



Ahmednagar Jilha Maratha Vidya Prasarak Samaj's

*Shri Chhatrapati Shivaji Maharaj College of Engineering, Nepti, Ahmednagar*

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**Approved by AICTE New Delhi, Govt. of Maharashtra & Affiliated To Savitribai Phule Pune University.**

**2.5.2 Mechanism to deal with internal examination related grievances is transparent, time bound and efficient**

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Ahmednagar Jilha Maratha Vidya Prasarak Samaj's

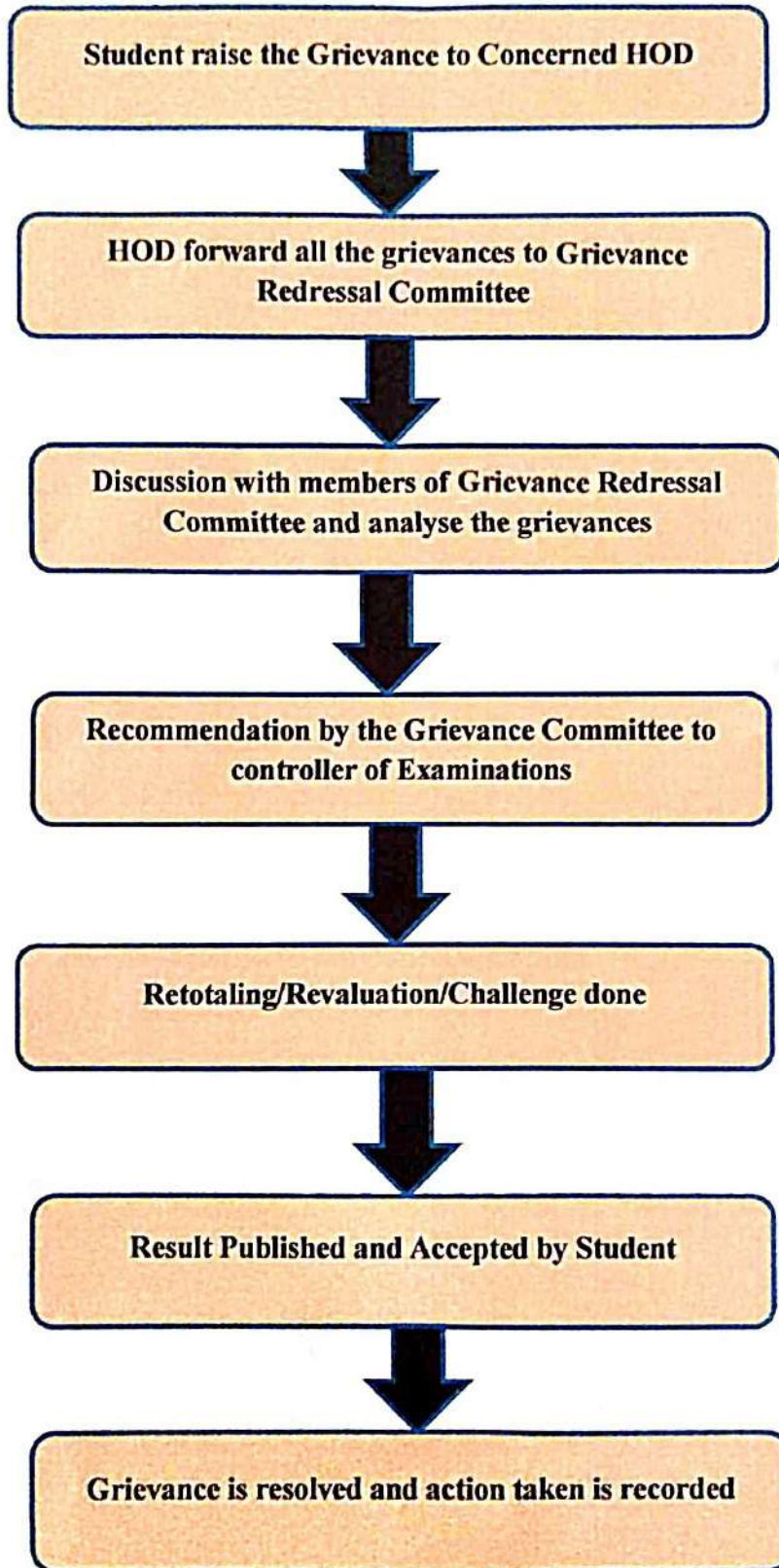
**Shri Chhatrapati Shivaji Maharaj College of Engineering, Nepti, Ahmednagar**

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PRINCIPAL

Shri. Chhatrapati Shivaji Maharaj College  
of Engineering, Nepti, Ahmednagar

**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 <sup>n</sup>	-	04				50		-	50		02		02
204201	Mandatory Audit Course 4 <sup>&amp;</sup>	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total</b>		<b>14</b>	<b>14</b>	<b>01</b>	<b>120</b>	<b>280</b>	<b>175</b>	<b>50</b>	<b>75</b>	<b>700</b>	<b>14</b>	<b>07</b>	<b>01</b>	<b>22</b>

**Abbreviations:**

In-Sem: In semester  
PR : Practical

End-sem: End semester  
OR : Oral

TH: Theory  
TUT : Tutorial

TW : Term Work

**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)**



*[Signature]*  
HEAD

Department of E & TC Engineering  
Shri Chhatrapati Shivaji Maharaj College  
of Engineering, Nepti, Ahmednagar

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

**Semester-V**

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 &	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total</b>		<b>15</b>	<b>10</b>	<b>01</b>	<b>150</b>	<b>350</b>	<b>50</b>	<b>125</b>	<b>25</b>	<b>700</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>Total Credit</b>											<b>15</b>	<b>05</b>	<b>01</b>	<b>21</b>

**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 &	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total</b>		<b>12</b>	<b>10</b>	<b>00</b>	<b>120</b>	<b>280</b>	<b>125</b>	<b>75</b>	<b>100</b>	<b>700</b>				
<b>Total Credit</b>											<b>12</b>	<b>05</b>	<b>04</b>	<b>21</b>

**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



*[Signature]*

**HEAD**

Department of E & TC Engineering  
 Shri Chhatrapati Shivaji Maharaj College  
 of Engineering, Nepti, Ahmednagar

**Savitribai Phule Pune University, Pune**  
**B.E. (Electronics & Telecommunication) 2019 Course**  
 (With effect from Academic Year 2022-23)

**Semester-VII**

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
404181	Radiation & Microwave Theory	03	-	-	30	70	-	-	-	100	03	-	-	03
404182	VLSI Design and Technology	03	-	-	30	70	-	-	-	100	03	-	-	03
404183	Cloud Computing	03	-	-	30	70	-	-	-	100	03	-	-	03
404184	Elective - 3	03	-	-	30	70	-	-	-	100	03	-	-	03
404185	Elective - 4	03	-	-	30	70	-	-	-	100	03	-	-	03
404186	Lab Practice - 1 (RMT & Cloud Computing)	-	04	-	-	-	25	-	50	75	-	02	-	02
404187	Lab Practice - 2 (VLSI Design & Elective -3)	-	04	-	-	-	25	50	-	75	-	02	-	02
404188	Project Stage - I	-	02	-	-	-	50	-	-	50	-	01	-	01
404189	Mandatory Audit Course 7	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total</b>		<b>15</b>	<b>10</b>	<b>-</b>	<b>150</b>	<b>350</b>	<b>100</b>	<b>50</b>	<b>50</b>	<b>700</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>Total Credits</b>											<b>15</b>	<b>05</b>	<b>-</b>	<b>20</b>

