Savitribai Phule Pune University, Pune
S.E. (Electronics / E&TC Engineering) 2019 Course
(With effect from Academic Year 2020-21)

Semester-III

Course Code	Course Name	Teaching Scheme (Hours/Week)			Examination Scheme and Marks						Credit			
		Theory	Practical	Tutorial	In-Sem	End-Sem	TW	PR	OR	Total	TH	PR	TUT	Total
207005	Engineering Mathematics III	04	-	01	30	70	25	-	-	125	04	-	01	05
204181	Electronic Circuits	03	-	-	30	70	-	-	-	100	03	-	-	03
204182	Digital Circuits	03	-	-	30	70	-	-	-	100	03	-	-	03
204183	Electrical Circuits	03	-	-	30	70	-	-	-	100	03	-	-	03
204184	Data structures	03	-	-	30	70	-	-	-	100	03	-	-	03
204185	Electronic Circuit Lab	-	02	-	-	-	-	50	-	50	-	01	-	01
204186	Digital circuits Lab		02					50		50		01		01
204187	Electrical Circuit Lab	-	02	-	-	-	25	-	-	25	-	01	-	01
204188	Data Structures Lab	-	02	-	-	-	-	-	25	25	-	01	-	01
204189	Electronic Skill Development	-	02	-	-	-	25	-	-	25	-	01	-	01
204190	Mandatory Audit Course 3 &	-	-	-				-	-	-	-	-	-	-
Total		16	10	01	150	350	75	100	25	700	16	05	01	22

Savitribai Phule Pune University, Pune
S.E. (Electronics / E&TC Engineering) 2019 Course
(With effect from Academic Year 2020-21)

Semester-IV

Course Code	Course Name	Teaching Scheme (Hours/Week)			Examination Scheme and Marks							Credit			
		Theory	Practical	Tutorial	In-Sem	End-Sem	TW	PR	OR	Total	TH	PR	TUT	Total
204191	Signals & Systems	03	-	01	30	70	25	-	-	125	03	-	01	04
204192	Control Systems	03	-		30	70		-	-	100	03	-	-	03
204193	Principles of Communication Systems	03	-	-	30	70	-	-	-	100	03	-	-	03
204194	Object Oriented Programming	03	-	-	30	70	-	-	-	100	03	-	-	03
204195	Signals & Control System Lab		02				50			50		01		01
204196	Principle of Communication Systems Lab	-	02	-	-	-	-	50	-	50	-	01	-	01
204197	Object Oriented Programming Lab	-	02	-	-	-	-	-	50	50	-	01	-	01
204198	Data Analytics Lab		02				-		25	25		01		01
204199	Employability Skill Development	02	02	-	-	-	50	-	-	50	02	01	-	03
204200	Project Based Learning [η]	-	04				50		-	50		02		02
204201	Mandatory Audit Course 4[&]	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	**14**	**14**	**01**	**120**	**280**	**175**	**50**	**75**	**700**	**14**	**07**	**01**	**22**

Abbreviations:
In-Sem: In semester   End-sem: End semester   TH : Theory   TW : Term Work
PR : Practical   OR : Oral   TUT : Tutorial

Note: Interested students of S.E. (Electronics/E&TC) can opt any one of the audit course from the list of audit courses prescribed by BoS (Electronics & Telecommunications Engineering)

Savitribai Phule Pune University Second Year of **Electronics / E & Tc Engineering** (2019 Course) **204190: Mandatory Audit Course - 3**		
Teaching Scheme:	**Credit**	**Examination Scheme:**
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List of Courses to be opted (Any one) under Mandatory Audit Course 3

- Technical English For Engineers
- Ecology and Environment
- Ecology and Society
- German I
- Science, Technology and Society
- Introduction to Japanese Language and Culture

GUIDELINES FOR CONDUCTION OF AUDIT COURSE

In addition to credits courses, it is mandatory that there should be audit course (non-credit course) from second year of Engineering. The student will be awarded grade as AP on successful completion of audit course. The student may opt for two of the audit courses (One in each semester). Such audit courses can help the student to get awareness of different issues which make impact on human lives and enhance their skill sets to improve their employability. List of audit courses offered in the semester is provided in the curriculum. Student can choose one of the audit course from list of courses mentioned. Evaluation of audit course will be done at institute level.

