



**JSPM's**  
**RAJARSHI SHAHU COLLEGE OF ENGINEERING**  
**TATHAWADE, PUNE-33**  
(An Autonomous Institute Affiliated to Savitribai Phule Pune University, Pune)



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**Department of Electronics and  
Telecommunication Engineering**  
**Syllabus Structure**  
**(2023 Pattern)**

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## Department of Electronics and Telecommunication Engineering

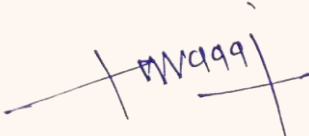
### Vision

“To create an educational environment to meet the challenges of modern Electronics and Telecommunication engineering industry through state of art technical knowledge and innovative approach”.

### Mission

- To entrust the students with fundamentals of Electronics and Telecommunication Engineering for successful carrier
- To enable students to pursue higher education, research and promote Entrepreneurship
- To serve the nation through techno-social development.



  
Dr. S. C. Wagaj  
B.O.S. Chairman

  
Dr. A. M. Badadhe  
Dean Academics



  
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## *Highlights of the Syllabus*

Curriculum of Electronics and Telecommunication Engineering course is designed in consultation with



Academic Experts

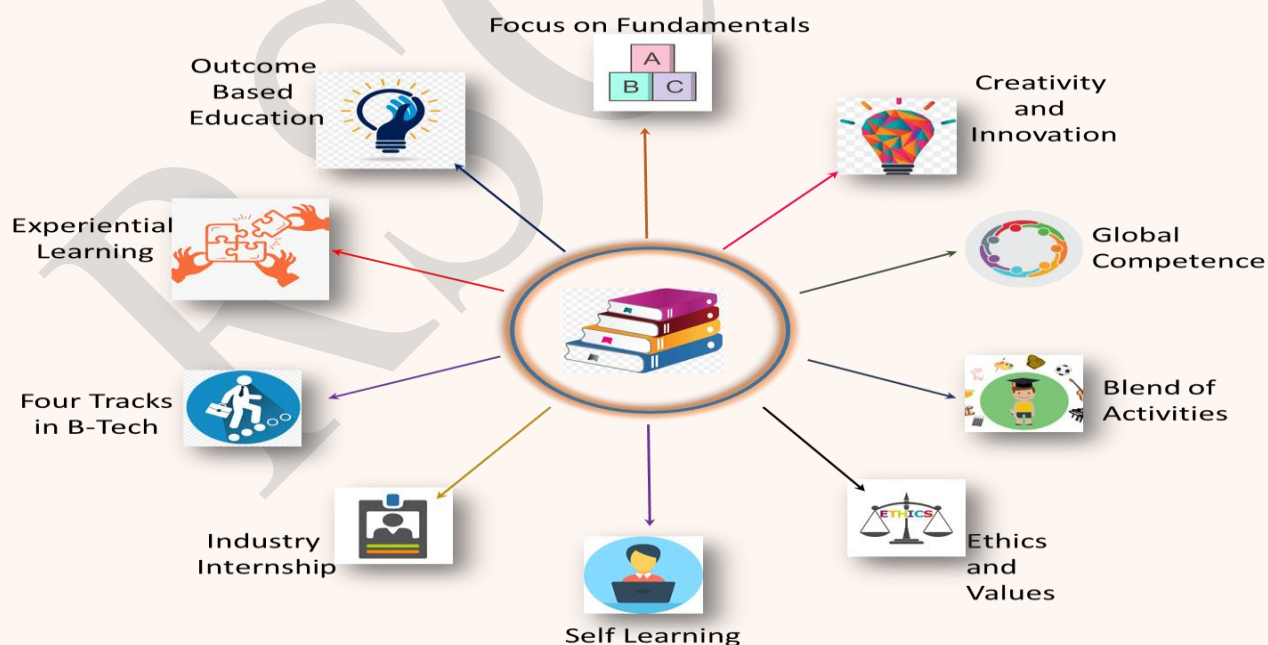


Industry/Corporate Experts



Distinguished Alumni

The salient features of curriculum designed in association with **KPIT, Nayan Electronics**.



