



Sinhgad Institutes

SINHGAD TECHNICAL EDUCATION SOCIETY'S®

# SMT. KASHIBAI NAVALE COLLEGE OF ENGINEERING®

Approved by AICTE Vide F. No. 740-89-004 (NDEGAPR/ET/2000) &  
Affiliated to Savitribai Phule Pune University ID. No. PU/PN/ENGG/155/2001

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Recognized by UGC under Section 2 (f) & 12 (B) of UGC Act 1956

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**PROF. M. N. NAVALE**  
M.E. (Elect.) MIE., MBA.  
FOUNDER PRESIDENT

**DR. (MRS.) SUNANDA M. NAVALE**  
B.A., M.P.M., Ph.D.  
FOUNDER SECRETARY

**DR. A. V. DESHPANDE**  
B.E., M. E.(Computer Engg.), Ph.D.  
PRINCIPAL

Date: 23/01/2023

To,  
The Director  
National Assessment and Accreditation Council (NAAC)  
P.O. Box No. 1075, Nagarbhavi,  
Bengaluru- 560 072

**Subject:** Proofs of Metric No. 1.2.1

**Reference:** Metric no. *1.2.1 Percentage of Programmes in which Choice Based Credit System (CBCS)/ elective course system has been implemented.*

Dear Sir/Madam,

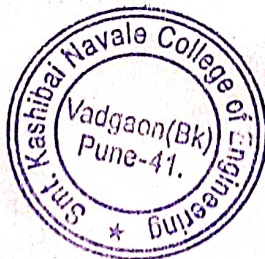
Kindly find below details of programmes in which Choice Based Credit System (CBCS)/ elective course system has been implemented for AY 2021-22.

- Number of Programmes in which CBCS/ Elective course system implemented.
- Percentage of Programmes in which Choice Based Credit System (CBCS)/ elective course system has been implemented.

Name of Program	Computer Engg.	IT	E&TC Engg	Mech. Engg	MBA	Total
No. of courses	63	18	30	61	50	222
Page No. (Proofs)	1-12	13-24	25-31	32-37	39-51	51

$$\frac{\text{Number of Programmes in which CBCS or elective course system Implemented}}{\text{Total number of Programmes offered}} \times 100 = (5/5) \times 100 = 100\%$$

Thanking you,



(Dr. A. V. Deshpande)

Principal

Principal  
Smt. Kashibai Navale  
College of Engineering  
Vadgaon(Bk.), Pune - 41.



Sinhgad Technical Education Society's  
Smt. Kashibai Navale College Of Engineering, PUNE- 411041  
Department of Computer Engineering

Criteria I

1.2.1 Number of Programmer in which Choice Based Credit System (CBCS)

Sr.No	Particular	Year	No.of Courses	
			A.Y. 2021-22	
			Semester I	Semester II
1	List of 2019 Course	SE	5	5
2	List of 2019 Course	TE	11	12
3	List of 2015 Course	BE	17	16



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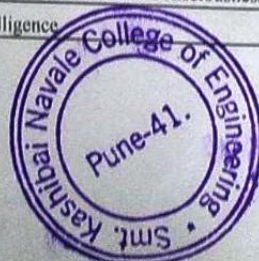


1.2.1 Number of Programmes in which Choice Based Credit System (CBCS)/ course system has been implemented

Programme Code	Programme name	Year of Introduction	Status of implementation of CBCS / course system (Yes/No)	Year of implementation of CBCS / course system	Link of relevant document
<b>SE</b>					
<b>SEM-I</b>					
617824510	Computer Engineering	2020-21	Yes	2021-22	Green Construction and Design
617824510	Computer Engineering	2020-21	Yes	2021-22	Social Awareness and Governance Program
617824510	Computer Engineering	2020-21	Yes	2021-22	Environmental Studies
617824510	Computer Engineering	2020-21	Yes	2021-22	Smart Cities
617824510	Computer Engineering	2020-21	Yes	2021-22	Foreign Language
<b>SEM-II</b>					
	Computer Engineering	2020-21			Water Management
617824510	Computer Engineering	2020-21	Yes	2021-22	Intellectual Property Rights and Patents
617824510	Computer Engineering	2020-21	Yes	2021-22	The Science of Happiness
617824510	Computer Engineering	2020-21	Yes	2021-22	Stress Relief, Yoga and Meditation
617824510	Computer Engineering	2020-21	Yes	2021-22	Foreign Language
<b>TE</b>					
<b>SEM-I</b>					
617824510	Computer Engineering	2021-22	Yes	2021-22	Cyber Security
617824510	Computer Engineering	2021-22	Yes	2021-22	Professional Ethics and Etiquettes
617824510	Computer Engineering	2021-22	Yes	2021-22	MOOC- Learn New Skill
617824510	Computer Engineering	2021-22	Yes	2021-22	Engineering Economics
617824510	Computer Engineering	2021-22	Yes	2021-22	Foreign Language
	Computer Engineering	2021-22	Yes	2021-22	Internet of Things and Embedded Systems
	Computer Engineering	2021-22	Yes	2021-22	Human Computer Interface
	Computer Engineering	2021-22	Yes	2021-22	Distributed Systems
	Computer Engineering	2021-22	Yes	2021-22	Software Project Management
617824510	Computer Engineering	2021-22	Yes	2021-22	Data science and Visualization
617824510	Computer Engineering	2021-22	Yes	2021-22	Information and Cyber security
<b>SEM-II</b>					
617824510	Computer Engineering	2021-22	Yes	2021-22	Digital and Social Media Marketing
617824510	Computer Engineering	2021-22	Yes	2021-22	Sustainable Energy Systems
617824510	Computer Engineering	2021-22	Yes	2021-22	Leadership and Personality Development
617824510	Computer Engineering	2021-22	Yes	2021-22	Foreign Language
617824510	Computer Engineering	2021-22	Yes	2021-22	MOOC- Learn New Skills
617824510	Computer Engineering	2021-22	Yes	2021-22	Information Security
617824510	Computer Engineering	2021-22	Yes	2021-22	Augmented and Virtual Reality
617824510	Computer Engineering	2021-22	Yes	2021-22	Cloud Computing
617824510	Computer Engineering	2021-22	Yes	2021-22	Software Modeling and Architectures
617824510	Computer Engineering	2021-22	Yes	2021-22	Data science and Visualization
617824510	Computer Engineering	2021-22	Yes	2021-22	Stat. AND Machine learning
617824510	Computer Engineering	2021-22	Yes	2021-22	Information and Cyber security
<b>BE</b>					
<b>SEM-I</b>					
617824510	Computer Engineering	2018-19	Yes	2019-20	Entrepreneurship Development
617824510	Computer Engineering	2018-19	Yes	2019-20	Botnet of Things
617824510	Computer Engineering	2018-19	Yes	2019-20	3D Printing
617824510	Computer Engineering	2018-19	Yes	2019-20	Industrial Safety and Environment Consciousness
617824510	Computer Engineering	2018-19	Yes	2019-20	Emotional Intelligence

