

**SCHEME OF TEACHING AND EXAMINATION**  
**B.E.: Electronics & Communication Engineering**

**V SEMESTER**

Sl. No	Subject Code	Title	Teaching Hours /Week		Examination				Credits
			Theory	Practical /Drawing	Duration	Theory/ Practical Marks	I.A. Marks	Total Marks	
1	15ES51	Management and Entrepreneurship Development	04		03	80	20	100	4
2	15EC52	Digital Signal Processing	04		03	80	20	100	4
3	15EC53	Verilog HDL	04		03	80	20	100	4
4	15EC54	Information Theory & Coding	04		03	80	20	100	4
5	15EC55X	Professional Elective-1	03		03	80	20	100	3
6	15EC56X	Open Elective-1	03		03	80	20	100	3
7	15ECL57	DSP Lab		11+2P	03	80	20	100	2
8	15ECL58	HDL Lab		11+2P	03	80	20	100	2
<b>TOTAL</b>			<b>22</b>	<b>06</b>	<b>24</b>	<b>640</b>	<b>160</b>	<b>800</b>	<b>26</b>

Professional Elective-1		Open Elective - 1* (List offered by EC/TC Board only)	
15EC551	Nanoelectronics	15EC561	Automotive Electronics
15EC552	Switching & Finite Automata Theory	15EC562	Object Oriented Programming Using C++
15EC553	Operating System	15EC563	8051 Microcontroller
15EC554	Electrical Engineering Materials		
15EC555	MSP430 Microcontroller		

1. **Professional Elective:** Elective relevant to chosen specialization/ branch.

2. \* **Open Elective List:** For other Open Electives offered by other Boards, refer the Scheme of other Boards or Consolidated list in VTU Website.



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Mangaluru - 575 006

**SCHEME OF TEACHING AND EXAMINATION**  
**B.E.: Electronics & Communication Engineering**

**VII SEMESTER**

Sl. No	Subject Code	Title	Teaching Hours /Week		Examination				15EC
			Theory	Practical/Drawing	Duration	I.A. Marks	Theory/Practical Marks	Total Marks	
1	15EC71	Microwave and Antennas	04		03	20	80	100	4
2	15EC72	Digital Image Processing	04		03	20	80	100	4
3	15EC73	Power Electronics	04		03	20	80	100	4
4	15XX74X	Professional Elective-3	03		03	20	80	100	3
5	15EC75X	Professional Elective-4	03		03	20	80	100	3
6	15ECL76	Advanced Communication Lab		11+2P	03	20	80	100	2
7	15ECL77	VLSI Lab		11+2P	03	20	80	100	2
8	15ECP78	Project Work Phase-I + Project work Seminar		03		100	-	100	2
<b>TOTAL</b>			<b>18</b>	<b>09</b>	<b>21</b>	<b>240</b>	<b>560</b>	<b>800</b>	<b>24</b>

Professional Elective-3		Professional Elective-4	
15EC741	Multimedia Communication	15EC751	DSP Algorithms and Architecture
15EC742	Biomedical Signal Processing	15EC752	IoT and Wireless Sensor Networks
15EC743	Real Time Systems	15EC753	Pattern Recognition
15EC744	Cryptography	15EC754	Advanced Computer Architecture
15EC745	CAD for VLSI	15EC755	Satellite Communication

**1. Project Phase -I + Project Work Seminar:** Literature Survey, Problem Identification, Objectives and Methodology. Submission of Synopsis and Seminar.



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Mangaluru - 575 006

**SCHEME OF TEACHING AND EXAMINATION**  
**B.E.: Electronics & Communication Engineering**

**VIII SEMESTER**

Sl. No	Subject Code	Title	Teaching Hours /Week		Examination			Credits	
			Theory	Practical/ Drawing	Duration	I.A. Marks	Theory/ Practical Marks		Total Marks
1	15EC81	Wireless Cellular and LTE 4G Broadband	4	-	3	20	80	100	4
2	15EC82	Fiber Optics & Networks	4	-	3	20	80	100	4
3	15EC83X	Professional Elective-5	3	-	3	20	80	100	3
4	15EC84	Internship/Professional Practice	Industry Oriented		3	50	50	100	2
5	15ECP85	Project Work	-	6	3	100	100	200	6
6	15ECS86	Seminar	-	4	-	100	-	100	1
<b>TOTAL</b>			<b>11</b>	<b>10</b>	<b>15</b>	<b>310</b>	<b>390</b>	<b>700</b>	<b>20</b>

<b>Professional Elective -5</b>	
15EC831	Micro Electro Mechanical Systems
15EC832	Speech Processing
15EC833	Radar Engineering
15EC834	Machine learning
15EC835	Network and Cyber Security

**1. Internship / Professional Practice:** To be carried between the (6<sup>th</sup> and 7<sup>th</sup> Semester) or (7<sup>th</sup> and 8<sup>th</sup>) Semester Vacation period.