The student registered for audit course shall be awarded the grade AP and shall be included such grade in the Semester grade report for that course, provided student has the minimum attendance as prescribed by the Savitribai Phule Pune University and satisfactory in-semester performance and secured a passing grade in that audit course. No grade points are associated with this 'AP' grade and performance in these courses is not accounted in the calculation of the performance indices SGPA and CGPA. Evaluation of audit course will be done at institute level itself.

Selecting an Audit Course:

Using NPTEL Platform:

NPTEL is an initiative by MHRD to enhance learning effectiveness in the field of technical education by developing curriculum based video courses and web based e-courses. The details of NPTEL courses are available on its official website www.nptel.ac.in

- Student can select any one of the courses mentioned above and has to register for the corresponding online course available on the NPTEL platform as an Audit course.
- Once the course is completed the student can appear for the examination as per the guidelines on the NPTEL portal.
- After clearing the examination successfully; student will be awarded with certificate.

Assessment of an Audit Course:

- The assessment of the course will be done at the institute level. The institute has to maintain the record of the various audit courses opted by the students. The audit course opted by the students could be interdisciplinary.
- During the course students will be submitting the online assignments. A copy of same students can submit as a part of term work for the corresponding Audit course.
- On the satisfactory submission of assignments, the institute can mark as "Present" and the student will be awarded the grade AP on the marksheet.

<table>
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Savitribai Phule Pune University

Second Year of Electronics / E & Tc Engineering (2019 Course)

204199: Employbility Skills Development

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</table>

Teaching Scheme:	Credit	Examination Scheme:
Theory: 02 hrs. / week Practical: 02 hrs. / week	02 + 01 = 03	Term work: 50 Marks

Prerequisite Courses, if any: --

Companion Course, if any: --

Course Objectives:

- Develop good communication skills – both oral as well as written.
- Encourage creative and critical thinking among students.
- Nurture collaborative behavior to work efficiently in groups.

Course Outcomes: On completion of the course, learner will be able to -

CO1: Define personal and career goals using introspective skills and SWOC assessment. Outline and evaluate short-term and long-term goals.

CO2: Develop effective communication skills (listening, reading, writing, and speaking), self- management attributes, problem solving abilities and team working & building capabilities in order to fetch employment opportunities and further succeed in the workplace.

CO3: Be a part of a multi-cultural professional environment and work effectively by enhancing inter-personal relationships, conflict management and leadership skills.

CO4: Comprehend the importance of professional ethics, etiquettes & morals and demonstrate sensitivity towards it throughout certified career.

CO5: Develop practically deployable skill set involving critical thinking, effective presentations and leadership qualities to hone the opportunities of employability and excel in the professional environment.

<table>
<tr><td colspan="3" align="center">

Course Contents

</td></tr>
<tr><td align="center">**Unit I**</td><td align="center">**Understanding Self and Soft Skills**</td><td align="center">**(04 Hrs)**</td></tr>
</table>

Introduction to introspective methods, SWOC Analysis, Understanding the importance of soft skills, soft skill vs hard skill, interdisciplinary relevance, emotional quotient and emotional intelligence, personal and career goal setting, aligning aspirations with individual's skill sets, understanding self-esteem and critically evaluating oneself.

Mapping of Course Outcomes for Unit I	CO1: Define personal and career goals using introspective skills and SWOC assessment. Outline and Evaluate short-term and long-term goals.	
Unit II	Communication Skills	(04 Hrs)

Essentiality of good communication skills, Importance of feedback, Different types of communication, Barriers in communication and how to overcome these barriers, Significance of non-verbal messages as augmentation to verbal communication, Group Discussion, Listening Vs Hearing, Reading to comprehend, Learning to skim and scan to extract relevant information, Effective digital communication.

Mapping of Course Outcomes for Unit II	CO2: Develop effective communication skills (listening, reading, writing, and speaking), self - management attributes, problem solving abilities and team working & building capabilities in order to fetch employment opportunities and further succeed in the workplace.	
Unit III	Language & Writing Skills	(04 Hrs)

Fundamentals of English Grammar, improve Lexical resource, essential steps to improve spoken and written English, Business vocabulary, Writing - Email, Resume, Formal letter, Official Communication, Essay, Presentation – Planning, Organizing, Preparing and Delivering Professional presentation, Resume writing: Resume content, identification of carrier objective, characteristics of good resume, different formats of resume-chronological, Functional , Hybrid Effective letter and cover letter writing, Application writing, Report writing.

