



**Ministry of Higher Education and Scientific Research
University of Mosul
College of Engineering
Electrical Engineering Department**

**Description of the academic program
(Courses / First level - Second level)
(Annual /Third Class- Fourth Class)
Of
Electrical Engineering Department
Electronic and Communications
2020–2021**

Description of the academic program

This academic program description provides a necessary summary of the most important characteristics of the program and the learning outcomes that the student is expected to achieve, demonstrating whether he or she has made the most of the available opportunities. It is accompanied by a description of each course within the program

University of Mosul	1. Educational institution
College of Engineering/Department of Electrical Engineering	2. Scientific department/center
Electronic and communications engineering	3. Name of the academic or professional program
Bachelor of Science in Electrical Engineering	4. Name of the final certificate
Courses and Annual	5. Academic system annual/courses/others
ABET	6. Accredited accreditation program
Higher decisions	7. Other external influences
2021	8. Date the description was prepared
9. Objectives of the academic program	
<ul style="list-style-type: none"> ● Emphasis on building the student's knowledge on solid foundations of basic sciences such as mathematics, physics and other engineering sciences related to the specialty of electronics and communications engineering. 	
<ul style="list-style-type: none"> ● Establishing a knowledge background based on the various electrical engineering sciences, especially those related to the subject of specialization. 	
<ul style="list-style-type: none"> ● Training the student to address practical problems by applying the principles of engineering sciences related to the field of electronics and communications. 	
<ul style="list-style-type: none"> ● Introducing the student to his technical and social responsibilities necessary to practice design, operation and maintenance work for a wide range of electronic and communications systems to achieve the required goals, taking into account 	

various practical determinants such as economic, environmental, security and health determinants.

- Developing the student's practical skills in dealing with electronic and communications units, systems, and applications, starting from the level of designing and analyzing units to diagnosing problems and malfunctions.

- Consolidating contemporary skills and sciences, such as computer science, engineering software applications, and other modern ancillary sciences necessary to ensure the student's ability to develop and learn lifelong.

- Enhancing the student's ability and skills in technical communication, such as presentation, report writing, and explanation skills, as a member of a team or individually.

10. Required program outcomes and teaching, learning and evaluation methods

A- Cognitive objectives.

A1- Principles of basic, applied, and engineering sciences necessary for knowledge of electrical engineering (such as mathematics, physics, and mechanical engineering principles).

A2- Basic electrical engineering sciences, such as electrical circuits, electronic systems, electromagnetic fields, measurements, electrical devices, and digital systems.

A3 Foundations of electrical engineering and analysis of electrical circuits and equipment for electrical installations such as grounding and others.

A4- Electrical engineering sciences that support the specialty, such as the basics of electronics, communications, microprocessors, and control engineering.

A5- Foundations of professionalism and related communication skills, such as presenting and writing reports, with familiarity with economic, legal, health, social, and security determinants.

B - Skills objectives of the program:

B1 - Solving and formulating engineering problems in general, especially those related to electrical engineering.

B2 - Identifying and formulating engineering problems and applying mathematical knowledge, science, engineering methods, and creativity skills to solve problems in the field of power engineering and electrical machines.

B3 - Writing and implementing algorithms to solve power and electrical machine problems.

B4- Interpreting numerical data and applying mathematical methods to analyze problems.

B5- Preparing technical and operational specifications for energy components and systems and electrical appliances.

Teaching and learning methods

- Theoretical lectures
- Discussion sessions
- Laboratory experiments
- Computer laboratories

Evaluation methods

- Mid-term and final exams.
- Short exams.
- Reports
- Practical exams
- Diction

C- Thinking skills:

C1- Conducting and designing practical experiments for electrical systems, in addition to analyzing and interpreting practical results related to communications systems.

C2- Writing computer programs and using ready-made programs to solve problems related to the field of specialization.

C3- Applying modern engineering techniques, skills and tools to electronic and communications systems.

C4- Design, build and evaluate electronic systems using appropriate analysis tools and modern systems.

Teaching and learning methods

- Theoretical lectures
- Discussion sessions
- Laboratory experiments

- Computer laboratories
- Projects
- Industrial training

Evaluation methods

- Semester and final exams
- Short exams
- Reports
- Practical exams

D - General and qualifying transferable skills (other skills related to employability and personal development).