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**Notes:**

For Theory courses: There shall be MSE, ISE and ESE. The ESE is a separate head of passing.

For Lab courses: There shall be continuous assessment (ISCE consists of ISE and MSE). The ESE is a separate head of passing.

**Abbreviations:**

**L** – Lecture, **T** – Tutorial, **P** – Practical, **Hr**– Hours, **C** – Credits, **ISE** – In Semester Evaluation, **MSE** – Mid Semester Evaluation, **ESE** – End Semester Evaluation

BSC: Basic Science Course

ESC: Engineering Science Course

PCC: Programme Core Course

PEC: Programme Elective Course

MDM: Multidisciplinary Minor

OE: Open Elective

VSEC: Vocational and Skill Enhancement Course

HSSM: Humanities Social Science and Management

AEC: Ability Enhancement Course

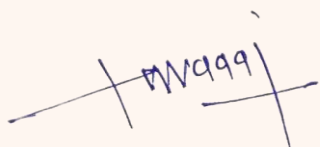
IKS: Indian Knowledge System

VEC: Value Education Course

CEP: Comm. Engg. Project

FP: Field Project

CC: Co-curricular Courses



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**F. Y. B. Tech (Electronics & Telecommunication Engineering)**  
**(2023 Pattern) Semester –I**

Course	Course code	Course Title	Teaching Scheme				Cre dit	Examination Scheme				Total Marks	Ownership
			L	T	P	H r		C	ISE	MSE	ESE		
BSC	ES1201T	Engineering Mathematics- I	3	1	-	4	4	20	30	50	50	150	Mathematics
BSC	ES1206T	Physics for Engineers	3	-	-	3	3	20	30	50	-	100	Physics
BSC	ES1206L	Physics for Engineers Laboratory	-	-	2	2	1	ISCE: 30		20	-	50	Physics
HSSM (VSEC)	ME1202L	Engineering Drawing Laboratory	-	-	4	4	2	ISCE:50		50	-	100	Mechanical
ESC	EE1201T	Introduction to Electrical Engineering	3	-	-	3	3	20	30	50	-	100	Electrical
ESC	EE1201L	Introduction to Electrical Engineering Laboratory	-	-	2	2	1	ISCE:30		20	-	50	Electrical
ESC	CS1201T	Introduction to Computer Programming	1	-	-	1	1	20	10	20	-	50	Computer & IT
ESC	CS1201L	Introduction to Computer Programming Laboratory	-	-	2	2	1	ISCE:30		20	-	50	Computer & IT
HSSM (AEC)	HS1202T/H S1203T/HS 1204T/ HS1205T	Professional English Communication/English Language skills German/Japanese	2	-	-	2	2	20	30	50	-	100	Humanities
HSSM (AEC)	HS1202L/H S1203L/HS 1204L/ HS1205L	Professional English Communication /English Language skills German/Japanese Laboratory	-	-	2	2	1	ISCE: 30		20	-	50	Humanities
CEP	ES1209L	Community Engagement Project	-	-	4	4	2	ISCE:50		50	-	100	Engineering Sciences
CC	HS1211L	Co-curricular Course-I	-	1	-	1	1	ISCE:50		-	-	50	Humanities
HSSM	HS1201	Induction Training	Non-credit Course										
	Total		12	2	16	30	22					950	

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**F. Y. B. Tech (Electronics & Telecommunication Engineering)**  
**(2023 Pattern) Semester -II**