Mapping of Course Outcomes for Unit III	CO2: Develop effective communication skills (listening, reading, writing, and speaking), self - management attributes, problem solving abilities and team working & building capabilities in order to fetch employment opportunities and further succeed in the workplace.	
Unit IV	Leadership Skills and Group Dynamics	(04 Hrs)

Understanding Corporate Culture and Leadership skills, difference between a leader and a manager, Importance of resilience in a professional surrounding, Developing empathy and emotional intelligence, being assertive and confident, 4-Ds of decision making, Creative and solution-centric thinking, Resolving conflicts, Working cohesively as a team to achieve success, 5 Qualities of an Effective team - Positivity, respect for others, trust, goal-focused, supportiveness.

Mapping of Course Outcomes for Unit IV	CO3: Be a part of a multi-cultural professional environment and work effectively by enhancing inter- personal relationships, conflict management and leadership skills.	

Unit V	**Professionalism & Ethics**	**(04 Hrs)**

Understanding ethics and morals, Importance of Professional Ethics, hindrances due to absence of Work ethics, Professional etiquette – Introductions, with colleagues, attire, events, dinning, telephone, travelling, netiquette, social media, writing.

Stress as integral part of life, Identifying signs and sources of stress, Steps to cope with stress – open communication, positive thinking, Belief in oneself, ability to handle failure, Retrospective thinking for future learning, Organizing skills to enhance time management, Focusing on goals, smart work vs hard work, Prioritizing activities, Perils of procrastination, Daily evaluation of "to-do" list.

Mapping of Course Outcomes for Unit V	**CO4: Comprehend the importance of professional ethics, etiquettes & morals and demonstrate sensitivity towards it throughout certified career.** **CO5: Develop practically deployable skill set involving critical thinking, effective presentations and leadership qualities to hone the opportunities of employability and excel in the professional environment.**

Unit VI	**Quantitative Ability & Logical Reasoning**	**(04 Hrs)**

Numbers, HCF and LCM, Time and distance, Time and work, Clock, Simple interest and compound interest, Boats and steams, Number series, Ratio and proportion, probability, profit and loss, odd man out series, permutations, height and distance, square and cube rootmatching, selection, verbal reasoning, logical games, logical deductions, logical problems, cause and effect.

Mapping of Course Outcomes for Unit VI	**CO2: Develop effective communication skills (listening, reading, writing, and speaking), self - management attributes, problem solving abilities and team working & building capabilities in order to fetch employment opportunities and further succeed in the workplace.**

Learning Resources

Text Books:

1. R. S. Agarwal "Quantitative Aptitude for Competitive Examinations" S. Chand Publications.
2. R.Gajendra Singh Chauhan and Sangeeta Sharma, "Soft Skills-An integrated approach to maximize personality", Wiley Publication, ISBN: 987-81-265-5639-7

Reference Books:

1. Indrajit Bhattacharya, "An Approach to Communication Skills", Dhanpat Rai.

2. Simon Sweeney, "English for Business Communication", Cambridge University Press.

3. Sanjay Kumar and Pushpa Lata, "Communication Skills", Oxford University Press.

4. Atkinson and Hilgard's, "Introduction to Psychology", 14th Edition.

5. Kenneth G. Mcgee, "Heads Up: How to Anticipate Business Surprises & Seize Opportunities First", Harvard Business School Press, Boston, Massachusetts.

6. Krishnaswami, N. and Sriraman, "Creative English for Communication", Macmillan.

THEORY SESSIONS

Sr. No.	Topic to be covered	No. of Hours
1.	Soft Skills Vs Hard Skills	1
2.	Planning Career Goals – Short Term & Long Term	1
3.	Understanding SWOC Analysis	1
4.	Resume Writing	1
5.	Presentation Skills	1
6.	Interview Skills	1
7.	Writing Skills	1
8.	Corporate Business Etiquette	2
9.	Time & Stress Management	1
10.	Attitude	1
11.	Leadership Skills	1
12.	Creative & Lateral Thinking	1
13.	Problem Solving	1
14.	Team Dynamics	1
15.	Mental Arithmetic	2

16.	Number Sequence	2
17.	Speed Calculation	2
18.	Fundamentals of English Grammar	2
19.	Verbal Reasoning / Verbal Ability	1
	TOTAL HOURS	**24**

Guidelines for Conduction of Employability Skills Development Lab

- The teacher may design specific assignments that can highlight the learning outcomes of each unit.

