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

Department of Electronics and Telecommunication Engineering

Structure and Syllabi

S.Y. B. Tech. (2019 Pattern)

w.e.f. Academic Year 2020-2021

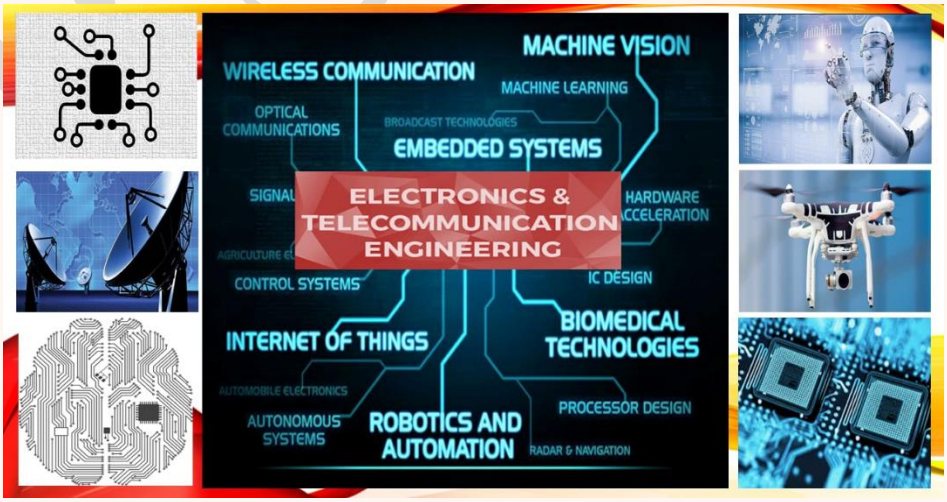
Department of Electronics and Telecommunication Engineering

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.B.D.Jadhav B.O.S. Chairman	Dr. R. B. Joshi Dean Academics	Dr. R. K. Jain Director RSCOE, Pune

Department of Electronics and TelecommunicationEngineering

Program Outcomes (POs)

Engineering Graduates will be able to:

1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

2. Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

3. Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

4. Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

5. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice. JSPM's Rajarshi Shahu College of Engineering Department of IT Engineering

7. Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

9. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

10. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

11.Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

12.Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Department of Electronics and Telecommunication Engineering

Program Specific Outcomes (PSOs)

Upon successful completion of UG course in Information Technology, the students will attain following Program Specific Outcomes:

1. Graduate will demonstrate the ability to apply knowledge of Electronics and Telecommunication to identify, formulate and solve Engineering problems useful to society.
2. Graduate will demonstrate an ability to design, implement and analyze various functional elements of Electronics and Telecommunication domain, interpret data and work with multidisciplinary approach.
3. Graduate will demonstrate the analytical and managerial skills with a virtue of continued learning; carry out the professional and entrepreneurial responsibilities in Electronics and Telecommunication Engineering field considering environmental issues.

Dr.B.D.Jadhav **B.O.S. Chairman**	**Dr. R. B. Joshi** **Dean Academics**	J.S.P.M.'s Rajarshi Shahu College of Engineering Pune University I.D. No. PU/PN/Engg./173/(2001) Tathawade, Pune-33	**Dr. R. K. Jain** **Director RSCOE, Pune**

Highlights of the Syllabus

Curriculum of Electronics and Telecommunication Engineeringcourse is designed in consultation with

Academic Experts

Industry/Corporate Experts

Distinguished Alumni

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

Dr.B.D.Jadhav
B.O.S. Chairman

Dr. R. B. Joshi
Dean Academics

Dr. R. K. Jain
Director RSCOE, Pune

Unique features of the curriculum

1. **Curriculum centered at Outcome Based Education:**
   The new Curriculum is based on student-centered instruction models that focus on measuring student performance through outcomes. The outcomes include subject knowledge, industry required skills and attitudes.

2. **Emphasize on Fundamentals:**
   The nature of the new curriculum is rigorous and well prescribed so that the students can spend more time on preparation and self-study. The students have to learn core subjects, solve practical based assignments and must attempt periodical quizzes. This will benefit them to grasp and keep a strong hold on fundamentals of Engineering in the most effective way.

3. **Experiential Learning:**
   The curriculum emphasizes on hands-on sessions along with theoretical information. The new curriculum considers Problem Based Learning (PBL) as a teaching pedagogy and includes different subjects that encourage the students for hands on learning through virtual labs, mini-projects, etc. Accordingly, the curriculum maintains good balance between theory and laboratory credits.

