

**SEMESTER WISE COURSE STRUCTURE**  
**&**  
**EVALUATION SCHEME**  
**ELECTRONICS ENGINEERING**  
**(Effective from Session 2020-21 for New Entrants)**



**HARCOURT BUTLER TECHNICAL UNIVERSITY**  
**KANPUR-208002 (UP)-INDIA**

## **VISION AND MISSION OF THE DEPARTMENT**

### **Vision**

*Department of Electronics Engineering aims to deliver Technical Education in the field of Electronics and Communication Engineering, for producing Engineers and Technologists who are happy, healthy and competent professionals, motivated to serve the society through research & innovation.*

### **Mission**

1. To educate and train the students with state-of-the-art in Electronics and Communication Engineering.
2. To prepare the students who are fit for meeting the requirements and challenges of the Industry right at the time of their graduation by evolving a sustainable Industry-University interaction system for this.
3. To upgrade the teaching standards through continued efforts toward improvement of the qualification and expertise of the teachers as well as supporting staff.
4. To create awareness amongst the students towards socio environmental technologies by offering related courses and organizing seminars/workshops on these topics in the university and by encouraging participation in similar activities at other places.
5. To expand research and development activities in the frontier areas related to Electronics and Communication.
6. To include the aspect of integration of environmental balance and human values in the curriculum.
7. To provide academic support to other technical institutions at state & national level through the process of networking.
8. To start social service programs like education for masses, particularly using the enhanced means of communication.

# **VISION AND MISSION OF THE UNIVERSITY**

## **VISION**

“To achieve excellence in technical education, research and innovation”.

## **MISSION**

1. Imparting Knowledge to develop analytical ability in science and technology to serve the industry and society at large.
2. Equip and enable students with conceptual, technical and managerial skills to transform the organization and society.
3. Inculcating entrepreneurial philosophy and innovative thinking to promote research, consultancy and institutional social responsibility.
4. Serving people, society and nation with utmost professionalism, values and ethics to make development sustainable and quality of life.

## **Program Educational Objectives (PEOs)**

**Program graduates, within three years from their graduation will**

- PEO 1:** have knowledge of basic and applied sciences, so as to apply the necessary competence for technically sound, economically feasible and socially acceptable solutions of real life complex engineering problems.
- PEO 2:** be fit for meeting the requirements and challenges of industries, research and academic institutions both at the national and International level, by applying expertise gained in area of electronics and communication engineering.
- PEO 3:** be professionally competent with excellent communication and management skills along with being enterprising professionals and responsible citizens capable of delivering their services individually as well as in a collaborative framework.

**Structure of the Curriculum**  
**Semester Wise Course Structure & Evaluation Scheme**  
**For B.Tech. in Electronics Engineering**  
**(Effective from Session 2020-21 for New Entrants: As per the th Academic Council)**  
**I Semester**

**BSC:** Basic Science Course

**PEC:** Program Elective Course

**MC:** Mandatory Courses

**PCC:** Program Core Course

**OEC :** Open Elective Course

**HSMC:** Hum., Social Sc. and Management Courses

**ESC:** Engineering Science Course

Sl. No.	Course Type	Subject Code	Course Title	Credits (LTP)	Sessional Marks				ESE	Total Marks
					MSE	TA	Lab	Total		
1.	BSC		Physics	4(3-0-2)	15	20	15	50	50	100
2.	BSC		Mathematics-I	4(3-1-0)	30	20	-	50	50	100
3.	ESC		Electrical Engineering	4(3-0-2)	15	20	15	50	50	100
4.	ESC		Engineering Mechanics	3(3-0-0)	30	20	-	50	50	100
5.	HSMC		Professional Communication	3(2-0-2)	15	20	15	50	50	100
6.	HSMC		English Language and Composition	2(2-0-0)	30	20	-	50	50	100
			Total Credits	20						

\* Subject Code of Electronics & Instrumentation Engineering for odd semester is EET-151