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**SCHEME OF TEACHING AND EXAMINATION**  
**B.E Electronics & Communication Engineering / Telecommunication Engineering**  
**(Common to Electronics & Communication and Telecommunication Engineering)**

**III SEMESTER**

Sl. No	Course Code	Title	Teaching Department	Teaching Hours /Week		Examination				Credits
				Theory	Practical/ Drawing	Duration in hours	SEE Marks	CIE Marks	Total Marks	
1	17MAT31	Engineering Mathematics –III*	Maths	04		03	60	40	100	4
2	17EC32	Electronic Instrumentation	EC	03		03	60	40	100	3
3	17EC33	Analog Electronics	EC	04		03	60	40	100	4
4	17EC34	Digital Electronics	EC	04		03	60	40	100	4
5	17EC35	Network Analysis	EC	04		03	60	40	100	4
6	17EC36	Engineering Electromagnetics	EC	04		03	60	40	100	4
7	17ECL37	Analog Electronics Lab	EC	01-Hour Instruction 02-Hour Practical		03	60	40	100	2
8	17ECL38	Digital Electronics Lab	EC	01-Hour Instruction 02-Hour Practical		03	60	40	100	2
9	17KL/CPH39/49	Kannada/Constitution of India, Professional Ethics and Human Rights	Humanities	01		01	30	20	50	01
<b>TOTAL</b>				<b>Theory: 24hours Practical: 06 hours</b>		<b>25</b>	<b>510</b>	<b>340</b>	<b>850</b>	<b>28</b>

**1. Kannada/Constitution of India, Professional Ethics and Human Rights:** 50 % of the programs of the Institution have to teach Kannada/Constitution of India, Professional Ethics and Human Rights in cycle based concept during III and IV semesters.

**2. Audit Course:**

(i) \*All lateral entry students (except B.Sc candidates) have to register for Additional Mathematics – I, which is 03 contact hours per week.

1	17MATDIP31	Additional Mathematics –I	Maths	03		03	60	--	60	--
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(ii) Language English (Audit Course) be compulsorily studied by all lateral entry students (except B.Sc candidates)



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**B.E Electronics & Communication Engineering / Telecommunication Engineering  
(Common to Electronics & Communication and Telecommunication Engineering)**

**IV SEMESTER**

Sl. No	Course Code	Title	Teaching Department	Teaching Hours /Week		Examination				Credits
				Theory	Practical/ Drawing	Duration in hours	SEE Marks	CIE Marks	Total Marks	
1	17MAT41	Engineering Mathematics –IV*	Maths	04		03	60	40	100	4
2	17EC42	Signals and Systems	EC	04		03	60	40	100	4
3	17EC43	Control Systems	EC	04		03	60	40	100	4
4	17EC44	Principles of Communication Systems	EC	04		03	60	40	100	4
5	17EC45	Linear Integrated Circuits	EC	04		03	60	40	100	4
6	17EC46	Microprocessor	EC	03		03	60	40	100	3
7	17ECL47	Microprocessor Lab	EC	01-Hour Instruction 02-Hour Practical		03	60	40	100	2
8	17ECL48	Linear ICs and Communication Lab	EC	01-Hour Instruction 02-Hour Practical		03	60	40	100	2
9	17KL/CPH39/49	Kannada/Constitution of India, Professional Ethics and Human Rights	Humanities	01		01	30	20	50	01
<b>TOTAL</b>				<b>Theory: 24hours Practical: 06 hours</b>		<b>25</b>	<b>510</b>	<b>340</b>	<b>850</b>	<b>28</b>

**1. Kannada/Constitution of India, Professional Ethics and Human Rights:** 50 % of the programs of the Institution have to teach Kannada/Constitution of India, Professional Ethics and Human Rights in cycle based concept during III and IV semesters.

**2. Audit Course:**

(i) \*All lateral entry students (except B.Sc candidates) have to register for Additional Mathematics – II, which is 03 contact hours per week.

1	17MATDIP41	Additional Mathematics –II	Maths	03		03	60	--	60	--
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(ii) Language English (Audit Course) be compulsorily studied by all lateral entry students (except B.Sc candidates)



## B.E.: Electronics & Communication Engineering

### V SEMESTER

Sl. No	Course Code	Title	Teaching Department	Teaching Hours /Week		Examination				Credits
				Theory	Practical/ Drawing	Duration in hours	SEE Marks	CIE Marks	Total Marks	
1	17ES51	Management and Entrepreneurship Development	EC	04		03	60	40	100	4
2	17EC52	Digital Signal Processing	EC	04		03	60	40	100	4
3	17EC53	Verilog HDL	EC	04		03	60	40	100	4
4	17EC54	Information Theory & Coding	EC	04		03	60	40	100	4
5	17EC55X	Professional Elective-1	EC	03		03	60	40	100	3
6	17EC56X	Open Elective-1	EC	03		03	60	40	100	3
7	17ECL57	DSP Lab	EC	01-Hour Instruction 02-Hour Practical		03	60	40	100	2
8	17ECL58	HDL Lab	EC	01-Hour Instruction 02-Hour Practical		03	60	40	100	2
<b>TOTAL</b>				<b>Theory: 22hours Practical: 06 hours</b>		<b>24</b>	<b>480</b>	<b>320</b>	<b>800</b>	<b>26</b>

Professional Elective-1		Open Elective – 1*** (List offered by EC/TC Board only)	
17EC551	Nanoelectronics	17EC561	Automotive Electronics
17EC552	Switching & Finite Automata Theory	17EC562	Object Oriented Programming Using C++
17EC553	Operating System	17EC563	8051 Microcontroller
17EC554	Electrical Engineering Materials		
17EC555	MSP430 Microcontroller		

\*\*\*Students can select any one of the open electives offered by any Department (Please refer to consolidated list of VTU for open electives).