4. **Promote Creativity and Innovation:**
   Along with experiential learning, the curriculum also motivates the students to inculcate creativity and innovation. Apart from conventional lab, the curriculum provides a freedom for students to perform industry assignments, pilot projects, innovative development, etc.

5. **Inculcating Ethics and Values:**
   To improvise student's behaviour, the curriculum has included systematic courses on ethics and values. The moral principles can help students to make right decisions, lead their professional lives and become ethical citizen.

6. **Blend of Curricular and Noncurricular Activities**
   The curriculum also gives importance of different activities like co-curricular, extra-curricular, sports, culture, etc. This will help to do all round development of students in all possible ways.

7. **Four Tracks in B-Tech:**
   The curriculum provides four tracks in the curriculum as
   I. Industry Internship
   II. Higher Studies and Research
   III. Entrepreneur
   IV. In house Project

8. **Global Competence:**
   The curriculum provides a unique opportunity for students to learn and engage in open and effective interaction with people from diverse and interconnected world. The combination of foreign languages (German, Japanese, English) and international internships in the curriculum help the students to build a capacity to examine global and intercultural issues and to propose perspectives and views.

9. **Industry Induced Internship Program**
   To support ever demanding industry requirements, the curriculum has included an industry internship with an objective to learn technologies pertaining to their discipline and enhance their technical knowledge with a support of the live platform of Industry.

10. **Motivation for Self Learning:**
    The curriculum also offers a freedom to students to take the initiatives in their learning needs and set the goals with the help of online learning platforms like MOOCs, NPTEL, Swayam, etc.

Dr.B.D.Jadhav **B.O.S. Chairman**	**Dr. R. B. Joshi** **Dean Academics**	J.S.P.M.'s Rajarshi Shahu College of Engineering Pune University I.D. No. PU/PN/Engg./173/(2001) Tathawade, Pune-33	**Dr. R. K. Jain** **Director RSCOE, Pune**

S. Y. B. Tech. (Electronics &Telecommunication Engineering)

Semester-III

Course Code	Course	Teaching Scheme			Examination Schemes						Credits
					Theory						
		TH	TUT	LAB	ISE (15)	MSE (25)	ESE (60)	TW	LAB	Total	Total
EC2101	Analog Circuits	3	-	2	15	25	60		50	150	4
EC2102	Digital System Design	3	-	2	15	25	60	-	25	125	4
EC2103	Electrical Circuits & Machines	3	-	2	15	25	60	-	25	125	4
EC2104	Data Structures and Algorithms	3	-	4	15	25	60	-	50	150	5
ES2105	Engineering Mathematics-III	4	1	-	15	25	60	25	-	125	5
EC2106 HS2101 HS2102 HS2103	Engineering Design and Innovation-I OR Language Proficiency II English/ German / Japanese	-	-	2	-	-	-	25	-	25	1
$$	Audit Course-I	Non Credit									
Total		**16**	**01**	**12**	**75**	**125**	**300**	**50**	**150**	**700**	**23**

$$	**Audit Course Title**
HS2106	Indian Constitution
EC2107	Intellectual Property Rights and Patents
CE2113B	Environmental Awareness
EL2106	Innovative Tools and Methods for Entrepreneur

Dr.B.D.Jadhav
B.O.S. Chairman

Dr. R. B. Joshi
Dean Academics

Dr. R. K. Jain
Director RSCOE, Pune

S. Y. B. Tech. (Electronics &Telecommunication Engineering)

Semester-IV

Course Code	Course	Teaching Scheme			Examination Schemes						Credits
					Theory			TW	LAB	Total	Total
		TH	TUT	LAB	ISE (15)	MSE (25)	ESE (60)				
EC2108	Communication Systems	3	-	2	15	25	60	-	25	125	4
EC2109	Control Systems	3	-	2	15	25	60	-	25	125	4
EC2110	Microcontrollers	3	-	2	15	25	60	-	25	125	4
EC2111	Signals and Systems	3	1	-	15	25	60	25	-	125	4
EC2112	Object Oriented Programming	3	-	4	15	25	60	-	50	150	5
EC2106 HS2101 HS2102 HS2103	Engineering Design and Innovation-I OR Language Proficiency -II English/ German / Japanese	-	-	2	-	-	-	25	-	25	1
HS2104	Human Values and Ethics	-	-	2	-	-	-	25		25	1
$$	Audit Course-II	Non Credit									
Total		**16**	**01**	**14**	**75**	**125**	**300**	**75**	**125**	**700**	**23**

$$	Audit Course Title
EC2113	Online certification
CS2113	Critical Thinking
HS2107	Engineering Economics
ME2111C	Innovations in Agriculture Engineering