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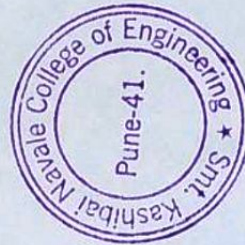


617824510	Computer Engineering	2018-19	Yes	2019-20	MOOC-Learn New Skill
617824510	Computer Engineering	2018-19	Yes	2019-20	Digital Signal Processing
617824510	Computer Engineering	2018-19	Yes	2019-20	Software Architecture and Design
617824510	Computer Engineering	2018-19	Yes	2019-20	Pervasive and Ubiquitous Computing
617824510	Computer Engineering	2018-19	Yes	2019-20	Data Mining and Warehousing
617824510	Computer Engineering	2018-19	Yes	2019-20	Distributed Systems
617824510	Computer Engineering	2018-19	Yes	2019-20	Software Testing and Quality Assurance
617824510	Computer Engineering	2018-19	Yes	2019-20	Operations Research
617824510	Computer Engineering	2018-19	Yes	2019-20	Mobile Communication
617824510	Computer Engineering	2018-19	Yes	2019-20	Machine learning
617824510	Computer Engineering	2018-19	Yes	2019-20	Internet of thing and Embeded Security
617824510	Computer Engineering	2018-19	Yes	2019-20	Machine learning and data science
			<b>SEM-II</b>		
617824510	Computer Engineering	2018-19	Yes	2019-20	Business Intelligence
617824510	Computer Engineering	2018-19	Yes	2019-20	Gamification
617824510	Computer Engineering	2018-19	Yes	2019-20	Quantum Computing
617824510	Computer Engineering	2018-19	Yes	2019-20	Usability Engineering
617824510	Computer Engineering	2018-19	Yes	2019-20	Conversational Interfaces
617824510	Computer Engineering	2018-19	Yes	2019-20	Advanced Digital Signal Processing
617824510	Computer Engineering	2018-19	Yes	2019-20	Compilers
617824510	Computer Engineering	2018-19	Yes	2019-20	Embedded and Real Time Operating Systems
617824510	Computer Engineering	2018-19	Yes	2019-20	Soft Computing and Optimization Algorithms
617824510	Computer Engineering	2018-19	Yes	2019-20	Software Defined Networks
617824510	Computer Engineering	2018-19	Yes	2019-20	Human Computer Interface
617824510	Computer Engineering	2018-19	Yes	2019-20	Cloud Computing
617824510	Computer Engineering	2018-19	Yes	2019-20	Internet of Things and Embedded Systems
617824510	Computer Engineering	2018-19	Yes	2019-20	Soft computing and deep learning
617824510	Computer Engineering	2018-19	Yes	2019-20	Info. Syst. Mgmt
617824510	Computer Engineering	2018-19	Yes	2019-20	Artificial Intelligent for Big data analytics

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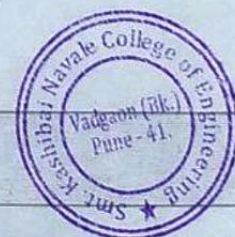
**Syllabus**

**for**

**Fourth Year of Computer Engineering**  
**(2015 Course)**

**(with effect from 2018-19 )**

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**Savitribai Phule Pune University**  
**Fourth Year of Computer Engineering (2015 Course)**  
**(with effect from 2018-19)**

**Semester I**

Course Code	Course	Teaching Scheme Hours / Week		Examination Scheme and Marks						Credit		
		Theory	Practical	In-Sem	End-Sem	TW	PR	OR/ *PRE	Total	TH/ TUT	PR	
410241	High Performance Computing	04	--	30	70	--	--	--	100	04	--	
410242	Artificial Intelligence and Robotics	03	--	30	70	--	--	--	100	03	--	
410243	Data Analytics	03	--	30	70	--	--	--	100	03	--	
410244	Elective I	03	--	30	70	--	--	--	100	03	--	
410245	Elective II	03	--	30	70	--	--	--	100	03	--	
410246	Laboratory Practice I	--	04	--	--	50	50	--	100	--	02	
410247	Laboratory Practice II	--	04	--	--	50	--	*50	100	--	02	
410248	Project Work Stage I	--	02	--	--	--	--	*50	50	--	02	
<b>Total Credit</b>										<b>16</b>	<b>06</b>	
<b>Total</b>		<b>16</b>	<b>10</b>	<b>150</b>	<b>350</b>	<b>100</b>	<b>50</b>	<b>100</b>	<b>750</b>	<b>22</b>		
410249	Audit Course 5										<b>Grade</b>	
<b>Elective I</b>					<b>Elective II</b>							
410244 (A) Digital Signal Processing					410245 (A) Distributed Systems							
410244 (B) Software Architecture and Design					410245 (B) Software Testing and Quality Assurance							
410244 (C) Pervasive and Ubiquitous Computing					410245 (C) Operations Research							
410244 (D) Data Mining and Warehousing					410245 (D) Mobile Communication							

**410249-Audit Course 5 (AC5) Options:**

AC5-I Entrepreneurship DevelopmentAC5-IV: Industrial Safety and Environment ConsciousnessAC5-II: Botnet of ThingsAC5-V: Emotional IntelligenceAC5-III: 3D PrintingAC5-VI: MOOC- Learn New Skills

**Abbreviations:**

TW: Term Work

TH: Theory

OR: Oral

PR: Practical

Sem: Semester

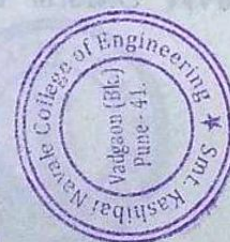
\*PRE: Project/ Mini-Project Presentation

Syllabus for Fourth Year of Computer Engineering

*[Signature]*  
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**Savitribai Phule Pune University**  
**Fourth Year of Computer Engineering (2015 Course)**  
**(with effect from 2018-19)**

