Ministry of Higher Education and Scientific Research
Scientific supervision and evaluation
Department of Quality Assurance and Academic Accreditation
International Accreditation Section

The academic program description form for colleges and institutes

For the academic year 2019-2020

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: 2020

Director of the Division of Quality Assurance and University Performance:	Assistant Dean for Scientific Affairs:	Name of the Dean of the college:
Dr. Ali Kareem Nahar	Dr. Abbas Hussian Issa	Dr. Montadher Sami Shaker
Date 23 /1 / 2020	Date 23 /1 / 2020	Date 23 /1 / 2020
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

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	A course system for the first stage and a semester system for the rest of the stages
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	2019-2020
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 10 (b) - Special skills	1. An ability to identify, formulate, and solve engineering problems by applying principles of engineering, science, and mathematics. (a)+ (e) 2. An ability to apply the engineering design process to produce solutions that meet specified needs with consideration for public health and safety, and global, cultural, social, environmental, economic, and other factors as appropriate to the discipline. (c) 3. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.(b) 4. An ability to communicate effectively with a range of audiences. (g) 5. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts. (f)+(h) 6. An ability to recognize the ongoing need to acquire new knowledge, to choose appropriate learning strategies, and to apply this knowledge. (i)+(j) +(k) 7. An ability to function effectively as a member or leader of a team that establishes goals, plans tasks, meets deadlines, and creates a collaborative and inclusive environment. (d)

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:

The number of the required units is 146 units (credit hours)

	Requirements	Credit Hrs. (Units)	Compulsory (Units)	Elective (Units)	Percent	Range
1	University Requirements	18	16	2	12%	10%---15%
2	College Requirements	31	31	0	22%	16%---22%
3	Department Requirements	97	82	15	66%	63%---74%
	Total	146	129	17	100%	

EE: Electronic Eng. UR: University Requirements UE: University Elective

CR: College Requirements DR: Department Requirements DE: Department Elective

Level	Course	Hours/week	Credit Hrs. (Units)
First	First Course	26	17
	Second Course	26	19
	Summer Course		
Second	First Course	21	17
	Second Course	22	19
	Summer Course		
Third	First Course	24	20
	Second Course	20	17
	Summer Course		
Fourth	First Course	25	20
	Second Course	21	17
	Summer Course		
Total		185*15=2775	146

Mathematics & Basic Sciences Modules (ABET Requirements)

	Modules	Code	Hours		Credit hours	Level	Prerequisites
			Th.	Pr.			
1	Engineering Mechanics	ENGM124	3		3	1	-
2	Electronic Physics I	ELEP115	3		3	1	-
3	Electronic Physics II	ELEP123	2	2	3	1	ELEP115

4	Mathematics I	MATH114	3		3	1	-
5	Mathematics II	MATH122	3		3	1	MATH114
6	Electromagnetic Fields I	ELMF216	3		3	2	ELEP123 & MATH122
7	Electromagnetic Fields II	ELMF222	3		3	2	ELMF216
8	Engineering Mathematics I	ENGM214	3		3	2	MATH122
9	Engineering Mathematics II	ENGM221	3		3	2	ENGM214
10	Probability and Statistical Eng.	PRSE215	3		3	2	MATH122
11	Chemistry	CHEM220	2		2	2	-
12	Biology	BIOL127	2		2	2	-
13	Eng. Mathematics Analysis	ENMA311	2		2	2	ENGM221
14	Numerical Analysis	NUMA321	2		2	2	ENGM221
Total			39		38		

	Credit Hours	Per.
Mathematics & Basic Sciences	38	26%
Engineering Topics	60	41%
General Education	8	6%
Humanities Education	4	3%
Computers & Programming	4	3%
Practical (Labs. & Workshops)	32	21%
Total	146	100%

1. University Requirements: 18 Credit Hrs. (Units

a) Compulsory Requirements: 16 Credit Hrs. (Units)