Course	Course code	Course Title	Teaching Scheme				Credit C	Examination Scheme				Total	Ownership
			L	T	P	Hr		ISE	MSE	ESE	T W		
BSC	ES1202T	Engineering Mathematics- II	3	1	-	4	4	20	30	50	50	150	Mathematics
BSC	ES1207T	Chemistry for Engineers	3	-	-	3	3	20	30	50	-	100	Chemistry
BSC	ES1207L	Chemistry for Engineers Laboratory	-	-	2	2	1	ISCE: 30		20	-	50	Chemistry
HSSM (VSEC)	ME1201L	Workshop Practice	-	-	4	4	2	ISCE:60		40	-	100	Mechanical
ESC	EC1201T	Basic Electronics Engineering	2	-	-	2	2	20	30	50	-	100	E&TC
ESC	EC1201L	Basic Electronics Engineering Laboratory	-	-	2	2	1	ISCE:30		20	-	50	E&TC
ESC	CE1201T	Engineering Mechanics	3	-	-	3	3	20	30	50	-	100	Civil
ESC	CE1201L	Engineering Mechanics Laboratory	-	-	2	2	1	ISCE:30		20	-	50	Civil
ESC	CS1202T	Fundamentals of Data Structure	1	-	-	1	1	20	10	20	-	50	Computer and IT
ESC	CS1202L	Fundamentals of Data Structure Laboratory	-	-	2	2	1	ISCE: 30		20	-	50	Computer and IT
HSSM (VSEC)	ES1208L	Introduction to Engineering and Engineering Products	-	-	2	2	1	ISCE:30		20	-	50	Humanities
HSSM( IKS)	HS1207T	Indian Knowledge Systems	2	-	-	2	2	20	30	50	-	100	Humanities
HSSM	HS1206	Indian Constitution	Non-credit Course										
	Total		14	1	14	29	22					950	

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**List of Exit Courses after completion of Semester I and II**

1. Exit option is available for students those who have earned the total 44 credits at the End of Second Semester.
2. Student who wants to avail the exit option after first year have to earn additional 8 credits from the list of courses shown below.
3. These courses student have to complete within summer vacation after 1<sup>st</sup> Year.
4. After fulfilment as mentioned in 1 to 3 above, Students can earn **U.G Certificate in E&TC Engineering** and same will be issued by the Institute.

Sr. No.	Course code	Name	Credits	
1.	EX-EC1201	Digital Systems	2	One Year UG Certificate in E&TC Engineering
2.	EX-EC1202	Introduction to Electronic softwares	2	
3.	EX-EC1203	Analog Electronics Circuits	2	
4.	EX-EC1204	Database Management System	2	
5.	EX-EC1205	Consumer Electronics	2	
6.	EX-EC1206	Radio Engineering	2	

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**S. Y. B. Tech (Electronics & Telecommunication Engineering)**  
**(2023 Pattern) Semester -III**

Course	Course code	Course Title	Teaching Scheme				Credit C	Examination Scheme				Total	Ownership
			L	T	P	Hr		ISE	MSE	ESE	TW		
BSC	ES2204T	Engineering Mathematics-III	3	1	-	4	4	20	30	50	50	150	Mathematics
PCC	EC2201T	Electronic Devices & Circuits	3	-	-	3	3	20	30	50	-	100	E&TC
PCC	EC2202T	Digital System Design	3	-	-	3	3	20	30	50	-	100	E&TC
PCC	EC2203T	Electrical Networks & Machines	2	-	-	2	2	20	30	50	-	100	E&TC
PCC	EC2204T	Advanced Data structures and Algorithms	3	-	-	3	3	20	30	50	-	100	E&TC
HSSM	HS2205T	Economics	2	-	-	2	2	20	30	50	-	100	E&TC
PCC	EC2201L	Electronic Devices & Circuits Lab	-	-	2	2	1	ISCE: 30		20	-	50	E&TC
PCC	EC2202L	Digital System Design Lab	-	-	2	2	1	ISCE: 30		20	-	50	E&TC
PCC	EC2204L	Advanced Data structures and Algorithms Lab	-	-	2	2	1	ISCE: 30		20	-	50	E&TC
CEP	EC2205L	Engineering Design & Innovation	-	-	4	4	2	ISCE: 60		40	-	100	E&TC
Total			16	1	10	27	22					900	