**Semester II**

Course Code	Course	Teaching Scheme Hours / Week		Examination Scheme and Marks						Credit		
		Theory	Practical	In-Sem	End-Sem	TW	PR	OR/ *PRE	Total	TH/ TUT	PR	
410250	Machine Learning	03	--	30	70	--	--	--	100	03	--	
410251	Information and Cyber Security	03	--	30	70	--	--	--	100	03	--	
410252	Elective III	03	--	30	70	--	--	--	100	03	--	
410253	Elective IV	03	--	30	70	--	--	--	100	03	--	
410254	Laboratory Practice III	--	04	--	--	50	50	--	100	--	02	
410255	Laboratory Practice IV	--	04	--	--	50	--	*50	100	--	02	
410256	Project Work Stage II	--	06	--	--	100	--	*50	150	--	06	
<b>Total Credit</b>									<b>12</b>	<b>10</b>		
<b>Total</b>		<b>12</b>	<b>14</b>	<b>120</b>	<b>280</b>	<b>200</b>	<b>50</b>	<b>100</b>	<b>750</b>	<b>22</b>		
410257	Audit Course 6										<b>Grade</b>	
<b>Elective III</b>						<b>Elective IV</b>						
410252 (A) <u>Advanced Digital Signal Processing</u>						410253 (A) <u>Software Defined Networks</u>						
410252 (B) <u>Compilers</u>						410253 (B) <u>Human Computer Interface</u>						
410252 (C) <u>Embedded and Real Time Operating Systems</u>						410253 (C) <u>Cloud Computing</u>						
410252 (D) <u>Soft Computing and Optimization Algorithms</u>						410253 (D) <u>Open Elective</u>						

**410259-Audit Course 6 (AC6) Options:**

AC6-I: Business Intelligence  
 AC6-II: Gamification  
 AC6-III: Quantum Computing

AC6-IV: Usability Engineering  
 AC6-V: Conversational Interfaces  
 AC6-VI: MOOC- Learn New Skills

**Abbreviations:**

**TW:** Term Work    **TH:** Theory    **OR:** Oral    **PR:** Practical  
**Sem:** Semester    **\*PRE:** Project/ Mini-Project Presentation



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Curriculum  
for  
Third Year of Computer Engineering  
(2019 Course)  
(With effect from 2021-22)



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Savitribai Phule Pune University  
**Third Year of Computer Engineering (2019 Course)**  
 (With effect from Academic Year 2021-22)  
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**Third Year of Computer Engineering (2019 Course)**  
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**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	Database Management Systems	03	-	-	30	70	-	-	-	100	03	-	-	03
310242	Theory of Computation	03	-	-	30	70	-	-	-	100	03	-	-	03
310243	Systems Programming and Operating System	03	-	-	30	70	-	-	-	100	03	-	-	03
310244	Computer Networks and Security	03	-	-	30	70	-	-	-	100	03	-	-	03
310245	Elective I	03	-	-	30	70	-	-	-	100	03	-	-	03
310246	Database Management Systems Laboratory	-	04	-	-	-	25	50	-	50	-	02	-	02
310247	Computer Networks and Security Laboratory	-	04	-	-	-	-	-	50	50	-	02	-	02
310248	Laboratory Practice I	-	02	-	-	-	25	-	-	50	-	01	-	01
310249	Seminar and Technical Communication	-	01	-	-	-	50	-	-	50	-	01	-	01
310250	Audit Course 5													
<b>Total Credit</b>											<b>15</b>	<b>06</b>	<b>-</b>	<b>21</b>
<b>Total</b>		<b>15</b>	<b>11</b>	<b>-</b>	<b>150</b>	<b>350</b>	<b>100</b>	<b>50</b>	<b>50</b>	<b>700</b>	<b>15</b>	<b>06</b>	<b>-</b>	<b>21</b>
<b>Elective I</b>						<b>Audit Course 5</b>								
<ul style="list-style-type: none"> <li>• <u>Internet of Things and Embedded Systems</u></li> <li>• <u>Human Computer Interface</u></li> <li>• <u>Distributed Systems</u></li> <li>• <u>Software Project Management</u></li> </ul>						<ul style="list-style-type: none"> <li>• Cyber Security</li> <li>• Professional Ethics and Etiquettes</li> <li>• MOOC- Learn New Skills</li> <li>• Engineering Economics</li> <li>• Foreign Language</li> </ul>								
<b>Laboratory Practice I</b>														
Assignments from System Programming and Operating System and Elective I														



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 (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>	03	-	-	30	70	-	-	-	100	03			03
310252	<u>Web Technology</u>	03	-	-	30	70	-	-	-	100	03			03
310253	<u>Artificial Intelligence</u>	03	-	-	30	70	-	-	-	100	03			03
310254	<u>Elective II</u>	03	-	-	30	70	-	-	-	100	03			03
310255	<u>Internship</u>	-	04	-	-	-	100	-	-	100		04		04
310256	<u>Data Science and Big Data Analytics Laboratory</u>	-	04	-	-	-	25	-	50	75		02		02
310257	<u>Web Technology Laboratory</u>	-	04	-	-	-	25	50	-	75		02		02
310258	<u>Laboratory Practice II</u>	-	02	-	-	-	50	-	-	50		01		01
310259	<u>Audit Course 6</u>													
<b>Total</b>											<b>12</b>	<b>09</b>	<b>-</b>	<b>21</b>
<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>09</b>	<b>-</b>	<b>21</b>

**Elective II**

- Information Security
- Augmented and Virtual Reality
- Cloud Computing
- Software Modeling and Architectures

**Audit Course 6**

- Digital and Social Media Marketing
- Sustainable Energy Systems
- Leadership and Personality Development
- Foreign Language
- MOOC- Learn New Skills

**Laboratory Practice II**

Assignments from Artificial Intelligence and Elective II.



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Curriculum  
for  
Second Year of Computer Engineering  
(2019 Course)  
(With effect from 2020-21)

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**Savitribai Phule Pune University**  
**Second Year of Computer Engineering (2019 Course)**  
 (With effect from Academic Year 2020-21)

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**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	-	-	-	-	-	-	-	-	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>

**RHB**  
**Head**

Department of Computer Engineering  
 SKNCOE, Pune - 411 041





1.2.1

Sinhgad Institutes

Sinhgad Technical Education Society's  
Smt. Kashibai Navale College of Engineering, Pune – 41

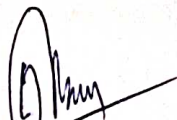
Department of Information Technology

Criteria I

1.2.1 Number of Programmes in which Choice Based Credit System (CBCS)

Sl.No.	Particulars	Year	No.of.Courses	
			Academic Year 2021-22	
			Semester I	Semester II
1	List of 2019 Course	SE	04	04
2	List of 2019 Course	TE	08	08
3	List of 2015 Course	BE	15	15



  
Dr. M.L. Bangare

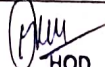
H.O.D (IT)  
HOD  
Department of Information Technology  
Smt. Kashibai Navale College of Engineering  
Vadgaon, (Bk.), Pune - 411 041