Elective - 3	Elective - 4
1. Speech Processing	1. Data Mining
2. PLC SCADA & Automation	2. Electronic Product Development
3. JAVA Script	3. Deep Learning
4. Embedded & RTOS	4. Low Power CMOS
5. Modernized IoT	5. Smart Antennas

Mandatory Audit Course - 7
1. Management Information System
2. Patent Search & Analysis
3. Knowledge Management
4. Energy Economics & Policy
5. Educational Leadership
6. Human Resource Development



**Savitribai Phule Pune University, Pune**  
**B.E. (Electronics & Telecommunication) 2019 Course**  
 (With effect from Academic Year 2022-23)

**Semester-VIII**

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
404190	Fiber Optic Communication	03	-	-	30	70	-	-	-	100	03	-	-	03
404191	Elective - 5	03	-	-	30	70	-	-	-	100	03	-	-	03
404192	Elective - 6	03	-	-	30	70	-	-	-	100	03	-	-	03
404193	Innovation & Entrepreneurship	-	-	02	-	-	50	-	-	50	-	-	02	02
404194	Digital Business Management	-	-	02	-	-	50	-	-	50	-	-	02	02
404195	Fiber Optic Lab	-	02	-	-	-	25	-	50	75	-	01	-	01
404196	Lab Practice - 3 (Elective - 5)	-	02	-	-	-	25	50	-	75	-	01	-	01
404197	Project Stage - II	-	10	-	-	-	100	-	50	150	-	05	-	05
<b>Total</b>		<b>09</b>	<b>14</b>	<b>04</b>	<b>90</b>	<b>210</b>	<b>250</b>	<b>50</b>	<b>100</b>	<b>700</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>Total Credits</b>											<b>09</b>	<b>07</b>	<b>04</b>	<b>20</b>

Elective - 5	Elective - 6
1. Biomedical Signal Processing	1. System on Chip
2. Industrial Drives & Automation	2. Nano Electronics
3. Android Development	3. Remote Sensing
4. Embedded System Design	4. Digital Marketing
5. Mobile Computing	5. Open Elective



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**HEAD**

Department of E & TC Engineering  
 Shri Chhatrapati Shivaji Maharaj College  
 of Engineering, Nepti, Ahmednagar

## SE Civil

Savitribai Phule Pune University, Pune														
SE(Civil 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
201001	Building Technology and Architectural Planning	03	-	-	30	70	--	-	-	100	03	--	--	03
201002	Mechanics of structure	03	-	-	30	70	--	-	-	100	03	-	-	03
201003	Fluid Mechanics	03	-	-	30	70	-	-	-	100	03	-	-	03
207001	Engineering Mathematics III	03	--	--	30	70	--	--	--	100	03		--	03
207003	Engineering Geology	03	-	-	30	70	-	-	-	100	03	-	-	03
201004	Building Technology and Architectural Planning Lab	-	04	-	-	-	50		-	50	-	02	-	02
201005	Mechanics of structure Lab	-	04	-	-	-	-	-	50	50	-	02	-	02
201006	Fluid Mechanics Lab	-	02	-	-	-	-		50	50		01		01
207002	Engineering Mathematics III Tutorial	--	--	01	--	--	25	--	--	25	--		01	01
207004	Engineering Geology Lab	-	02	-	-	-	25		-	25	-	01	-	01
201007	Audit Course 1 Awareness to civil Engineering Practices / Road Safety Management / Foreign Language	--	01	-	-	Grade	-	-	-	Grade	--	--	-	--
<b>Total</b>		15	13	01	150	350	100	--	100	700	15	06	01	22

**Abbreviations:**

H : Theory      TW: Term Work      PR : Practical      OR: Oral      TUT : Tutorial

**Note:** Interested students of S.E. (Civil) can opt any one of the audit course from the list of audit courses prescribed by BoS (Civil Engineering)

**Note:** The Underlined portion of the syllabus will be covered by video lectures/ on-line lectures/ flip classroom, self study, NPTEL course lecture and/or using relevant ICT technique





**Savitribai Phule Pune University, Pune**  
**SE(Civil 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
201008	Geotechnical Engineering	03	-	-	30	70	--	-	-	100	03	--	--	03
201009	Survey	03	-	-	30	70	--	-	-	100	03	-	-	03
201010	Concrete Technology	03	-	-	30	70	-	-	-	100	03	-	-	03
201011	Structural Analysis	03	-	--	30	70	-	-	-	100	03	-	--	03
201012	Project management	03	--	-	30	70	--	--	--	100	03	-	-	03
201013	Geotechnical Engineering Lab	-	02	-	-	-	-	-	50	50	-	01	-	01
201014	Survey Lab	-	04	-	-	-	-	50	-	50	-	02	-	02
201015	Concrete Technology Lab	-	02	-	-	-	25	-	-	25	-	01	-	01
201016	Structural Analysis Tutorial	--	-	01	--	--	25	-	-	25	--	-	01	01
201017	Project Based Learning	-	04	-	-	-	50	-	-	50	-	02	-	02
<b>Total</b>		15	12	01	150	350	100	50	50	700	15	06	01	22

**Abbreviations:**

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

**Note: The Underlined portion of the syllabus will be covered by video lectures/ on-line lectures/ flip classroom, self study, NPTEL course lectures and/or using relevant ICT technique**



*Prithvi*  
**HOD**

**Civil Department**  
**Shri Chhatrapati Shivaji Maharaj College**  
**of Engineering, Nepti, Ahmednagar**

**Savitribai Phule Pune University, Pune**  
**TE (Civil Engineering) 2019 Pattern**  
**(With effect from Academic Year 2021-22)**

**SEMESTER: V**

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	TW	PR	OR	TUT	Total
301001	Hydrology and Water Resources Engineering	03	--	--	30	70	--	--	--	100	03	--	--	--	--	03
301002	Water Supply Engineering	03	--	--	30	70	--	--	--	100	03	--	--	--	--	03
301003	Design of Steel Structures	03	--	--	30	70	--	--	--	100	03	--	--	--	--	03
301004	Engineering Economics and Financial Management	03	--	--	30	70	--	--	--	100	03	--	--	--	--	03
301005	Elective I	03	--	--	30	70	--	--	--	100	03	--	--	--	--	03
301006	Seminar	--	--	01	--	--	50	--	--	50	--	--	--	--	01	01
301007	Hydrology and Water Resources Engineering Lab	--	02	--	--	--	25	--	--	25	--	01	--	--	--	01
301008	Water Supply Engineering Lab	--	02	--	--	--	--	50	--	50	--	--	01	--	--	01
301009	Design of Steel Structures Lab	--	04	--	--	--	--	--	50	50	--	--	--	02	--	02
301010	Elective I Lab	--	02	--	--	--	25	--	--	25	--	01	--	--	--	01
301011	Audit Course I: Professional Ethics and Etiquettes/ Sustainable Energy Systems	--	--	01	--	GR	--	--	--	GR	--	--	--	--	--	--
<b>Total</b>		<b>15</b>	<b>10</b>	<b>02</b>	<b>150</b>	<b>350</b>	<b>100</b>	<b>50</b>	<b>50</b>	<b>700</b>	<b>15</b>	<b>02</b>	<b>01</b>	<b>02</b>	<b>01</b>	<b>21</b>

**Abbreviations: TH : Theory, TW: Term Work, PR : Practical, OR: Oral, TUT : Tutorial, GR: Grade**

**Elective I: 301005**

S N	Course Code	Course Name
01	301005 a	Advanced Fluid Mechanics and Hydraulic Machines
02	301005 b	Research Methodology and IPR
03	301005 c	Construction Management
04	301005 d	Advanced Concrete Technology
05	301005 e	Matrix Methods of Structural Analysis
06	301005 f	Advanced Mechanics of Structures



