

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



Courses Description

Department of Electrical Engineering

Power and Machines

2021-2022

Academic Program Description form

University Name: University of Mosul

Faculty / Institute: College of Engineering

Scientific Department: Electrical Engineering

Academic or Professional Program Name:

B.Sc. Electrical Engineering / Electronics and Communication

B.Sc. Electrical Engineering / Power and Machines

Final Certificate Name: B.Sc. in Electrical Engineering

Academic System: Courses System + Bologna Process

Description Preparation Date: March, 2024

File Completion Date: March, 2024

Signature:

Head of Department Name:

Dr. Mohammad Tariq Yaseen

Date: March, 2024

Signature:

Scientific Associate Name:

Dr. Ayman T.Hameed

Date: March, 2024

The file is checked by: Department of Quality Assurance and University Performance

Director of Quality Assurance and University Performance Department:

Date:

Signature:

Approval of the Dean

a) Undergraduate

Courses / College of Engineering / University of Mosul / First level for the academic year 2021-2022 / 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 | |
| | - | - | 2 | - | 2 | Environmental Pollution | Elective | |
| | - | - | 2 | - | 2 | 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 2021-2022 / Department of
Electrical Engineering

| Fall Semester / Second Level – P&M | | | | | | | | |
|---|----------|--|-------|-----------------|-------------------|-----------------------------------|------------|-------------------------|
| 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. | | - | 1 | - | 1 | English Language-Pre intermediate | Compulsory | University requirements |
| Compulsory for Dept. Students | ENGE228 | Calculus I,II | 3 | - | 3 | Engineering Mathematics I | Elective | College requirements |
| | ENET202 | Electrical Circuit Analysis II, Calculus I, II | 4 | - | 4 | Electric Networks | Compulsory | Department requirements |
| | ELTR204 | Electrical Circuit Analysis II, Calculus II | 3 | - | 3 | Electrical Transformers | Compulsory | |
| | COMP206 | Computer | 3 | 2 | 2 | Computer Programming | Compulsory | |
| | DIGT 208 | | 2 | - | 2 | Digital Techniques | 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) | ECFU 212 | Electronics Physics | 2 | - | 2 | Electronics Fundamentals | Elective | |
| | ELCI214 | Electronics Physics | | | | Electronic Circuits | Elective | |
| | | | 19 | 4 | 17 | Total Hours | | |

| Spring Semester / Second Level – P&M | | | | | | | | |
|---|----------|---|-------|-----------------|-------------------|-----------------------------------|------------|-------------------------|
| 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 |
| | PECT 250 | Electrical Circuit Analysis II | 3 | - | 3 | Power Electronics I | Compulsory | Department requirements |
| | SIGS 252 | Electrical Circuit Analysis I, Calculus II | 2 | - | 2 | Signals & Systems | Compulsory | |
| | EMGT 254 | Electrical Circuit Analysis II, Calculus I | 3 | - | 3 | Electromagnetic Theory | Compulsory | |
| | DCMA 256 | Electrical Transformers, Electrical Circuit Analysis II | 3 | - | 3 | DC Machines | Compulsory | |
| | DISS 258 | Electrical Transformers, Electrical Circuit Analysis II | 2 | - | 2 | Distribution Systems | 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 | | |
| | | | 19 | 4 | 17 | Total Hours | | |

Courses / College of Engineering / University of Mosul / Third level for the academic year 2021-2022 / Department of
Electrical Engineering

| Fall Semester / Third Level – P&M | | | | | | | | |
|---|----------|--------------------------------|-------|-----------------|-------------------|----------------------------|------------|-------------------------|
| Notes | Code | Pre-request | Units | Practical hours | Theoretical hours | Subject | Type | |
| Compulsory for Dept. Students | ENGE 320 | Calculus I, II | 2 | - | 2 | Numerical Analysis | Elective | College requirements |
| | ENGC 327 | - | 2 | - | 2 | Statistics | Compulsory | |
| | TRSY 300 | Electrical Circuit Analysis II | 3 | - | 3 | Transmission Systems | Compulsory | Department requirements |
| | PECT 302 | Power Electronics I | 3 | - | 3 | Power Electronics II | Compulsory | |
| | INMA 304 | Electrical Transformers | 3 | - | 3 | Induction Machines | Compulsory | |
| | PLAB 306 | Electrical Engineering Lab II | 2 | 6 | - | Power & Machines Lab I | Compulsory | |
| The student should select one subject only (no. of units =2 only) | ELCD 312 | Electrical Circuit Analysis I | 2 | - | 2 | Electrical Circuits Design | Elective | |
| | RENE 314 | Electrical Circuit Analysis I | | | | Renewable Energy | | |
| The student should select one subject only (no. of units =2 only) | DSIP 405 | Signals & Systems | 2 | - | 2 | Digital Signal Processing | Elective | |
| | MICP 316 | Digital Techniques | | | | Microprocessors | | |
| | | | 19 | 6 | 17 | Total Hours | | |

| Spring Semester / Third Level – P&M | | | | | | | | |
|--|----------|-------------------------------|-------|-----------------|-------------------|--------------------------------------|------------|-------------------------|
| Notes | Code | Pre-request | Units | Practical hours | Theoretical hours | Subject | Type | |
| | - | - | 2 | - | 2 | English Language Intermediate | Compulsory | University requirements |
| | ENGC 326 | - | 2 | - | 2 | Engineering Economic | Compulsory | College requirements |
| | MINS 350 | Electrical Circuit Analysis I | 3 | - | 3 | Electrical Measurements | Compulsory | Department requirements |
| | ICOS 352 | Signals & Systems | 3 | - | 3 | Introduction to Control Systems | Compulsory | |
| | ECSS 354 | Signals & Systems | 2 | - | 2 | Electronic and Communication Systems | Compulsory | |
| | SYMA 356 | Electrical Transformers | 3 | - | 3 | Synchronous Machines | Compulsory | |
| | PLAB 358 | Power & Machines Lab 1 | 2 | 6 | - | Power & Machines Lab II | Compulsory | |
| يختار الطالب مقرر واحد ، عدد الوحدات المطلوبة 2 وحدة | PCON 362 | Digital Techniques | 2 | - | 2 | Programmable Controller | Elective | |
| | AINT 364 | Signals & Systems | | | | Artificial Intelligence | | |
| | | | 19 | 6 | 17 | Total Hours | | |

