

# BACHELOR OF TECHNOLOGY DEGREE PROGRAM IN ELECTRICAL AND ELECTRONICS ENGINEERING B.Tech (Electrical and Electronics Engineering) 2018-2022

## 1.1 PROGRAM CURRICULUM

### 1.1.1 Mandatory Courses and Credits

The B.Tech (Electrical and Electronics Engineering) program structure (2018- 2022) consists of 62 courses totalling 180 credits.

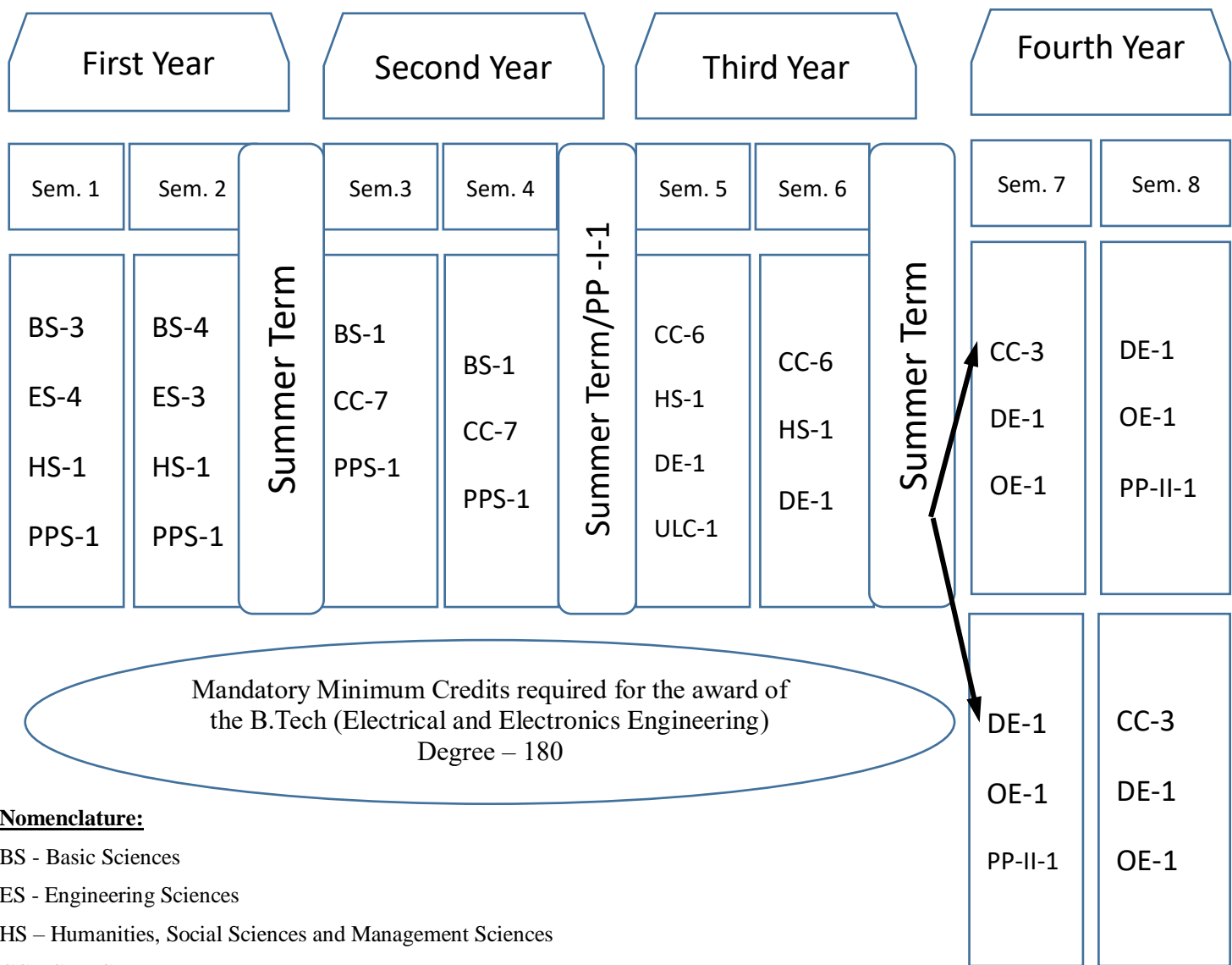
Table 3.1.1 summarizes the type of Courses, number of Courses under each type and the associated credits that are mandatorily required for the completion of the Degree.