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	TW	PR	OR	TUT	Total
301012	Waste Water Engineering	03	--	--	30	70	--	--	--	100	03	--	--	--	03	
301013	Design of RC Structures	03	--	--	30	70	--	--	--	100	03	--	--	--	03	
301014	Remote Sensing and GIS	03	--	--	30	70	--	--	--	100	03	--	--	--	03	
301015	Elective II	03	--	--	30	70	--	--	--	100	03	--	--	--	03	
301016	Internship	--	--	--	--	--	100	--	--	100	--	04	--	--	04	
301017	Waste Water Engineering Lab	--	02	--	--	--	--	--	50	50	--	--	--	01	01	
301018	Design of RC Structures Lab	--	04	--	--	--	--	--	50	50	--	--	--	02	02	
301019	Remote Sensing and GIS Lab	--	02	--	--	--	50	--	--	50	--	01	--	--	01	
301020	Elective II Lab	--	02	--	--	--	50	--	--	50	--	01	--	--	01	
301021	Audit Course II: Leadership and Personality Development/ Industrial Safety	--	--	01	--	GR	--	--	--	GR	--	--	--	--	--	
<b>Total</b>		<b>12</b>	<b>10</b>	<b>01</b>	<b>120</b>	<b>280</b>	<b>200</b>	<b>--</b>	<b>100</b>	<b>700</b>	<b>12</b>	<b>06</b>	<b>--</b>	<b>03</b>	<b>--</b>	<b>21</b>

**Abbreviations: TH : Theory, TW: Term Work, PR : Practical, OR: Oral and TUT : Tutorial, GR: Grade**

### Elective II: 301015

S N	Course Code	Course Name
01	301015 a	Advanced Engineering Geology with Rock Mechanics
02	301015 b	Soft Computing Techniques
03	301015 c	Advanced Surveying
04	301015 d	Advanced Geotechnical Engineering
05	301015 e	Architecture and Town Planning
06	301015 f	Solid Waste Management



*Prithvi*  
**HOD**  
**Civil Department**  
**Shri Chhatrapati Shivaji Maharaj College**  
**of Engineering, Nepti, Ahmednagar**

**Savitribai Phule Pune University, Pune**  
**BE (Civil Engineering) 2019 Pattern**  
**(With effect from Academic Year 2022-23)**

**SEMESTER: VII**

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	TW	PR	OR	TUT	Total
401001	Foundation Engineering	03	--	--	30	70	--	--	--	100	03	--	--	--	--	03
401002	Transportation Engineering	03	--	--	30	70	--	--	--	100	03	--	--	--	--	03
401003	Elective III	03	--	--	30	70	--	--	--	100	03	--	--	--	--	03
401004	Elective IV	03	--	--	30	70	--	--	--	100	03	--	--	--	--	03
401005	Project Stage I	--	04	--	--	--	50	--	50	100	--	01	--	02	--	03
401006	Transportation Engineering Lab	--	02	--	--	--	--	--	50	50	--	--	--	01	--	01
401007	Elective III Lab	--	02	--	--	--	--	--	50	50	--	--	--	01	--	01
401008	Elective IV Lab	--	02	--	--	--	50	--	--	50	--	01	--	--	--	01
401009	Computer Programming in Civil Engineering	01	02	--	--	--	50	--	--	50	--	02	--	--	--	02
401010	Audit Course I Stress Management by Yoga / Communication Etiquette in Workplaces	--	--	01	--	GR	--	--	--	GR	--	--	--	--	--	--
<b>Total</b>		<b>13</b>	<b>12</b>	<b>01</b>	<b>120</b>	<b>280</b>	<b>150</b>	<b>--</b>	<b>150</b>	<b>700</b>	<b>12</b>	<b>04</b>	<b>--</b>	<b>04</b>	<b>--</b>	<b>20</b>

**Abbreviations: TH : Theory, TW: Term Work, PR : Practical, OR: Oral, TUT : Tutorial, GR: Grade**

**Elective III and IV**

S N	Course Code	Elective III: Course Name	Course Code	Elective IV: Course Name
01	401003 a	Coastal Engineering	401004 a	Air Pollution and Control
02	401003 b	Advanced Design of Concrete Structures	401004 b	Advanced Design of Steel Structures
03	401003 c	Integrated Water Resources Planning & Management	401004 c	Statistical Analysis and Computational Method
04	401003 d	Finite Element Method	401004 d	Airport and Bridge Engineering
05	401003 e	Data Analytics	401004 e	Design of Prestressed Concrete Structures
06	401003 f	Operation Research	401004 f	Formwork and Plumbing Engineering



SEMESTER-VIII																
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	TW	PR	OR	TUT	Total
401011	Dams and Hydraulics Structures	03	--	--	30	70	--	--	--	100	03	--	--	--	--	03
401012	Quantity Surveying, Contracts and Tenders	03	--	--	30	70	--	--	--	100	03	--	--	--	--	03
401013	Elective V	03	--	--	30	70	--	--	--	100	03	--	--	--	--	03
401014	Elective VI	03	--	--	30	70	--	--	--	100	03	--	--	--	--	03
401015	Project Stage II	--	10	--	--	--	100	--	50	150	--	03	--	02	--	05
401016	Dams and Hydraulics Structures Lab	--	02	--	--	--	--	--	50	50	--	--	--	01	--	01
401017	Quantity Surveying, Contracts and Tenders Lab	--	02	--	--	--	--	--	50	50	--	--	--	01	--	01
401018	Elective V Lab	--	02	--	--	--	50	--	--	50	--	01	--	--	--	01
401019	Audit Course II Social Responsibility / Human Rights	--	--	01	--	GR	--	--	--	GR	--	--	--	--	--	--
<b>Total</b>		<b>12</b>	<b>16</b>	<b>01</b>	<b>120</b>	<b>280</b>	<b>150</b>	<b>--</b>	<b>150</b>	<b>700</b>	<b>12</b>	<b>04</b>	<b>--</b>	<b>04</b>	<b>--</b>	<b>20</b>

Abbreviations: TH : Theory, TW: Term Work, PR : Practical, OR: Oral and TUT : Tutorial, GR: Grade

### Elective V and VI

S N	Course Code	Elective V: Course Name	Course Code	Elective VI: Course Name
01	401013 a	Earthquake Engineering	401014 a	TQM and MIS
02	401013 b	Structural Design of Bridges	401014 b	Advanced Transportation Engineering
03	401013 c	Irrigation and Drainage	401014 c	Geo Synthetic Engineering
04	401013 d	Design of Precast and Composite Structures	401014 d	Structural Design of Foundations
05	401013 e	Hydropower Engineering	401014 e	Green Structures and Smart Cities
06	401013 f	Structural Audit and Retrofitting of Structures	401014 f	Rural Water Supply and Sanitation



3

*Prakash*  
HOD  
Civil Department  
Shri Chhatrapati Shivaji Maharaj College  
of Engineering, Nepti, Ahmednagar

**Savitribai Phule Pune University**  
**Board of Studies - Automobile and Mechanical Engineering**  
**Undergraduate Program - Automobile Engineering & Mechanical Engineering (2019 pattern)**

