responsibilities of the Head of Department: The Head of the Department is responsible for overseeing all administrative, academic, financial, and student-related matters. This includes supervising the development of the department's strategic plan and ensuring its effective implementation. The Head also manages academic and research activities, monitors student attendance, and oversees theoretical and practical examinations. The Head works on fostering internal and external relationships and ensures the provision of all required educational, research, administrative, and financial resources, while continuously improving academic outcomes.

Additionally, the Head reviews academic curricula periodically, presents proposed updates to the college council, and hosts external lecturers for specialized talks to both undergraduate and postgraduate students. The Head ensures that faculty members comply with their duties and provides regular reports on department activities. The Head also reviews research submitted for promotion and academic enhancement, assesses the department's needs for academic and technical staff, and recommends annual admission plans. Regular meetings with students are conducted to understand their needs and suggestions and to find solutions to any issues they encounter.

Responsibilities of the Department Secretary: The Department Secretary assists the Head by organizing department matters, tracking student attendance, supervising classroom setups, and organizing class schedules and examination timetables.

Department Council: The Department Council collaborates with the Head in supervising the educational process, monitoring departmental operations, and ensuring the implementation of the academic plan. The Council also works on the development of the faculty and staff.

Scientific Committee & Postgraduate Committee: These committees work with the Head on all scientific decisions, including curriculum development, academic promotions, plagiarism checks, and research evaluations. They also handle matters related to postgraduate students, such as forming examination committees, organizing thesis defense panels, and reviewing extension requests and supervisor appointments for postgraduate students.

Quality Committee: This committee promotes the culture of quality and supports activities that apply quality standards in all aspects of the department's work to improve educational and teaching outcomes. It oversees accreditation activities, fosters continuous quality improvement, and supports the preparation of course descriptions, academic reports, and departmental statistics.

Examination Committee: Responsible for overseeing all aspects of exams, including scheduling, organizing invigilators, collecting and organizing exam questions and results, ensuring confidentiality, and conducting statistical analysis on student performance. It also manages the re-examination process for students with supplementary exams.

Audit Committee: This committee works in parallel with the Examination Committee, verifying grades submitted by faculty members and ensuring accuracy in the recorded results before they are made public.

Graduation Projects Committee: This committee reviews project proposals from faculty members, organizes student selection for graduation projects, and establishes evaluation criteria. The committee also supervises the organization of graduation project defenses.

Continuing Education and Seminars Committee: Responsible for coordinating continuous education programs and workshops conducted by department faculty for engineering staff from various government agencies. It also organizes department-sponsored seminars and conferences.

Advising Committee: Meets with students to understand and address academic challenges, preparing reports on the issues raised.

Summer Training Committee: Oversees the preparation of official documents for third-year students' summer internships in government departments, tracks student progress, and collects reports on completed internships.

Media Committee: Handles the documentation and promotion of department events, both academic and social, through photography and explanatory publications.

Timetable Committee: Responsible for creating and managing the academic timetables for both undergraduate and postgraduate students for each semester.

Information Committee: Manages the electronic archiving and documentation of all scientific and research activities, including seminars, conferences, and training sessions. The committee maintains a comprehensive database of these events, generates monthly and annual statistics, and ensures easy access to data for decision-making and planning.

Registration Committee: Responsible for receiving and registering new students at the start of each academic year, managing student records for all levels, and tracking student cases throughout the year, including transfers, extensions, and other academic matters. The committee also prepares student lists for all academic stages according to classroom assignments.

Department Administration Office: Handles the reception and registration of incoming official letters, distributes outgoing mail from the Head of the Department, monitors official correspondence, and organizes documents for easy access and tracking.

Library: Manages the electronic and paper collection of master's theses from recent graduates, facilitates the borrowing of theses, books, and scientific discs related to academic programs.