D1- Work professionally and with ethical responsibility, individually or within a multidisciplinary team

D2- Writing technical reports and presenting effectively

D3- Effective use of information technology related to engineering applications in general and the field of electronics and communications in particular.

D4-The possibility of starting scientific research projects in the future

Teaching and learning methods

- Theoretical lectures
- Discussion sessions
- Laboratory experiments
- Computer laboratories
- Projects
- Industrial training

Evaluation methods

- Semester and final exams
- Short exams
- Reports
- Practical exams

11. Planning for personal development

Student development, the teacher's program for student development, such as using the Internet, using IT, using safety methods in the laboratory, and developing the student's academic personality capable of competition, dialogue, and problem solving.

12.. Admission standard (establishing regulations related to college admission)

1. Central distribution by the Ministry of Higher Education determines those accepted into the College of Engineering.
2. The choices of those accepted into the departments are determined, and competition takes place between them on the basis of the total - then the total of the differentiation lessons.
3. Transfer from other departments and universities is accepted in accordance with higher controls and instructions.
4. After the first stage, students are divided between the Power and Machinery and Electronics and Communications branches based on their choice and the results of the first stage.

13.The most important sources of information about the program

- Developing the program through resources
- Higher directives
- What new sciences are developed in the field of specialization

14.Department vision, mission and goals

Department vision:

The department seeks to be one of the leading departments in the field of electrical engineering in Iraq and the region by graduating engineers specializing in electrical engineering in accordance with the latest approved scientific curricula and using the latest scientific teaching methods such as laboratories and modern teaching methods.

Department message

Providing educational programs characterized by depth in areas of specialization and comprehensiveness in engineering foundations. Disseminating engineering knowledge and contributing to its development in the field of specialization. In addition to serving industrial projects and specialists in all sectors of society.

Department objectives

- 1- Preparing competent engineering cadres in the specialization of electronics, communications, power and machinery engineering, as well as preparing specialized engineering cadres with higher degrees and for the same specializations above in order to contribute to the comprehensive development and urban renaissance in the country.
- 2- Contributing to providing academic, scientific, practical and applied services and consultations to all public, mixed and private sectors of the state through cooperation agreements as well as through the advisory office of the College of Engineering.
- 3- Preparing research that works and contributes to solving the engineering and industrial problems and obstacles facing industrial facilities and projects in the country.
- 4- Contributing to the dissemination and development of engineering knowledge and transferring the latest developments in the fields of electrical and electronic engineering to engineers in various fields of work by holding continuing education courses and training courses, as well as by publishing scientific research in local and international specialized scientific journals.
- 5- Developing teaching staff by sending a section of teaching staff on scientific delegations to participate in joint conferences, seminars and workshops with Arab, international or international institutions, as well as by granting sabbatical leaves to work in universities outside the country, which helps in exchanging and developing experiences.
- 6- Participate in organizing and holding conferences, seminars, workshops and scientific discussions inside and outside the country.

15. Program structure

a) Undergraduate

Courses / College of Engineering / University of Mosul / First level for the academic year 2020-2021 / Department of Electrical Engineering

Fall Semester / First Level								
Notes	Code	Pre-request	Units	Practical hours	Theoretical hours	Subject	Type	
	UOMC101	-	3	-	3	English Language	Compulsory	University requirements
	UOMC102	-	3	2	2	Computer	Compulsory	
	UOMC103	-	2	-	2	Rights and Freedoms	Compulsory	
	ENGC121	-	3	-	3	Calculus I	Compulsory	College requirements
	ENGC123	-	1	3	-	Engineering Drawings	Compulsory	
Compulsory for Dept. Students	ENGE133	-	2	-	2	Physics	Elective	
	ELCA100	-	4	2	3	Electrical Circuit Analysis I	Compulsory	Department requirements
			18	7	15	Total Hours		