Selection of an open elective is not allowed, if:

- The candidate has no pre – requisite knowledge.
  - The candidate has studied similar content course during previous semesters.
  - The syllabus content of the selected open elective is similar to that of Departmental core course(s) or to be studied Professional elective(s).
- Registration to open electives shall be documented under the guidance of Programme Coordinator and Adviser.



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Mangaluru - 575 006

**B.E.: Electronics & Communication Engineering**

**VII SEMESTER**

Sl No	Course Code	Title	Teaching Department	Teaching Hours /Week		Examination				Credits
				Theory	Practical/ Drawing	Duration in hours	SEE Marks	CIE Marks	Total Marks	
1	17EC71	Microwave and Antennas	EC	04		03	60	40	100	4
2	17EC72	Digital Image Processing	EC	04		03	60	40	100	4
3	17EC73	Power Electronics	EC	04		03	60	40	100	4
4	17EC74X	Professional Elective-3	EC	03		03	60	40	100	3
5	17EC75X	Professional Elective-4	EC	03		03	60	40	100	3
6	17ECL76	Advanced Communication Lab	EC	01-Hour Instruction 02-Hour Practical		03	60	40	100	2
7	17ECL77	VLSI Lab	EC	01-Hour Instruction 02-Hour Practical		03	60	40	100	2
8	17ECP78	Project Work Phase-I + Project work Seminar	EC		03		-	100	100	2
<b>TOTAL</b>				<b>Theory:18 hours Practical and Project: 09 hours</b>		<b>21</b>	<b>420</b>	<b>380</b>	<b>800</b>	<b>24</b>

Professional Elective-3		Professional Elective-4	
17EC741	Multimedia Communication	17EC751	DSP Algorithms and Architecture
17EC742	Biomedical Signal Processing	17EC752	IOT and Wireless Sensor Networks
17EC743	Real Time Systems	17EC753	Pattern Recognition
17EC744	Cryptography	17EC754	Advanced Computer Architecture
17EC745	CAD for VLSI	17EC755	Satellite Communication

1. **Project Phase – I and Project Seminar:** Comprises of Literature Survey, Problem identification, Objectives and Methodology. CIE marks shall be based on the report covering Literature Survey, Problem identification, Objectives and Methodology and Seminar presentation skill.



## B.E.: Electronics & Communication Engineering

### VIII SEMESTER

Sl. No	Course Code	Title	Teaching Department	Teaching Hours /Week		Examination				Credits
				Theory	Practical/ Drawing	Duration in hours	SEE Marks	CIE Marks	Total Marks	
1	17EC81	Wireless Cellular and LTE 4G Broadband	EC	4	-	3	60	40	100	4
2	17EC82	Fiber Optics & Networks	EC	4	-	3	60	40	100	4
3	17EC83X	Professional Elective-5	EC	3	-	3	60	40	100	3
4	17EC84	Internship/Professional Practice	EC	Industry Oriented		3	50	50	100	2
5	17ECP85	Project Work	EC	-	6	3	100	100	200	6
6	17ECS86	Seminar	EC	-	4	-	-	100	100	1
<b>TOTAL</b>				<b>Theory: 11 hours Project and Seminar: 10 hours</b>		<b>15</b>	<b>330</b>	<b>370</b>	<b>700</b>	<b>20</b>

Professional Elective -5	
17EC831	Micro Electro Mechanical Systems
17EC832	Speech Processing
17EC833	Radar Engineering
17EC834	Machine learning
17EC835	Network and Cyber Security

1. **Internship/ Professional Practice:** 4 Weeks internship to be completed between the (VI and VII semester vacation) and/or (VII and VIII semester vacation) period.



  
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**VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI**  
**Scheme of Teaching and Examination 2018 – 19**  
**Outcome Based Education (OBE) and Choice Based Credit System (CBCS)**  
**(Effective from the academic year 2018 – 19)**