Course Code	Course Name	Teaching Scheme (Hours/Week)			Examination Scheme and Marks					Credit				
		TH	PR	TUT	ISE	ESE	TW	PR	OR	TOTAL	TH	PR	TUT	TOTAL
<b>Semester-III</b>														
202041	Solid Mechanics	4	2	-	30	70	-	50	-	150	4	1	-	5
202042	Solid Modeling and Drafting	3	2	-	30	70	-	50	-	150	3	1	-	4
202043	Engineering Thermodynamics	3	2	-	30	70	-	-	25	125	3	1	-	4
202044	Engineering Materials and Metallurgy	3	2	-	30	70	25	-	-	125	3	1	-	4
203156	Electrical and Electronics Engineering	3	2	-	30	70	25	-	-	125	3	1	-	4
202045	Geometric Dimensioning and Tolerancing Lab	-	2	-	-	-	25	-	-	25	-	1	-	1
202046	Audit Course - III	-	-	-	-	-	-	-	-	-	-	-	-	-
	<b>Total</b>	<b>16</b>	<b>12</b>	<b>-</b>	<b>150</b>	<b>350</b>	<b>75</b>	<b>100</b>	<b>25</b>	<b>700</b>	<b>16</b>	<b>6</b>	<b>-</b>	<b>22</b>

<b>Semester-IV</b>														
207002	Engineering Mathematics - III	3	-	1	30	70	25	-	-	125	3	-	1	4
202047	Kinematics of Machinery	3	2	-	30	70	-	-	25	125	3	1	-	4
202048	Applied Thermodynamics	3	2	-	30	70	-	-	25	125	3	1	-	4
202049	Fluid Mechanics	3	2	-	30	70	-	-	25	125	3	1	-	4
202050	Manufacturing Processes	3	-	-	30	70	-	-	-	100	3	-	-	3
202051	Machine Shop	-	2	-	-	-	50	-	-	50	-	1	-	1
202052	Project Based Learning - II	-	4	-	-	-	50	-	-	50	-	2	-	2
202053	Audit Course - IV	-	-	-	-	-	-	-	-	-	-	-	-	-
	<b>Total</b>	<b>15</b>	<b>12</b>	<b>1</b>	<b>150</b>	<b>350</b>	<b>125</b>	<b>-</b>	<b>75</b>	<b>700</b>	<b>15</b>	<b>6</b>	<b>1</b>	<b>22</b>

**Abbreviations:** TH: Theory, PR: Practical, TUT: Tutorial, ISE: In-Semester Exam, ESE: End-Semester Exam, TW: Term Work, OR: Oral

**Note:** Interested students of SE (Automobile Engineering and Mechanical Engineering) can opt for any one of the audit course from the list of audit courses prescribed by BoS (Automobile and Mechanical Engineering)

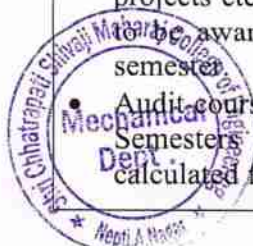
**Instructions**

- Practical/Tutorial must be conducted in three batches per division only.
- Minimum number of required Experiments/Assignments in PR/ Tutorial shall be carried out as mentioned in the syllabi of respective subjects.
- Assessment of tutorial work has to be carried out as a term-work examination. Term-work Examination at second year of engineering course shall be internal continuous assessment only.
- Project based learning (PBL) requires continuous mentoring by faculty throughout the semester for successful completion of the tasks selected by the students per batch. While assigning the teaching workload of 2 Hrs/week/batch needs to be considered for the faculty involved. The Batch needs to be divided into sub-groups of 5 to 6 students. Assignments / activities / models/ projects etc. under project based learning is carried throughout semester and Credit for PBL has to be awarded on the basis of internal continuous assessment and evaluation at the end of semester.

Audit course is mandatory but non-credit course. Examination has to be conducted at the end of Semesters for award of grade at institute level. Grade awarded for audit course shall not be calculated for grade point & CGPA.

*(Signature)*  
**HOD**

**Mechanical Department**  
**Shri Chhatrapati Shivaji Maharaj College**  
**of Engineering, Nepti, Ahmednagar**



**Savitribai Phule Pune University**  
**Board of Studies - Automobile and Mechanical Engineering**  
**Undergraduate Program - Mechanical Engineering (2019 pattern)**

Course Code	Course Name	Teaching Scheme (Hrs./week)			Examination Scheme and Marks						Credit			
		TH	PR	TUT	ISE	ESE	TW	PR	OR	Total	TH	PR	TUT	Total
<b>Semester-V</b>														
302041	Numerical & Statistical Methods	3	-	1	30	70	25	-	-	125	3	-	1	4
302042	Heat & Mass Transfer	3	2	-	30	70	-	50	-	150	3	1	-	4
302043	Design of Machine Elements	3	2	-	30	70	-	-	25	125	3	1	-	4
302044	Mechatronics	3	2	-	30	70	-	-	25	125	3	1	-	4
302045	Elective I	3	-	-	30	70	-	-	-	100	3	-	-	3
302046	Digital Manufacturing Laboratory	-	2	-	-	-	50	-	-	50	-	1	-	1
302047	Skill Development	-	2	-	-	-	25	-	-	25	-	1	-	1
302048	Audit course - V <sup>S</sup>	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total</b>		<b>15</b>	<b>10</b>	<b>1</b>	<b>150</b>	<b>350</b>	<b>100</b>	<b>50</b>	<b>50</b>	<b>700</b>	<b>15</b>	<b>5</b>	<b>1</b>	<b>21</b>
<b>Semester-VI</b>														
302049	Artificial Intelligence & Machine Learning	3	2	-	30	70	-	-	25	125	3	1	-	4
302050	Computer Aided Engineering	3	2	-	30	70	-	50	-	150	3	1	-	4
302051	Design of Transmission Systems	3	2	-	30	70	-	-	25	125	3	1	-	4
302052	Elective II	3	-	-	30	70	-	-	-	100	3	-	-	3
302053	Measurement Laboratory	-	2	-	-	-	50	-	-	50	-	1	-	1
302054	Fluid Power & Control Laboratory	-	2	-	-	-	50	-	-	50	-	1	-	1
302055	Internship/Mini project *	-	4	-	-	-	100	-	-	100	-	4	-	4
302056	Audit course - VI <sup>S</sup>	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total</b>		<b>12</b>	<b>14</b>	<b>-</b>	<b>120</b>	<b>280</b>	<b>200</b>	<b>50</b>	<b>50</b>	<b>700</b>	<b>12</b>	<b>9</b>	<b>-</b>	<b>21</b>
<b>Elective-I</b>					<b>Elective-II</b>									
302045-A	Advanced Forming & Joining Processes	302052-A			Composite Materials									
302045-B	Machining Science & Technology	302052-B			Surface Engineering									

**Abbreviations:** TH: Theory, PR: Practical, TUT: Tutorial, ISE: In-Semester Exam, ESE: End-Semester Exam, TW: Term Work, OR: Oral

**Note:** Interested students of TE (Automobile Engineering and Mechanical Engineering) can opt for any one of the audit course from the list of audit courses prescribed by BOS (Automobile and Mechanical Engineering)

**Instructions:**

- Practical/Tutorial must be conducted in FOUR batches per division only.
- Minimum number of Experiments/Assignments in PR/Tutorial shall be carried out **as mentioned in the syllabi** of respective courses.
- Assessment of tutorial work has to be carried out similar to term-work. The Grade cum marks for Tutorial and Term-work shall be awarded on the basis of **continuous evaluation**.

\* Audit course is mandatory but non-credit course. Examination has to be conducted at the end of Semesters for award of grade at institute level. Grade awarded for audit course shall not be calculated for grade point & CGPA.