Spring Semester / First Level								
Notes	Code	Pre-request	Units	Practical hours	Theoretical hours	Subject	Type	
	UOMC 100	-	2	-	2	Arabic Language	Compulsory	University requirements
The student should select one subject only (no. of units =2 only)	-	-	2	-	2	Manufacturing Processes	Elective	
	-	-				Environmental Pollution	Elective	
	-	-				Information Technology	Elective	
	ENGC122	Calculus I	3	-	3	Calculus II	Compulsory	College requirements
	ENGC124	Engineering Drawing	1	3	-	Auto-CAD	Compulsory	
Compulsory for Dept. Students	ENGE132	-	3	-	3	Engineering Mechanics	Elective	
	ELCA 150	Electrical Circuit Analysis I	4	2	3	Electrical Circuit Analysis II	Compulsory	Department requirements
	PHEC151	Physics	3	-	3	Electronic Physics	Compulsory	
			18	5	16	Total Hours		

Courses / College of Engineering / University of Mosul / Second Level for the academic year 2020-2021 / Department of
Electrical Engineering

Fall Semester / Second Level – E&C								
Notes	Code	Pre-request	Units	Practical hours	Theoretical hours	Subject	Type	
English Subject in this level equal 1 unit because it was 3 units in first level	The name will be standardized by the course unit/college	-	1	-	1	English Language-Pre intermediate	Compulsory	University requirements
Compulsory for Dept. Students	ENGE228	Calculus II	3	-	3	Engineering Mathematics I	Elective	College requirements
	ACOM201	Electrical Circuit Analysis II, Calculus II	4	-	4	Analog Communications	Compulsory	Department requirements
	ENET202	Electrical Circuit Analysis II, Calculus II	4	-	4	Electric Networks	Compulsory	
	COMP206	Computer	3	2	2	Computer Programming	Compulsory	
	ELAB210	Electrical Circuit Analysis II	1	2	-	Electrical Engineering Lab I	Compulsory	
The student should select one subject only (no. of units =2 only)	SOC 203	Physics of Electronics	2	-	2	Solar Cell Systems	Elective	
	ELCI214	Physics of Electronics				Electronic Circuits	Elective	
			18	4	16	Total Hours		

Spring Semester / Second Level – E&C

Notes	Code	Pre-request	Units	Practical hours	Theoretical hours	Subject	Type	
Compulsory for Dept. Students	ENGE 230	Calculus I	3	-	3	Engineering Mathematics II	Elective	College requirements
	PHEC 251	Physics of Electronics	3	-	3	Analog Electronics	Compulsory	Department requirements
	SIGS 252	Electrical Circuit ,Analysis I Calculus II	2	-	2	Systems & Signals	Compulsory	
	EMGT 254	Electrical Circuit ,Analysis II Calculus I	3	-	3	Electromagnetic Theory	Compulsory	
	MAPS 253	Electrical Circuit ,Analysis II Calculus II	2	-	2	& Machines Power Systems	Compulsory	
	DIGT208	-	2	-	2	Digital Techniques	Compulsory	
	ELAB 260	Electrical Engineering Lab I	1	2	-	Electrical Engineering Lab II	Compulsory	
The student should select one subject only (no. of units =2 only)	MODS 262	Computer Programming	2	2	1	Basics of Modeling and Simulation	Elective	
	COAP 264	Computer Programming				Computer Applications		
			18	4	16	Total Hours		

Annual / College of Engineering / University of Mosul / Third Class for the academic year 2020-2021 / Department of Electrical Engineering

Course No.	Subject	First Term			Second Term			Units No.
		Theo.	Pract.	App	Theo.	Pract.	App.	
EEC 301	Statistics & Engineering Economics	2	-	-	2	-	-	4
EEC 302	Engineering Analysis	2	-	1	2	-	1	4
EEC 303	Radiation & Propagation	2	-	1	2	-	1	4
EEC 304	Digital Communications	3	-	1	3	-	1	6
EEC 305	Electronics II	2	-	1	2	-	1	4
EEC 306	Digital Electronics	2	-	1	2	-	1	4
EEC 307	Computer Engineering	2	-	1	2	-	1	4
EEC 308	Elective Subjects (Measurements)	2	-	1	2	-	1	4
EEC 309	Electronics & Communications Lab.	-	6	-	-	6	-	4
Total		17	17	6	7	17	6	7
		29			30			30

Note: The student is required to complete the summer training after the end of the second semester of the third level

Annual / College of Engineering / University of Mosul / Fourth class for the academic year 2020-2021 / Department of Electrical Engineering