Programme: B.E: Electronics & Communication Engineering

**III SEMESTER**

Sl No	Course and Course Code		Course Title	Teaching Department	Teaching Hours/Week			Examination			Credits	
					Theory Lecture	Tutorial	Practical/ Drawing	Duration in hours	CIE Marks	SEE Marks		Total Marks
					L	T	P					
1	BSC	18MAT31	Transform Calculus, Fourier Series and Numerical Techniques	Mathematics	2	2	-	03	40	60	100	3
2	PCC	18EC32	Network Theory		3	2	-	03	40	60	100	4
3	PCC	18EC33	Electronic Devices		3	0	-	03	40	60	100	3
4	PCC	18EC34	Digital System Design		3	0	-	03	40	60	100	3
5	PCC	18EC35	Computer Organization & Architecture		3	0	-	03	40	60	100	3
6	PCC	18EC36	Power Electronics & Instrumentation		3	0	-	03	40	60	100	3
7	PCC	18ECL17	Electronic Devices & Instrumentation Laboratory		-	2	2	03	40	60	100	2
8	PCC	18ECL38	Digital System Design Laboratory		-	2	2	03	40	60	100	2
9	HSMC	18KVK39/49	Vyavaharika Kannada (Kannada for Communication)/	HSMC	-	2	-	-	100	-	100	1
		18KAK39/49	Aadaha Kannada (Kannada for Administration)									
		<b>OR</b>										
		18CPC39/49	Constitution of India, Professional Ethics and Cyber Law		1	-	-	03	40	60		
					Examination is by objective type questions							
<b>TOTAL</b>					17	10	04	24	420	480	900	24
					OR	OR		OR	OR	OR		
					18	08		26	360	540		

13

  
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VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI  
Scheme of Teaching and Examination 2018 – 19  
Outcome Based Education (OBE) and Choice Based Credit System (CBCS)  
(Effective from the academic year 2018 – 19)

Programme: B.E: Electronics & Communication Engineering

IV SEMESTER

Sl No	Course and Course code		Course Title	Teaching Department	Teaching Hours/Week			Examination			Credits		
					Theory Lecture	Tutorial	Practical/ Drawing	Duration in Hours	CIE Marks	SEE Marks		Total Marks	
					L	T	P						
1	BSC	18MAT41	Complex Analysis, Probability and Statistical Methods	Mathe matics	2	2	–	03	40	60	100	3	
2	PCC	18EC42	Analog Circuits		3	2	–	03	40	60	100	4	
3	PCC	18EC43	Control Systems		3	0	–	03	40	60	100	3	
4	PCC	18EC44	Engineering Statistics & Linear Algebra		3	0	–	03	40	60	100	3	
5	PCC	18EC45	Signals & Systems		3	0	–	03	40	60	100	3	
6	PCC	18EC46	Microcontroller		3	0	–	03	40	60	100	3	
7	PCC	18ECL47	Microcontroller Laboratory		–	2	2	03	40	60	100	2	
8	PCC	18ECL48	Analog Circuits Laboratory		–	2	2	03	40	60	100	2	
9	HSMC	18KVK39/49	Vyavaharika Kannada (Kannada for Communication)	HSM C	–	2	–	–	100	–	100	1	
		18KAK39/49	Aacharya Kannada (Kannada for Administration)		–	2	–	–	100	–			
		OR			–	–	–	–	–	–			–
		18CPC39/49	Constitution of India, Professional Ethics and Cyber Law		1	–	–	01	40	60			
Examination is by objective type questions													
<b>TOTAL</b>					17	10	–	24	420	480	900	24	
					OR	OR	04	OR	OR	OR			
					18	08	–	26	360	540			

23

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Mangaluru - 575 006

VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI												
Scheme of Teaching and Examination 2018 – 19												
Outcome Based Education (OBE) and Choice Based Credit System (CBCS)												
(Effective from the academic year 2018 – 19)												
Programme: B.E: Electronics & Communication Engineering												
VI SEMESTER												
Sl. No	Course and Course code		Course Title	Teaching Department	Teaching Hours/Week			Examination			Credits	
					Theory Lecture	Tutorial	Practical/ Drawing	Duration in hours	CIE Marks	SEE Marks		Total Marks
					L	T	P					
1	PCC	18EC61	Digital Communication		3	2	1	03	40	60	100	4
2	PCC	18EC62	Embedded Systems		3	2	1	03	40	60	100	4
3	PCC	18EC63	Microwave and Antennas		3	2	1	03	40	60	100	4
4	PEC	18XX64X	Professional Elective -I		3	1	1	03	40	60	100	3
5	OEC	18XX65X	Open Elective -A		3	1	1	03	40	60	100	3
6	PCC	18ECL66	Embedded Systems Laboratory		1	2	2	03	40	60	100	2
7	PCC	18ECL67	Communication Laboratory		1	2	2	03	40	60	100	2
8	MP	18ECMP68	Mini-project		1	1	2	03	40	60	100	2
9	Internship	-	Internship		To be carried out during the vacation's of VI and VII semesters and/or VII and VIII semesters.							
<b>TOTAL</b>					<b>15</b>	<b>10</b>	<b>6</b>	<b>24</b>	<b>320</b>	<b>480</b>	<b>890</b>	<b>24</b>
Note: PCC: Professional core, PEC: Professional Elective, OE: Open Elective, MP: Mini-project.												
Professional Elective -I												
Course code under 18XX64X		Course Title										
18EC641		Operating System										
18EC642		Artificial Neural Networks										
18EC643		Data Structures using C++										
18EC644		Digital System Design Using Verilog										
18EC645		Nanoelectronics										
18EC646		Python Application Programming										