Teaching staff

No.	Name	Academic Title	Email Address
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Department Building

The Computer Engineering Department was established in 1998 with the goal of preparing specialized engineers in the field of computer engineering. The department currently occupies a building with an area of 455 square meters (12m * 35m), consisting of four floors designed to meet the needs of education and scientific research. The department focuses on advanced topics including the design of computer-specific electronic circuits, the development of circuits necessary to connect computers to external peripherals, the construction of software to operate and manage these peripherals, computer networks, computer-based control systems, and real-time signal processing. A master's program was launched in the same year the department was established, and the doctoral program started in 2008, further enhancing the department's position as an academic center of excellence in this field.

Department Laboratories

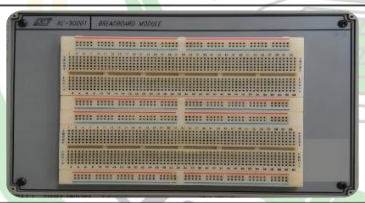
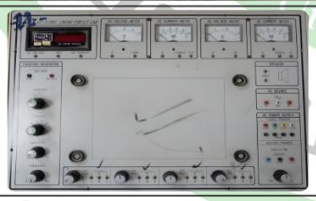
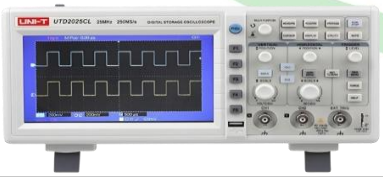
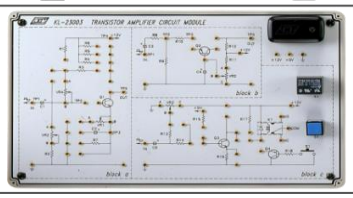
The Computer Engineering Department includes a variety of laboratories dedicated to students in all four stages of study, which are essential for enhancing the practical aspect of the educational process. These laboratories include: the Electrical Laboratory, Electronics Laboratory, Control Laboratory, Logic Laboratory, Real-Time Laboratory, Processor Laboratory, Computer Laboratory, and Computer Networks Laboratory. In the Computer Laboratory, students learn the fundamentals of computers, object-oriented programming, data structures, and operating systems, helping them build a strong foundation in software development. The Computer Networks Laboratory focuses on advanced technologies for connecting and operating networks. These laboratories contribute to reinforcing students' understanding of theoretical concepts through practical applications and are supervised by distinguished professors with both scientific and practical experience. Additionally, all equipment undergoes regular maintenance to ensure the provision of an advanced educational environment that supports academic and technical excellence.

Electrical Laboratory:

The laboratory serves the practical side of the Electrical Circuits 1 and 2 courses, where students can familiarize themselves with electrical and electronic devices and the correct way to use these devices in the electrical circuits laboratory. The goal of this laboratory is to enable students to acquire the basic skills in constructing simple electrical circuits and using basic testing and measurement equipment. Additionally, a series of experiments are conducted to demonstrate the theories of electrical circuits in both direct current (DC) and alternating current (AC). Practical circuits are implemented either on educational boards or by manually constructing the required circuits on breadboard kits.

Electronics Laboratory:

The Analog Electronics Laboratory is an educational and experimental environment used to teach and apply the principles of analog electronics, which deals with signals that take continuous values, such as current or voltage. The laboratory aims to teach students how to design and analyze basic electronic circuits that use analog components such as resistors, capacitors, transistors, diodes, and operational amplifiers. In the Analog Electronics Laboratory, many practical experiments are conducted to help students understand how circuits work and how analog components respond to different signals. Students can measure currents and voltages and analyze the characteristics of the generated waves using equipment such as multimeters, oscilloscopes, signal generators, and frequency counters.