Course No.	Subject	First Term			Second Term			Units No.
		Theo.	Pract.	App.	Theo.	Pract.	App.	
EEC 401	Engineering Project	1	3	-	1	3	-	4
EEC 402	Engineering Control	3	-	1	3	-	1	6
EEC 403	Communication Engineering	3	-	-	3	-	-	6
EEC 404	Digital Signal Processing (DSP)	2	-	1	2	-	1	4
EEC 405	Microelectronic	2	-	1	2	-	1	4
EEC 406	Computer Networks	2	-	1	2	-	1	4
EEC 407	Elective Subjects (Computer interfacing systems)	2	-	-	2	-	-	4
EEC 408	Laboratories	-	6	-	-	6	-	4
Total		15	9	4	15	9	4	36
		28			28			

Below are the links to download the curriculum vocabulary for the Department of Electrical Engineering:

Study subject file	Subject	Academic level	No.
https://drive.google.com/file/d/1DR87hpgb4O90QCAgpLOqzT4RnHWLcZk6/view?usp=sharing	English	First Level	1
https://drive.google.com/file/d/17gygpB7bSwiYYCnaDvPHRo6DRnQLwWPm/view?usp=sharing	Calculus I		2
https://drive.google.com/file/d/15C1uwqZGQVag6CrvCSUGRbJhhnBs7Wxj/view?usp=sharing	Engineering Drawings		3
https://drive.google.com/file/d/1iU9IK4STDVO-L-bGjqsxnJzN5qvs5MnK/view?usp=sharing	physics		4
https://drive.google.com/file/d/1MXzGAP97DujN6UHJj28pKLEniv7CIZOx/view?usp=sharing	Electrical Circuit Analysis I		5
https://drive.google.com/file/d/1ouEGwQcmFx12sc1_nskdLAmKEHtnIF8P/view?usp=sharing	Environmental Pollution		6
https://drive.google.com/file/d/1IRKW2psvkD_QCOSiNh-8WQ752hI3IS_p/view?usp=sharing	Calculus II		7
https://drive.google.com/file/d/1A2pC1Qaf0DSn8_VHhkJPSbx9Zwc_bnn/view?usp=sharing	Auto-CAD		8
https://drive.google.com/file/d/17O_LmYM-JWaRDqnh-x0t4G2CKqoT7iMb/view?usp=sharing	Engineering Mechanics		9
https://drive.google.com/file/d/12x8kYJhKt7C6uzDvmBqSBMfsiGe9IDD/view?usp=sharing	Electrical Circuit Analysis II		10
https://drive.google.com/file/d/1hCeUzqqbA_KHi3SfJ7Y8907E71K5W8_I/view?usp=sharing	Electronics physics		11

Study subject file	Subject	Academic level	No.
https://drive.google.com/file/d/1qIIHUpUHfISD5sO78kgRaIC6nGEzxW_A/view?usp=sharing	Engineering Mathematics I	Second Level	1
https://drive.google.com/file/d/1RnJTtYGMkDCG-4Lo0ZfJQI6z7Lbkx58Ws/view?usp=sharing	Electrical Engineering Lab I		2
https://drive.google.com/file/d/1wtBTLNiLz4TmMiE8IkU7FSxe5H94m89p/view?usp=sharing	Solar Cell Systems		3
https://drive.google.com/file/d/16N6TS1Wwnn3OsNjK1XfquvI14AxUY2_G/view?usp=sharing	Electronic circuits		4
https://drive.google.com/file/d/1N3G7S4ELCPVRsG4Ps-Renzs1PK5oU5Bx/view?usp=sharing	Digital technologies		5
https://drive.google.com/file/d/1gng3L-vcVS8RuXZkS7D5OvxSllHm9oYe/view?usp=sharing	Electronic basics		6
https://drive.google.com/file/d/1zY_HVe0MXwOCMOKjS2EeS8SXqLRcqzOU/view?usp=sharing	Analog electronics		7
https://drive.google.com/file/d/1uHFt9O2_Z2LV0a7RbaaxopNW1CJeNrto/view?usp=sharing	Signals and systems		8
https://drive.google.com/file/d/1zwqatGEreTZwgOF05A1p5O3Ppwmfg7mD/view?usp=sharing	Machines and power systems		9
https://drive.google.com/file/d/1ajIshWvzKxpP2_bpM3Eiet1ddZrqqRIp/view?usp=sharing	Electrical Engineering Lab II		10
https://drive.google.com/file/d/1L7LNBWtuN_m0cge2ACv_d-9wJLlnwWSO/view?usp=sharing	Power Electronics I		11
https://drive.google.com/file/d/1wJqLTaRKcel1d10uvMRSLK0zpUufgTID/view?usp=sharing	Distribution systems		12

