The academic program description form for colleges and institutes

For the academic year 2022-2023

University Name: University of Technology
Name of Faculty: Department of Electrical Engineering
Number of sections and scientific branches in the college: (2) Two
Date of file filling: 2022
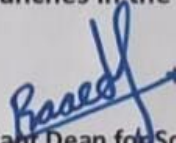
Director of the Division of Quality Assurance and University Performance:	Assistant Dean for Scientific Affairs:	Name of the Dean of the College:
Msc.Sarab Ali Mahmood	Dr. Raaed Thaaban Hammed	Dr. Montadher Sami Shaker
Date 4 /12 / 2022	Date 4 /12 / 2022	Date 4 /12 / 2022
Signature	Signature	Signature

Check the file by:
Quality assurance and university performance
Name of the Director of the Department of Quality
Assurance and University Performance:
Date :-2023

Signature

Model Description of Academic Program

Review of Performance of Higher Education Institutions (Academic Program Review)

Description of the academic program

This description of the academic program provides a brief summary of the main characteristics of the program and the expected learning outcomes of the students to demonstrate whether they have made the best use of the opportunities available. It is accompanied by a description of each course within the program

1. Educational institution	University Of Technology
2. University / Center	Electrical Engineering Department
3. Name of academic program	Electronic program
4. Name of the final certificate	B.Sc.
5. Study system	semester system
6. Accredited accreditation program	The department is preparing to obtain accreditation from an organization **ABET**
7. Other external influences	none
8. Date of description setting	2022-2023
9. Objectives of the academic program	9 (a) Preparing graduates in the field of understanding and design of electronic circuits and the use of computer skills and software development**.**

	9 (b) The ability to understand the problems to be solved and to find the target required representative of solving these problems through the collection of data for electronic circuits and scientific programs and analysis
	9 (c) Provide the educational process within the department teachers and researchers and provide public institutions with qualified engineers in the field of competence.
10 (a) - Knowledge and understanding	and specialized engineering sciences in the application of electrical engineering 2- Acquisition of the necessary sciences in the various disciplines of electrical engineering 3- Preparing the student to continue self-learning and the acquisition of new technologies and skills in the field of engineering 4- Building skills by following the right procedures.
10 (b) - Special skills	1- The ability to select and conduct the required examinations and collect, compare and analyze the results of the examinations 2- The ability to design, audit and supervise the implementation of systems related to electrical engineering 3- The ability to derive and approach engineering issues in a scientific manner and to determine the appropriate method to address emerging engineering problems.

Teaching and learning methods

Theory books and theoretical lectures
Scientific laboratories
small projects
Electronic References

Evaluation methods

Exam sudden and evaluation of homework in addition to the written exam quarterly
A quarterly exam
Exam quarterly "small projects
Preparing quarterly reports
Class discussions and discussions
Determine the grade for daily attendance

Emotional goals and values

1-Question: Search for new information and raise questions
2 - Conclusion and reasoning: think about what is beyond the information available to fill gaps in them
3 - Comparison: Note the proportions and differences between things
4- .Classification: Putting things into groups according to common characteristics

Teaching and learning methods

1. Practical labs that develop students' thinking architecture
2. Questions of intellectual tests
3. Interference with other disciplines (mathematical applications)
4. Preparing research and projects related to the subject matter

Evaluation methods

Prepare periodic reports on subjects related to the article

Implementation of small practical and applied projects

Giving the student real problems to find out the extent of his comprehension of the scientific material and linking the subjects with each other

Theoretical and practical tests

General and movable skills

1- Be able to solve any electronic problem

2 - Conducting experiments to develop any electronic circuit

3 - the ability to use the means of illustration to make polymers

4 - Identify the software ready and deal with it at a high degree that expands the base rule

5. Paying the application and encouraging them to participate in competitive forums between the branches of one college or a number of colleges