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Mangaluru - 575 006

**VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI**  
Scheme of Teaching and Examination 2018 - 19  
Outcome Based Education (OBE) and Choice Based Credit System (CBCS)  
(Effective from the academic year 2018 - 19)

Programme: B.E: Electronics & Communication Engineering

**V SEMESTER**

Sl. No	Course and Course code		Course Title	Teaching Department	Teaching Hours /Week			Examination			Credits	
					Theory Lecture	Tutorial	Practical/ Drawing	Duration in hours	CIE Marks	SEE Marks		Total Marks
					L	T	P					
1	HSMC	18ES51	Technological Innovation Management and Entrepreneurship		3	0	-	03	40	60	100	3
2	PCC	18EC52	Digital Signal Processing		3	2	-	03	40	60	100	4
3	PCC	18EC53	Principles of Communication Systems		3	2	-	03	40	60	100	4
4	PCC	18EC54	Information Theory & Coding		3	-	-	03	40	60	100	3
5	PCC	18EC55	Electromagnetic Waves		3	-	-	03	40	60	100	3
6	PCC	18EC56	Verilog HDL		3	-	-	03	40	60	100	3
7	PCC	18ECL57	Digital Signal Processing Laboratory		-	2	2	03	40	60	100	2
8	PCC	18ECL58	HDL Laboratory		-	2	2	03	40	60	100	2
9	HSMC	18CIV59	Environmental Studies	Civil/Environmental [Paper setting: Civil Engineering Board]	1	-	-	02	40	60	100	1
<b>TOTAL</b>					<b>19</b>	<b>8</b>	<b>4</b>	<b>26</b>	<b>360</b>	<b>540</b>	<b>900</b>	<b>25</b>

Note: PCC: Professional Core, HSMC: Humanity and Social Science.

AICTE activity Points: In case students fail to earn the prescribed activity Points, Eighth semester Grade Card shall be issued only after earning the required activity Points. Students shall be admitted for the award of degree only after the release of the Eighth semester Grade Card.

  
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VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI												
Scheme of Teaching and Examination 2018 - 19												
Outcome Based Education (OBE) and Choice Based Credit System (CBCS)												
(Effective from the academic year 2018 - 19)												
Programme: B.E: Electronics & Communication Engineering												
VIII SEMESTER												
SL No	Course and Course code		Course Title	Teaching Department	Teaching Hours /Week			Examination			Credits	
					Theory Lecture	Tutorial	Practical/ Drawing	Duration in hours	CIE Marks	SEE Marks		Total Marks
					L	T	P					
1	PCC	18EC81	Wireless and Cellular Communication		3	--	--	03	40	60	100	3
2	PEC	18XX82X	Professional Elective - 4		3	--	--	03	40	60	100	3
3	Project	18ECP83	Project Work Phase - 2		--	--	--	03	40	60	100	8
4	Seminar	18ECS84	Technical Seminar		--	--	2	03	100	--	100	1
5	Internship	18EC85	Internship	Completed during the vacation's of VI and VII semesters and /or VII and VIII semesters.)				03	40	60	100	3
<b>TOTAL</b>					<b>05</b>	<b>--</b>	<b>04</b>	<b>15</b>	<b>240</b>	<b>240</b>	<b>500</b>	<b>18</b>
Note: PCC: Professional Core, PEC: Professional Elective.												
<b>Professional Elective - 4</b>												
Course code under 18XX82X		Course Title										
18EC821		Network Security										
18EC822		Micro Electro Mechanical Systems										
18EC823		Radar Engineering										
18EC824		Optical Communication Networks										
18EC825		Biomedical Signal Processing										

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**VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI**  
**B.E. in Electronics and Communication Engineering (ECE)**  
**Scheme of Teaching and Examinations 2021**  
**Outcome Based Education (OBE) and Choice Based Credit System (CBCS)**  
**(Effective from the academic year 2021 - 22)**

## III SEMESTER

Sl. No	Course and Course Code	Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours /Week				Examination			Credits	
				Theory Lecture	Tutorial	Practical/ Drawing	Self-Study	Duration in hours	CIE Marks	SEE Marks		Total Marks
				L	T	P	S					
1	BSC 21MAT31	Mathematics Course (Common to all)	TD- Maths PSB-Maths					03	50	50	100	3
2	IPCC 21EC32	Digital System Design using Verilog	TD: ECE PSB: ECE	3	0	2		03	50	50	100	4
3	IPCC 21EC33	Basic Signal Processing	TD: ECE PSB: ECE	3	0	2		03	50	50	100	4
4	PCC 21EC34	Analog Electronic Circuits	TD: ECE PSB: ECE	3	0	0	1	03	50	50	100	3
5	PCC 21ECL35	Analog and Digital Electronics Lab	TD: ECE PSB: ECE	0	0	2		03	50	50	100	1
6	UHV 21UH36	Social Connect and Responsibility	Any Department	0	0	1		01	50	50	100	1
7	HSMC 21KSK37/47	Samskrutika Kannada	TD and PSB HSMC	1	0	0		01	50	50	100	1
	HSMC 21KBK37/47	Balake Kannada										
	OR											
	HSMC 21CIP37/47	Constitution of India and Professional Ethics										
8	AEC 21EC38X	Ability Enhancement Course - III	TD: Concerned department PSB: Concerned Board	If offered as Theory Course				01	50	50	100	1
				1	0	0						
				If offered as lab. course				02				
				0	0	2						
								<b>Total</b>	<b>400</b>	<b>400</b>	<b>800</b>	<b>18</b>