Study subject file	Subject	Academic level	No.
https://drive.google.com/file/d/1kM6tP2zipr6DtTD5yPRVwPPAr0eMcbUi/view?usp=sharing	Numerical analyses	Third Level	1
https://drive.google.com/file/d/1601fYEKM08AMhSqtIKRZiBypd38lWvnX/view?usp=sharing	Statistics		2
https://drive.google.com/file/d/1QEE97mWD1BJDo7e3xeuHt-213u8mTlIo6/view?usp=sharing	Digital communications 1		3
https://drive.google.com/file/d/1Ad5KCWfKVvvnC7SovGyDjsCNDuKbszFn/view?usp=sharing	& Radiation Propagation		4
https://drive.google.com/file/d/1z_vUNZ6mqt1hQ_Tbv96UKPtZOabtFLNq/view?usp=sharing	Electronic Devices		5
https://docs.google.com/document/d/18w5J2PXDAJiSdpxUWXlGUcsmT5UtDcX6/edit?usp=sharing&sd=true&rtpof=true&645849946868231	Digital Electronics		6
https://drive.google.com/file/d/1kdlGfyv_rpC-gq_v-m5XYUI_55YQ4DZP/view?usp=sharing	E & C Lab 1		7
https://drive.google.com/file/d/1xqj5-qYPm8BBPKmSjaonSSXmetGgHX5R/view?usp=sharing	Power electronics		8
https://drive.google.com/file/d/1jvvJYS0zevDLMgIsk6XvPOg0X--bAws/view?usp=sharing	Special topics in communications		9
https://drive.google.com/file/d/1RDDiD_uAkgLaa2XUe1srkaZc50udHqZ6/view?usp=sharing	Renewable energy		10
https://drive.google.com/file/d/1COFPXowqS0ROWNC0LD7iLhtimXOsd5Zm/view?usp=sharing	Electrical circuit design		11
https://drive.google.com/file/d/1cuF9V9rD9Cy_GuV-ffACWX_rFoe_EcU3/view?usp=sharing	Transmission Systems		12

https://drive.google.com/file/d/1LTZcV6_fTeaxP1mA_MhZmUxXdaDw8ur6/view?usp=sharing	Power electronics 2	13
https://drive.google.com/file/d/16_j2IJHvCbQ2wplArId2cAdOEy_QM1dI/view?usp=sharing	Induction machines	14
https://drive.google.com/file/d/1t_9obCvG7wQ4WYeXElj7XnRfNDXL7OxL/view?usp=sharing	P & M Lab 1	15
https://drive.google.com/file/d/1fTuLteSwAPo0RpW9HPbp3eX5CTE7C2u9/view?usp=sharing	Microprocessors	16
https://drive.google.com/file/d/1VdONsR0I-Xvimmzqnpw27m_ke8XVoj7k/view?usp=sharing	English language - intermediate	17
https://drive.google.com/file/d/1tobfkDQcCH6cq303rQNbZU5iQ-j197IS/view?usp=sharing	Engineering economics	18
https://drive.google.com/file/d/1rW_YiuOq5KB4EFSSA6zCFjqEIE017DpC/view?usp=sharing	Introduction to control systems	19
https://drive.google.com/file/d/1jMMktsiKSeCOsZr9kxLSbvvSvwP1mfkp/view?usp=sharing	Computer architecture	20
https://drive.google.com/file/d/1XA-gT1a5x6MhI6mCu7Pve2-YP0PVCqli/view?usp=sharing	Digital communications 2	21
https://drive.google.com/file/d/1OMEMOKnxU9CXuVhownjyF2RrEq1yp5I/view?usp=sharing	Programmable controllers	22
https://drive.google.com/file/d/1pLUWBVfiOmAICps1vTWREnsqN8v8r356/view?usp=sharing	Electronic and communications systems	23
https://drive.google.com/file/d/1l_YiE1OpuvCm_3fXTAHjHJJVYFCVXRuT/view?usp=sharing	Synchronous machines	24