*Delitza*  
HOD

**Mechanical Department**  
**Shri Chhatrapati Shivaji Maharaj College**  
**of Engineering, Nopli, Ahmednagar**

**Savitribai Phule Pune University**  
**Board of Studies - Mechanical and Automobile Engineering**  
 Undergraduate Program – Final Year Mechanical Engineering (2019 pattern)

Course Code	Course Name	Teaching Scheme (Hrs./week)			Examination Scheme and Marks						Credit			
		TH	PR	TUT	ISE	ESE	TW	PR	OR	TOTAL	TH	PR	TUT	TOTAL
<b>Semester-VII</b>														
402041	Heating Ventilation Air-Conditioning and Refrigeration	3	2	-	30	70	-	-	25	125	3	1	-	4
402042	Dynamics of Machinery	3	2	-	30	70	-	-	25	125	3	1	-	4
402043	Turbomachinery*	2	2	-	-	50	25	-	25	100	2	1	-	3
402044	Elective – III	3	-	-	30	70	-	-	-	100	3	-	-	3
402045	Elective - IV	3	-	-	30	70	-	-	-	100	3	-	-	3
402046	Data Analytics Laboratory	-	2	-	-	-	50	-	-	50	-	1	-	1
402047	Project (Stage - I)	-	4	-	-	-	50	-	50	100	-	2	-	2
402054	Audit Course VII <sup>S</sup>	-	-	-	-	-	-	-	-	-	-	-	-	NC
<b>Total</b>		<b>14</b>	<b>12</b>	<b>-</b>	<b>120</b>	<b>330</b>	<b>125</b>	<b>-</b>	<b>125</b>	<b>700</b>	<b>14</b>	<b>6</b>	<b>-</b>	<b>20</b>
<b>Semester-VIII</b>														
402048	Computer Integrated Manufacturing	3	2	-	30	70	25	-	25	150	3	1	-	4
402049	Energy Engineering	3	2	-	30	70	25	-	25	150	3	1	-	4
402050	Elective - V	3	-	-	30	70	-	-	-	100	3	-	-	3
402051	Elective - VI	3	-	-	30	70	-	-	-	100	3	-	-	3
402052	Mechanical Systems Analysis Laboratory	-	2	-	-	-	25	-	25	50	-	1	-	1
402053	Project (Stage - II)	-	10	-	-	-	100	-	50	150	-	5	-	5
402055	Audit Course VIII <sup>S</sup>	-	-	-	-	-	-	-	-	-	-	-	-	NC
<b>Total</b>		<b>12</b>	<b>16</b>	<b>-</b>	<b>120</b>	<b>280</b>	<b>175</b>	<b>-</b>	<b>125</b>	<b>700</b>	<b>12</b>	<b>8</b>	<b>-</b>	<b>20</b>
<b>Elective-III</b>						<b>Elective-V</b>								
402044A	Automobile Design				402050A	Quality and Reliability Engineering								
402044B	Design of Heat Transfer Equipments				402050B	Energy Audit and Management								
402044C	Modern Machining Processes				402050C	Manufacturing Systems and Simulation								
402044D	Industrial Engineering				402050D	Engineering Economics and Financial Management								
402044E	Internet of Things				402050E	Organizational Informatics								
402044F	Computational Fluid Dynamics				402050F	Computational Multi Body Dynamics								
<b>Elective-IV</b>						<b>Elective-VI</b>								
402045A	Product Design and Development				402051A	Process Equipment Design								
402045B	Experimental Methods in Thermal Engineering				402051B	Renewable Energy Technologies								
402045C	Additive Manufacturing				402051C	Automation and Robotics								
402045D	Operations Research				402051D	Industrial Psychology and Organizational Behavior								
402045E	Augmented Reality and Virtual Reality				402051E	Electrical and Hybrid Vehicle								
<b>Audit Courses</b>														
402054A	Yoga Practices				402054B	Stress Management								
402055A	Managing Innovation				402055B	Operations Management								

**Abbreviations:** TH: Theory, PR: Practical, TUT: Tutorial, ISE: In-Semester Exam, ESE: End-Semester Exam, TW: Term Work, OR: Oral

• Student can select any elective subjects from the list given as per his/her choice. However, it is advised to select the subjects from within a group identified for specialization.



*(Signature)*  
**BOB**  
**Mechanical Department**  
**Shri Chhatrapati Shivaji Maharaj College**  
**of Engineering, Nepti, Ahmednagar**



TABLE -1 First Engineering _Structure for Semester-I														
Course Code	Course Name	Teaching Scheme (Hours/Week)			Examination Scheme and Marks						Credits			
		Theory	Practical	Tutorial	ISE	ESE	TW	PR	OR	Total	TH	PR	TUT	Total
107001	Engineering Mathematics-I	03	--	01	30	70	25	--	--	125	03	--	01	04
107002/ 107009	Engineering Physics / Engineering Chemistry	04	02	--	30	70	--	25	--	125	04	01	--	05
102003	Systems in Mechanical Engineering	03	02	--	30	70	--	25	--	125	03	01	--	04
103004 / 104010	Basic Electrical Engineering / Basic Electronics Engineering	03	02	--	30	70	--	25	--	125	03	01	--	04
110005/ 101011	Programming and Problem Solving / Engineering Mechanics	03	02	--	30	70	--	25	--	125	03	01	--	04
111006	Workshop <sup>@</sup>	--	02	--	--	--	--	25	--	25	--	01	--	01
Total		16	10	01	150	350	25	125	--	650	16	05	01	22
101007	Audit Course 1 <sup>&amp;</sup>	02	Environmental Studies-I											

**Induction Program :** 2 weeks at the beginning of semester-I and 1 week at the beginning of semester-II

TABLE -2 First Engineering _Structure for Semester-II														
Course Code	Course Name	Teaching Scheme (Hours/Week)			Examination Scheme and Marks						Credits			
		Theory	Practical	Tutorial	ISE	ESE	TW	PR	OR	Total	TH	PR	TUT	Total
107008	Engineering Mathematics-II	04	--	01	30	70	25	--	--	125	04	--	01	05
107002/ 107009	Engineering Physics/ Engineering Chemistry	04	02	--	30	70	--	25	--	125	04	01	--	05
103004 / 104010	Basic Electrical Engineering / Basic Electronics Engineering	03	02	--	30	70	--	25	--	125	03	01	--	04
110005/ 101011	Programming and Problem Solving / Engineering Mechanics	03	02	--	30	70	--	25	--	125	03	01	--	04
102012	Engineering Graphics <sup>U</sup>	01	02	01	--	50	25	--	--	75	01	01	--	02
110013	Project Based Learning <sup>S</sup>	--	04	--	--	--	25	50	--	75	--	02	--	02
Total		15	12	02	120	330	75	125	--	650	15	05	02	22
101014	Audit Course 2 <sup>&amp;</sup>	02	Environmental Studies-II											
107015		--	Physical Education-Exercise and Field Activities											