**II Semester**

Sl. No.	Course Type	Subject Code	Course Title	Credits (LTP)	Sessional Marks				ESE	Total Marks
					MSE	TA	Lab	Total		
1.	BSC		Engineering Chemistry	4(3-0-2)	15	20	15	50	50	100
2.	BSC		Mathematics -II	4(3-1-0)	30	20	-	50	50	100
3.	ESC	EET-152	Electronics & Instrumentation Engineering	3(3-0-0)	30	20	-	50	50	100
4.	ESC		Engineering Graphics	3(0-0-6)	30	20	-	50	50	100
5.	ESC		Computer Concept & C Programming	4(3-0-2)	15	20	15	50	50	100
6.	ESC		Workshop Practice	2(0-0-4)	-	20	30	50	50	100
7.	MC Non Credit		Environment and Ecology	2(2-0-0)	30	20	-	50	50	100
			Total Credits	20						

### III Semester

Sr. No	Course Type	Subject code	Course title	Credits	Sessional Marks				ESM	Total Marks
					MSE	TA	Lab	Total		
1.	BSC		Mathematics- III	4(3-1-0)	30	20	-	50	50	100
2.	ESC		Electrical Circuit Analysis	5(3-1-2)	15	20	15	50	50	100
3.	PCC	EET-251	Digital Electronics (ET)	4(3-0-2)	15	20	15	50	50	100
4.	PCC	EET-259	Digital Electronics (CS & IT)	4(3-0-2)	15	20	15	50	50	100
5.	PCC	EET-253	Solid State Devices (ET)	4(2-1-2)	15	20	15	50	50	100
6.	PCC	EET-257	Solid State Devices & Circuits (EE)	4(2-1-2)	15	20	15	50	50	100
7.	PCC	EET-255	Hardware Description Language	2(2-0-0)	30*	20*	*	50	50	100
8.	HSMC		Engineering Economics and Management	3(3-0-0)	30	20	-	50	50	100
9.	MC (Non-credit)		Indian Constitution	2(2-0-0)	30	20	-	50	50	100
Total Credits					22					

### IV Semester

Sr. No	Course Type	Subject code	Course title	Credits	Sessional Marks				ESM	Total Marks
					MSE	TA	Lab	Total		
1.	BSC		Computer Oriented Numerical Methods	4(3-1-0)	30	20	-	50	50	100
2.	ESC		Data Structure Using C	5(3-1-2)	15	20	15	50	50	100
3.	PCC	EET-252	Signal and Systems	3(2-1-0)	30	20	-	50	50	100
4.	PCC	EET-254	Analog Circuits	4(2-1-2)	15	20	15	50	50	100
5.	PCC	EET-256	Electromagnetic Field Theory	3(2-1-0)	30	20	-	50	50	100
6.	HSMC		Organizational Behaviour	3(3-0-0)	30	20	-	50	50	100
7.	MC (Non-credit)		Cyber Security	2(2-0-0)	30	20	-	50	50	100
Total Credits					22					

\* Note: As per instruction by the DAA, and as per the decision of 7<sup>th</sup> academic council's decision the MSE will be 30 for the PCC subject with credit 2(2-0-0)

### V Semester

Sr. No.	Course Type	Subject code	Course title	Credits	Sessional Marks				ESE	Total Marks
					MSE	TA	Lab	Total		
1	PCC	EET-351	Analog Integrated Circuits	4(2-1-2)	15	20	15	50	50	100
2	PCC	EET-353	Analog Communication	5(3-1-2)	15	20	15	50	50	100
3	PCC	EET-355	Antenna and Wave Propagation	3(2-1-0)	30	20	-	50	50	100
4	PCC	EET-357	Microprocessors	4(2-1-2)	15	20	15	50	50	100
5	PCC	EET-359	VLSI Technology	3(2-1-0)	30	20	-	50	50	100
6	OEC (Maths)		Operation Research	3(3-0-0)	30	20	-	50	50	100
<b>Total Credit</b>					<b>22</b>					