9	Scheduled activities for III to VIII semesters	NMDC 21NS83	National Service Scheme (NSS)	NSS	All students have to register for any one of the course namely National Service Scheme, Physical Education (PE)(Sports and Athletics) and Yoga with the concerned coordinator of the course during the first week of III semester. The activities shall be carried out between III semester to VIII semester (for 5 semesters). SEE in the above courses shall be conducted during VIII semester examinations and the accumulated CIE marks shall be added to the SEE marks. Successful completion of the registered course is mandatory for the award of the degree. The events shall be appropriately scheduled by the colleges and the same shall be reflected in the calendar prepared for the NSS, PE and Yoga activities.							
		NMDC 21PE83	Physical Education (PE)(Sports and Athletics)	PE								
		NMDC 21YO83	Yoga	Yoga								

**Course prescribed to lateral entry Diploma holders admitted to III semester B.E./B.Tech programs**

1	NMDC 21MATDIP31	Additional Mathematics - I	Maths	02	02	--	--	--	100	---	100	0
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Note: BSC: Basic Science Course, IPCC: Integrated Professional Core Course, PCC: Professional Core Course, INT –Internship, HSMC: Humanity and Social Science & Management Courses, AEC–Ability Enhancement Courses. UHV: Universal Human Value Course.

L –Lecture, T – Tutorial, P- Practical/ Drawing, S – Self Study Component, CIE: Continuous Internal Evaluation, SEE: Semester End Examination, TD-Teaching Department, PSB: Paper Setting department

21KSK37/47 Samskrutika Kannada is for students who speak, read and write Kannada and 21KBK37/47 Balake Kannada is for non-Kannada speaking, reading, and writing students.

Integrated Professional Core Course (IPCC): Refers to Professional Theory Core Course Integrated with practical of the same course. Credit for IPCC can be 04 and its Teaching-Learning hours (L : T : P) can be considered as (3 : 0 : 2) or (2 : 2 : 2). The theory part of the IPCC shall be evaluated both by CIE and SEE. The practical part shall be evaluated by only CIE (no SEE). However, questions from the practical part of IPCC shall be included in the SEE question paper. For more details, the regulation governing the Degree of Bachelor of Engineering /Technology (B.E./B.Tech) 2021-22 may be referred.

**VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI**  
**B.E. in Electronics and Communication Engineering (ECE)**  
**Scheme of Teaching and Examinations 2021**  
**Outcome Based Education (OBE) and Choice Based Credit System (CBCS)**  
**(Effective from the academic year 2021 - 22)**

V SEMESTER															
Sl. No	Course and Course Code	Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours /Week				Examination				Credits			
				Theory Lecture	Tutorial	Practical/ Drawing	Self-Study	Duration in hours	CIE Marks	SEE Marks	Total Marks				
				L	T	P	S								
1	BSC 21EC51	Digital Communication	TD: ECE PSB: ECE	3	0	0	1	03	50	50	100	3			
2	IPCC 21EC52	Computer Organization & ARM Microcontroller	TD: ECE, CSE PSB: ECE	3	0	2		03	50	50	100	4			
3	PCC 21EC53	Computer Communication Networks	TD: ECE PSB: ECE	3	0	0	1	03	50	50	100	3			
4	PCC 21EC54	Electromagnetics Waves	TD: ECE PSB: ECE	3	0	0		03	50	50	100	3			
5	PCC 21ECL55	Communication Lab II		0	0	2		03	50	50	100	1			
6	AFC 21EC56	Research Methodology & Intellectual Property Rights	TD: Any Department PSB: As identified by University	2	0	0		02	50	50	100	2			
7	HSMC 21CIV57	Environmental Studies	TD: Civil/ Environmental /Chemistry/ Biotech. PSB: Civil Engg	1	0	0		1	50	50	100	1			
8	AEC 21EC58X	Ability Enhancement Course-V	Concerned Board	If offered as Theory courses				01	50	50	100	1			
				1	0	0									
				If offered as lab. courses				02							
				0	0	2		<b>Total</b>				400	400	800	18

**Ability Enhancement Course - V**

21EC581	IoT (Internet of Things) Lab	21EC583	Java Programming
21EC582	Communication Simulink Toolbox	21EC584	Data Structures Using C++

Note: BSC: Basic Science Course, PCC: Professional Core Course, IPCC: Integrated Professional Core Course, AEC –Ability Enhancement Course INT – Internship, HSMC: Humanity and Social Science & Management Courses.

L –Lecture, T – Tutorial, P- Practical/ Drawing, S – Self Study Component, CIE: Continuous Internal Evaluation, SEE: Semester End Examination.