Code	Modules		Hours/Week		Credit Hrs. (Units)	Pre-requisite
			Th.	Pra.		
WRKS101	Workshops I		-	6	2	-
WRKS105	Workshops II		-	6	2	WRKS101
ENGL102	English Language I		2	-	2	-

ENGL106	English Language II		2	-	2	ENGL102
HRDE103	Human Rights & Democracy		2	-	2	-
COMP104	Computer Science		1	3	2	-
CHEM220	Chemistry		2	-	2	-
ENET401	Engineering Ethics		2	-	2	-
			11	15		
			26		16	

b) Elective Requirements: 2 Credit Hrs. (Units)

Code	Subject		Hours/Week		Credit Hrs. (Units)	Pre-requisite
			Th.	Pra.		
TERE107	Technical Report		2	-	2	-
SPRT109	Sport		-	-	Free hours	-
ARBL108	Arabic Language		2	-	2	-
ART110	Arts		-	-	Free hours	-
BIOL127	Biology		2	-	2	-
			6			

2. College Requirements: 31 Credit Hrs. (Units)

Code	Modules		Hours/Week		Credit Hrs. (Units)	Pre-requisite
			Th.	Pra.		
MATH114	Mathematics I		3	-	3	-
MATH122	Mathematics II		3	-	3	MATH114
ELEF117	Fundamentals of Electrical Eng. I		2	2	3	-
ELEF125	Fundamentals of Electrical Eng. II		2	2	3	ELEF117
ENGM214	Engineering Mathematics I		3	-	3	MATH122
ENGM221	Engineering Mathematics II		3	-	3	ENGM214
ENMA311	Eng. Mathematics Analysis		2	-	2	ENGM221

ENGD116	Engineering Drawing		1	3	2	-
ELEP115	Electronic Physics I		3		3	-
ELEP123	Electronic Physics II		2	2	3	ELEP115
ENGM124	Engineering Mechanics		3		3	
			27	9		
			36		31	

3. Department Requirements: 97 Credit Hrs. (Units)

a) Compulsory Requirements: 82 Credit Hrs. (Units

Code	Subject		Hours/Week		Credit Hrs. (Units)	Pre-requisite	
			Th.	Pra.		Subject	Code
COMP212	Computer Programming		1	3	2	Computer Science	COMS112
ELMF216	Electromagnetic Fields I		3	-	3	Mathematics II	MATH122
ELMF222	Electromagnetic Fields II		3	-	3	Electromagnetic Fields I	ELMF216
DIGE126	Digital Electronic I		2	2	3	-	-
DIGE226	Digital Electronic II		2	2	3	Digital Electronic I	DIGE126
ELEC213	Electrical Circuits I		2	-	2	Fundamentals of Electrical Eng. II	ELEF125
ELEC223	Electrical Circuits II		2	-	2	Electrical Circuits I	ELEC213
ELEM224	Electrical Machines		2	3	3	Fundamentals of Electrical Eng. II	ELEF125
ANAE217	Analog Electronic I		2	3	3	Electronic Physics II	ELEP123
CONE312	Control Engineering I		2	2	3	Engineering Mathematics II & Fundamentals of Electrical Eng. II	ENGM221 & ELEF125
ANAC313	Analog Communication		2	2	3	Engineering Mathematics II	ENGM221
NUME321	Numerical Analysis		2	-	2	Eng. Mathematics Analysis	ENMA311
CONE322	Control Engineering II		2	2	3	Control Engineering I	CONE312
DIGC323	Digital Communication		2	2	3	Analog Communication	ANAC313