ت	اسم الجهاز	صورة الجهاز
1	مقياس رقمي متعدد القياسات Digital Multimeter	
2	لوحة التجارب Breadboard	
3	لوحة الدوائر الخطية Linear Circuit Lab	
4	راسمة اشارة رقمية Digital Signal Oscilloscope	
5	وحدة الدائرة الإلكترونية Circuit Module	

Electronics Laboratory:

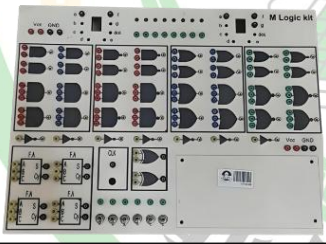
The Control Laboratory serves as a dynamic learning environment for fourth-level students studying control systems engineering. The lab aims to bridge the gap between theoretical knowledge and practical applications through a series of hands-on experiments. It covers a wide range of topics, equipping students with essential skills and insights into control theory and its applications. The experiments follow an organized curriculum that includes the use of MATLAB, LabVIEW, analog and digital control systems, as well as Programmable Logic Controllers (PLCs). This comprehensive set of experiments provides an integrated understanding of control systems, combining theoretical knowledge with practical skills and real-world applications using hardware components such as Arduino and PLCs.

Electronics Laboratory:

The Digital Logic Laboratory is one of the essential labs for first-year students in the Department of Computer Engineering, where students apply the practical side of the course "Fundamentals of Digital Systems and Logic Circuits."

The primary goal of this laboratory is to introduce students to digital logic and the fundamentals of designing logic circuits, with an emphasis on practical implementation techniques. The laboratory covers the following topics:

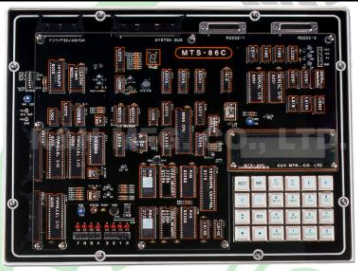
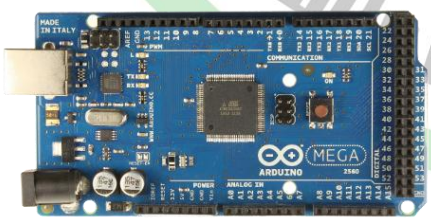
1. **Helping students understand the operation of basic logic gates, Boolean algebra theories, and methods for simplifying logical functions through theoretical analysis.**
2. **Designing combinational and sequential digital circuits, such as digital comparator circuits, binary encoder and decoder circuits, and logical addition and subtraction circuits using separate circuits like half adders and full adders.**
3. **Introducing students to circuit design using schematic capture, understanding how these circuits work, and how to perform logical simulations of these circuits.**

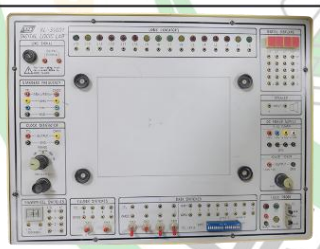
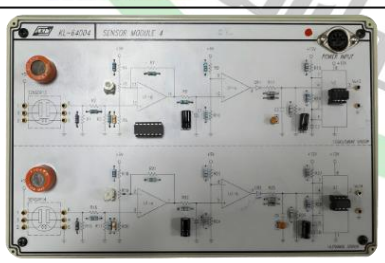
ت	اسم الجهاز	صورة الجهاز
1	محرك سيرفو مختبري Analogue Servo Motor	
2	متحكم منطقي قابل للبرمجة LOGO! PLC	
3	حاسوب مكتبي PC	
4	لوحة المنطق الرقمي M-Logic Kit	
5	لوحة مصفوفات البوابات القابلة للبرمجة Spartan-3 FPGA	

Real-Time Laboratory:

The course introduces the principles and systems of real-time, covering both hardware and software components of any real-time system. The course focuses on:

- **The ability to identify, analyze, and solve complex engineering problems according to engineering principles, science, and mathematics.**
- **Gaining and applying new knowledge using appropriate learning strategies.**
- **Working professionally and ethically within interdisciplinary teams.**
- **Recognizing the importance of continuous self-development in scientific and professional knowledge.**
- **A comprehensive understanding of real-time system components, such as system classification, types of sensors, signal conditioning techniques, graphical buses (GPIB and RS232), and types of storage devices.**
- **Designing and developing real-time software for control and application, with an understanding of the challenges and timing requirements in real-time software development.**