VI Semester										
Sr. No.	Course Type	Subject code	Course title	Credits	Sessional Marks				ESE TA	Total Marks
					MSE	TA	Lab	MSE		
1	PCC	EET-352	Optical Communication & Switching Network	4(2-1-2)	30	20	-	50	50	100
2	PCC	EET-354	VLSI Design	3(2-0-2)	15	20	15	50	50	100
3	PCC	EET-356	Advanced Instrumentation	3(2-1-0)	30	20	-	50	50	100
4	PCC	EET-358	Digital Communication	3(2-0-2)	30	20	-	50	50	100
5	PCC	EET-360	Control System	3(2-1-0)	30	20	-	50	50	100
6	PCC	EET-362	Machine Learning	3(3-0-0)	30	20	-	50	50	100
7	OEC (Humanities)		OEC (Humanities)	3(3-0-0)	30	20	-	50	50	100
<b>Total Credit</b>					<b>22</b>					

### VII Semester

SL.NO.	Course Type	Subject Code	Course Title	Credits(LTP)	Sessional Marks				ESE	Total Marks
					MSE	TA	Lab	Total		
1.	PCC	EET-451	Digital Signal Processing	3(2-0-2)	15	20	15	50	50	100
2.	PCC	EET-453	VLSI Implementation of Digital Signal Processing Algorithms	2(2-0-0)	30	20	-	50	50	100
3.	PEC	EET-	PEC-I	3(3-0-0)	30	20	-	50	50	100
4.	PEC	EET-	PEC-II	3(3-0-0)	30	20	-	50	50	100
5.	OEC	EET-491	OEC-I	3(3-0-0)	30	20	-	50	50	100
6.	Industrial Training	EET-493	Industrial Training	2(0-0-4)	-	50	-	50	50	100
7.	Seminar	EET-495	Seminar	2(0-0-4)	-	50	-	50	50	100
8.	Project	EET-497	Project	4(0-0-8)	-	50	-	50	50	100
				22						

### VIII Semester

SL.NO.	Course Type	Subject Code	Course Title	Credits(LTP)	Sessional Marks				ESE	Total Marks
					MSE	TA	Lab	Total		
1.	PEC	EET-	PEC-III	4(3-1-0)	30	20	-	50	50	100
2.	PEC	EET-	PEC-IV	4(3-1-0)	30	20	-	50	50	100
3.	OEC	EET-492	OEC-II	4(3-1-0)	30	20	-	50	50	100
4.	Project	EET-498	Project	10(0-0-20)	-	50	-	50	50	100
				22						

\* **Note:** Internal Evaluation of Project in VII semester will be conducted by the Departmental Committee. Evaluation of project in VIII semester will be conducted by External and Internal Examiners.



**ELECTIVE-I**

SL.NO.	Course Type	Subject Code	Course Title	Credits(LTP)	Sessional Marks				ESE	Total Marks
					MSE	TA	Lab	Total		
1.	PEC	EET-455	Biomedical Signal Processing	3(3-0-0)	30	20	-	50	50	100
2.	PEC	EET-457	Satellite Communication	3(3-0-0)	30	20	-	50	50	100
3.	PEC	EET-459	Digital System Design using VHDL	3(3-0-0)	30	20	-	50	50	100
4.	PEC	EET-461	Data Communication Networks	3(3-0-0)	30	20	-	50	50	100

**ELECTIVE-II**

SL.NO.	Course Type	Subject Code	Course Title	Credits(LTP)	Sessional Marks				ESE	Total Marks
					MSE	TA	Lab	Total		
1.	PEC	EET-463	Artificial Intelligence	3(3-0-0)	30	20	-	50	50	100
2.	PEC	EET-465	Wireless Communication	3(3-0-0)	30	20	-	50	50	100
3.	PEC	EET-467	VLSI Device Modelling	3(3-0-0)	30	20	-	50	50	100
4.	PEC	EET-469	Microwave and Radar Engineering	3(3-0-0)	30	20	-	50	50	100