ANWP324	Antennas & Wave Propagation		3		3	Eng. Mathematics Analysis	ENMA311
GRAP411	Graduation Project I		1	4	3	85 Credits Hrs. (Units)	-
ARIS412	Artificial Intelligent Systems I		2	2	3	Numerical Analysis	NUME321
DISP414	Digital Signal Processing I		2	2	3	Eng. Mathematics Analysis & Digital Communication	ENMA311 & ANAC313
GRAP421	Graduation Project II		1	4	3	85 Credits Hrs. (Units)	-
ARIS422	Artificial Intelligent Systems II		2	2	3	Artificial Intelligent Systems I	ARIS412
MICD423	Microwave Circuit Design		2	2	3	Electromagnetic Fields II	ELMF222
PRSE215	Probability & Statistical Eng.		2	-	2	Mathematics II	MATH122
INSM316	Instrumentation & Measurements		3	-	3	Fundamentals of Electrical Eng. II	ELEF125
SIGS326	Signals & Systems		2	2	3	Eng. Mathematics Analysis	ENMA311
ANAE315	Analog Electronic II		2	2	3	Analog Electronic I	ANAE217
MIPE314	Microprocessor Engineering I		2	2	3	Digital Electronic II	DIGE226
MICE413	Microcontrollers Engineering		2	2	3	Microprocessor Engineering	MIPE314
COMN415	Computer Networks		2	2	3	Digital Communication	DIGC323
INTC424	Information Theory and Coding		2		2	Digital Signal Processing I	DISP414
					82		

b) Elective Requirements: 15 Credit Hrs. (Units)

Code	Subject		Hours/Week		Credit Hrs. (Units)	Pre-requisite	
			Th.	Pra.		Subject	Code
INDM415	Industrial Management		3	-	3	Numerical Analysis	NUME321
OPFC431	Optical Fiber Communications		3	-	3	Electromagnetic Fields II	ELMF222
MICT432	Microelectronic Technology		3	-	3	Analog Electronic II	ANAE315

MEDE433	Medical Electronics		3	-	3	Analog Electronic II	ANAE315
SOPT434	Solar Photovoltaic Technology		3	-	3	Analog Electronic II	ANAE315
MOBC435	Mobile Communication		3	-	3	Digital Signal Processing I	DISP414
DIIP436	Digital Image Processing		3	-	3	Digital Signal Processing I	DISP414
DISP437	Digital Signal Processing II		3	-	3	Digital Signal Processing I	DISP414
DISD438	Digital Systems' Design		3	-	3	Digital Electronic II	DIGE226
SMAS439	Smart Sensors		3	-	3	Instrumentation & Measurements	INSM316
MIPE440	Microprocessor Engineering II		3	-	3	Microprocessor Engineering I	MIPE314

The first academic level							
code	Introductory lessons	Number of units	Number of practical hours	Number of theoretical hours	The cores name		required
WRKS101	-	2	6	-	Workshops I		University
ENGL102	-	2	-	2	English Language I		
COMP104	-	2	3	1	Computer Science		
MATH114	-	3	-	3	Mathematics I		College
ELCP115	-	3	-	3	Electronic Physics I		
ENGD116	-	2	3	1	Eng. Drawing		
ELEF117	-	3	2	2	Fundamentals of Electrical Eng. I		
		17	14	12	Total the number of units (First Semester)		
code	Introductory lessons	Number of units	Number of practical hours	Number of theoretical hours	The cores name		required

WRKS105	**Workshops I**	**2**	**6**	**-**	**Workshops II**		**University**
	-	**2**	**-**	**2**	**Elective**		
MATH122	**Mathematics I**	**3**	**-**	**3**	**Mathematics II**		**College**
ELCP123	**Electronic Physics I**	**3**	**2**	**2**	**Electronic Physics II**		
ELEF125	**Fundamentals of Electrical Eng. I**	**3**	**2**	**2**	**Fundamentals of Electrical Eng. II**		
ENGM124	**-**	**3**	**-**	**3**	**Engineering Mechanics**		
DIGE126	**-**	**3**	**2**	**2**	**Digital Electronic I**		**Dep.**
		19	**12**	**14**	**Total the number of units (Second Semester)**		

Second Year

Code	First Semester	Hours/Week				CR (Units)
	Subject	Th.	Pra.	Tu.		
ECE211	Engineering Skills & Ethics I	1				1
ECE212	Mathematics III	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			2
ECE219	Electronic & (Communication & Electrical Machines) Lab. I		6			3
Total hours per week		16	7	5		20
		28 hrs/week				