<b>TABLE 3.1.1</b>			
<b>B.Tech (Electrical and Electronics Engineering) 2018-2022: Mandatory Courses and Credits</b>			
<b>S. No</b>	<b>TYPE OF COURSES</b>	<b>NO. OF COURSES</b>	<b>CREDITS</b>
1	Humanities, Social Sciences and Management Sciences(HS)	4	11
2	Basic Sciences (BS)	9	29
3	Engineering Sciences (ES)	7	21
4	Core (Professional) Course (CC)	29	76
5	Discipline(Professional) Elective (DE)	4	12
6	Open Elective (OE)	2	6
7	Professional Practice (PP) I and II	2	20
8	Personal and Professional Skills (PPS)	4	4
9	University Learning Courses (ULC)	1	1
<b>TOTAL</b>		<b>62</b>	<b>180</b>
<b>The mandatory minimum credits required for the award of the B.Tech (Electronics and Communication Engineering) Degree is 180 Credits</b>			

The Table 3.1.1 is indicative of various components such as Foundation Courses (Basic Sciences, Engineering Sciences, Humanities, Social Sciences and Management Sciences), Professional Core, Discipline and Open Elective Courses. The unique feature of this program is Professional Practice - I of 6-8 weeks during the end of 4th Semester and before the commencement of 5th Semester for the student to have industry exposure. The Professional Practice - II will be during their 7th / 8th Semester for about 15 weeks. University Learning Course, which is mandatory, is introduced in the curriculum for the student to give value of social service such as community service, clean and green, NSS, Protection of environment and health hazards, etc.

Table 3.1.1 lists the mandatory courses, type of courses, number of type of courses and the associated credits required for the completion of the B.Tech (Electrical and Electronics Engineering) program

### 3.1.2 B.Tech. (Electrical and Electronics Engineering) Program Year Wise Structure



**Nomenclature:**

- BS - Basic Sciences
- ES - Engineering Sciences
- HS – Humanities, Social Sciences and Management Sciences
- CC - Core Course
- DE - Discipline/ Professional Electives
- OE - Open Electives
- PP-I/ PP-II - Professional Practice
- PPS-Personal and Professional Skills
- ULC - University Learning Course

In the entire program, the practical and skill based course component contribute to an extent of approximately 30% out of the total credits of 180 for B.Tech (Electrical and Electronics Engineering) program of four years duration.

## 1.2 Program Structure

### I Sem- PHYSICS CYCLE (Aug-Dec)\*

S. No	COURSE CODE	COURSE NAME	CREDIT STRUCTURE				CONTACT HOURS
			L	T	P	CREDITS	
1	MAT 101	Engineering Mathematics – I	3	1	0	4	4
2	PHY 101	Engineering Physics	4	0	0	4	4
3	EEE 101	Elements of Electrical Engineering	3	0	0	3	3
4	CIV 101	Elements of Civil Engineering	3	0	0	3	3
5	MEC 152	Engineering Graphics	2	0	4	4	6
6	ENG 103	Technical Written Communication	2	1	0	3	3
7	PHY 151	Engineering Physics Lab	0	0	2	1	2
8	MEC 151	Workshop Practice	0	0	2	1	2
9	PPS 105	Building Self Confidence	0	0	2	1	2
<b>TOTAL</b>			<b>17</b>	<b>2</b>	<b>10</b>	<b>24</b>	<b>29</b>

### I Sem - CHEMISTRY CYCLE (Aug-Dec)#

S. No	COURSE CODE	COURSE NAME	CREDIT STRUCTURE				CONTACT HOURS
			L	T	P	CREDITS	
1	MAT 101	Engineering Mathematics – I	3	1	0	4	4
2	CHE 101	Engineering Chemistry	4	0	0	4	4
3	ECE 101	Elements of Electronics Engineering	3	0	0	3	3
4	MEC 101	Elements of Mechanical Engineering	3	0	0	3	3
5	CIV 102	Environmental Science and Disaster Management	3	0	0	3	3
6	ENG 104	Technical Spoken Communication	1	0	2	2	3
7	CSE 151	Computer Programming	2	0	4	4	6
8	CHE 151	Engineering Chemistry Lab	0	0	2	1	2
9	PPS 105	Building Self Confidence	0	0	2	1	2
<b>TOTAL</b>			<b>19</b>	<b>1</b>	<b>10</b>	<b>25</b>	<b>30</b>