ت	اسم الجهاز	صورة الجهاز
1	أدوات الأنظمة المطمورة Embedded systems kits	
2	لوحة تفاعلية متكاملة MTS-86C KIT	
3	حاسوب مكتبي PC	
4	راسمة الإشارات Oscilloscope	
5	لوحة اردوينو Arduino Mega	

ت	اسم الجهاز	صورة الجهاز
6	مجهز القدرة Power Supply	
7	مولد الدوال Functions Generator	
8	متحسسات Sensors	
9	لوحة المنطق الرقمي المتقدم Advanced Digital Logic Lab	
10	وحدات الدارات الإلكترونية KL-64s Circuits Module	

ت	اسم الجهاز	صورة الجهاز
11	شريحة معالجة وتحكم صغيرة ESP32-WROOM	
12	شريحة حاسوبية صغيرة متقدمة Raspberry Pi 4 Model B	
13	وحدة الحساسات المثبتة Sense HAT	
14	شريحة حاسوبية صغيرة Raspberry Pi 3 Model B	
15	مقياس رقمي متعدد القياسات Digital Multimeter	

Processors Laboratory:

The laboratory consists of a set of laptops equipped with a suite of software tools that allow students to conduct the necessary experimental work for the courses on processors 1 and 2. The lab is designed so that each student has their own laptop, and no more than one student works on each laptop to ensure the best possible experimental performance. The teaching and lab staff prepare all the materials needed for experiments and exams, while also maintaining and updating the software to keep up with the scientific progress in the department.

Computer Networks Laboratory:

The Computer Networks Laboratory in the Department of Computer Engineering aims to teach students both the theoretical and practical fundamentals of networking. The laboratory is equipped with advanced devices such as routers, switches, and advanced control units, allowing students to build and design local networks and experiment with various network configurations.
Key activities in the lab include setting up local area networks (LAN) and wide area networks (WAN), configuring wired and wireless networks, as well as learning communication protocols like TCP/IP and basic methods of cyberattack protection. The lab provides students with the opportunity to experiment with virtual networks and apply software that helps deepen their understanding of modern networking and its requirements. Students also use simulation software like Cisco Packet Tracer to build simulated network models and test various scenarios they may encounter in real-world environments.

Computer Laboratory:

This is one of the most important practical elements in the Department of Computer Engineering, combining theoretical study with practical applications related to computer software systems. It covers topics such as computer hardware and user applications, commonly known as the Computer Laboratory, as well as Operating Systems Laboratory, which focuses on recognizing and simulating various operating systems used in computer systems and finding software solutions to handle the problems addressed by these operating systems, such as task management, scheduling, and resource management.

This lab also includes practical lessons on programming, object-oriented programming, and data structures, which fall under the general category of Programming Laboratory. The lab teaches undergraduate students about various programming languages, software design, and software engineering practices. It highlights the evolution of programming languages, particularly during the transition from C to C++, with an emphasis on object-oriented programming.

ت	اسم الجهاز	صورة الجهاز
1	حاسوب متنقل Laptop	
2	موجه شبكة لاسلكي MikroTik RouterBOARD	
3	موجه شبكة لاسلكي TP LINK Router	
4	TP LINK Switch	
5	SMC Switch	

- **Laboratory Number:**


COMPUTER ENG. DEPT.
جامعة الموصل
University of Mosul
قسم هندسة الحاسوب
CPU

University of Mosul/ College of Engineering/ Department of Computer Engineering Curriculum Guide 2024-2025/ Bologna System

Republic of Iraq - Ministry of Higher Education and Scientific Research
University of Mosul
Bachelor's degree in Computer Engineering (Second cycle)
Four years (Eight semesters) - 240 ECTS credits - 1 ECTS = 25 hr
Program Curriculum (2024 - 2025)