Code	Second Semester	Hours/Week				CR (Units)
	Subject	Th.	Pra.	Tu.		
ECE221	Engineering Skills & Ethics II	1				1
ECE222	Mathematics IV	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			2
ECE229	Electronic &(Communication & Electrical Machines) Lab. II		6			3
Total hours per week		16	7	5		20
		28 hrs/week				

ECE: Electronic & Communication Engineering

	Hours	CR
First Semester	28	20
Second Semester	28	20

Third Year

(Electronic Engineering program 2019-2020)

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.	
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

(Electronic Engineering program 2019-2020)

	First Semester	Hours/Week	CR

Code	Subject	Th.	Pra.	Tu.		(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	Hours/Week				CR (Units)
	Subject	Th.	Pra.	Tu.		
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
4 Optoelectronics
5 Industrial Electronics
6 VLSI Technology
7 Biomedical Instrumentation
8 Radio Frequency Circuit Design
9 Nano Electronics
10 Solar Photovoltaic Technology

Elective Subject (B)

1 Digital Filters
2 Optical Fiber Communications
3 Digital Image Processing
4 Software Define Radio
5 Microwave Circuit Design
6 Wireless Communication and LAN
7 Switching Systems
8 Smart Grid Communication
9 Radar Communication
10 Data Compression

First Semester

First Year		Second Year		Third Year		Fourth Year	
Electronic	Communication	Electronic	Communication	Electronic	Communication	Electronic	Communication
Digital Electronic I		Analog Electronic II	Electromagnetic Fields	Microelectronic Circuit Design	Analog Communication	Digital System Design	Microwave Engineering
		Electrical Circuits		Instrumentation & Measurements I	Wave Propagation	Artificial Intelligent Systems I	Digital Signal Processing
		Electronic & Communication Engineering Lab. I		Control Engineering I	Information Theory and Coding	Elective Subject (A)	
				Electronic & Communication Engineering Lab. III		Electronic & Communication Engineering Lab. V	

Second Semester

First Year		Second Year		Third Year		Fourth Year	
Electronic	Communication	Electronic	Communication	Electronic	Communication	Electronic	Communication

Analog Electronic I		Digital Electronic II	Electromagnetic Fields	Microprocessor Eng.	Digital Communication	Microcontrollers	Mobile Communication
			Signals & Systems	Instrumentation & Measurements I	Antennas	Artificial Intelligent Systems I	Computer Networks
		Electronic & Communication Engineering Lab. II			Satellite & Navigation		Elective Subject (B)
				Electronic & Communication Engineering Lab. IV		Electronic & Communication Engineering Lab. VI	

	Laboratory	Description		Hrs/week	Units
1	**Electronic & Communication Engineering Lab. I**	**Electronic**	**2**	6	3
		Communication	**2**		
		Electrical Machines	**2**		
2	**Electronic & Communication Engineering Lab. II**	**Electronic**	**2**	6	3
		Communication	**2**		
		Electrical Machines	**2**		
3	**Electronic & Communication Engineering Lab. III**	**Digital Electronic**	**2**	8	4
		Microprocessor	**2**		
		Control Engineering	**2**		
		Communication	**2**		
4	**Electronic & Communication Engineering Lab. IV**	**Digital Electronic**	**2**	8	4
		Microprocessor	**2**		
		Control Engineering	**2**		
		Communication	**2**		
5	**Electronic & Communication Engineering Lab. V**	**Intelligent Systems**	**2**	6	3
		RF Electronics	**2**		
		Microcontroller	**2**		
6	**Electronic & Communication Engineering Lab. VI**	**Intelligent Systems**	**2**	6	3
		RF Electronics	**2**		
		Microcontroller	**2**		