*M.Bhasak*

**Savitribai Phule Pune University**  
**Second Year of Computer 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 Scheme			
		Lecture	Practical	Tutorial	Mid-Sem	End-Sem	Term work	Practical	Oral	Total	Lecture	Practical	Tutorial	Total
210241	Discrete Mathematics	03	-	-	30	70	-	-	-	100	03	-	-	03
210242	Fundamentals of Data Structures	03	-	-	30	70	-	-	-	100	03	-	-	03
210243	Object Oriented Programming (OOP)	03	-	-	30	70	-	-	-	100	03	-	-	03
210244	Computer Graphics	03	-	-	30	70	-	-	-	100	03	-	-	03
210245	Digital Electronics and Logic Design	03	-	-	30	70	-	-	-	100	03	-	-	03
210246	Data Structures Laboratory	-	04	-	-	-	25	50	-	75	-	02	-	02
210247	OOP and Computer Graphics Laboratory	-	04	-	-	-	25	25	-	50	-	02	-	02
210248	Digital Electronics Laboratory	-	02	-	-	-	25	-	-	25	-	01	-	01
210249	Business Communication Skills	-	02	-	-	-	25	-	-	25	-	01	-	01
210250	Humanity and Social Science	-	-	01	-	-	25	-	-	25	-	-	01	01
210251	Audit Course 3													
<b>Total Credit</b>											<b>15</b>	<b>06</b>	<b>01</b>	<b>22</b>
<b>Total</b>		<b>15</b>	<b>12</b>	<b>01</b>	<b>150</b>	<b>350</b>	<b>125</b>	<b>75</b>	<b>-</b>	<b>700</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>

**Semester-IV**

Course Code	Course Name	Teaching Scheme (Hours/Week)			Examination Scheme and Marks						Credit Scheme			
		Lecture	Practical	Tutorial	Mid-Sem	End-Sem	Term work	Practical	Oral	Total	Lecture	Practical	Tutorial	Total
207003	Engineering Mathematics III	03	-	01	30	70	25	-	-	125	03	-	01	04
210252	Data Structures and Algorithms	03	-	-	30	70	-	-	-	100	03	-	-	03
210253	Software Engineering	03	-	-	30	70	-	-	-	100	03	-	-	03
210254	Microprocessor	03	-	-	30	70	-	-	-	100	03	-	-	03
210255	Principles of Programming Languages	03	-	-	30	70	-	-	-	100	03	-	-	03
210256	Data Structures and Algorithms Laboratory	-	04	-	-	-	25	25	-	50	-	02	-	02
210257	Microprocessor Laboratory	-	02	-	-	-	25	-	25	50	-	01	-	01
210258	Project Based Learning II	-	04	-	-	-	50	-	-	50	-	02	-	02
210259	Code of Conduct	-	-	01	-	-	25	-	-	25	-	-	01	01
210260	Audit Course 4													
<b>Total Credit</b>											<b>15</b>	<b>05</b>	<b>02</b>	<b>22</b>
<b>Total</b>		<b>15</b>	<b>10</b>	<b>02</b>	<b>150</b>	<b>350</b>	<b>150</b>	<b>25</b>	<b>25</b>	<b>700</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>



*Dayan*  
**HOD**

**Computer Department**

Savitribai Phule Pune University														
Third Year of Computer Engineering (2019 Course)														
(With effect from Academic Year 2021-22)														
Semester V														
Course Code	Course Name	Teaching Scheme (Hours/week)			Examination Scheme and Marks						Credit Scheme			
		Lecture	Practical	Tutorial	Mid-Sem	End-Sem	Term work	Practical	Oral	Total	Lecture	Practical	Tutorial	Total
310241	<u>Database Management Systems</u>	03	-	-	30	70	-	-	-	100	03	-	-	03
310242	<u>Theory of Computation</u>	03	-	-	30	70	-	-	-	100	03	-	-	03
310243	<u>Systems Programming and Operating System</u>	03	-	-	30	70	-	-	-	100	03	-	-	03
310244	<u>Computer Networks and Security</u>	03	-	-	30	70	-	-	-	100	03	-	-	03
310245	<u>Elective I</u>	03	-	-	30	70	-	-	-	100	03	-	-	03
310246	<u>Database Management Systems Laboratory</u>	-	04	-	-	-	25	25	-	50	-	02	-	02
310247	<u>Computer Networks and Security Laboratory</u>	-	02	-	-	-	25	-	25	50	-	01	-	01
310248	<u>Laboratory Practice I</u>	-	04	-	-	-	25	25	-	50	-	02	-	02
310249	<u>Seminar and Technical Communication</u>	-	-	01	-	-	50	-	-	50	-	-	01	01
<b>Total</b>		<b>15</b>	<b>10</b>	<b>01</b>	<b>150</b>	<b>350</b>	<b>125</b>	<b>50</b>	<b>25</b>	<b>700</b>	<b>15</b>	<b>05</b>	<b>01</b>	<b>21</b>
310250	<u>Audit Course 5</u>												<b>Grade</b>	
<b>Total Credit</b>											<b>15</b>	<b>05</b>	<b>01</b>	<b>21</b>
<b>310245 Elective I Options:</b>						<b>310250 Audit Course 5 Options:</b>								
310245(A) <u>Internet of Things and Embedded Systems</u>						310250 (A) <u>Cyber Security</u>								
310245(B) <u>Human Computer Interface</u>						310250 (B) <u>Professional Ethics and Etiquettes</u>								
310245(C) <u>Distributed Systems</u>						310250 (C) <u>Learn New Skills</u>								
310245(D) <u>Software Project Management</u>						310250 (D) <u>Engineering Economics</u>								
						310250 (E) <u>Foreign Language</u>								
<b>Laboratory Practice I</b>														
Assignments from <b>Systems Programming and Operating System</b> and <b>Elective I</b>														



Savitribai Phule Pune University																
Third Year of Computer 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 Scheme					
		Lecture	Practical	Tutorial	Mid-Sem	End-Sem	Term work	Practical	Oral	Total	Lecture	Practical	Tutorial	Total		
310251	<u>Data Science and Big Data Analytics</u>	04	-	-	30	70	-	-	-	100	03	-	-	03		
310252	<u>Web Technology</u>	04	-	-	30	70	-	-	-	100	03	-	-	03		
310253	<u>Artificial Intelligence</u>	04	-	-	30	70	-	-	-	100	03	-	-	03		
310254	<u>Elective II</u>	04	-	-	30	70	-	-	-	100	03	-	-	03		
310255	<u>Internship**</u>	-	-	-	-	-	100	-	-	100	-	-	-	04		
310256	<u>Data Science and Big Data Analytics Laboratory</u>	-	04	-	-	-	50	25	-	75	-	02	-	02		
310257	<u>Web Technology Laboratory</u>	-	02	-	-	-	25	-	25	50	-	01	-	01		
310258	<u>Laboratory Practice II</u>	-	04	-	-	-	50	25	-	75	-	02	-	02		
<b>Total</b>		<b>12</b>	<b>10</b>	<b>-</b>	<b>120</b>	<b>280</b>	<b>225</b>	<b>50</b>	<b>25</b>	<b>700</b>	<b>12</b>	<b>09</b>	<b>-</b>	<b>21</b>		
310259	<u>Audit Course 6</u>											<b>Grade</b>				
												<b>Total</b>	<b>12</b>	<b>09</b>	<b>-</b>	<b>21</b>
<b>310254 Elective II Options:</b>						<b>310259 Audit Course 6 Options:</b>										
310254(A) <u>Information Security</u>						310259(A) <u>Digital and Social Media Marketing</u>										
310254(B) <u>Augmented and Virtual Reality</u>						310259(B) <u>Sustainable Energy Systems</u>										
310254(C) <u>Cloud Computing</u>						310259(C) <u>Leadership and Personality Development</u>										
310254(D) <u>Software Modeling and Architectures</u>						310259(D) <u>Foreign Language</u>										
						310259(E) <u>Learn New Skills</u>										
<b>Laboratory Practice II:</b>																
Assignments from <b>Artificial Intelligence</b> and <b>Elective II</b> .																
<b>** Internship:</b>																
Internship guidelines are provided in course curriculum sheet.																
<b>§§ Hours/Week for Theory Course in Third Year of Engineering, Semester VI:</b>																
As per the apex bodies' recommendations and guidelines, it is need of the day to train the pre-final year students for the industrial readiness through internship. As per the guidelines of AICTE, the duration of internship is 4-6 weeks after completion of semester V and before commencement of semester VI, so it is apparent that the contact hours of the TE students need to be managed meticulously. It becomes mandatory as per the structure that 4 credits for internship must earned by the students. <b>Per semester, 15 weeks duration that is suggested ideally by the affiliated university will eventually reduce to fruitful 12 weeks after the implementation of the revised curriculum (2019 Course). With the evaluatory introduction of internship in the structure, we are left with the choice of 4 theory courses in the sixth semester with 12 weeks instead of traditional 15 weeks.</b> To balance the credits and to achieve the minimum required contact hours, it is the reasonable choice to allot 4 hours / week for each theory course of the sixth semester of Third year of Engineering. The additional one lecture/ week will definitely be instrumental in achieving the largest of minimum contact hours. As such there is no correspondence of weekly load and credits earned, the credit allotted per course remain intact despite of the change. <b>So it is almost imperative that the commencement of VI Semester need to be approx. 3 weeks beyond the schedule.</b>																