Dr.B.D.Jadhav
B.O.S. Chairman

Dr. R. B. Joshi
Dean Academics

Dr. R. K. Jain
Director RSCOE, Pune

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

Course Code	Course	Teaching Scheme			Examination Schemes						Credits
					Theory			TW	LAB	Total	Total
		TH	TUT	LAB	ISE (15)	MSE (25)	ESE (60)				
EC3101	Digital Signal Processing	3	-	2	15	25	60	-	50	150	4
EC3102	Electromagnetic Waves & Radiating System	3	-	2	15	25	60	-	25	125	4
EC3103	Mechatronics	3	-	2	15	25	60	-	25	125	4
EC3104	Power Electronics & Drives	3	-	2	15	25	60	-	25	125	4
EC3105	Program Elective- I	3	-	2	15	25	60	-	25	125	4
EC3106	Electronics System Design	-	1	-	-	-	-	25	-	25	1
EC3107	Software Lab	-	-	2	-	-	-	-	25	25	1
$$	Audit Course-III	Non Credit									
Total		**15**	**1**	**12**	**75**	**125**	**300**	**25**	**175**	**700**	**22**

Course Code	Program Elective-I	Course Code	Audit course III
EC3105:A	Information Theory and Coding Techniques	HS3106	Essence of Indian Knowledge Tradition -I
EC3105:B	Biomedical Instrumentation	HS3108	Cultural Studies
EC3105:C	Microwave Engineering	CE 3113	Urbanization and Environment
EC3105:D	Advance Java		

Dr.B.D.Jadhav
B.O.S. Chairman

Dr. R. B. Joshi
Dean Academics

Dr. R. K. Jain
Director RSCOE, Pune

T. Y. B. Tech. (Electronics &Telecommunication Engineering)

Semester-VI

Course Code	Course	Teaching Scheme			Examination Schemes						Credits
					Theory			TW	LAB	Total	Total
		TH	TUT	LAB	ISE (15)	MSE (25)	ESE (60)				
EC 3108	Embedded & Real Time Operating System	4	-	2	15	25	60	-	50	150	5
EC 3109	CMOS Design and Verification	3	-	2	15	25	60	-	50	150	4
EC 3110	Internet of Things	3	-	2	15	25	60	-	50	150	4
HS3109	Business Management	3	-	-	15	25	60	-	-	100	3
EC 3111	Program Elective- II	3	-	-	15	25	60	-	-	100	3
EC 3112	Engineering Design and Innovation-II	-	-	2	-	-	-	-	50	50	1
$$	Audit Course-IV	Non Credit									
Total		**16**	**00**	**08**	**75**	**125**	**300**	**-**	**200**	**700**	**20**

Course code	Program Elective-II	Course code	Audit course IV
EC3111:A	Electronics in Agriculture	HS3107	Essence of Indian Knowledge Tradition -II
EC3111:B	Renewable Energy Systems	HS3105	Introduction to Human Factors and Ergonomics
EC3111:C	Wireless Sensor Networks	HS3110	Mind Education
EC3111:D	Software Engineering and Project Management		

Dr.B.D.Jadhav
B.O.S. Chairman

Dr. R. B. Joshi
Dean Academics

Dr. R. K. Jain
Director RSCOE, Pune

B. Tech. (Electronics &Telecommunication Engineering)
Semester-VII

Course Code	Course	Teaching Scheme			Examination Schemes						Credits
					Theory			TW	LAB	Total	Total
		TH	TUT	LAB	ISE (15)	MSE (25)	ESE (60)				
EC 4101	Computer Network	3	-	2	15	25	60	25	25	150	4
EC 4102	Broadband Communication System	3	-	2	15	25	60	25	25	150	4
EC 4103	Program level Elective-III	3	-	2	15	25	60	25	25	150	4
EC 4104	Project Phase-I	-	01	12	-	-	-	100	50	150	6
Total		**09**	**01**	**18**	**45**	**75**	**180**	**175**	**125**	**600**	**18**

Course Code	Program Elective-III
EC 4103A	Mobile Communication
EC 4103B	Automotive Electronics
EC 4103C	Digital Image Processing
EC 4103D	Web Technology