- Each activity conducted in the lab should begin with a brief introduction of the topic, purpose of the activity from a professional point of view and end with the learning outcomes as feedback from students.

- Most of the lab sessions can be designed to be inclusive; allowing students to learn skills experientially; which will benefit them in the professional environment.

- Every student must be given sufficient opportunity to participate in each activity and constructive feedback from the instructor / facilitator at the end of the activity should learn towards encouraging students to work on improving their skills.

- Activities should be designed to respect cultural, emotional and social standing of students. Some of the activities can be designed to cater to enhancement of multiple skills – For eg – Team Building Activity can highlight 'open communication', 'group discussion', 'respecting perspectives', 'leadership skills', 'focus on goals' which can help students improve their inherent interpersonal skills.

Guidelines for Student's Lab Journal and TW Assessment

- Each student should have a Lab Workbook (sample can be provided if required) which outlines each lab activity conducted.
- The student must respond by writing out their learning outcomes and elaborating the activities performed in the lab.
- Continuous assessment of laboratory work is to be done based on overall performance and lab assignments and performance of student.
- Each lab assignment assessment will be assigned grade/marks based on parameters with

appropriate weightage.

- Suggested parameters for overall assessment as well as each lab assignment assessment include- timely completion, performance, punctuality, neatness, enthusiasm, participation and contribution in various activities-SWOC analysis, presentations, team activity, event management, group discussion, group exercises and interpersonal skills and similar other activities/assignments

List of Laboratory Sessions

1.	**Introduction of Self / SWOC Analysis:**
	a. Explain how to introduce oneself in a professional manner and presenting oneself positively.
	Name | Academic Profile | Achievements | Career Aspirations | Personal Information (hobbies, family, social)
	b. Focus on introspection and become aware of one's Strengths, Weakness, Opportunities and Challenges.
	Students can write down their SWOC in a matrix and the teacher can discuss the gist personally.
2.	**Career Goals and Planning:**
	• Make students understand the difference between a job and a career. Elaborate steps on how to plan a career.
	➢ Students can choose a career and they should write down what skills, knowledge, steps are need to be successful in that particular career and how they can get the right opportunity.
	• Explain to students how to plan short term and long term goals.
	➢ Think and write down their short term goals and long terms goals. Teacher can read and discuss (provide basic counselling) about the choices written.
3.	**Group Discussion:**
	• The class can be divided into groups of 8 - 10 students in each group for a discussion lasting 10 minutes:
	➢ Topics can be topical and non-controversial. After each group finishes its discussion, the teacher can give critical feedback including areas of improvement. The teacher should act as a moderator / observer only.
4.	**Team Building Activities:**
	• The class can be divided into groups of 4-5 students in each group and an activity can

	be given to each group: ➢ The activities chosen for each team should be competitive and should involve every student in the team. The activities can be conducted indoors or outdoors depending on infrastructure.

5.	**Public Speaking - (Choose any 2):**
	• **Prepared Speech:**
	  ➢ Topics are shared with students and they will be given 10 minutes to prepare and 3 minutes to deliver followed by Q&A from audience. Teacher can evaluate each student based on content, communication skills, logical and cohesive presentation of topic, perspective of student, ability to handle questions and respond positively.
	
	• **Extempore Speech:**
	  ➢ Various topics are laid out in front of the audience and each student is to pick one topic and speak about the topic for 5 minutes followed by Q&A from audience. Teacher can evaluate each student based on ability to think on his/her feet, content, communication skills, logical and cohesive presentation of topic, perspective of student, ability to handle questions and respond positively.
	• **Reviewing an Editorial article:**
	  ➢ Either using e-paper / printed copy, students have to select a recent editorial (that is non-controversial), read it and explain to the audience what the editor's perspective is and what the student's perspective is.
	
	• **Book Review:**
	  ➢ Each student will orally present to the audience his/her review of a book that he/she has recently read.

6.	**Mock Interviews:** • Every student has to undergo this session and the teacher should seek the assistance of another faculty member / TPO Officer to act as interview panel. Students will be informed beforehand about the job profile that they are appearing the interview for and they have to come prepared with a printed copy of their resume, formally dressed. Questions will include technical as well as HR. Faculty can choose to give problems that students have to solve using their technical skills. Students will be graded on the basis of their technical knowledge, ability to answer questions well, presentation of self, body language and verbal skills.