**BE Computer Engineering 2019 Course tentative Curriculum structure:**

Savitribai Phule Pune University Final Year of Computer Engineering (2019 Course) (With effect from Academic Year 2022-23)														
Semester VII														
Course Code	Course Name	Teaching Scheme (Hours/week)			Examination Scheme and Marks						Credit Scheme			
		Lecture	Practical	Tutorial	Mid-Sem	End-Sem	Term work	Practical	Oral/Pre	Total	Lecture	Practical	Tutorial	Total
410241	<u>Design and Analysis of Algorithms</u>	03	-	-	30	70	-	-	-	100	3	-	-	3
410242	<u>Machine Learning</u>	03	-	-	30	70	-	-	-	100	3	-	-	3
410243	<u>Blockchain Technology</u>	03	-	-	30	70	-	-	-	100	3	-	-	3
410244	<u>Elective III</u>	03	-	-	30	70	-	-	-	100	3	-	-	3
410245	<u>Elective IV</u>	03	-	-	30	70	-	-	-	100	3	-	-	3
410246	<u>Laboratory Practice III</u>	-	04	-	-	-	50	50	-	100	-	2	-	2
410247	<u>Laboratory Practice IV</u>	-	02	-	-	-	50	-	-	50	-	1	-	1
410248	<u>Project Stage I</u>	-	02	-	-	-	50	-	-	50	-	2	-	2
<b>Total Credit</b>											15	05	-	20
<b>Total</b>		15	08	-	150	350	150	50	-	700	15	05	-	20
410249	<u>Audit Course 7</u>										Grade			
<b>Elective III</b>						<b>Elective IV</b>								
410244(A) Pervasive Computing 410244(B) Multimedia Techniques 410244(C) Cyber Security and Digital Forensics 410244(D) Object Oriented Modeling and Design 410244(E) Digital Signal Processing						410245(A) Information Retrieval 410245(B) GPU Programming and Architecture 410245(C) Mobile Computing 410245(D) Software Testing and Quality Assurance 410245(E) Compilers								
<b>Laboratory Practice III:</b> Laboratory assignments Courses- 410241, 410242, 410243						<b>Laboratory Practice IV:</b> Laboratory assignments Courses- 410244, 410245								
<b>Audit Course 7(AC7) Options:</b> AC7- I MOOC- Learn New Skills AC7- II Entrepreneurship Development AC7- III Botnet of Things AC7- IV 3D Printing AC7- V Industrial Safety and Environment Consciousness														



Savitribai Phule Pune University														
Final Year of Computer Engineering (2019 Course)														
(With effect from Academic Year 2022-23)														
Semester VIII														
Course Code	Course Name	Teaching Scheme (Hours/week)			Examination Scheme and Marks						Credit Scheme			
		Lecture	Practical	Tutorial	Mid-Sem	End-Sem	Term work	Practical	Oral/Pre	Total	Lecture	Practical	Tutorial	Total
410250	High Performance Computing	03	-	-	30	70	-	-	-	100	03			03
410251	Deep Learning	03	-	-	30	70	-	-	-	100	03			03
410252	Elective V	03	-	-	30	70	-	-	-	100	03			03
410253	Elective VI	03	-	-	30	70	-	-	-	100	03			03
410254	Laboratory Practice V	-	02	-	-	-	50	50	-	100		01		01
410255	Laboratory Practice VI	-	02	-	-	-	50	-	-	50		01		01
410256	Project Stage II	-	06	-	-	-	100	-	50	150		06		06
<b>Total Credit</b>											12	08	-	20
<b>Total</b>		12	10	-	120	280	200	50	50	700	12	08	-	20
410257	Audit Course 8													Grade
<b>Elective V</b>						<b>Elective VI</b>								
410252(A) Natural Language Processing						410253(A) Pattern Recognition								
410252(B) Image Processing						410253(B) Soft Computing								
410252(C) Software Defined Networks						410253(C) Business Intelligence								
410252(D) Advanced Digital Signal Processing						410253(D) Quantum Computing								
410252(E) Open Elective						410253(E) Open Elective								
<b>Lab Practice V:</b>						<b>Lab Practice VI:</b>								
Laboratory assignments Courses- 410250, 410251						Laboratory assignments Courses- 410252, 410253								
<b>Audit Course 8(AC8) Options:</b>														
AC8- I Usability Engineering														
AC8- II Conversational Interfaces														
AC8- II Social Media and Analytics														
AC8- IV MOOC- Learn New Skills														
AC8- V Emotional Intelligence														



  
**HOD**  
**Computer Department**  
**Shri Chhatrapati Shivaji Maharaj College**  
**of Engineering, Nepti, Ahmednagar**



AhmednagarJilha Maratha VidyaPrasarakSamaj's

**Shri Chhatrapati Shivaji Maharaj College of Engineering, Nepti, Ahmednagar**

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Approved by AICTE New Delhi, Govt. of Maharashtra & Affiliated To Savitribai Phule Pune University.

Date:5/10/2023

## Department of Computer Engineering

### Notice about Submission of Grievance Application

All the students of S.E. to B.E. are hereby informed that the Class Test II Result is declared so those students having grievances regarding marks they should collect application form of Grievances from your class teacher and submit it to the your Head of Department within three days.



(Head of Department)

**HOD**

**Computer Department**  
Shri Chhatrapati Shivaji Maharaj College  
of Engineering, Nepti, Ahmednagar



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## APPLICATION FORM FOR GRIEVANCE

Roll No : 61  
Name of the Student : shinde vaishnavi umesh  
Class : TE  
Semester : 5th  
Department : computer Engineering

Detail reason for Grievance:

Q1B is for 8 marks and i had check model answer my answer is right but i only got 5 marks so i request to check it once.

Subject Name of Test Paper : Theory of computation

Name of Subject Teacher : P. S. kobakade

Shinde

(Signature of Student)

## REMARK OF THE HEAD

Department : computer Engineering

Name of HOD : V.V. Jagtap

Dated : 6/10/2023

Jagtap

(Signature of HOD)



HOD  
Computer Department  
Shri Chhatrapati Shivaji Maharaj College  
of Engineering, Nepti, Ahmednagar





AhmednagarJilha Maratha VidyaPrasarakSamaj's

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Approved by AICTE New Delhi, Govt. of Maharashtra & Affiliated To Savitribai Phule Pune University.