Dr.B.D.Jadhav
B.O.S. Chairman

Dr. R. B. Joshi
Dean Academics

Dr. R. K. Jain
Director RSCOE, Pune

B. Tech. (Electronics &Telecommunication Engineering)
Semester-VIII (Regular Courses)

Course Code	Course	Teaching Scheme			Examination Schemes						Credits
					Theory			TW	LAB	Total	Total
		TH	TUT	LAB	ISE (15)	MSE (25)	ESE (60)				
EC4105	PLC and SCADA	3	-	02	15	25	60	-	50	150	4
EC4106	Open Elective-I	3	-	-	15	25	60	-	-	100	3
EC4107	Program Elective-IV	3	-	-	15	25	60	-	-	100	3
EC 4108	Project Phase- II	-	-	16	-	-	-	150	100	250	8
Total		9	-	18	45	75	180	150	150	600	18

Course Code	Program Elective-IV	Course Code	Open Elective-I
EC 4107A	Audio Video Engineering	EC4106A	Nano Technology
EC 4107B	Speech Processing	EC4106B	Industrial Internet of Things
EC 4107C	Electronics Product Design	EC4106C	Computer Vision
EC 4107D	Cloud Computing		Any other open elective course from circuit branch

Dr.B.D.Jadhav
B.O.S. Chairman

Dr. R. B. Joshi
Dean Academics

Dr. R. K. Jain
Director RSCOE, Pune

B. Tech. (Electronics &Telecommunication Engineering)
Semester-VIII (Higher Studies & Research)

Course Code	Course	Teaching Scheme			Examination Schemes						Credits
					Theory						
		TH	TUT	LAB	ISE (15)	MSE (25)	ESE (60)	TW	LAB	Total	Total
EC 4109	Research Methodology	3	-	-	15	25	60	-	-	100	3
EC 4110	Finance and Management Information Systems	3	1	-	15	25	60	50	-	150	4
EC4107	Program Elective-IV	3	-	-	15	25	60	-	-	100	3
EC 4108	Project Phase- II	-	-	16	-	-	-	150	100	250	8
Total		**9**	**-1**	**16**	**45**	**75**	**180**	**200**	**100**	**600**	**18**

Course Code	Program Elective-IV
EC 4107A	Audio Video Engineering
EC 4107B	Speech Processing
EC 4107C	Electronics Product Design
EC 4107D	Cloud Computing

Dr.B.D.Jadhav	Dr. R. B. Joshi	Dr. R. K. Jain
B.O.S. Chairman	Dean Academics	Director RSCOE, Pune

B. Tech. (Electronics &Telecommunication Engineering)
Semester-VIII (Entrepreneur)

Course Code	Course	Teaching Scheme			Examination Schemes						Credits
					Theory			TW	LAB	Total	Total
		TH	TUT	LAB	ISE (15)	MSE (25)	ESE (60)				
EC 4111	Foundations of Entrepreneurship and Start-up	3	-	-	15	25	60	-	-	100	3
EC 4112	Entrepreneurial Finance	3	1	-	15	25	60	50	-	150	4
EC4107	Program Elective-IV	3	-	-	15	25	60	-	-	100	3
EC 4108	Project Phase- II	-	-	16	-	-	-	150	100	250	8
Total		**9**	**1**	**16**	**45**	**75**	**180**	**200**	**100**	**600**	**18**

Course Code	Program Elective-IV
EC 4107A	Audio Video Engineering
EC 4107B	Speech Processing
EC 4107C	Electronics Product Design
EC 4107D	Cloud Computing

Dr.B.D.Jadhav
B.O.S. Chairman

Dr. R. B. Joshi
Dean Academics

Dr. R. K. Jain
Director RSCOE, Pune

B. Tech. (Electronics &Telecommunication Engineering)
Semester-VIII (Industry Internship and Project)

Course Code	Course	Teaching Scheme			Examination Schemes						Credits
		TH	TUT	LAB	Theory			TW	LAB	Total	Total
					ISE (15)	MSE (25)	ESE (60)				
EC 4113	Industry Internship		-	*20	-	-	-	200	150	350	10
EC 4108	Project Phase- II	-	-	16	-	-	-	150	100	250	8
Total		**-**	**-**	**36**	**-**	**-**	**-**	**350**	**250**	**600**	**18**

(*)Students should spend minimum 20 Hrs/week for industry internship

Dr.B.D.Jadhav B.O.S. Chairman	Dr. R. B. Joshi Dean Academics	Dr. R. K. Jain Director RSCOE, Pune