		Year	Subject	Code	CR
1	**Mathematics & Basic Sciences**	**First**	**Mathematics** I	**ECE112**	3
			Mathematics II	**ECE122**	3
			Solid State Physics I	**ECE115**	3
			Solid State Physics II	**ECE125**	3
			Chemistry I	**ECE118**	2
			Chemistry II	**ECE128**	2
		Second	**Engineering Mathematics** I	**ECE212**	3
			Engineering Mathematics II	**ECE222**	3
			Probability & Statistical Engineering I	**ECE214**	3
			Probability & Statistical Engineering II	**ECE224**	3
		Third	**Engineering Analysis I**	**ECE312**	3
			Engineering Analysis II	**ECE322**	3
		Fourth	**Numerical Methods I**	**ECE417**	3
			Numerical Methods II	**ECE427**	3
2	**Computer Sciences**	**First**	**Computer Science I**	**ECE117**	1.5
			Computer Science II	**ECE127**	1.5
		Second	**Computer Programming I**	**ECE218**	1.5
			Computer Programming II	**ECE228**	1.5
3	**Engineering Topics**	**First**	**Digital Electronic I**	**ECE113**	2
			Analog Electronic I	**ECE123**	2
			Electrical Engineering Fundamentals I	**ECE114**	3

			Electrical Engineering Fundamentals II	**ECE124**	3
			Mechanical Engineering	**ECE116**	2
		Second	**Analog Electronic II**	**ECE213**	2
			Digital Electronic II	**ECE223**	2
			Electrical Circuits	**ECE215**	2
			Signals & Systems	**ECE225**	2
			Energy Conversion I	**ECE216**	2
			Energy Conversion II	**ECE226**	2
			Electromagnetic Fields I	**ECE217**	2
			Electromagnetic Fields II	**ECE227**	2
		Third	**Microelectronic Circuit Design**	**ECE313**	2
			Control Engineering I	**ECE314**	2
			Information Theory and Coding	**ECE315**	2
			Analog Communication	**ECE316**	2
			Wave Propagation	**ECE317**	2
			Instrumentation & Measurements I	**ECE318**	2
			Microprocessor Engineering	**ECE323**	2
			Control Engineering II	**ECE324**	2
			Satellite & Navigation	**ECE325**	2
			Digital Communication	**ECE326**	2
			Antennas	**ECE327**	2
			Instrumentation & Measurements II	**ECE328**	2
		Fourth	**Digital Systems' Design**	**ECE413**	2
			Microwave Engineering	**ECE414**	2
			Digital Signal Processing	**ECE415**	2
			Artificial Intelligent Systems I	**ECE416**	2
			Elective Subject (A)	**ECE418**	2
			Microcontroller	**ECE423**	2
			Mobile Communication	**ECE424**	2
			Computer Networks	**ECE425**	2
			Artificial Intelligent Systems II	**ECE426**	2
			Elective Subject (B)	**ECE428**	2
4	**Practical (Labs. & Workshops)**	**First**	**Workshops I**	**ECE119**	2
			Workshops II	**ECE129**	2
			Auto CAD	**ECE126**	1.5
		Second	**Electronic & Communication Engineering Lab. I**	**ECE219**	3
			Electronic & Communication Engineering Lab. II	**ECE229**	3
		Third	**Electronic & Communication Engineering Lab. III**	**ECE319**	4
			Electronic & Communication Engineering Lab. IV	**ECE329**	4
		Fourth	**Electronic & Communication Engineering Lab. V**	**ECE419**	3
			Electronic & Communication Engineering Lab. VI	**ECE429**	3

Curriculum Skills Map																															
please tick in the relevant boxes where individual Programme Learning Outcomes are being assessed																															
Year / Level	Course Code	Course Title	Core (C) Title or Option (O)	Programme Learning Outcomes																											
				Knowledge and understanding							Subject-specific skills					Thinking Skills						General and Transferable Skills (or) Other skills relevant to employability and personal development								
				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 I	C	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*		
	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	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	ECE213	Analog Electronic II	C	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	ECE214	Probability & Statistical Engineering I	C	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	ECE215	Electrical Circuits	C	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

Second	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 Propagation	c	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	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 II	c	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
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	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	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	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*