1.2.1 Number of Programmes in which Choice Based Credit System (CBCS)/ elective course system has been implemented

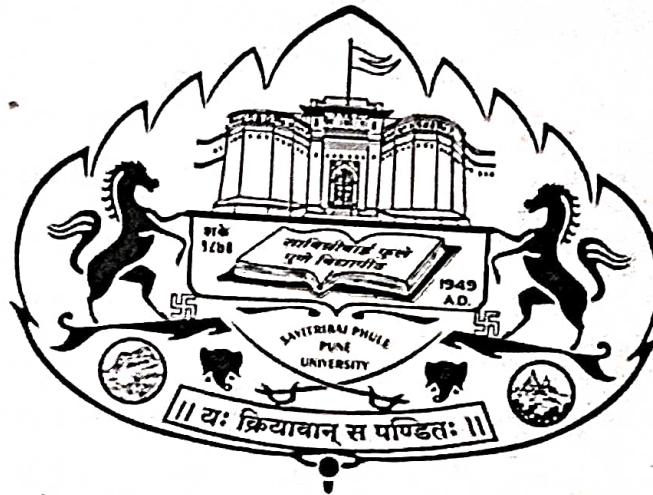
Programme Code	Programme name	Year of Introduction	Status of Implementation	Year of Implementation of	Link to the relevant document
617824610	Information Technology	2020	Yes	2021-2022	(214450A) Audit Course 3 (SE-IT) (Ethics and values in IT)
617824610	Information Technology	2020	Yes	2021-2022	(214450H) Audit Course 3 (SE-IT) (Quantitative Aptitude and Logical Reasoning)
617824610	Information Technology	2020	Yes	2021-2022	(214450C) Audit Course 3 (SE-IT) (Language Study Japanese Module)
617824610	Information Technology	2020	Yes	2021-2022	(214450I) Audit Course 3 (SE-IT) (Cyber Security and Law)
617824610	Information Technology	2020	Yes	2021-2022	(214459A) Audit Course 4 (SE-IT) (Water Supply and Treatment)
617824610	Information Technology	2020	Yes	2021-2022	(214459H) Audit Course 4 (SE-IT) (Language Study Japanese Module 2)
617824610	Information Technology	2020	Yes	2021-2022	(214459C) Audit Course 4 (SE-IT) (Waste management and Pollution Control)
617824610	Information Technology	2021	Yes	2021-2022	(214459I) Audit Course 4 (SE-IT) (Intellectual Property rights)
617824610	Information Technology	2021	Yes	2021-2022	(314445A) JI-lective-I (IT-IT) (Design and Analysis of Algorithm)
617824610	Information Technology	2021	Yes	2021-2022	(314445H) JI-lective-I (IT-IT) (Advanced Database and Management System)
617824610	Information Technology	2021	Yes	2021-2022	(314445C) JI-lective-I (IT-IT) (Design Thinking)
617824610	Information Technology	2021	Yes	2021-2022	(314445I) JI-lective-I (IT-IT) (Internet of Things)
617824610	Information Technology	2021	Yes	2021-2022	(314454A) JI-lective-II (IT-IT) (Artificial Intelligence)
617824610	Information Technology	2021	Yes	2021-2022	(314454H) JI-lective-II (IT-IT) (Cyber Security)
617824610	Information Technology	2021	Yes	2021-2022	(314454C) JI-lective-II (IT-IT) (Cloud Computing)
617824610	Information Technology	2021	Yes	2021-2022	(314454I) JI-lective-II (IT-IT) (Software Modeling and Design)
617824610	Information Technology	2021	Yes	2021-2022	(314450A) Audit Course 5 (TE-IT) (Banking and Insurance)
617824610	Information Technology	2021	Yes	2021-2022	(314450H) Audit Course 5 (TE-IT) (Startup Ecosystems)
617824610	Information Technology	2021	Yes	2021-2022	(314450C) Audit Course 5 (TE-IT) (Foreign Language - (Japanese Language-III)
617824610	Information Technology	2021	Yes	2021-2022	(314459A) Audit Course 6 (TE-IT) (Green and Unconventional Energy)
617824610	Information Technology	2021	Yes	2021-2022	(314459H) Audit Course 6 (TE-IT) (Leadership and Personality Development)
617824610	Information Technology	2021	Yes	2021-2022	(314459C) Audit Course 6 (TE-IT) (Foreign Language-(Japanese Language-IV))
617824610	Information Technology	2021	Yes	2021-2022	(310501) Honours* in Data Science & Visualization
617824610	Information Technology	2018	Yes	2021-2022	(310502) Honours* in Statistics & Machine learning
617824610	Information Technology	2018	Yes	2021-2022	(414456A) JI-lective-I (BE-IT) (Wireless Communication)
617824610	Information Technology	2018	Yes	2021-2022	(414456B) JI-lective-I (BE-IT) (Natural Language Processing)
617824610	Information Technology	2018	Yes	2021-2022	(414456C) JI-lective-I (BE-IT) (Usability Engineering)
617824610	Information Technology	2018	Yes	2021-2022	(414456D) JI-lective-I (BE-IT) (Multicore and Concurrent System)
617824610	Information Technology	2018	Yes	2021-2022	(414456E) JI-lective-I (BE-IT) (Business Analytics and Intelligence)
617824610	Information Technology	2018	Yes	2021-2022	(414457A) JI-lective-II (BE-IT) (Software Defined Network)
617824610	Information Technology	2018	Yes	2021-2022	(414457H) JI-lective-II (BE-IT) (Soft Computing)
617824610	Information Technology	2018	Yes	2021-2022	(414457C) JI-lective-II (BE-IT) (Software Testing and quality Assurance)
617824610	Information Technology	2018	Yes	2021-2022	(414457I) JI-lective-II (BE-IT) (Compiler Construction)
617824610	Information Technology	2018	Yes	2021-2022	(414457J) JI-lective-II (BE-IT) (Gamification)
617824610	Information Technology	2018	Yes	2021-2022	(414464A) JI-lective-III (BE-IT) (Internet of Things)
617824610	Information Technology	2018	Yes	2021-2022	(414464H) JI-lective-III (BE-IT) (Information Storage and Retrieval)
617824610	Information Technology	2018	Yes	2021-2022	(414464C) JI-lective-III (BE-IT) (Multimedia Techniques)
617824610	Information Technology	2018	Yes	2021-2022	(414464I) JI-lective-III (BE-IT) (Internet and web Programming)
617824610	Information Technology	2018	Yes	2021-2022	(414464J) JI-lective-III (BE-IT) (Computational Optimization)
617824610	Information Technology	2018	Yes	2021-2022	(414465A) JI-lective-IV (BE-IT) (Rural Technologies and community Development)
617824610	Information Technology	2018	Yes	2021-2022	(414465H) JI-lective-IV (BE-IT) (Parallel Computing)
617824610	Information Technology	2018	Yes	2021-2022	(414465C) JI-lective-IV (BE-IT) (Computer Vision)
617824610	Information Technology	2018	Yes	2021-2022	(414465I) JI-lective-IV (BE-IT) (Social Media Analytics)
617824610	Information Technology	2018	Yes	2021-2022	(414465J) JI-lective-IV (BE-IT) (Open Elective)
617824610	Information Technology	2018	Yes	2021-2022	(414461A) Audit Course 5 (BE-IT) (Emotional Intelligence)
617824610	Information Technology	2018	Yes	2021-2022	(414461B) Audit Course 5 (BE-IT) (Green Computing)
617824610	Information Technology	2018	Yes	2021-2022	(414461C) Audit Course 5 (BE-IT) (Critical Thinking)
617824610	Information Technology	2018	Yes	2021-2022	(414461D) Audit Course 5 (BE-IT) (Statistical learning model using R)
617824610	Information Technology	2018	Yes	2021-2022	(414469A) Audit Course 6 (BE-IT) (IoT Application Engg field)
617824610	Information Technology	2018	Yes	2021-2022	(414469B) Audit Course 6 (BE-IT) (Entrepreneurship)
617824610	Information Technology	2018	Yes	2021-2022	(414469C) Audit Course 6 (BE-IT) (Cognitive computing)
617824610	Information Technology	2018	Yes	2021-2022	(414469D) Audit Course 6 (BE-IT) (AI and Robotics)
617824610	Information Technology	2020	Yes	2021-2022	(410501) Honours* in Machine learning & Data Science (BE)
617824610	Information Technology	2020	Yes	2021-2022	(410502) Honours* in Artificial Intelligence of Big data Analysis (BE) (Machine Learning and Data Science Laboratory)