6. The use of theoretical and practical tools in the analysis and implementation of database systems

7- Use modern means of communication to interact with the team to solve a specific problem

Teaching and learning methods

by:-

1 - Presentation of exercises during the lectures and ask the student to solve at home and laboratory applications in the field of competence

2 - Monitoring the ways of learning the students and assess the growth of their learning throughout the academic year, knowledge of the needs of students and points

Weakness and strength and have the ability to assess reality

3- Adopting modern electronic means of illustration

4 -Adoption of modern books

Evaluation methods

Practical and theoretical exam
Daily tests
Homework
Work small projects
Class discussions

The contents of the Bachelor of Electrical Engineering program are listed below:

(*Electronic Engineering program 2022-2023*)
First Year

Code	First Semester / Subject	Hours/Week Th.	Pra.	Tu.		CR (Units)
ECE111	Technical English I	1				1
ECE112	Mathematics I	3				3
ECE113	Physics of Electronics I	2				2
ECE114	Mechanics I	2				2
ECE115	Fundamentals of Electrical Engineering I	2		1		2
ECE116	Digital Techniques I	2				2
ECE117	Computer Science I	1	2			2
ECE118	Electrical Engineering Lab.I and Digital Techniques Lab.		4			2
ECE119	Workshops I		4			2
		13	10	1		18
Total hours per week		24				

Code	Second Semester / Subject	Hours/Week Th.	Pra.	Tu.		CR (Units)
ECE121	Engineering Drawing and AutoCAD		4			2
ECE122	Mathematics II	3				3

Code	Subject	Th.	Pra.	Tu.		CR
ECE123	Physics of Electronics II	2				2
ECE124	Mechanics II	2				2
ECE125	Fundamentals of Electrical Engineering II	2		1		2
ECE126	Digital Electronics	2				2
ECE127	Computer Science II	1	2			2
ECE128	Electrical Engineering Lab. II and Digital Electronics Lab.		4			2
ECE129	Workshops II		4			2
		12		2		19
Total hours per week		27				19

ECE: Electronic Engineering

	Hours/week	CR (Units)
First Semester	24	18
Second Semester	27	19

Second Year

Code	First Semester	Hours/Week				CR (Units)
	Subject	Th.	Pra.	Tu.		
ECE211	Technical English III	1				1
ECE212	Engineering Mathematics I	3		1		3
ECE213	Analog Electronic II	2		1		2
ECE214	Probability & Statistical Engineering I	3				3
ECE215	Electrical Circuits	2		1		2
ECE216	Energy Conversion I	2		1		2
ECE217	Electromagnetic Fields I	2		1		2
ECE218	Computer Programming I	1	1			1.5
ECE219	Electronic & Communication Engineering Lab. I		6			3
		16	7	5		
Total hours per week		28				19.5

Code	Second Semester	Hours/Week				CR (Units)
	Subject	Th.	Pra.	Tu.		
ECE221	Technical English IV	1				1

Code	Subject	Th.	Pra.	Tu.		CR (Units)
ECE222	Engineering Mathematics II	3		1		3
ECE223	Digital Electronic II	2		1		2
ECE224	Probability & Statistical Engineering II	3				3
ECE225	Signals & Systems	2		1		2
ECE226	Energy Conversion II	2		1		2
ECE227	Electromagnetic Fields II	2		1		2
ECE228	Computer Programming II	1	1			1.5
ECE229	Electronic & Communication Engineering Lab. II		6			3
		16	7	5		
Total hours per week		28				19.5

ECE: Electronic Engineering

	Hours/week	CR (Units)
First Semester	28	19.5
Second Semester	28	19.5

Third Year

Code	First Semester	Hours/Week			CR (Units)
	Subject	Th.	Pra.	Tu.	
ECE311	Human Rights	1			1
ECE312	Engineering Analysis I	3		1	3
ECE313	Microelectronic Circuit Design	2		1	2
ECE314	Control Engineering I	2		1	2
ECE315	Information Theory and Coding	2			2
ECE316	Analog Communication	2		1	2
ECE317	Wave Propagation	2			2
ECE318	Instrumentation & Measurements I	2			2
ECE319	Electronic & Communication Engineering Lab. III		8		4
		16	8	4	
Total hours per week		28			20

Code	Second Semester	Hours/Week			CR (Units)
	Subject	Th.	Pra.	Tu.	