جمهورية العراق - وزارة التعليم العالي والبحث العلمي
جامعة الموصل
بكالوريوس في هندسة الحاسوب (الدورة الثانية)
أربع سنوات (ثمانية فصول دراسية) - ٢٤٠ وحدة اوربية - كل وحدة اوربية = ٢٥ ساعة
المنهاج الدراسي للعام ٢٠٢٤-٢٠٢٥

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)	Semn (hr/w)							
UGI	One	1	UOM1021	English Language 1	اللغة الانكليزية 1	English	2		0				3	33	17	50	2.00	B	
		2	UOM1040	Democracy and Human Rights	ديمقراطية و حقوق انسان	Arabic	2		0				3	33	17	50	2.00	B	
		3	CO103	Mathematics 1	الرياضيات 1	English	4		0		1		3	78	97	175	7.00	C	
		4	CO104	Engineering Drawing by Computer	الرسم الهندسي بواسطة الحاسوب	English	0		3				3	48	52	100	4.00	S	
		5	CO105	Electrical Circuits Analysis1	تحليل الدوائر الكهربائية 1	English	3		3		1		3	108	67	175	7.00	C	
		6	CO106	Electronics Physics	فيزياء الإلكترونيات	English	3		0		1		3	63	62	125	5.00	C	
		7	UOM1031	Computer 1	حاسوب 1	English	2		2				3	63	12	75	3.00	B	
						Total	16	0	8	0	3	0	21	426	324	750	30		

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)	Semn (hr/w)							
Two	1	CO108	Programing using C++ Language	البرمجة بأستخدام لغة C++	English	3		3				3	93	82	175	7.00	C	
	2	UOM1011	Arabic Language 1	اللغة العربية 1	Arabic	2		0				3	33	17	50	2.00	B	
	3	CO110	Mathematics 2	الرياضيات 2	English	4		0		1		3	78	97	175	7.00	C	CO103
	4	CO111	Electrical Circuits Analysis 2	تحليل الدوائر الكهربائية 2	English	3		3		1		3	108	67	175	7.00	C	CO105
	5	CO112	Digital System Fundamentals	مبادئ النظم الرقمية	English	2		3		1		3	93	82	175	7.00	C	
					Total	14	0	9	0	3	0	15	405	345	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)	Semn (hr/w)							
UGII	Three	1	CO201	Engineering Mathematics 1	رياضيات هندسية 1	English	4		0				3	63	62	125	5.00	C	CO110
		2	CO202	Analog Electronics	الكترونيات تناظرية	English	3		3				3	93	57	150	6.00	C	CO111
		3	CO203	Microprocessors 1	معالجات دقيقة 1	English	2		3				3	78	72	150	6.00	C	
		4	UOM2022	English Language 2	اللغة الانكليزية 2	English	2		0				3	33	17	50	2.00	B	
		5	CO205	Object Oriented Programing	البرمجة بالكائنات الموجهة	English	2		3				3	78	47	125	5.00	C	CO108
		6	CO206	Programmable Logic Design	تصميم منطق قابل للبرمجة	English	2		3				3	78	72	150	6.00	C	CO112
						Total	15	0	12	0	0	0	18	423	327	750	30.00		

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)	Semn (hr/w)							
Four	1	CO207	Computational Methods for Data Analysis	طرق الحوسبة لتحليل البيانات	English	2		0		1		3	48	27	75	3.00	C	
	2	CO208	Engineering Mathematics 2	رياضيات هندسية 2	English	4		0				3	63	62	125	5.00	C	CO201
	3	CO209	Statistics	إحصاء	English	2		0				3	33	17	50	2.00	C	
	4	CO210	Digital Electronics	الكترونيات رقمية	English	2				1		3	48	52	100	4.00	C	
	5	CO211	Microprocessors 2	معالجات دقيقة 2	English	2		3				3	78	72	150	6.00	C	CO203
	6	CO212	Data Structures	هياكل البيانات	English	2		3		1		3	93	57	150	6.00	C	
	7	UOM2050	Baath Regime Crimes in Iraq	جرائم نظام البعث في العراق	Arabic	2						3	33	17	50	2.00	B	
	8	UOM2012	Arabic Language 2	اللغة العربية 2	Arabic	2						3	33	17	50	2.00	B	
					Total	18	0	6	0	3	0	24	429	321	750	30.00		