### II Sem- CHEMISTRY CYCLE (Jan-May)\*

S. No	COURSE CODE	COURSE NAME	CREDIT STRUCTURE				CONTACT HOURS
			L	T	P	CREDITS	
1	MAT 102	Engineering Mathematics – II	3	1	0	4	4

2	CHE 101	Engineering Chemistry	4	0	0	4	4
3	ECE 101	Elements of Electronics Engineering	3	0	0	3	3
4	MEC 101	Elements of Mechanical Engineering	3	0	0	3	3
5	CIV 102	Environmental Science and Disaster Management	3	0	0	3	3
6	ENG 104	Technical Spoken Communication	1	0	2	2	3
7	CSE 151	Computer Programming	2	0	4	4	6
8	CHE 151	Engineering Chemistry Lab	0	0	2	1	2
9	PPS 106	Effective Communication	0	0	2	1	2
<b>TOTAL</b>			<b>19</b>	<b>1</b>	<b>10</b>	<b>25</b>	<b>30</b>

### II Sem -PHYSICS CYCLE (Jan-May) #

S. No	COURSE CODE	COURSE NAME	CREDIT STRUCTURE				CONTACT HOURS
			L	T	P	CREDITS	
1	MAT 102	Engineering Mathematics – II	3	1	0	4	4
2	PHY 101	Engineering Physics	4	0	0	4	4
3	EEE 101	Elements of Electrical Engineering	3	0	0	3	3
4	CIV 101	Elements of Civil Engineering	3	0	0	3	3
5	MEC 152	Engineering Graphics	2	0	4	4	6
6	ENG 103	Technical Written Communication	2	1	0	3	3
7	PHY 151	Engineering Physics Lab	0	0	2	1	2
8	MEC 151	Workshop Practice	0	0	2	1	2
9	PPS 106	Effective Communication	0	0	2	1	2
<b>TOTAL</b>			<b>17</b>	<b>2</b>	<b>10</b>	<b>24</b>	<b>29</b>

**Note: At the end of the 1<sup>st</sup> year (Common to all B.Tech. Program) the total credits offered is 49.**

The 1<sup>st</sup> year B.Tech. Program structure is executed in two cycles.

\* The students undergoing the “Physics” cycle shall take the courses as indicated.

# The students undergoing the “Chemistry” cycle shall take the courses as indicated.

### III SEMESTER

S. No.	COURSE CODE	COURSE NAME	CREDIT STRUCTURE				CONTACT HOURS
			L	T	P	CREDITS	
1	MAT 103	Engineering Mathematics - III	3	1	0	4	4
2	ECE 201	Analog Electronics	4	0	0	4	4
3	ECE 202	Signals and Systems	3	1	0	4	4
4	CSE 202	Digital Design	3	0	0	3	3
5	EEE 204	Electromagnetic Theory	4	0	0	4	4

6	ECE 251	Analog Electronics Lab	0	0	2	1	2
7	CSE 252	Digital Design Lab	0	0	2	1	2
8	ECE 253	Signals and Systems Lab with MATLAB	0	0	2	1	2
9	PPS 107	Design Thinking and Team Building	0	0	2	1	2
		<b>TOTAL</b>	<b>17</b>	<b>2</b>	<b>8</b>	<b>23</b>	<b>27</b>

<b>IV SEMESTER</b>							
S. No.	COURSE CODE	COURSE NAME	CREDIT STRUCTURE				CONTACT HOURS
			L	T	P	CREDITS	
1	MAT 106	Probability and Statistics	3	1	0	4	4
2	EEE 205	Control Systems	3	1	0	4	4
3	ECE 206	Linear Integrated Circuits	4	0	0	4	4
4	ECE 207	Microprocessor Programming and Interfacing	4	0	0	4	4
5	EEE 208	Electrical Machines - I	4	0	0	4	4
6	ECE 254	Linear Integrated Circuits Lab	0	0	2	1	2
7	EEE 255	Electrical Machines Lab - I	0	0	2	1	2
8	ECE 256	Microprocessor Programming and Interfacing Lab	0	0	2	1	2
9	PPS 108	Being Corporate Ready	0	0	2	1	2
		<b>TOTAL</b>	<b>18</b>	<b>2</b>	<b>8</b>	<b>24</b>	<b>28</b>