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 2021-2022 / Department of
Electrical Engineering / Power & Machines

| Course No. | Subject | First Term | | | Second Term | | | Units No. |
|------------|--|------------|--------|------|-------------|--------|------|-----------|
| | | Theo. | Pract. | App. | Theo. | Pract. | App. | |
| EEP 401 | Power System Analysis | 2 | - | 2 | 2 | - | 2 | 4 |
| EEP402 | Protection & Operation of PS | 2 | - | 1 | 2 | - | 1 | 4 |
| EEP 403 | Advanced Electrical Machines | 3 | - | 1 | 3 | - | 1 | 6 |
| EEP 404 | High Voltage Systems | 2 | - | - | 2 | - | - | 4 |
| EEP 405 | Final Year Project | 1 | 3 | - | 1 | 3 | - | 4 |
| EEP 406 | Power & Machines Lab. | - | 6 | - | - | 6 | - | 4 |
| EEP 407 | Control Engineering | 3 | - | 1 | 3 | - | 1 | 6 |
| EEP 408 | (Generation Systems) Elective Subjects | 2 | - | - | 2 | - | - | 4 |
| Total | | 15 | 9 | 5 | 15 | 9 | 5 | 36 |
| | | 29 | | | 29 | | | |

b) Postgraduate

| | Subject | Type | Hours | Units | Code |
|---|---|------------------|--------------|----------------|----------------|
| Master | Antennas and Wave (Elective) | Semesters | 2 | 2 | EEE644 |
| | Microelectronics (Elective) | Semesters | 2 | 2 | EEE 653 |
| | Digital Signal Processing (Compulsory) | Semesters | 2 | 2 | EEE652 |
| | Engineering Analysis (Compulsory) | Semesters | 2 | 2 | EEE 640 |
| | Modern Control Theory (Compulsory) | Semesters | 2 | 2 | EEE 647 |
| | Modeling and Simulation(Compulsory) | Semesters | 2 | 2 | EEP 670 |
| | Power Electronics (Compulsory) | Semesters | 2 | 2 | EEP 667 |
| | A.C. Machines (Elective) | Semesters | 2 | 2 | EEP669 |
| | Power System Analysis (Elective) | Semesters | 2 | 2 | EEP683 |
| | Antennas and Wave (Elective) | Semesters | 2 | 2 | EEE646 |
| | Microwave Devices (Elective) | Semesters | 2 | 2 | |
| | Computer Networks (Elective) | Semesters | 2 | 2 | EEE661 |
| | Programmable Controllers(Compulsory) | Semesters | 2 | 2 | EEE680 |
| | English Language II (Compulsory) | Semesters | 2 | 2 | |
| | Scientific Research Methods (Compulsory) | Semesters | 1 | 1 | EEE 690 |
| | Electrical Drive (Elective) | Semesters | 2 | 2 | EEP 672 |
| Advanced High Voltage (Elective) | Semesters | 2 | 2 | EEP 671 | |
| Power System Protection (Elective) | Semesters | 2 | 2 | | |

| | Subject | Type | Hours | Units | Code |
|---|--|------------------|----------|---------------|---------------|
| PhD | Advanced Communication Systems (Elective) | Semesters | 2 | 2 | EED709 |
| | CMOS Integrated Circuits (Elective) | Semesters | 2 | 2 | |
| | Advanced Antenna Theory (Elective) | Semesters | 2 | 2 | EED708 |
| | Advanced Control Systems (Compulsory) | Semesters | 2 | 2 | EED710 |
| | Advanced DSP (Compulsory) | Semesters | 2 | 2 | |
| | Advanced Topics in Electrical (Compulsory) | Semesters | 2 | 2 | EED720 |
| | Advanced Electrical Drives (Elective) | Semesters | 2 | 2 | EED714 |
| | Flexible A C Transmission System (FACTS) (Elective) | Semesters | 2 | 2 | EED706 |
| | Power Systems Stability (Elective) | Semesters | 2 | 2 | EED712 |
| | Wave Propagation (Elective) | Semesters | 2 | 2 | EED718 |
| | Computer Network Security (Elective) | Semesters | 2 | 2 | EED717 |
| | Advanced Microprocessors (Elective) | Semesters | 2 | 2 | |
| | English Language II (Compulsory) | Semesters | 2 | 2 | |
| | Research Methodology (Compulsory) | Semesters | 1 | 1 | |
| | & Advanced Modeling Simulation (Compulsory) | Semesters | 2 | 2 | EED701 |
| | Smart Grids and Renewable Energy (Compulsory) | Semesters | 2 | 2 | EED711 |
| | Advanced Alternating Machines (Elective) | Semesters | 2 | 2 | EE768 |
| | Advanced High Voltage DC (Elective) | Semesters | 2 | 2 | |
| : Modern Protection Systems (Elective) | | 2 | 2 | EED704 | |