7.	**Listening and Reading Skills:**
	• Listening Worksheets to be distributed among students
	➢ Each student can be given specifically designed worksheets that contain blanks / matching / MCQs that are designed to an audio (chosen by the faculty). Students must listen to the audio (only once) and complete the worksheet as the audio plays. This will help reiterate active listening as well as deriving information (listening to information between the lines).
	➢ Reading Comprehension Worksheets to be distributed among students.
	• Teacher can choose reading passages from non-technical domains, design worksheets with questions for students to answer. This will enhance students' reading skills by learning how to skim and scan for information.

8.	**Writing Skills (Choose any 2):**
	
	 • **Letter / Email Writing:**
	     ➢ After explaining to the students the highlights of effective writing, students can be asked to write (using digital platforms / paper-based) letter to an organization with the following subject matter:
	         i. Requesting opportunity to present his/her product.
	         ii. Complaining about a faulty product / service.
	         iii. Apologizing on behalf of one's team for the error that occurred.
	         iv. Providing explanation for a false accusation by a client .
	
	 • **Report Writing**
	     ➢ After describing various formats to write report and explaining how to write a report, each student should be asked to write a report (digital / paper-based) on any of the following topics:
	         ▪ Industrial visit.
	         ▪ Project participated in.
	         ▪ Business / Research Proposal.
	 • **Resume Writing**
	     ➢ The teacher should conduct a brief session outlining the importance of a CV / Resume and students can write / type out their own resumes:
	         ▪ Share various professional formats.
	         ▪ Focus on highlighting individual strengths.
	         ▪ Develop personalized professional goals / statement at the beginning of the resume.

9.	**Lateral and Creative Thinking:**
	• Every student needs to step out of the linear thinking and develop lateral and creative thinking. Teacher can develop creative activities in the classroom / lab that will help students enhance their creative thinking. Some of the suggested activities:
	➢ Each group (3-4 students) can be given random unrelated items and they will be given 20 mins to come up with creative ideas on how the objects can be used for activities / purposes other than its intended one.
	➢ Each student is given a random line and he/she has to spin a fictional story and tell it to the class (3 minutes). Each story should have a beginning, middle and end.
	➢ Each group (3-4 students) can be given a fictional / hypothetical dangerous situation and they have to find a solution to that problem. They can present it to the other teams who will then get the opportunity to pick flaws in the ideas.
10.	**Presentation Skills:** Every student will have to choose a topic of his/her choice and make a 5-minute presentation using audio-video aids / PPT. The topic can either be technical or non-technical. Focus and evaluation of each presentation should be the depth of knowledge about the topic, originality of perspective on the topic, well-researched or not, verbal and non-verbal skills and ability to answer questions effectively. Plagiarism should be discredit and students should be warned about it.
11.	**Expert Lecture:** Highlighting the need to manage stress and time, experts from the fields of health and fitness, counselling, training, medical or corporate HR can be invited to deliver a participatory session that focus on helping students to cope with parental, social, peer and career pressures.

Virtual LAB Link:

1. Virtual English Communication Lab:
https://ve-iitg.vlabs.ac.in/

Note: Additional (min.3) tutorials are to be performed using Virtual Lab.

Recommended parameters for assessment, evaluation and weightage:

1. Idea Inception (kind of survey). (10%)

2. Outcome (Participation/ publication, copyright, patent, product in market). (50%)

3. Documentation (Gathering requirements, design & modeling, implementation/execution, use of technology and final report, other documents). (15%)

4. Attended reviews, poster presentation and model exhibition. (10%)

5. Demonstration (Poster Presentation, Model Exhibition etc). (10%).

6. Awareness /Consideration of - Environment/ Social /Ethics/ Safety measures/Legal aspects. (5%)

Learning Resources

Reference Books / Research Articles:

1. John Larmer, John R. Mergendoller, and Suzie Boss, "Setting the Standard for Project Based Learning".

2. John Larmer and Suzie Boss, "Project Based Teaching: How to Create Rigorous and Engaging Learning Experiences".

3. Erin M. Murphy and Ross Cooper, "Hacking Project Based Learning: 10 Easy Steps to PBL and Inquiry". M. Krašna, "Project based learning (PBL) in the teachers' education,"39th International Convention on Information and Communication Technology, Electronics and Microelectronics (MIPRO), Opatija, 2016, pp. 852-856, doi: 10.1109/MIPRO.2016.7522258.

