

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

#### 2022-2023

## 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

Semesters / College of Engineering / University of Mosul / First year for the academic year 2022-2023 / Department of Electrical Engineering

First Year / /First Semester					
Notes	Code	Credits	Lab	Theoretical	Title
	EE 101	2	-	2	Human Rights and Democracy
	EE 102	2	-	3	Digital Techniques I
	EE 103	1	3	-	Engineering Drawing, I
	EE 104	3	2	2	Computer fundamentals
	EE 105	2	-	2	Principle of Mechanical Eng. I
	EE 108	3	-	4	Basics of Electrical Engineering I
	EE 106	3	-	4	Calculus I
	EE 107	2	-	3	Electronics Physics I
	EE 109	1	2	-	Laboratories
		19	7	20	Total Hours

Semesters / College of Engineering / University of Mosul / First year for the academic year 2022-2023 / Department of Electrical Engineering

First Year / /Second Semester					
Notes	Code	Credits	Lab	Theoretical	Title
	EE 113	1	3	-	Engineering Drawing II
	EE 112	2	-	3	Digital Techniques II
	EE 114	3	2	2	Programing Language
	EE 115	2		2	Principle of Mechanical Eng. II
	EE 118	3	-	4	Basics of Electrical Engineering II
	EE 111	2	-	2	English Language
	EE 116	3	-	4	Calculus II
	EE 117	2	-	3	Electronics Physics II
	EE 119	1	2	-	Laboratories
		19	7	20	Total Hours

Courses / College of Engineering / University of Mosul / Second Level for the academic year 2022-2023 / 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	Physics of Electronics	2	-	2	Electronics Fundamentals	Elective	
	ELCI214	Physics of Electronics				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 2022-2023 / 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	
	CYMA 356	Electrical Transformers	3	-	3	Synchronous Machines	Compulsory	
	PLAB 358	Power and 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



Courses / College of Engineering / University of Mosul / Fourth level for the academic year 2022-2023 / Department of  
Electrical Engineering

Fall Semester / Fourth Level – P&M								
Notes	Code	Pre-request	Units	Practical hours	Theoretical hours	Subject	Type	
	PSAN 400	Numerical Analysis	4	-	4	Power System Analysis	Compulsory	Department Requirements
	COSA 402	-Introduction to Control Systems	4	-	4	Control Systems Analysis	Compulsory	
	SPIM 404	Induction Machines	3	-	3	Single Phase Induction Motors	Compulsory	
	PGST 406	Synchronous Machines	2	-	2	Power Generating Stations	Compulsory	
	MLAB 408	Power & Machines Lab II	2	6	-	Power & Machines Lab III	Compulsory	
	GPRO 410	All compulsory department requirements for the third level	2	-	2	Graduation Project I	Compulsory	
The student should select one subject only (no. of units =2 only)	HVDC 414	Power Electronics II	2	-	2	High Voltage DC	Elective	
	SGRD 416	Electrical Circuit Analysis II				Smart Power Grid Systems		
			19	6	17	Total Hours		

Spring Semester / Fourth Level – P&M

Notes	Code	Pre-request	Units	Practical hours	Theoretical hours	Subject	Type	
	UOMC 104	-	2	-	2	Professional Ethics	Compulsory	University Requirements
	-	-	2	-	2	English -Language Upper Intermediate	Compulsory	
	ENGC425	-	2	-	2	Engineering Management	Compulsory	College Requirements
	PSPR 450	Transmission Systems	3	-	3	Power System Protection	Compulsory	Department Requirements
	HVEN 452	Electronic Physics, Electromagnetic Theory	3	-	3	High Voltage Engineering	Compulsory	
	SPEM 458	Induction Machines	2	-	2	Special Electrical Machines	Compulsory	
	GPRO454	Graduation Project I	2	-	2	Graduation Project II	Compulsory	
	MLAB456	Power & Machines Lab III	2	6	-	Power & Machines Lab IV	Compulsory	
The student should select one subject only (no. of units =2 only)	ELDR 462	Power Electronics II	2	-	2	Electrical Derives	Elective	
	ENEM 460	Power Generating Stations, Power Electronics II				Energy Management	Elective	
			20	6	18	Total Hours		

b) Postgraduate

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

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