**Integrated Professional Core Course (IPCC):** refers to Professional Theory Core Course Integrated with Practical of the same course. Credit for IPCC can be 04 and its Teaching – Learning hours (L : T : P) can be considered as (3 : 0 : 2) or (2 : 2 : 2). Theory part of the IPCC shall be evaluated both by CIE and SEE. The practical part shall be evaluated by CIE only and there shall be no SEE. For more details the regulation governing the Degree of Bachelor of Engineering /Technology (BE/B.Tech.) 2021-22 may be referred.



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VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI  
Scheme of Teaching and Examination 2018 - 19  
Outcome Based Education (OBE) and Choice Based Credit System (CBCS)  
(Effective from the academic year 2018 - 19)

Programme: B.E: Electronics & Communication Engineering

VII SEMESTER

Sl. No	Course and Course code		Course Title	Teaching Department	Teaching Hours /Week			Examination			Credits	
					Theory Lectures	Tutorial	Practical/ Drawing	Duration in hours	CIE Marks	SEE Marks		Total Marks
1	PCC	18EC71	Computer Networks		3	-	-	03	40	60	100	3
2	PCC	18EC72	VLSI Design		3	-	-	03	40	60	100	3
3	PEC	18XX73X	Professional Elective - 2		3	-	-	03	40	60	100	3
4	PEC	18XX74X	Professional Elective - 3		3	-	-	03	40	60	100	3
5	OEC	18XX75X	Open Elective -B		3	-	-	03	40	60	100	3
6	NCC	18ECL76	Computer Networks Lab		-	2	3	03	40	60	100	2
7	NCC	18ECL77	VLSI Laboratory		-	2	2	03	40	60	100	2
8	Project	18ECP78	Project Work Phase - 1		-	-	2	-	100	-	100	1
9	Internship	--	Internship		(If not completed during the vacation of VI and VII semesters, it shall be carried out during the vacation of VII and VIII semesters)							
<b>TOTAL</b>					<b>15</b>	<b>04</b>	<b>06</b>	<b>21</b>	<b>38</b>	<b>420</b>	<b>800</b>	<b>20</b>

Note: PCC: Professional core, PEC: Professional Elective.

Professional Elective - 2

Course code under 18XX73X	Course Title
18EC731	Real Time Systems
18EC732	Satellite Communication
18EC733	Digital Image Processing
18EC734	DSP Algorithms & Architecture

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**VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI**  
**B.E. in Electronics and Communication Engineering (ECE)**  
**Scheme of Teaching and Examinations 2021**  
**Outcome Based Education(OBE) and Choice Based Credit System (CBCS)**  
**(Effective from the academic year 2021 - 22)**

Swappable VII and VIII SEMESTER

**VII SEMESTER**

Sl. No	Course and Course Code	Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours /Week				Examination			Credits	
				Theory Lecture	Tutorial	Practical/ Drawing	Self -Study	Duration in hours	CIE Marks	SEE Marks		Total Marks
				L	T	P	S					
1	PLC 21EC71	Advanced VLSI	TD: ECE PSB: ECE	3	0	0		3	50	50	100	3
2	PCC 21EC72	Optical & Wireless Communication	TD: ECE PSB: ECE	2	0	0		3	50	50	100	2
3	PEC 21EC72X	Professional elective Course-II	TD: ECE PSB: ECE					3	50	50	100	3
4	PEC 21EC73X	Professional elective Course-III	TD: ECE PSB: ECE					3	50	50	100	3
5	OEC 21EC74X	Open elective Course-II	Concerned Department					3	50	50	100	3
6	Project 21ECP75	Project work		Two contact hours /week for interaction between the faculty and students.				3	100	100	200	10
<b>Total</b>								<b>350</b>	<b>350</b>	<b>700</b>	<b>24</b>	

**VIII SEMESTER**

Sl. No	Course and Course Code	Course Title	Teaching Department	Teaching Hours /Week				Examination			Credits		
				Theory Lecture	Tutorial	Practical/ Drawing	Self -Study	Duration in hours	CIE Marks	SEE Marks		Total Marks	
				L	T	P	S						
1	Seminar 21ECB1	Technical Seminar		One contact hour /week for interaction between the faculty and students.				--	100	--	100	01	
2	INT 21INTS2	Research Internship/ Industry Internship		Two contact hours /week for interaction between the faculty and students.				03 (Batch wise )	100	100	200	15	
3	NCMC	21NS83	National Service Scheme (NSS)	NSS	Completed during the intervening period of III semester to VIII semester.				--	50	50	100	0
		21PE83	Physical Education (PE) (Sports and Athletics)	PE									
		21Y083	Yoga	Yoga									
<b>Total</b>								<b>250</b>	<b>150</b>	<b>400</b>	<b>16</b>		

**Professional Elective - II**

21EC721	Advanced Design Tools for VLSI (L:T:P :: 2:0:2)	21EC724	Biomedical Signal Processing (L:T:P :: 3:0:0)
21EC722	Digital Image Processing (L:T:P :: 2:0:2)	21EC725	Speech Signal Processing (L:T:P :: 3:0:0)
21EC723	DSP Algorithms & Architecture (L:T:P :: 3:0:0)		