**\*\*NOTE: Students will undergo Professional Practice-I during the summer break between the fourth and fifth semesters and the credits earned will be accounted for in the fifth semester.**

<b>V SEMESTER</b>							
S. No.	COURSE CODE	COURSE NAME	CREDIT STRUCTURE				CONTACT HOURS
			L	T	P	CREDITS	
1	EEE 209	Electrical and Electronic Measurements and Instrumentation	4	0	0	4	4
2	EEE 210	Electrical Machines – II	4	0	0	4	4
3	EEE 217	Network Theory	3	1	0	4	4
4	EEE 3XX	Discipline Elective – I	3	0	0	3	3
5	MGT 112/ MGT 113	Engineering Economics/ Digital Entrepreneurship	3	0	0	3	3
6	EEE 257	Electrical and Electronic Measurements and Instrumentation Lab	0	0	2	1	2
7	EEE 258	Electric Machines Lab – II	0	0	2	1	2

8	EEE 263	Computer aided design for Electric machine winding	0	0	2	1	2
9	ULC 101	University Learning Course*	0	0	0	1	
10	PIP 101	Professional Practice– I **				5	
<b>TOTAL</b>			<b>17</b>	<b>1</b>	<b>6</b>	<b>26/ 27</b>	<b>24</b>

\* Student has to register for university learning courses in any one semester 5/ 6 to earn the mandatory credits.

<b>VI SEMESTER</b>							
S.NO.	COURSE CODE	COURSE NAME	CREDIT STRUCTURE				CONTACT HOURS
			L	T	P	CREDITS	
1	EEE 212	Transmission and Distribution	3	1	0	4	4
2	ECE 213	Digital Signal Processing	3	1	0	4	4
3	EEE 214	Power Electronics	4	0	0	4	4
4	MGT 113/ MGT 112	Digital Entrepreneurship/ Engineering Economics	3	0	0	3	3
5	EEE 3XX	Discipline Elective – II	3	0	0	3	3
6	EEE 259	Control System Lab	0	0	2	1	2
7	ECE 260	Digital Signal Processing Lab	0	0	2	1	2
8	EEE 261	Power Electronics Lab	0	0	2	1	2
9	ULC 101	University Learning Course*				1	
<b>TOTAL</b>			<b>16</b>	<b>2</b>	<b>6</b>	<b>21/ 22</b>	<b>24</b>

<b>VII SEMESTER</b>							
S. No.	COURSE CODE	COURSE NAME	CREDIT STRUCTURE				CONTACT HOURS
			L	T	P	CREDITS	
1	EEE 215	Power System Analysis	4	0	0	4	4
2	EEE 218	Switchgear and Protection	4	0	0	4	4
3	EEE 3XX	Discipline Elective – III	3	0	0	3	3
4	OPE 4XX	Open Elective-I	3	0	0	3	3
5	EEE 262	Power System Simulation Lab	0	0	2	1	2
<b>TOTAL</b>			<b>14</b>	<b>0</b>	<b>2</b>	<b>15</b>	<b>16</b>

<b>VIII SEMESTER</b>							
S. No.	COURSE CODE	COURSE NAME	CREDIT STRUCTURE				CONTACT HOURS
			L	T	P	CREDITS	

1	EEE 3XX	Discipline Elective – IV	3	0	0	3	3
2	OPE 4XX	Open Elective – II	3	0	0	3	3
3	PIP 102	Professional Practice - II				15	
		<b>TOTAL</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>21</b>	<b>6</b>