  
 HOD  
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Faculty of Science & Technology  
Savitribai Phule Pune University, Pune  
Maharashtra, India



Curriculum  
for  
Second Year of Information Technology  
(2019 Course)  
(With effect from AY 2020-21)

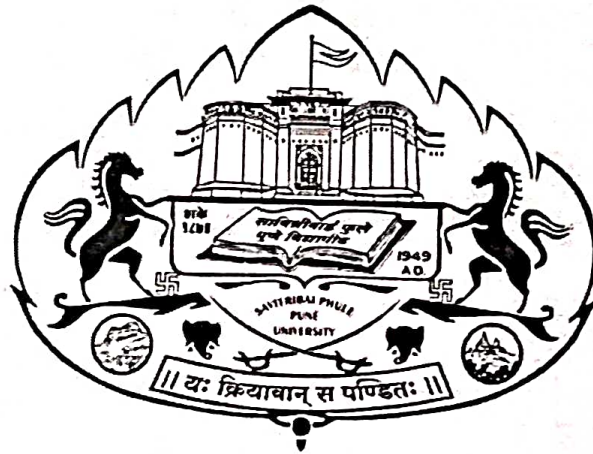


  
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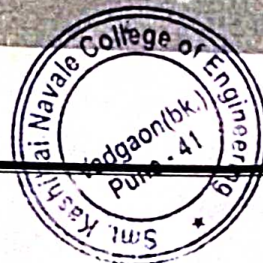
Faculty of Science & Technology  
Savitribai Phule Pune University,  
Pune, Maharashtra, India



Curriculum For  
Third Year of Information Technology  
(2019 Course)  
(With effect from AY 2021-22)

Department of Information Technology  
Smt. Kashibai Navale College of Engineering

TE (Information Technology) Syllabus (2019 Course) Vadgaon, (Bk.), Pune - 411 007





**Savitribai Phule Pune University**  
**Second Year of Information Technology 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
<u>214441</u>	Discrete Mathematics	03	-	01	30	70	25	-	-	125	03	--	01	04
<u>214442</u>	Logic Design and Computer Organization	03	-	-	30	70	-	-	-	100	03	-	-	03
<u>214443</u>	Data Structures and Algorithms	03	-	-	30	70	-	-	-	100	03	-	-	03
<u>214444</u>	Object Oriented Programming	03	-	-	30	70	-	-	-	100	03	-	-	03
<u>214445</u>	Basics of Computer Network	03	-	-	30	70	-	-	-	100	03	-	-	03
<u>214446</u>	Logic Design Computer Organization Lab	-	02	-	-	-	25	25	-	50	-	01	-	01
<u>214447</u>	Data Structures and Algorithms Lab	-	04	-	-	-	25	25	-	50	-	02	-	02
<u>214448</u>	Object Oriented Programming Lab	-	04	-	-	-	25	25	-	50	-	02	-	02
<u>214449</u>	Soft Skill Lab	-	02	-	-	-	25	-	-	25	-	01	-	01
<u>214450</u>	Mandatory Audit Course 3	-	-	-	-	-	-	-	-	-	Non Credit			-
<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>15</b>	<b>06</b>	<b>01</b>	<b>22</b>

**Abbreviations:**

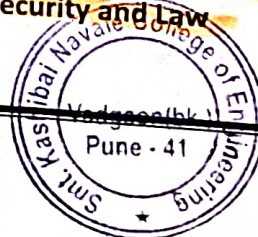
TH: Theory      TW: Term Work      PR: Practical  
 OR: Oral      TUT: Tutorial


**Note: Students of S.E. (Information Technology) can opt any one of the audit course from the list of audit courses prescribed by BoS (Information Technology)**

**#Mandatory Audit Course 3:**

- 214450A- Ethics and values in IT**
- 214450B - Quantitative Aptitude and Logical Reasoning**
- 214450C- Language Study- Japanese- Module**
- 214450D- Cyber Security and Law**

**SE (Information Technology) Syllabus (2019 Course)**



  
 Department of Information Technology  
 Smt. Kasturba Navale College of Engineering  
 Vadgaon, (Bk.), Pune - 41 041