4. J. Macias- Guarasa, J.M. Montero, R. San-Segundo, A. Araujo and O. Nieto-Taladriz, "A project based learning approach to design electronic systems curricula", IEEE transactions on Education, vol.49, no. 3, pp. 389-397, Aug. 2006, doi: 10.1109/TE.2006.879784

Web resources:

- Project-Based Learning, Edutopia, March 14, 2016.
- What is PBL? Buck Institute for Education.
- www.howstuffworks.com
- www.wikipedia.org

Savitribai Phule Pune University
Second Year of Electronics/E & Tc Engineering (2019 Course)
204201: Mandatory Audit Course - 4

Teaching Scheme:	Credit	Examination Scheme:
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List of Courses to be opted (Any one) under Mandatory Audit Course 4

- Enhancing Soft Skills and Personality
- Language & Mind
- Emotional Intelligence
- German II
- Human Behaviour
- Speaking Effectively

GUIDELINES FOR CONDUCTION OF AUDIT COURSE

In addition to credits courses, it is mandatory that there should be audit course (non-credit course) from second year of Engineering. The student will be awarded grade as AP on successful completion of audit course. The student may opt for two of the audit courses (One in each semester). Such audit courses can help the student to get awareness of different issues which make impact on human lives and enhance their skill sets to improve their employability. List of audit courses offered in the semester is provided in the curriculum. Student can choose one of the audit course from list of courses mentioned. Evaluation of audit course will be done at institute level.

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Selecting an Audit Course:

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Assessment of an Audit Course:

- The assessment of the course will be done at the institute level. The institute has to maintain the record of the various audit courses opted by the students. The audit course opted by the students could be interdisciplinary.

- During the course students will be submitting the online assignments. A copy of same students can submit as a part of term work for the corresponding Audit course.

- On the satisfactory submission of assignments, the institute can mark as "Present" and the student will be awarded the grade AP on the marksheet.

Course Code	Course Name	Teaching Scheme (Hours/Week)			Examination Scheme and Marks						Credit			
		Theory	Practical	Tutorial	In-Sem	End-Sem	TW	PR	OR	Total	TH	PR	TUT	Total
304181	Digital Communication	03	-	-	30	70	-	-	-	100	03	-	-	03
304182	Electromagnetic Field Theory	03	-	01	30	70	25	-	-	125	03	-	01	04
304183	Database Management	03	-	-	30	70	-	-	-	100	03	-	-	03
304184	Microcontrollers	03	-	-	30	70	-	-	-	100	03	-	-	03
304185	Elective - I	03	-	-	30	70	-	-	-	100	03	-	-	03
304186	Digital Communication Lab	-	02	-	-	-	-	50	-	50	-	01	-	01
304187	Database Management Lab	-	02	-	-	-	-	-	25	25	-	01	-	01
304188	Microcontroller Lab	-	02	-	-	-	-	50	-	50	-	01	-	01
304189	Elective I Lab	-	02	-	-	-	-	25	-	25	-	01	-	01
304190	Skill Development	-	02	-	-	-	25	-	-	25	-	01	-	01
304191A	Mandatory Audit Course 5 &	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	15	10	01	150	350	50	125	25	700	**-**		-	-
	Total Credit										15	05	01	21

Elective -I

1) Digital Signal Processing

2) Electronic Measurements

3) Fundamentals of JAVA Programming

4) Computer Networks

Savitribai Phule Pune University, Pune
T.E. (Electronics& Telecommunication Engineering) 2019 Course
(With effect from Academic Year 2021-22)

Semester-VI

Course Code	Course Name	Teaching Scheme (Hours/Week)			Examination Scheme and Marks						Credit			
		Theory	Practical	Tutorial	In-Sem	End-Sem	TW	PR	OR	Total	TH	PR	TUT	Total
304192	Cellular Networks	03	-	-	30	70	-	-	-	100	03	-	-	03
304193	Project Management	03	-	-	30	70	-	-	-	100	03	-	-	03
304194	Power Devices & Circuits	03	-	-	30	70	-	-	-	100	03	-	-	03
304195	Elective-II	03	-	-	30	70	-	-	-	100	03	-	-	03
304196	Cellular Networks Lab	-	02	-	-	-	-	-	50	50	-	01	-	01
304197	Power Devices & Circuits Lab	-	02	-	-	-	-	50	-	50		01		01
304198	Elective-II Lab	-	02	-	-	-	-	25	-	25	-	01	-	01
304199	Internship**	-	-	-	-	-	100	-	-	100	-	-	04	04
304200	Mini Project	-	04	-	-	-	25	-	50	75	-	02	-	02
304191 B	Mandatory Audit Course 6 &	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	12	10	00	120	280	125	75	100	700				
	Total Credit										12	05	04	21