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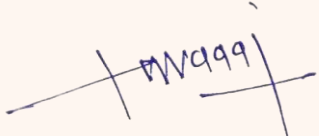



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**S. Y. B. Tech (Electronics & Telecommunication Engineering)**  
**(2023 Pattern) Semester -IV**

Course	Course code	Course Title	Teaching Scheme				Credit	Examination Scheme			Total	Ownership
			L	T	P	Hr		ISE	MSE	ESE		
PCC	EC2206T	Communication Systems	2	-	-	2	2	20	30	50	100	E&TC
PCC	EC2207T	Microcontrollers	3	-	-	3	3	20	30	50	100	E&TC
PCC	EC2208T	Signals and Systems	3	-	-	3	3	20	30	50	100	E&TC
MDM	ECM2201T	Multidisciplinary Minor-I	3	-	-	3	3	20	30	50	100	Other department
ESC	ES2206T	Environmental Science & Engineering	2	-	-	2	2	20	30	50	100	Humanities
PCC	EC2209T	Innovation and Entrepreneurship	2	-	-	2	2	20	30	50	100	E&TC
HSSM	HS2203T	Universal Human Values and Ethics	2	-	-	2	2	20	30	50	100	Humanities
PCC	EC2206L	Communication System Lab	-	-	2	2	1	ISCE: 30		20	50	E&TC
PCC	EC2207L	Microcontrollers Lab	-	-	2	2	1	ISCE: 30		20	50	E&TC
PCC	EC2210L	Introduction to Python and Data Science	-	-	4	4	2	ISCE: 60		40	100	E&TC
CC	EC2211L	Co-curricular Course-II	-	-	2	2	1	ISCE: 30		20	50	E&TC
Total			17	-	10	27	22				950	

  
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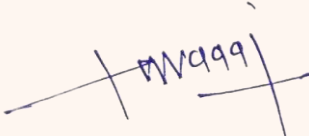
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**List of Exit Courses after completion of Semester III and IV**

1. Exit option is available for students those who have earned the total 88 credits at the end of fourth Semester.
2. Student who wants to avail the exit option after second year have to earn additional 8 credits from the list of courses shown below.
3. These courses student have to complete within summer vacation after 2<sup>nd</sup> Year.
4. After fulfilment as mentioned in 1 to 3 above, Students can earn **Diploma in E&TC Engineering** and same will be issued by the Institute.

Sr. No.	Course code	Name	Credits	
1.	EX-EC2201	Digital Communication and Networking	2	Two Years UG Diploma in E&TC Engineering
2.	EX-EC2202	Electronics Servicing & Maintenance	2	
3.	EX-EC2203	An Introduction to Information Theory	2	
4.	EX-EC2204	Advanced Microcontroller	2	
5.	EX-EC2205	Introduction to semiconductor devices	2	
6.	EX-EC2206	Introduction to Adaptive Signal Processing	2	

  
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**T. Y. B. Tech (Electronics & Telecommunication Engineering)**  
**(2023 Pattern) Semester -V**

Course	Course code	Course Title	Teaching Scheme				Credit	Examination Scheme			Total	Ownership
			L	T	P	Hr		ISE	MSE	ESE		
PCC	EC3201T	Advanced Embedded & RTOS	3	-	-	3	3	20	30	50	100	E&TC
PCC	EC3202T	Electromagnetic Waves & Radiating Systems	2	-	-	2	2	20	30	50	100	E&TC
PCC	EC3203T	Control Systems	3	-	-	3	3	20	30	50	100	E&TC
PEC	EC3204T	Program elective-I	3	-	-	3	3	20	30	50	100	E&TC
OE	ECO3201T	Open elective-I	3	-	-	3	3	20	30	50	100	Other department
MDM	ECM3201T	Multidisciplinary Minor-II	3	-	-	3	3	20	30	50	100	Other department
PCC	EC3201L	Advanced Embedded & RTOS Lab	-	-	2	2	1	ISCE: 30		20	50	E&TC
PCC	EC3202L	Electromagnetic Waves & Radiating System Lab	-	-	2	2	1	ISCE: 30		20	50	E&TC
PEC	EC3204L	Program elective-I Lab	-	-	2	2	1	ISCE: 30		20	50	E&TC
MDM	ECM3201L	Multidisciplinary Minor-II Lab	-	-	2	2	1	ISCE: 30		20	50	Other department
CC	EC3205L	Co-curricular Course-III	-	-	2	2	1	ISCE: 30		20	50	E&TC
Total			17	-	10	27	22			400	850	