Savitribai Phule Pune University  
Third Year of Information Technology (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			
		Theory	Practical	Tutorial	Mid-Sem	End-Sem	Term work	Practical	Oral	Total	Lecture	Practical	Tutorial	Total
314441	Theory of Computation	03	-	-	30	70	-	-	-	100	3	-	-	3
314442	Operating Systems	03	-	-	30	70	-	-	-	100	3	-	-	3
314443	Machine Learning	03	-	-	30	70	-	-	-	100	3	-	-	3
314444	Human Computer Interaction	03	-	-	30	70	-	-	-	100	3	-	-	3
314445	Elective-I	03	-	-	30	70	-	-	-	100	3	-	-	3
314446	Operating Systems Lab	-	04	-	-	-	25	25	-	50	-	2	-	2
314447	Human Computer Interaction- Lab	-	02	-	-	-	-	-	50	50	-	1	-	1
314448	Laboratory Practice-I	-	04	-	-	-	25	25	-	50	-	2	-	2
314449	Seminar	-	01	-	-	-	50	-	-	50	-	1	-	1
314450	Audit Course 5	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total Credit</b>											<b>15</b>	<b>06</b>	<b>-</b>	<b>21</b>
<b>Total</b>		<b>15</b>	<b>11</b>	<b>-</b>	<b>150</b>	<b>350</b>	<b>100</b>	<b>50</b>	<b>50</b>	<b>700</b>	<b>15</b>	<b>06</b>	<b>-</b>	<b>21</b>

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

**Elective-I:**

- 314445A- Design and Analysis of Algorithm
- 314445B- Advanced Database and Management System
- 314445C- Design Thinking
- 314445D- Internet of Things

**Audit Course 5:**

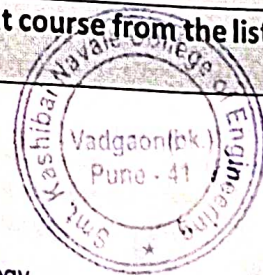
- 314450A-Banking and Insurance
- 314450B-Startup Ecosystems
- 314450C- Foreign Language-(Japanese Language- III )

**Laboratory Practice-I:**

Assignment from Machine Learning and Elective I

**Note: Students of T.E. (Information Technology) can opt any one of the audit course from the list of audit courses prescribed by BoS (Information Technology)**

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## B.E. (Information Technology) 2015 Course to be implemented from Academic Year 2018-19

## SEMESTER-I

Subject Code	Subject	Teaching Scheme			Examination Scheme					Total Marks	Credits
		Lecture	Practical	Tutorial	In-Sem	TW	PR	OR	End-Sem		
414453	Information and Cyber Security	3	--	--	30	--	--	--	70	100	3
414454	Machine Learning and Applications	4	--	--	30	--	--	--	70	100	4
414455	Software Design and Modeling	3	--	--	30	--	--	--	70	100	3
414456	Elective-I	3	--	--	30	--	--	--	70	100	3
414457	Elective -II	3	--	--	30	--	--	--	70	100	3
414458	Computer Laboratory-VII	--	4	--	--	50	50	--	--	100	2
414459	Computer Laboratory-VIII	--	4	--	--	50	--	50	--	100	2
414460	Project Phase-I	--	--	2	--	--	--	50	--	50	2
414461	Audit Course-V	--	--	--	--	--	--	--	--	50	2
Total		16	8	2	150	100	50	100	350	Grade	
Total of Part-I		26			750					750	22

Abbreviations: TW: Term Work TH: Theory OR: Oral PR: Practical Sem: Semester  
 Computer Laboratory-VII (Information and Cyber Security+ Machine Learning and Application)  
 Computer Laboratory-VIII (Software Design and Modeling)

Elective I		Elective II	
414456 A	1. Wireless Communications	414457A	1. Software Defined Networks
414456B	2. Natural Language Processing	414457B	2. Soft Computing
414456C	3. Usability Engineering	414457C	3. Software Testing and Quality Assurance
414456D	4. Multicore and Concurrent Systems	414457D	4. Compiler Construction
414456E	5. Business Analytics and Intelligence	414457E	5. Gamification

Audit Course-V	
414461A	1. Emotional Intelligence
414461B	2. Green Computing
414461C	3. Critical Thinking
414461D	4. Statistical Learning model using R.



Savitribal Phule Pune University, Pune  
 Second Year of Information Technology 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
207003	Engineering Mathematics- III	03	-	01	30	70	25	-	-	125	03	-	01	04
214451	Processor Architecture	03	-	-	30	70	-	-	-	100	03	-	-	03
214452	Database Management System	03	-	-	30	70	-	-	-	100	03	-	-	03
214453	Computer Graphics	03	-	-	30	70	-	-	-	100	03	-	-	03
214454	Software Engineering	03	-	-	30	70	-	-	-	100	03	-	-	03
214455	Programming Skill Development Lab	-	02	-	-	-	25	25	-	50	-	01	-	01
214456	Database Management System Lab	-	04	-	-	-	25	25	-	50	-	02	-	02
214457	Computer Graphics Lab	-	02	-	-	-	-	25	-	25	-	01	-	01
214458	Project Based Learning	-	04	-	-	-	50	-	-	50	-	02	-	02
214459	Mandatory Audit Course 4	-	-	-	-	-	-	-	-	-	Non Credit			-
Total		15	12	01	150	350	125	75	-	700	15	06	01	22

Abbreviations:

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

Note: Students of S.E. (Information Technology) can opt any one of the audit course from the list of audit courses prescribed by BoS ( Information Technology)

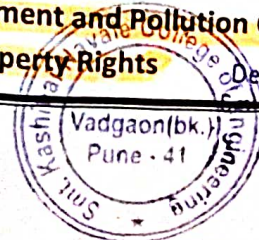
#Mandatory Audit Course 4:

214459A - Water Supply and Treatment

214459B - Language Study- Japanese- Module II

214459C - Waste Management and Pollution Control

214459D - Intellectual Property Rights





Savitribal Phule Pune University  
Third Year of Information Technology (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
<u>314451</u>	Computer Networks & Security	03	-	-	30	70	-	-	-	100	03			03
<u>314452</u>	Data Science and Big Data Analytics	03	-	-	30	70	-	-	-	100	03			03
<u>314453</u>	Web Application Development	03	-	-	30	70	-	-	-	100	03			03
<u>314454</u>	Elective-II	03	-	-	30	70	-	-	-	100	03			03
<u>314455</u>	Internship	-	04	-	-	-	100	-	-	100		04		04
<u>314456</u>	Computer Networks & Security-Lab	-	04	-	-	-	25	-	50	75		02		02
<u>314457</u>	DS & BDA-Lab	-	02	-	-	-	25	25	-	50		01		01
<u>314458</u>	Laboratory Practice-II	-	04	-	-	-	50	25	-	75		02		02
<u>314459</u>	Audit Course 6	-	-	-	-	-	-	-	-	-		-	-	-
<b>Total</b>											<b>12</b>	<b>09</b>	<b>-</b>	<b>21</b>
<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>09</b>	<b>-</b>	<b>21</b>

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

Elective-II:

314454A- Artificial Intelligence

314454B- Cyber Security

314454C- Cloud Computing

314454D- Software Modeling and Design

Laboratory Practice-II:

Assignments from Web Application Development and Elective-II.