Date: 9/10/2023

## Closure Report of Grievance Application

Roll No : 61

Name of the Student : shinde vaishnavi umesh

Class : TE

Semester : 5<sup>th</sup>

Department : computer Engineering

1. Have you satisfied regarding your grievance as per your grievance application?

a. Yes

b. No

2. Subject teacher shows you model answer paper and marking scheme to you?

a. Yes

b. No

3. Are you want to close the report of grievance regarding marks?

a. Yes

b. No

Shinde

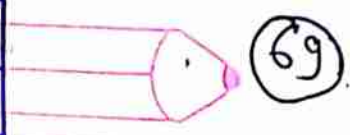
(Signature of Student)

[Signature]

(Head of Department)



HOD  
Computer Department  
Shri Chhatrapati Shivaji Maharaj College  
of Engineering, Nepti, Ahmednagar



Name of Student	Vaishnavi Umesh Shinde				Inst. Code-5382							
Program	CO	Course	TOC	Course Code								
Class	TE	Semester	V	Date of Exam	29/9/23							
Sign of Supervisor				Sign of Assessor								
Que.No.	1	2	3	4	5	6	7	8	9	10	Total Marks	19
Marks.	9	-	-	10	-	-	-	-	-	-	-	-

11 - - 11 ----- 22

Q.1

a) Given CFG is as follows -

$S \rightarrow a$  - ①

$S \rightarrow aA$  - ②

$S \rightarrow B$  - ③

$A \rightarrow aBB$  - ④

$A \rightarrow \epsilon$  - ⑤

$B \rightarrow Aa$  - ⑥

$B \rightarrow b$  - ⑦

Step 1) Unit production removal

$S \rightarrow B$  - ③ is unit production

$\therefore S \rightarrow Aa$  - by ⑥

$\therefore S \rightarrow Ab$  - by ⑦

Step 2) Epsilon production removal

$S \rightarrow aA$  - ②

$A \rightarrow \epsilon$  - ⑤

$S \rightarrow a\epsilon$

$\therefore S \rightarrow a$

$B \rightarrow Aa$

$B \rightarrow \epsilon a$

$\therefore B \rightarrow a$  - ⑧

Step 3) Useless production removal

There are no useless production.

4) simplified CFG  $\rightarrow$

- $S \rightarrow a$  — ①
- $S \rightarrow aA$  — ②
- $S \rightarrow Bb$  — ③
- $A \rightarrow aBB$  — ④
- $B \rightarrow Aa$  — ⑤
- $B \rightarrow b$  — ⑥
- $B \rightarrow a$  — ⑦
- ~~$S \rightarrow b$  — ⑧~~

5) CNF form -

$\perp NT \rightarrow 2 NT$

$\perp NT \rightarrow \perp T$

1)  $S \rightarrow a$  — is already simplified.

$\therefore R_1 \rightarrow a$   
 $\therefore S \rightarrow R_1$

2)  $S \rightarrow aA$   
 $R_1 \rightarrow a$   
 $\therefore S \rightarrow R_1 A$

3)  $S \rightarrow b$  — is already simplified.

4)  $A \rightarrow aBB$   
 $R_2 \rightarrow BB$   
 $A \rightarrow R_1 R_2$

5)  $B \rightarrow Aa$   
 $R_1 = a$   
 $B \rightarrow AR_1$

6)  $B \rightarrow a$  — is already simplified

7)  $B \rightarrow b$  — is already simplified.

∴ CNF is as follows →

$$S \rightarrow a \quad \text{--- ①}$$

$$R1 \rightarrow a \quad \text{--- ②}$$

$$S1 \rightarrow R1A \quad \text{--- ③}$$

$$S \rightarrow b \quad \text{--- ④}$$

$$R2 \rightarrow BB \quad \text{--- ⑤}$$

$$A \rightarrow R1R2 \quad \text{--- ⑥}$$

$$B \rightarrow ARI \quad \text{--- ⑦}$$

$$B \rightarrow a \quad \text{--- ⑧}$$

$$B \rightarrow b \quad \text{--- ⑨}$$

b) Given grammar -

$$S \rightarrow XB \quad \text{--- ①}$$

$$S \rightarrow AA \quad \text{--- ②}$$

$$A \rightarrow a \quad \text{--- ③}$$

$$A \rightarrow SA \quad \text{--- ④}$$

$$B \rightarrow b \quad \text{--- ⑤}$$

$$X \rightarrow a \quad \text{--- ⑥}$$

1) Removal of useless production -

There is no useless production.

2) Removal of epsilon production -

There is no epsilon production.

3) Removal of unit production -

There is no unit production.

∴ Given CFG is already simplified.



Q.4  
Q)

Given grammar  $\rightarrow$

- $S \rightarrow AA$  - (1)
- $S \rightarrow 0$  - (2)
- $A \rightarrow SS$  - (3)
- $A \rightarrow 1$  - (4)

1) Removal of unit production -  
There is no unit production -

2) Removal of useless production -  
There is no useless production

3) Removal of  $\epsilon$  production -  
There is no  $\epsilon$  production

$\therefore$  The given grammar is in simplified form.

4) GNF form  $\rightarrow$

$1NT \rightarrow 1T$

S) Conversion  $\rightarrow$

1)  $S \rightarrow AA$   
 $\therefore S \rightarrow 0AA$

2)  $S \rightarrow AA$   
 $S \rightarrow 1AA$

3)  $A \rightarrow SS$   
 $\therefore A \rightarrow 0SS$

4)  $A \rightarrow SS$

$\therefore A \rightarrow ISS$

← (grammar given)  
① -  $AA \rightarrow A$   
② -  $0 \rightarrow A$

$\therefore$  GNF Grammar is as follows

① -  $S \rightarrow A$   
② -  $T \rightarrow A$

1)  $S \rightarrow 0AA$

2)  $S \rightarrow 1AAA$

3)  $A \rightarrow 0ISS$

4)  $A \rightarrow ISS$

5  
3

b) Given grammar  $\rightarrow$

$E \rightarrow E + E$  — ①

$E \rightarrow E - E$  — ②

$E \rightarrow E * E$  — ③

$E \rightarrow id$  — ④

We have to derive string  $\rightarrow id - id * id$

1) Leftmost derivation -  $T \vdash \leftarrow T U \vdash$

$E \rightarrow E - E$  — ②

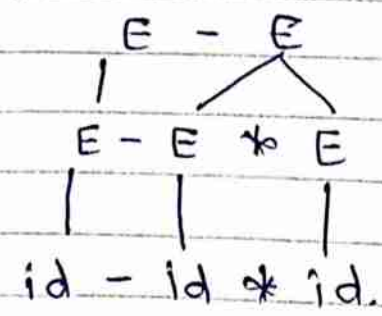
$E \rightarrow E - E * E$  — ③

$E \rightarrow id - id * id$  — ④

$\therefore$  We have derived string using leftmost derivation

$id - id * id$

Parse Tree  $\rightarrow$



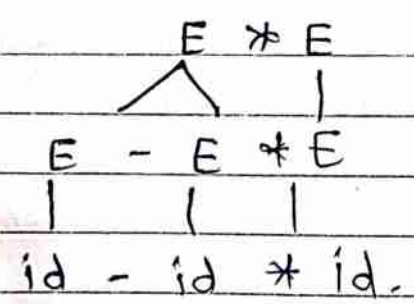
$\Rightarrow$  Rightmost derivation -

- $E \rightarrow E * E \text{ --- (3)}$
- $E \rightarrow E - E * E \text{ --- (2)}$
- $E \rightarrow id - id * id \text{ --- (1)}$

$\therefore$  We have derived string using rightmost derivation.

$id - id * id.$

Parse tree -



5

6