Code	Subject	Th.	Pra.	Tu.		CR (Units)
ECE321	Democracy	1				1
ECE322	Engineering Analysis II	3		1		3
ECE323	Microprocessor Engineering	2		1		2
ECE324	Control Engineering II	2		1		2
ECE325	Satellite & Navigation	2				2
ECE326	Digital Communication	2		1		2
ECE327	Antennas	2				2
ECE328	Instrumentation & Measurements II	2				2
ECE329	Electronic & Communication Engineering Lab. IV		8			4
		16	8	4		
Total hours per week		28				20

ECE: Electronic Engineering

	Hours/week	CR (Units)
First Semester	28	20
Second Semester	28	20

Fourth Year

Code	First Semester / Subject	Th.	Pra.	Tu.		CR (Units)
ECE411	Final Year Project I	1	3			2.5
ECE412	Industrial Management I	2				2
ECE413	Digital Systems' Design	2		1		2
ECE414	Microwave Engineering	2		1		2
ECE415	Digital Signal Processing	2		1		2
ECE416	Artificial Intelligent Systems I	2				2
ECE417	Numerical Methods I	3				3
ECE418	Elective Subject (A)	2				2
ECE419	Electronic & Communication Engineering Lab. V		6			3
		16	9	3		
Total hours per week		28				20.5

Code	Second Semester / Subject	Th.	Pra.	Tu.		CR (Units)

Code	Subject					CR
ECE411	Final Year Project II	1	3			2.5
ECE422	Industrial Management II	2				2
ECE423	Microcontrollers	2		1		2
ECE424	Mobile Communication	2		1		2
ECE425	Computer Networks	2		1		2
ECE426	Artificial Intelligent Systems II	2				2
ECE427	Numerical Methods II	3				3
ECE428	Elective Subject (B)	2				2
ECE429	Electronic & Communication Engineering Lab. VI		6			3
		16	9	3		
Total hours per week		28				20.5

ECE: Electronic Engineering

	Hours/week	CR (Units)
First Semester	28	20.5
Second Semester	28	20.5

Total CR (Units)	159.5
Total Hours	3330

	Credit Hours	Per.
Mathematics & Basic Sciences	40	25%
Engineering Topics	72	45.15%
General Education	4	2.52%
Humanities Education	6	3.76%
Computers & Programming	4	2.52%
Practical (Labs. & Workshops)	33.5	21%
Total	159.5	100%

Elective Subject (A)
1. Computer Aided Design
2. Medical Electronics
3. Advanced Electronic Circuit Design

Elective Subject (B)
1. Digital Filters
2. Optical Fiber Communications
3. Digital Image Processing

4	Optoelectronics	4	Software Define Radio
5	Industrial Electronics	5	Microwave Circuit Design
6	VLSI Technology	6	Wireless Communication and LAN
7	Biomedical Instrumentation	7	Switching Systems
8	Radio Frequency Circuit Design	8	Smart Grid Communication
9	Nano Electronics	9	Radar Communication
10	Solar Photovoltaic Technology	10	Data Compression

| | | | | Programme Learning Outcomes | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | Knowledge and understanding | | | | | | | Subject-specific skills | | | | | Thinking Skills | | | | | | General and Transferable Skills (or) Other skills relevant to employability and personal development | | | | | | | |
Year / Level	Course Code	Course Title	Core (C) Title or Option (O)	A1	A2	A3	A4	A5	A6	A7	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5	C6	D1	D2	D3	D4	D5	D6	D7	D8
First	ECE111	Technical English I	C	*	*						*	*				*	*					*	*						
	ECE112	Mathematics I	C	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	ECE113	Digital Electronic I	C	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	ECE114	Electrical Engineering Fundamentals I	C	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	ECE115	Solid State Physics I	C	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	ECE116	Mechanical Engineering	C	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	ECE117	Computer Science	C	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