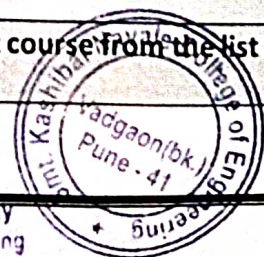
Note: Students of T.E. (Information Technology) can opt any one of the audit course from the list of audit courses prescribed by BoS (Information Technology)

Audit Course 6:

314459A - Green and Unconventional Energy

314459B - Leadership and Personality Development

314459C- Foreign Language-(Japanese Language- IV)





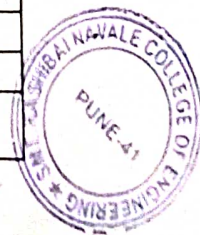
## SEMESTER –II

Subject Code	Subject	Teaching Scheme			Examination Scheme					Total Marks	Credits
		Lecture	Practical	Tutorial	In-Sem	TW	PR	OR	End-Sem		
414462	<u>Distributed Computing System</u>	3	--	--	30	--	--	--	70	100	3
414463	<u>Ubiquitous Computing</u>	3	--	--	30	--	--	--	70	100	3
414464	<u>Elective-III</u>	3	2	--	30	25	--	25	70	150	4
414465	<u>Elective-IV</u>	3	--	--	30	--	--	--	70	100	3
414466	<u>Computer Laboratory-IX</u>	--	4	--	--	50	50	--	--	100	2
414467	<u>Computer Laboratory-X</u>	--	2	--	--	25	--	25	--	50	1
414468	<u>Project Work</u>	--	--	6	--	50	--	100	--	150	6
414469	<u>Audit Course-VI</u>	--	--	--	--	--	--	--	--	Grade	
<b>Total</b>		<b>12</b>	<b>8</b>	<b>6</b>	<b>120</b>	<b>150</b>	<b>50</b>	<b>150</b>	<b>280</b>	<b>750</b>	<b>22</b>
<b>Total of Part-II</b>		<b>26</b>			<b>750</b>						

Abbreviations: TW: Term Work TH: Theory OR: Oral PR: Practical Sem: Semester  
 Computer Laboratory-IX (Distributed Computing System)  
 Computer Laboratory-X (Ubiquitous Computing)

Elective III		Elective IV	
414464A	<u>1. Internet of Things (IoT)</u>	414465A	<u>1. Rural Technologies and Community Development</u>
414464B	<u>2. Information storage and retrieval</u>	414465B	<u>2. Parallel Computing</u>
414464C	<u>3. Multimedia Techniques</u>	414465C	<u>3. Computer Vision</u>
414464D	<u>4. Internet and Web Programming</u>	414464D	<u>4. Social Media Analytics</u>
414464E	<u>5. Computational Optimization</u>	414465E	<u>5. Open Elective</u>

Audit Course-VI	
414469A	<u>1. IoT – Application in Engineering field</u>
414469B	<u>2. Entrepreneurship</u>
414469C	<u>3. Cognitive Computing</u>
414469D	<u>4. AI and Robotics</u>

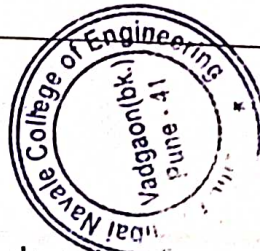


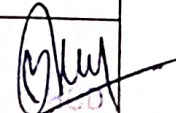


## Honours\* in Data Science

With effect from 2020-21

Year & Semester	Course Code and Course Title		Teaching Scheme Hours / Week			Examination Scheme and Marks					Credit Scheme			
			Theory	Tutorial	Practical	Mid-Semester	End-Semester	Term work	Practical	Presentation	Total Marks	Theory / Tutorial	Practical	Total Credit
TE & V	310501	Data Science and Visualization	04	--	--	30	70	--	--	--	100	04	--	04
	310502	Data Science and Visualization Laboratory	--	--	02	--	--	50	--	--	50	--	01	01
	Total		04	-	02	100	50	-	-	-	150	04	01	05
<b>Total Credits = 05</b>														
TE & VI	310503	Statistics and Machine Learning	04	--	--	30	70	--	--	--	100	04	--	04
	Total		04	-	-	100	-	-	-	-	100	04	-	04
<b>Total Credits = 04</b>														
BE & VII	410501	Machine Learning and Data Science	04	--	--	30	70	--	--	--	100	04	--	04
	410502	Machine Learning and Data Science Laboratory	--	--	02	--	--	50	--	--	50	--	01	01
	Total		04	-	02	100	50	-	-	-	150	04	01	05
<b>Total Credits = 05</b>														
BE & VIII	410503	Artificial Intelligence for Big Data Analytics	04	-	--	30	70	--	--	--	100	04	--	04
	410504	Seminar	--	02	--	--	--	-	--	50	50	02	--	02
	Total		04	-	02	100	-	--	50	50	150	06	-	06
<b>Total Credits = 06</b>														
<b>Total Credit for Semester V+VI+VII+VIII = 20</b>														
<p><b>* To be offered as Honours for Major Disciplines as-</b></p> <ol style="list-style-type: none"> <li>1. Computer Engineering</li> <li>2. Electronics and Telecommunication Engineering</li> <li>3. Electronics Engineering</li> <li>4. Information Technology</li> </ol> <p><b>For any other Major Disciplines which is not mentioned above, it may be offered as Minor Degree.</b></p>														
<p>Reference: <a href="https://www.aicte-india.org/sites/default/files/APH%202020_21.pdf">https://www.aicte-india.org/sites/default/files/APH%202020_21.pdf</a> / page 99-100</p>														



  
 Department of Information Technology  
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 Vadgaon, (Bk.), Pune - 411 041





1.2.1

Sinhgad Institutes

Sinhgad Technical Education Society's  
Smt. Kashibai Navale College of Engineering, Pune – 41

Department of Electronics and Telecommunication Engineering

Criteria I

1.2.1 Number of Programmes in which Choice Based Credit System (CBCS)

Sl.No.	Particulars	Year	No.of.Courses	
			Academic Year 2021-22	
			Semester I	Semester II
1	List of 2019 Course	SE	1	1
2	List of 2019 Course	TE	7	5
3	List of 2015 Course	BE	8	8

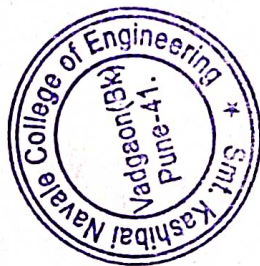
Dr. S. K. Jagtap

HOD, E&TC

Head

Dept. of Electronics &  
Telecommunication Engineering

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of Engineering, Pune - 411 041