Study subject file	Subject	Academic level	No.
https://drive.google.com/file/d/1UIJsaIcW4iD_nA2k7OBq1JhWIwHD67vh/view?usp=sharing	Satellite communications	Fourth Level	1
https://drive.google.com/file/d/17-pNmZ5uOCG-rr2_qHU7P75FJTLh9Yo-/view?usp=sharing	Control systems analysis		2
https://drive.google.com/file/d/1Ns0G_ozJ9YZdg-U3ARZDgSE2TCCVbnxa/view?usp=sharing	computer networks		3
https://drive.google.com/file/d/1zP-3T7NNtzyIulSnIh3KQYBAWwn_rRE/view?usp=sharing	Digital signal processing		4
https://drive.google.com/file/d/1HgOj5zJ1n8EOtwrgqT8WxhGB7qFIORTp/view?usp=sharing	Microwaves		5
https://drive.google.com/file/d/1IVBhbao6xYD4CZjZ66jNDg-CYVon-10j/view?usp=sharing	Fiber optic communications systems		6
https://drive.google.com/file/d/1Yty_518XCfMbSk5-L4vLI4ImGgC1kUKC/view?usp=sharing	Power systems analysis		7
https://drive.google.com/file/d/1Yt6_x0-JF7JiUXAMVt4ogGr4pEy9YD_/view?usp=sharing	Single phase induction motors		8
https://drive.google.com/file/d/1ORPbvg-2wK_rDM5o82qIeZsPIBpOAKCz/view?usp=sharing	Power generating stations		9
https://drive.google.com/file/d/1eOCNqeqWGEkUdUiLJuvxBMoAmTJqo2gi/view?usp=sharing	P &M Lab 3		10
https://drive.google.com/file/d/1vphUE5imqC2xbcFH3kVIvaSTlgLHipNb/view?usp=sharing	High Voltage DC		11

https://drive.google.com/file/d/1AOtvrAiTNnOiBuveL6hknupooAJVa1PP/view?usp=sharing	Smart power grid systems		12
https://drive.google.com/file/d/16p-LKT_am7qUltmw-Jsc6hrU3Fz1OC1I/view?usp=sharing	Professional ethics		13
https://drive.google.com/file/d/1iA5r6wvKnbbJvTvVUf1T-iK-QmZ0-Dtq/view?usp=sharing	English language - post-intermediate		14
https://drive.google.com/file/d/1LJd7jakMvc_xgUiQiWH3Sd5Wk20r7CeF/view?usp=sharing	Engineering Management		15
https://drive.google.com/file/d/1e58x2ir0T1HENI3g24yAi7TNDQFfihbA/view?usp=sharing	Microelectronics		16
https://drive.google.com/file/d/1iJTuzgjhmk7h5Wa09AUHop_7Eu2LrJ0b/view?usp=sharing	Mobile communications		17
https://drive.google.com/file/d/1VMwW7LI3haczXbr78owi68gwzUkengVt/view?usp=sharing	Wireless network security		18
https://drive.google.com/file/d/1hVqRjZee0xDvrK-pA3sxcdCd5AGNqwnF/view?usp=sharing	Interface systems		19
https://drive.google.com/file/d/1EhQfqdIcrNE0333Nh0HFLwkZm0qCnV_M/view?usp=sharing	Protection and operation systems		20
https://drive.google.com/file/d/1qtcVhV0Sd0rcVBkq2A2Xotqtir1ZZRFJ/view?usp=sharing	High Voltage engineering		21
https://drive.google.com/file/d/1NzS0MJUyQq1D4POk55X-VihFH1LNC8mx/view?usp=sharing	Special electrical machines	22	

https://drive.google.com/file/d/139LJSMaiQMsQoQqK5oR-dmWMEcWzMpPT/view?usp=sharing	P & M Lab 4		23
https://drive.google.com/file/d/118P3wwdj8KmWo3q7yIcYr-sXsAei_RiY/view?usp=sharing	Electric Drives		24