Curriculum Skills Map

please tick in the relevant boxes where individual Programme Learning Outcomes are being assessed

Code	Course	Type	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
	I																												
ECE118	Chemistry I	O	*	*					*	*				*	*					*	*								
ECE119	Workshops I	C	*	*	*				*	*	*			*	*	*				*	*	*							
ECE121	Technical English II	C	*	*					*	*				*	*					*	*								
ECE122	Mathematics II	C	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
ECE123	Analog Electronic I	C	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
ECE124	Electrical Engineering Fundamentals II	C	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
ECE125	Solid State Physics II	C	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
ECE126	Auto CAD	C	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
ECE127	Computer Science II	C	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
ECE128	Chemistry II	O	*	*					*	*				*	*					*	*								
ECE129	Workshops II	C	*	*	*				*	*	*			*	*	*				*	*	*							
ECE211	Technical English III	C	*	*					*	*				*	*					*	*								
ECE212	Engineering Mathematics I	C	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

Semester	Code	Course	Type																									
Second	ECE213	Analog Electronic II	C	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	ECE214	Probability & Statistical Engineering I	C	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	ECE215	Electrical Circuits	C	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	ECE216	Energy Conversion I	C	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	ECE217	Electromagnetic Fields I	C	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	ECE218	Computer Programming I	C	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	ECE221	Technical English IV	C	*	*					*	*			*	*				*	*									
	ECE222	Engineering Mathematics II	C	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	ECE223	Digital Electronic II	C	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	ECE224	Probability & Statistical Engineering II	C	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	ECE225	Signals & Systems	C	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

	ECE226	Energy Conversion II	C	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	ECE227	Electromagnetic Fields II	C	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	ECE228	Computer Programming II	C	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Third	ECE311	Human Rights	C	*	*						*	*				*	*				*	*			
	ECE312	Engineering Analysis I	C	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	ECE313	Microelectronic Circuit Design	C	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	ECE314	Control Engineering I	C	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	ECE315	Information Theory and Coding	C	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	ECE316	Analog Communication	C	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	ECE317	Wave	C	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

Code	Course		C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16	C17	C18	C19	C20	C21	C22	C23	C24	C25
	Propagation																										
ECE318	Instrumentation & Measurements I	c	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
ECE321	Democracy	c	*	*					*	*				*	*				*	*					
ECE322	Engineering Analysis II	c	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
ECE323	Microprocessor Engineering	c	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
ECE324	Control Engineering II	c	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
ECE325	Satellite & Navigation	c	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
ECE326	Digital Communication	c	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
ECE327	Antennas	c	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
ECE328	Instrumentation & Measurements	c	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

				II																								
Fourth	ECE411	Final Year Project I	c	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	ECE412	Industrial Management I	c	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	ECE413	Digital Systems' Design	c	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	ECE414	Microwave Engineering	c	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	ECE415	Digital Signal Processing	c	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	ECE416	Artificial Intelligent Systems I	c	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	ECE417	Numerical Methods I	c	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	ECE418	Advanced Electronic Circuit Design	o	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

Code	Course	Type																							
ECE411	Final Year Project II	c	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
ECE422	Industrial Management II	c	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
ECE423	Microcontrollers	c	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
ECE424	Mobile Communication	c	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
ECE425	Computer Networks	c	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
ECE426	Artificial Intelligent Systems II	c	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
ECE427	Numerical Methods II	c	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
ECE428	Optical Fiber Communications	o	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*