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**T. Y. B. Tech (Electronics & Telecommunication Engineering)**  
**(2023 Pattern) Semester -VI**

Course	Course code	Course Title	Teaching Scheme				Credit	Examination Scheme			Total	Ownership
			L	T	P	Hr		ISE	MSE	ESE		
PCC	EC3206T	VLSI Design & Technology	3	-	-	3	3	20	30	50	100	E&TC
PCC	EC3207T	Internet of Things	2	-	-	2	2	20	30	50	100	E&TC
MDM	ECM3202T	Multidisciplinary Minor-III	3	-	-	3	3	20	30	50	100	Other department
PEC	EC3208T	Program Elective-II	3	-	-	3	3	20	30	50	100	E&TC
PEC	EC3209T	Program Elective-III	3	-	-	3	3	20	30	50	100	E&TC
OE	ECO3202T	Open elective-II	3	-	-	3	3	20	30	50	100	Other department
PCC	EC3206L	VLSI Design & Technology Lab	-	-	2	2	1	ISCE: 30		20	50	E&TC
PCC	EC3207L	Internet of Things Lab	-	-	2	2	1	ISCE: 30		20	50	E&TC
PCC	EC3209L	Program Elective-III Lab	-	-	2	2	1	ISCE: 30		20	50	E&TC
Project	EC3210L	Project Phase-I	-	-	4	4	2	ISCE: 100		50	150	E&TC
Total			17	-	10	27	22			-	900	

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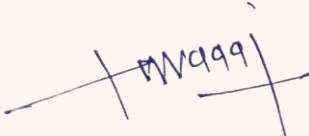
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**List of Exit Courses after completion of Semester V and VI**

1. Exit option is available for students those who have earned the total 132 credits at the end of sixth Semester.
2. Student who wants to avail the exit option after Third year have to earn additional 8 credits from the list of courses shown below.
3. These courses student have to complete within summer vacation after 3<sup>rd</sup> Year.
4. After fulfilment as mentioned in 1 to 3 above, Students can earn **Bachelor's Degree in Vocation (B.Voc) E&TC Engineering** and same will be issued by the Institute.

Sr. No.	Course code	Name	Credits	
1.	EX-EC3201	Principles of Modern CDMA/MIMO/OFDM wireless communication	2	<b>Three Years Bachelor's Degree in Vocation (B. Voc) E&amp;TC Engineering</b>
2.	EX-EC3202	Analysis and design principles of Microwave Antennas	2	
3.	EX-EC3203	Digital VLSI Testing	2	
4.	EX-EC3204	Simulation of communication Network using MATLAB	2	
5.	EX-EC3205	System Design using Verilog	2	
6.	EX-EC3206	Industry Automation	2	

  
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**Final. Year. B. Tech (Electronics & Telecommunication Engineering)**  
**(2023 Pattern) Semester -VII**