University of Mosul / College of Engineering / Department of Computer Engineering / Third Year
Semester System / Academic Year 2024-2025

Third Year / First Semester

Course Name (Arabic)	Course Name (English)	Lecture Hours	Practical Hours	Credit Hours	Code
اتصالات البيانات	Data Communications	3	3	4	DCNE301
اشارات و انظمة	Signals and Systems	3	-	3	SISY302
معمارية الحاسوب 1	Computer Architecture 1	3	-	3	COAR303
موائمة الحاسوب	Computer Interface	2	3	3	COIN304
انظمة تشغيل 1	Operating Systems 1	2	3	3	OPSY305
أساسيات الذكاء الصناعي	Artificial Intelligence Fundamentals	2	-	2	ARIN306
Total Hours and Credits		15	9	18	

University of Mosul / College of Engineering / Department of Computer Engineering / Third Year
Semester System / Academic Year 2024-2025

Third Year / Second Semester

Course Name (Arabic)	Course Name (English)	Lecture Hours	Practical Hours	Credit Hours	Code
شبكات الحاسوب	Computer Networks	3	3	4	DCNE311
معالجة الاشارة الرقمية	Digital Signal Processing	3	-	3	DISP312
معمارية الحاسوب 2	Computer Architecture 2	3	-	3	COAR313
الانظمة المضمنة	Embedded Systems	2	3	3	EMSY314
انظمة تشغيل 2	Operating Systems 2	2	3	3	OPSY315
السلامة المهنية	Occupational Safety	1	-	1	OCSA316
Total Hours and Credits		14	9	17	

University of Mosul / College of Engineering / Department of Computer Engineering / Fourth Year
Semester System / Academic Year 2024-2025

Fourth Year / First Semester

Requirement Type	Course Name (Arabic)	Course Name (English)	Lecture Hours	Practical Hours	Credit Hours	Prerequisite	Code	Notes
College Requirement (Elective)	السلامة العامة	Public Safety	2	-	2	-	ENGE429	Mandatory for department students
Department Requirement (Compulsory)	مشروع تخرج I	Graduation Project I	2	-	2	Third Year	GRPR450	
	انظمة السيطرة	Control Systems	3	2	4	Signals and Systems	COSY403	
	انظمة الزمن الحقيقي	Real-Time Systems	2	2	3	Embedded Systems	RETS404	
	الرسم بالحاسوب	Computer Graphics	2	-	2	-	COGR405	
	ذكاء صناعي	Artificial Intelligence	2	-	2	-	ARIN409	
Elective	الشبكات اللاسلكية	Wireless Networks	2	-	2	-	WINE406	Student selects one course (2 credits required)
	معمارية حاسوب متطورة	Advanced Computer Architecture	2	-	2	-	ACAR408	
	اتصالات ضوئية	Optical Communication	2	-	2	-	OPCO407	
	هندسة القياسات الحيوية	Biometric Engineering	2	-	2	-	BIEN411	
Total Hours and Credits		17	4	19				

University of Mosul / College of Engineering / Department of Computer Engineering / Fourth Year
Semester System / Academic Year 2024-2025
Fourth Year / Second Semester