**TABLE 3. 2.1****DISCIPLINE ELECTIVE**

S. No.	COURSE CODE	COURSE NAME	CREDIT STRUCTURE			
			L	T	P	CREDITS
1	EEE 301	Microcontroller Applications	3	0	0	3
2	EEE 302	Electrical Machine Design	3	0	0	3
3	EEE 303	Testing and Commissioning of Electrical Equipment	3	0	0	3
4	EEE 304	Electrical Drives	3	0	0	3
5	EEE 306	Flexible A.C. Transmission Systems (FACTS)	3	0	0	3
6	EEE 307	Electrical Power Quality	3	0	0	3
7	EEE 308	Embedded System Design Using ARM	3	0	0	3
8	EEE 309	Embedded Real Time Systems	3	0	0	3
9	EEE 310	Electric Power Generation	3	0	0	3
10	EEE 311	Electric Power Utilization	3	0	0	3
11	EEE 312	Power System Operation and Control	3	0	0	3
12	EEE 313	High Voltage Engineering	3	0	0	3
13	EEE 314	Energy Management Systems and SCADA	3	0	0	3
14	EEE 315	Advanced Control Systems	3	0	0	3
15	EEE 316	Power Semiconductor Devices	3	0	0	3
16	EEE 317	PWM Converters	3	0	0	3
17	EEE 318	Distributed Generation and Microgrid	3	0	0	3

**TABLE 3. 2.2****OPEN ELECTIVE**

S. No.	COURSE CODE	COURSE NAME	CREDIT STRUCTURE			
			L	T	P	CREDITS
<b>OPEN ELECTIVES OFFERED BY THE DEPARTMENT OF CIVIL ENGINEERING</b>						
1	CIV 401	Geographical Information Systems	3	0	0	3
2	CIV 402	Environmental Impact Assessment	3	0	0	3
3	CIV 403	Sustainable Materials and Green Buildings	3	0	0	3
4	CIV 404	Construction Project Management	3	0	0	3
<b>OPEN ELECTIVES OFFERED BY THE DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING</b>						
1	CSE 401	Image Processing	3	0	0	3
2	CSE 402	Data Structures Using C	3	0	0	3
3	CSE 403	Software Testing and Quality Assurance	3	0	0	3
4	CSE 404	Social Network Analytics	3	0	0	3
5	CSE 405	Digital and Mobile Forensics	3	0	0	3
6	CSE 406	Database Management Systems	3	0	0	3
7	CSE 407	Multimedia and Animation	3	0	3	3
<b>OPEN ELECTIVES OFFERED BY THE DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING</b>						
1	EEE 401	Artificial Neural Networks	3	0	0	3
2	EEE 405	Energy Audit	3	0	0	3
3	EEE 406	Research Methodology	3	0	0	3



4	EEE 407	Smart Grid Technology	3	0	0	3
5	EEE 408	Professional Ethics in Engineering	3	0	0	3
<b>OPEN ELECTIVES OFFERED BY THE DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING</b>						
1	ECE 401	Artificial Neural Networks	3	0	0	3
2	ECE 402	Biomedical Instrumentation	3	0	0	3
3	ECE 407	Internet of Things	3	0	0	3
4	ECE 408	Industrial automation and control	3	0	0	3
<b>OPEN ELECTIVES OFFERED BY THE DEPARTMENT OF MECHANICAL ENGINEERING</b>						
1	MEC 401	Automotive Vehicles	3	0	0	3
2	MEC 402	Nanotechnology	3	0	0	3
3	MEC 405	Engineering Optimisation	3	0	0	3
4	MEC 406	Operations Research for Engineers	3	0	0	3
5	MEC 407	Operations Management	3	0	0	3
6	MEC 408	Work Study	3	0	0	3
7	MEC 409	Project Management	3	0	0	3
8	MEC 410	Organizational Behaviour	3	0	0	3
9	MEC 411	Renewable Energy Systems	3	0	0	3
<b>OPEN ELECTIVES OFFERED BY THE DEPARTMENT OF PETROLEUM ENGINEERING</b>						
1	PET 402	Computational Methods in Chemical Engineering	3	0	0	3
2	PET 403	Computational Fluid Dynamics	3	0	0	3
3	PET 405	Petroleum Corrosion Technology	3	0	0	3
4	PET 406	Polymer Technology	3	0	0	3
5	PET 407	Total Quality Management	3	0	0	3
6	PET 408	Oil and Gas Marketing and Resource Management	3	0	0	3
<b>OPEN ELECTIVES OFFERED BY THE DEPARTMENT OF BASIC SCIENCES AND HUMANITIES</b>						
1	CHE 401	Composite Materials	3	0	0	3
2	CHE 402	Catalysis Technology	3	0	0	3

Note: However these are only indicative. Depending upon the need and availability of expertise new electives can be offered.