Course	Course code	Course Title	Teaching Scheme				Credit C	Examination Scheme			Total	Ownership
			L	T	P	Hr		ISE	MSE	ESE		
PCC	EC4201T	Industrial Drives & Control	3	-	-	3	3	20	30	50	100	E&TC
PCC	EC4202T	Mobile Communication	3	-	-	3	3	20	30	50	100	E&TC
HSSM	EC4203T	Industrial Psychology	2	-	-	2	2	20	30	50	100	E&TC
MDM	ECM4201T	Multidisciplinary Minor-IV	3	-	-	3	3	20	30	50	100	Other department
PCC	EC4204T	Program Elective-IV	3	-	-	3	3	20	30	50	100	E&TC
PCC	EC4201L	Industrial Drives & Control Lab	-	-	2	2	1	ISCE: 30		20	50	E&TC
MDM	ECM4201L	Multidisciplinary Minor-IV Lab	-	-	2	2	1	ISCE: 30		20	50	Other department
PCC	EC4202L	Mobile Communication Lab			2	2	1	ISCE: 30		20	50	E&TC
PCC	EC4204L	Program Elective-IV Lab	-	-	2	2	1	ISCE: 30		20	50	E&TC
Project	EC4205L	Project Phase-II	-	-	8	8	4	ISCE: 100		100	200	E&TC
Total			14	-	16	30	22				900	

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**Program Elective-I (Sem 5th)**

Course Code	Course
EC3204TA	Digital Signal Processing
EC3204TB	Information Theory & Coding Techniques
EC3204TC	NPTEL
EC3204TD	NPTEL

**Program Elective-II (Sem 6th)**

Course Code	Course
EC3208TA	Biomedical Instrumentation
EC3208TB	Electronics Product Design
EC3208TC	NPTEL
EC3208TD	NPTEL

**Program Elective -III (Sem 6th)**

Course Code	Course
EC3209TA	Industrial Automation
EC3209TB	Computer Network & Security
EC3209TC	NPTEL
EC3209TD	NPTEL

**Program Elective -IV (Sem 7th)**

Course Code	Course
EC4204TA	Embedded Automotive System
EC4204TB	5G Technology
EC4204TC	NPTEL
EC4204TD	NPTEL

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**Final. Year. B. Tech (Electronics & Telecommunication Engineering)**  
**(2023 Pattern) Semester -VIII: Regular Track**

Course	Course code	Course Title	Teaching Scheme				Credit C	Examination Scheme			TW	Total Marks	Ownership
			L	T	P	Hr		ISE	MSE	ESE			
PCC	EC4206T	Broadband Communication System	3	-	-	3	3	20	30	50	-	100	E&TC
PCC	EC4207T	Microwave Engineering	3	-	-	3	3	20	30	50	-	100	E&TC
PCC	EC4210L	Comprehensive Evaluation	-	-	4	4	2	ISCE: 60		40	-	100	E&TC
PCC	EC4208T	Skill based course	3	-	-	3	3	20	30	50	-	100	E&TC
PCC	EC4209T	Research Methodology	3	1	-	4	4	20	30	50	50	150	E&TC
PCC	EC4206L	Broadband Communication System lab	-	-	2	2	1	ISCE: 30		20	-	50	E&TC
Total			12	1	6	19	16					600	

**Final. Year. B. Tech (Electronics & Telecommunication Engineering)**  
**(2023 Pattern) Semester -VIII: Internship Track**

Course	Course code	Course Title	Teaching Scheme				Credit C	Examination Scheme			Total	Ownership
			L	T	P	Hr		ISE	MSE	ESE		
Project	EC4210L	Comprehensive Evaluation	-	-	4	4	2	ISCE: 60		40	100	E&TC
MDM	EC4211T	SWAYAM professional elective courses	2	-	-	2	2	20	30	50	100	E&TC
PCC	EC4212L	Internship	-	-	24	24	12	ISCE: 200		200	400	E&TC
Total			2	-	28	30	16				600	

Dr. S. C. Wagaj  
B.O.S. Chairman

Dr. A. M. Badadhe  
Dean Academics



Dr. S. P. Bhosle  
Director RSCOE, Pune



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**DEPARTMENT OF ELECTRONICS AND TELECOMMUNICATION  
ENGINEERING**

**Open Electives (offered to other Departments)**

Structure (Effective from 2024-25)