Requirement Type	Course Name (Arabic)	Course Name (English)	Lecture Hours	Practical Hours	Credit Hours	Prerequisite		Notes
University Requirement (Compulsory)	اللغة الإنكليزية – فوق المتوسط	English Language – Upper Intermediate	2	-	2	-	UOMC104	
	اخلاقيات المهنة	Professional Ethics	2	-	2	-	UOMC105	
Department Requirement (Compulsory)	مشروع تخرج II	Graduation Project II	2	-	2	Graduation Project I	GRPR450	
	سيطرة رقمية	Digital Control	3	2	4	Control Systems	DICO452	
	هندسة البرمجيات	Software Engineering	2	-	2	-	SOEN451	
Elective	أمنية الشبكات	Network Security	2	-	2	-	NESE453	Student selects one course (2 credits required)
	معالجات الأغراض الخاصة	Special Purpose Processors	2	-	2	-	SPPR456	
	تطبيق الشبكة وإدارتها	Network Application & Management	2	-	2	-	NAMA455	
	الأنظمة الموزعة	Distributed Systems	2	-	2	-	DISY457	
	الشبكات الصناعية	Industrial Networks	2	-	2	-	INNE454	
	الهوائيات والانتشار	Antenna and Propagation	2	-	2	-	ANPR458	
	سيطرة ذكية	Intelligent Control	2	-	2	-	INCO459	
Total Hours and Credits		17	2	18				

Graduate Studies:

Curriculum / Department of Computer Engineering / Master's Program / First Semester

Code	Course	Credit Hours
MCE01	Advanced Computer Architecture	2
MCE02	Advanced Computer Networks	2
MCE03	Programmable Logic Devices	2
MCE04	3D Computer Graphics	2
MCE05	Wireless Networks	2
MCE06	Research Methodology	2
Total		12

Curriculum / Department of Computer Engineering / Master's Program / Second Semester

Code	Course	Credit Hours
MCE07	Advanced Microprocessors	2
MCE08	Advanced Image Processing	2
MCE09	Artificial Intelligence	2
MCE10	Network Security	2
MCE11	Advanced Real-Time Systems	2
MCE12	English Language	2
MCE13	Distributed Systems	2
Total		14

Curriculum / Department of Computer Engineering / PhD Program / First Semester

Code	Course	Credit Hours
DCE01	Next-Generation Computer Networks	2
DCE02	Advanced Topics in Graphics & Vision	2
DCE03	Advanced Mobile Communication Systems	2
DCE04	IoT and Cloud Computing Technologies	2
DCE05	Research Methodology	2
DCE06	English Language	2
Total		12

Curriculum / Department of Computer Engineering / PhD Program / Second Semester

Code	Course	Credit Hours
DCE07	Advances in Microprocessor Design	2
DCE08	Network Security and Cryptography	2
DCE09	Parallel Processing & High Performance Computing (HPC)	2
DCE10	Advanced Biometric and Biomedical Engineering	2
DCE11	Advanced Wireless Networks and Protocols	2
DCE12	Advances in Microprocessor Design	2
Total		12

Research Directions/Aspects Considered in Department of Architecture Engineering

The Computer Engineering Department provides a wide range of training and research facilities in the field of computer engineering. The research aspects of the department focus on: computer networks, computer security, computer architecture, embedded systems, signal processing, computer vision, artificial intelligence, and real-time systems.

The broad diversity in the research directions in computer engineering has created vast opportunities for students and researchers to delve into advanced fields that cater to both local and global market needs. Below are the key research directions in computer engineering:

- **Computer Networks and Information Security**
  This area focuses on the design and secure development of network systems.
- **Computer Architecture and Embedded Systems**
  This field emphasizes the design of computer architecture and the development of embedded systems.
- **Signal Processing and Computer Vision**
  This domain deals with the analysis and processing of visual and audio data, as well as computer vision applications.
- **Real-time Systems and Artificial Intelligence**
  This field aims to enhance the performance of real-time systems in environments that require immediate and accurate responses. The development of these systems has a significant impact on areas such as healthcare, autonomous driving, the Internet of Things (IoT), cybersecurity, and AI-based decision support systems.

University of Mosul
College of Engineering

This guide has been prepared under the guidance of the Dean of the College of Engineering

Professor Dr. Abdul Rahim Ibrahim Jassim

Under the supervision of the Head of the Computer Engineering Department

Prof. Dr. Salah Abdulghani Jaro Hayawi Al-Abadi

To serve as a reference for introducing the Department of Computer Engineering, its members, and the study programs for undergraduate and graduate studies

coordination

Department of Media and Government Communication at the College of Engineering

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