**ELECTIVE-III**

SL.NO.	Course Type	Subject Code	Course Title	Credits(LTP)	Sessional Marks				ESE	Total Marks
					MSE	TA	Lab	Total		
1.	PEC	EET-452	Architecture And Applications Of Digital Signal Processors	4(3-1-0)	30	20	-	50	50	100
2.	PEC	EET-454	Information Theory and Coding	4(3-1-0)	30	20	-	50	50	100
3.	PEC	EET-456	Advanced Semiconductor Devices	4(3-1-0)	30	20	-	50	50	100
4.	PEC	EET-458	RF Systems	4(3-1-0)	30	20	-	50	50	100

**ELECTIVE-IV**

SI.NO.	Course Type	Subject Code	Course Title	Credits(LTP)	Sessional Marks				ESE	Total Marks
					MSE	TA	Lab	Total		
1.	PEC	EET-460	Image Processing	4(3-1-0)	30	20	-	50	50	100
2.	PEC	EET-462	Neural Networks	4(3-1-0)	30	20	-	50	50	100
3.	PEC	EET-464	Embedded Systems	4(3-1-0)	30	20	-	50	50	100
4.	PEC	EET-466	Data Analytics	4(3-1-0)	30	20	-	50	50	100

**OPEN ELECTIVE-I**

SI.NO.	Course Type	Subject Code	Course Title	Credits(LTP)	Sessional Marks				ESE	Total Marks
					MSE	TA	Lab	Total		
1.	OEC	EET-491	Mobile Communication	3(3-0-0)	30	20	-	50	50	100
2.	OEC		Biomedical Electronics	3(3-0-0)	30	20	-	50	50	100

**OPEN ELECTIVE-II**

SI.NO.	Course Type	Subject Code	Course Title	Credits(LTP)	Sessional Marks				ESE	Total Marks
					MSE	TA	Lab	Total		
1.	OEC	EET-492	Image Processing	4(3-1-0)	30	20	-	50	50	100
2.	OEC		Fuzzy Logic with electronics engineering applications	4(3-1-0)	30	20	-	50	50	100

## The components of the curriculum

*Table (a) Program curriculum grouping based on course components*

Course Component	Curriculum Content (% of total Credits of the program)	Total number of credits
Basic Sciences (BSC)	13.95	24
Engineering Sciences(ESC)	16.86	29
Humanities and Social Sciences (HSMC)	6.39	11
Program Core (PCC)	36.63	63
Program Electives (PEC)	8.14	14
Open Electives (OEC)	7.56	13
Project(s)	8.14	14
Industrial training and Seminars	2.33	2+2 = 4
Any other (Mandatory Courses)	Non Credit	Non Credit
<b>Total</b>		<b>172</b>

*Table (b) Program curriculum grouping based on course components as per semester: Frequency & Credits*

Sem	BSC		ESC		HSMC		PCC		PEC		OEC		Project		Ind,training		Seminar		Total Credit
	Credits	No.	Credits	No.	Credits	No.	Credits	No.	Credits	No.	Credits	No.	Credit	No.	Credit	No.	Credit	No.	
I	4+4=8	2	4+3=7	2	3+2=5	2	-	-	-	-	-	-	-	-	-	-	-	-	20
II	4+4=8	2	4x3=12	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20
III	4	1	5	1	3	1	4+4+2=10	3	-	-	-	-	-	-	-	-	-	-	22
IV	4	1	5	1	3	1	3+4+3=10	3	-	-	-	-	-	-	-	-	-	-	22
V	-	-	-	-	-	-	4+4+5+3+3=19	5	-	-	3	1	-	-	-	-	-	-	22
VI	-	-	-	-	-	-	4+3+3+3+3+3=19	6	-	-	3	1	-	-	-	-	-	-	22
VII	-	-	-	-	-	-	2+3=5	2	6	2	3	1	4	1	2	1	2	1	22
VIII	-	-	-	-	-	-	-	-	8	2	4	1	10	1	-	-	-	-	22
Tot	<b>24</b>	<b>6</b>	<b>29</b>	<b>8</b>	<b>11</b>	<b>4</b>	<b>63</b>	<b>19</b>	<b>14</b>	<b>4</b>	<b>13</b>	<b>4</b>	<b>14</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>172</b>