**Professional Elective - III**

21EC731	IoT & Wireless Sensor Networks (L:T:P :: 3:0:0)	21EC734	Machine Learning with Python (L:T:P :: 2:0:2)
21EC732	Network Security (L:T:P :: 3:0:0)	21EC735	Multimedia Communication (L:T:P :: 2:0:2)
21EC733	Fabrication technology (L:T:P :: 3:0:0)		



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**VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI**  
**B.E. in Electronics and Communication Engineering**  
**Scheme of Teaching and Examinations 2022**  
**Outcome Based Education (OBE) and Choice Based Credit System (CBCS)**  
**(Effective from the academic year 2023-24)**

III SEMESTER													
Sl. No	Course	Course Code	Course Title	Teaching Department (TD) and Question and Paper Setting Board (PSB)	Teaching Hours /Week				Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	SDA	Duration in hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P	S					
1	PCC	BMATEC301	AV Mathematics-III for EC Engineering	TD- Maths PSB - Maths	3	0	0		03	50	50	100	3
2	IPCC	BEC302	Digital System Design using Verilog	TD: ECE PSB: ECE	3	0	2		03	50	50	100	4
3	IPCC	BEC303	Electronic Principles and Circuits	TD: ECE PSB: ECE	3	0	2		03	50	50	100	4
4	PCC	BEC304	Network Analysis	TD: ECE PSB: ECE	3	0	0		03	50	50	100	3
5	PCCL	BECL305	Analog and Digital Systems Design Lab	TD: ECE PSB: ECE	0	0	2		03	50	50	100	1
6	ESC	BXX306x	ESC/ETC/PLC	TD: PSB:	3	0	0		03	50	50	100	3
7	UHV	BSCK307	Social Connect and Responsibility	Any Department	0	0	2		01	100	---	100	1
8	AEC/ SEC	BXX358x	Ability Enhancement Course/Skill Enhancement Course- III		If the course is a Theory				01	50	50	100	1
					1	0	0						
					If a course is a laboratory				02				
					0	0	2						
9	MC	BNSK359	National Service Scheme (NSS)	NSS coordinator	0	0	2			100	---	100	0
		BPEK359	Physical Education (PE) (Sports and Athletics)	Physical Education Director									
		BYOK359	Yoga	Yoga Teacher									
<b>Total</b>										<b>550</b>	<b>350</b>	<b>900</b>	<b>20</b>

PCC: Professional Core Course, PCCL: Professional Core Course laboratory, UHV: Universal Human Value Course, MC: Mandatory Course (Non-credit), AEC: Ability Enhancement Course, SEC: Skill Enhancement Course, L: Lecture, T: Tutorial, P: Practical S= SDA: Skill Development Activity, CIE: Continuous Internal Evaluation, SEE: Semester End Evaluation. K : This letter in the course code indicates common to all the stream of engineering. ESC: Engineering Science Course, ETC: Emerging

VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI  
**B.E. in Electronics and Communication Engineering**  
**Scheme of Teaching and Examinations 2022**  
 Outcome Based Education (OBE) and Choice Based Credit System (CBCS)  
 (Effective from the academic year 2023-24)

IV SEMESTER													
Sl. No	Course and Course Code		Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours /Week				Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	Self -Study	Duration in hours	CIE Marks	SEE Marks	Total Marks	
1	PCC	BEC401	Electromagnetics Theory	TD: ECE/ETE PSB: ECE/ETE	3	0	0		03	50	50	100	3
2	IPCC	BEC402	Principles of Communication Systems	TD: ECE/ETE PSB: ECE/ETE	3	0	2		03	50	50	100	4
3	IPCC	BEC403	Control Systems	TD: ECE/ETE PSB: ECE/ETE	3	0	2		03	50	50	100	4
4	PCCL	BECL404	Communication Lab	TD: ECE/ETE PSB: ECE/ETE	0	0	2		03	50	50	100	1
5	ESC	BEC405x	ESC/ETC/PLC	TD: ECE/ETE PSB: ECE/ETE	3	0	0		03	50	50	100	3
6	AEC/ SEC	BXX456x	Ability Enhancement Course/Skill Enhancement Course- IV	TD and PSB: Concerned department	If the course is Theory				01	50	50	100	1
					1	0	0						
					If the course is a lab				02				
0	0	2											
4	BSC	BBOK407	Biology For Engineers	TD / PSB: BT, CHE,	3	0	0		03	50	50	100	3
7	UHV	BUHK408	Universal human values course	Any Department	1	0	0		01	50	50	100	1
9	MC	BNSK459	National Service Scheme (NSS)	NSS coordinator	0	0	2			100	—	100	0
		BPEK459	Physical Education (PE) (Sports and Athletics)	Physical Education Director									
		BYOK459	Yoga	Yoga Teacher									
<b>Total</b>										<b>500</b>	<b>400</b>	<b>900</b>	<b>20</b>