Savitribai Phule Pune University, Pune SE (Robotics & Automation) 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**
207007	Engineering Mathematics-III	3		1	30	70	25			125	3		1	4
211501	Industrial Electronics and Electrical Technology	3			30	70				100	3			3
211082	Strength of Materials	3			30	70				100	3			3
211502	Manufacturing Technology	3			30	70				100	3			3
211503	Materials Science and Engineering Metallurgy	3			30	70				100	3			3
211504	Industrial Electronics and Electrical Technology Lab		2				25			25		1		1
211086	Strength of Materials Lab		2						25	25		1		1
211505	Manufacturing Technology Lab		2					50		50		1		1
211506	Materials Science and Engineering Metallurgy Lab		2						25	25		1		1
211507	C Programming Lab		4				50			50		2		2
211090	Mandatory Audit Course 3	-	-	-	-	-	-	-	-	-	-	-	-	-
Total		**15**	**12**	**1**	**150**	**350**	**100**	**50**	**50**	**700**	**15**	**6**	**1**	**22**

Savitribai Phule Pune University, Pune
SE (Robotics & Automation)
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
211508	Industrial Engineering and Management	3			30	70				100	3			3
211509	Control System Engineering	3			30	70				100	3			3
211510	Design of Machine Elements	3			30	70				100	3			3
211511	Metrology and Quality Assurance	3			30	70				100	3			3
211512	Computer Graphics for Robotics	3			30	70				100	3			3
211513	Control System Engineering Lab		2				25	25		50		1		1
211514	Design of Machine Elements Lab		2						25	25		1		1
211515	Metrology and Quality Assurance Lab		2					25		25		1		1
211516	Computer Graphics for Robotics Lab		2				25			25		1		1
211517	Robot Operating System		2						25	25		1		1
211099	Project Based Learning		4				50			50		2		2
211100	Mandatory Audit Course 4	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total	**15**	**14**	**0**	**150**	**350**	**100**	**50**	**50**	**700**	**15**	**7**	**0**	**22**

Abbreviations:
TH : Theory TW : Term Work PR : Practical
OR : Oral TUT : Tutorial

Mandatory Audit Course 3: Road Safety

211090

Road transport remains the least safe mode of transport, with road accidents representing the main cause of death of people. The boom in the vehicle population without adequate road infrastructure, poor attention to driver training and unsatisfactory regulation has been responsible for increase in the number of accidents. India's vehicle population is negligible as compared to the World statistics; but the comparable proportion for accidents is substantially large.

The need for stricter enforcement of law to ensure greater safety on roads and an environment-friendly road transport operation is of paramount importance. Safety and security are growing concerns for businesses, governments and the traveling public around the world, as also in India. It is, therefore, essential to take new initiatives in raising awareness, skill and knowledge of students as one of the ibid stake holders who are expected to follow the rules and policies of the government in order to facilitate safety of individual and safe mobility of others.

Course Contents:

1. Existing Road Transport Scenario
2. Accident Causes & Remedies
3. Road Accident Investigation & Investigation Methods
4. Vehicle Technology – CMVR & Road Safety
5. Regulatory / Legislative Provisions for Improving Road Safety
6. Behavioral Training for Drivers for Improving Road Safety
7. Road Safety Education
8. Road Engineering Measures for Improving Road Safety

Mandatory Audit Course 4

211100

Students should complete one of the NPTEL courses listed below:

NPTEL Courses:

1. Developing soft skills and personality, T. Ravichandran, IIT Kanpur
   https://swayam.gov.in/nd1_noc20_hs43/preview
2. Innovation by Design, By Prof. B.K. Chakravarthy, IIT Bombay
   https://swayam.gov.in/nd1_noc20_de08/preview
3. Design Thinking - A Primer, By Prof. Ashwin Mahalingam, Prof. Bala Ramadurai, IIT Madras
   https://swayam.gov.in/nd1_noc20_mg38/preview
4. Technical English for Engineers, By Prof. Isha Iqbal, IIT Madras
   https://swayam.gov.in/nd1_noc20_hs56/preview
5. Ethics in Engineering Practice, Susmita Mukhopadhyay, IIT Kharagpur
   https://swayam.gov.in/explorer?searchText=Ethics%20in%20Engineering%20Practice

Industrial visit/expert lectures should be organized for the audit courses undertaken by students. The group of students should be allocated to faculty members to keep the track of students' progress. The performance of the students may be evaluated using any appropriate method.