Course Code	Course	Teaching Scheme				Credit	Examination Scheme			Total Marks
		L	T	P	Hr		C	ISE	MSE	
T. Y. Sem V										
ECO3201T	Electronics in Agriculture	3	-	-	3	3	20	30	50	100
T. Y. Sem VI										
ECO3202T	Biomedical Instrumentation	3	-	-	3	3	20	30	50	100
Total		6	-	-	6	6				200

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**DEPARTMENT OF ELECTRONICS AND TELECOMMUNICATION  
ENGINEERING**

**Multidisciplinary Minor (offered to other Departments)**

Structure (Effective from 2024-25)

Course Code	Course	Teaching Scheme				Credit	Examination Scheme			Total Marks
		L	T	P	Hr		C	ISE	MSE	
S. Y. Sem IV										
ECM2201T	Digital Design & Computer Organization	3	-	-	3	3	20	30	50	100
T. Y. Sem V										
ECM3201T	Microcontroller	3	-	-	3	3	20	30	50	100
ECM3201L	Microcontroller Laboratory	-	-	2	2	1	ISCE: 30		20	50
T. Y. Sem VI										
ECM3202T	Internet of Things	3	-	-	3	3	20	30	50	100
B.Tech. Sem VII										
ECM4201T	Embedded Systems	3	-	-	3	3	20	30	50	100
ECM4201L	Embedded System Lab	-	-	2	2	1	ISCE: 30		20	50
Total		12	-	4	16	14				500

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**DEPARTMENT OF ELECTRONICS AND TELECOMMUNICATION**  
**ENGINEERING**  
**Minor in Emerging Area**  
**Internet of Things**  
**Structure**

Course Code	Course	Teaching Scheme				Credit	Examination Scheme			Total Marks	
		L	T	P	Hr		C	ISE	MSE		ESE
	S. Y. Sem IV										
ECH2201T	Internet of Things Architectures, Protocols and Systems Programming	3	1	-	4	4	20	30	50	50	150
	T. Y. Sem V										
ECH3201T	Embedded Systems and Internet of Things	3	-	-	3	3	20	30	50	-	100
ECH3201L	Embedded Systems and Internet of Things Lab	-	-	2	2	1	ISCE: 30		20	-	50
	T. Y. Sem VI										
ECH3202T	Machine Learning for Internet of Things	3	-	-	3	3	20	30	50	-	100
ECH3202L	Machine Learning for Internet of Things Lab	-	-	2	2	1	ISCE:30		20	-	50
	B.Tech. Sem VII										
ECH4201T	Internet of Things Security	3	-	-	3	3	20	30	50	-	100
ECH4202L	Mini Project	-	-	6	6	3	ISCE: 60		40	-	100
Total		12	1	10	23	18				50	650

**Eligibility for admission to the UG Bachelor's Degree with Double Minor: Minimum CGPA/CPI of 7.5 or minimum 75% after second semester for UG Bachelor's Degree**

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**JSPM's**  
**RAJARSHI SHAHU COLLEGE OF ENGINEERING**  
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**Department of E&TC Engineering**

**Honors with Research**

**Structure (Effective from 2024-25)**

Course Code	Course	Teaching Scheme				Credit	Examination Scheme			Total Marks
		L	T	P	Hr		C	ISE	MSE	
B. Tech. Sem VII										
ECR4101T	Research Specific core course (Online NPTEL course)	4	-	-	4	4	20	30	50	100
ECR4102T	Design Thinking and Innovation (online/offline)	4	-	-	4	4	20	30	50	100
ECR4103L	Research Project Stage I	-	-	4	4	2	ISCE: 60		40	100
B.Tech. Sem VIII										
ECR4104L	Comprehensive Evaluation	-	-	4	4	2	ISCE: 100			100
ECR4105L	Research Project Stage II	-	-	12	6	6	ISCE: 100		100	200
Total		6	2	20	22	18				600

**Eligibility for admission to the UG Bachelor's Degree with Research: Minimum CGPA/CPI of 7.5 or minimum 75% after sixth semester for UG Bachelor's Degree**

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**Dr. S. P. Bhosle**  
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