Abbreviations:

In-Sem: In semester   End-Sem: End semester   TH: Theory   TW : Term Work

PR: Practical   OR: Oral   TUT: Tutorial

Note: Students of T.E. (Electronics & Telecommunications) have to opt any one of the audit course from the list of audit courses prescribed by BoS (Electronics & Telecommunications Engineering)

Elective -II

1) Digital Image Processing

2) Sensors in Automation

3) Advanced JAVA Programming

4) Embedded Processors

5) Network Security

Savitribai Phule Pune University Third Year of **E & Tc Engineering** (2019 Course) **304191 (A): Mandatory Audit Course - 5**		
Teaching Scheme:	**Credit**	**Examination Scheme:**
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List of Courses to be opted (Any one) under Mandatory Audit Course 5

- Developing Soft skills and Personality

- Entrepreneurship and IP Strategy

- Urbanization and Environment

- Environmental & Resource Economics

- Environment and Development

- Globalization and Culture

GUIDELINES FOR CONDUCTION OF AUDIT COURSE

In addition to credits courses, it is mandatory that there should be audit course (non-credit course) from second year of Engineering. The student will be awarded grade as AP on successful completion of audit course. The student may opt for two of the audit courses (One in each semester). Such audit courses can help the student to get awareness of different issues which make impact on human lives and enhance their skill sets to improve their employability. List of audit courses offered in the semester is provided in the curriculum. Student can choose one of the audit course from list of courses mentioned. Evaluation of audit course will be done at institute level.

The student registered for audit course shall be awarded the grade AP and shall be included such grade in the Semester grade report for that course, provided student has the minimum attendance as prescribed by the Savitribai Phule Pune University and satisfactory in-semester performance and secured a passing grade in that audit course. No grade points are associated with this 'AP' grade and performance in these courses is not accounted in the calculation of the performance indices SGPA and CGPA. Evaluation of audit course will be done at institute level itself.

Selecting an Audit Course:

Using NPTEL Platform:

NPTEL is an initiative by MHRD to enhance learning effectiveness in the field of technical education by developing curriculum based video courses and web based e-courses. The details of NPTEL courses are available on its official website www.nptel.ac.in

- Student can select any one of the courses mentioned above and has to register for the corresponding online course available on the NPTEL platform as an Audit course.
- Once the course is completed the student can appear for the examination as per the guidelines on the NPTEL portal.
- After clearing the examination successfully; student will be awarded with certificate.

Assessment of an Audit Course:

- The assessment of the course will be done at the institute level. The institute has to maintain the record of the various audit courses opted by the students. The audit course opted by the students could be interdisciplinary.
- During the course students will be submitting the online assignments. A copy of same students can submit as a part of term work for the corresponding Audit course.
- On the satisfactory submission of assignments, the institute can mark as "Present" and the student will be awarded the grade AP on the marksheet.

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Teaching Scheme:	Credit	Examination Scheme:
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List of Courses to be opted (Any one) under Mandatory Audit Course 6

- Patent Law for Engineers and Scientists

- English language for competitive exams

- Energy Resources, Economics and Environment

- Principles of Human Resource Management

- Six Sigma

- Non-Conventional Energy Resources

GUIDELINES FOR CONDUCTION OF AUDIT COURSE

In addition to credits courses, it is mandatory that there should be audit course (non-credit course) from second year of Engineering. The student will be awarded grade as AP on successful completion of audit course. The student may opt for two of the audit courses (One in each semester). Such audit courses can help the student to get awareness of different issues which make impact on human lives and enhance their skill sets to improve their employability. List of audit courses offered in the semester is provided in the curriculum. Student can choose one of the audit course from list of courses mentioned. Evaluation of audit course will be done at institute level.

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- The assessment of the course will be done at the institute level. The institute has to maintain the record of the various audit courses opted by the students. The audit course opted by the students could be interdisciplinary.
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