**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 &	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total</b>		<b>16</b>	<b>10</b>	<b>01</b>	<b>150</b>	<b>350</b>	<b>75</b>	<b>100</b>	<b>25</b>	<b>700</b>	<b>16</b>	<b>05</b>	<b>01</b>	<b>22</b>

*Jagtap*  
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**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>

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**Elective - I**

- 1) Digital Signal Processing
- 2) Electronic Measurements
- 3) Fundamentals of JAVA Programming
- 4) Computer Networks





**Savitribai PhulePune University**  
**Final Year E&TC Engineering (2015 Course)**  
 (With effect from Academic Year 2018-19)

Semester I												
Course Code	-Course	Teaching Scheme Hours / Week			Semester Examination Scheme of Marks						Credits	
		Theor y	Tut	Pract	In-Sem	End-Sem	TW	PR	OR	Total	TH/TW	PR+OR
404181	VLSI Design & Technology	3	--	--	30	70	--	--	--	100	3	--
404182	Computer Networks & Security	4	--	--	30	70	--	--	--	100	4	--
404183	Radiation & Microwave Techniques	3	--	--	30	70	--	--	--	100	3	--
404184	Elective I	3	--	--	30	70	--	--	--	100	3	--
404185	Elective II	3	--	--	30	70	--	--	--	100	3	--
404186	Lab Practice -I (CNS+ RMT)	--	--	4	--	--	50	--	50	100	--	2
404187	Lab Practice -II (VLSI + Elective I)	--	--	4	--	--	50	50	--	100	--	2
404188	Project Stage I	-	2	--	--	--	-	--	50	50	--	2
	<b>Audit Course 5</b>	--	--	--	--	--	--	--	--	--	--	----
	<b>Total</b>	16	2	8	150	350	100	50	100	750	16	6

**Total Credits**

22

**Elective I**

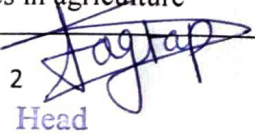
1. Digital Image and Video Processing
2. Industrial Drives and Control
3. Embedded Systems & RTOS
4. Internet of Things

**Elective II**

1. Wavelets
2. Electronics Product Design
3. Optimization Techniques
4. Artificial Intelligence
5. Electronics in agriculture

**Audit Course 5**

1. Green Energy
2. Human Behaviour

2 

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**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>1</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)**

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**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

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## Final Year E&TC Engineering (2015 Course)

(With effect from Academic Year 2018-19)

Semester II												
Course Code	Course	Teaching Scheme			Semester Examination Scheme of						Credit	
		Hours / Week			Marks						TH/TW	PR+OR
Theory	Tut	Pract	In-Sem	End-Sem	TW	PR	OR	Total				
404189	Mobile Communication	3	--	--	30	70	--	--	--	100	3	--
404190	Broadband Communication Systems	4	--	--	30	70	--	--	--	100	4	--
404191	Elective III	3	--	--	30	70	--	--	--	100	3	--
404192	Elective IV	3	--	--	30	70	--	--	--	100	3	--
404193	Lab Practice –III (MC+BCS)	--	--	4	--	--	50	50	--	100	--	2
404194	Lab Practice –IV ( Elective III)	--	--	2	--	--	--	50	--	50	--	1
404195	Project Stage II	--	6	-	--	--	150	--	50	200	--	6
	<b>Audit Course 6</b>	--	--	--	--	--	--	--	--	--		
<b>Total</b>		13	6	6	120	280	200	50	100	750	13	9
<b>Total Credits</b>											<b>22</b>	
<b>Elective III</b>				<b>Elective-IV</b>				<b>Audit Course 6</b>				
1. Machine Learning 2. PLC s and Automation 3. Audio and Speech Processing 4. Software Defined Radio 5. Audio Video Engineering				1. Robotics 2. Biomedical Electronics 3. Wireless Sensor Networks 4. Renewable Energy Systems 5. Open Elective*				1. Team Building, Leadership and Fitness 2. Environmental issues and Disaster Management				

\*Any one course from the list of Elective IV of computer/IT/Electrical/Instrumentation or Institute can offer elective IV based on any industry need with prior approval from BoS(Electronics & Telecommunication). Repetition of course or topics should be avoided.

3  
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Sinhgad Institutes

1.2.1

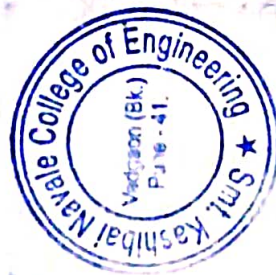
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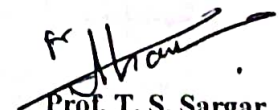
**Department of Mechanical Engineering**

**Criteria I**

**1.2.1 Number of Programmes in which Choice Based Credit System (CBCS)**

Sl.No.	Particulars	Year	No.of.Courses	
			Academic Year 2021-22	
			Semester I	Semester II
1	List of 2019 Course	SE	6	7
2	List of 2019 Course	TE	13	9
3	List of 2015 Course	BE	13	13



  
Prof. T. S. Sargar

**HOD, Mech**  
Assistant Professor & Head  
Dept. of Mechanical Engg.  
Smt. Kashibai Navale College  
of Engineering, Pune - 41.



1.2.1 Number of Programmes in which Choice Based Credit System (CBCS) elective course system has been implemented

Sl.No	Programme Code	Programme Name	Year of Introduction	Status of Implementation of CBCS / elective course system (Yes/No)	Year of implementation of CBCS / elective course system	Link to the relevant document
<b>2021-22 SEM-I</b>						
<b>SE</b>						
1	617837210, 617837220	Mechanical Engineering	2021-22	Yes	2021-22	Audit Course - III (Technical English For Engineers)
2	617837210, 617837220	Mechanical Engineering	2021-22	Yes	2021-22	Audit Course - III (Entrepreneurship Development)
3	617837210, 617837220	Mechanical Engineering	2021-22	Yes	2021-22	Audit Course - III (Developing soft skills and personality)
4	617837210, 617837220	Mechanical Engineering	2021-22	Yes	2021-22	Audit Course - III (Design Thinking)
5	617837210, 617837220	Mechanical Engineering	2021-22	Yes	2021-22	Audit Course - III (Foreign Language (preferably German/ Japanese))
6	617837210, 617837220	Mechanical Engineering	2021-22	Yes	2021-22	Audit Course - III (Science, Technology and Society)
<b>TE</b>						
1	617837210, 617837220	Mechanical Engineering	2021-22	Yes	2021-22	Elective I Advanced Forming & Joining Processes
2	617837210, 617837220	Mechanical Engineering	2021-22	Yes	2021-22	Elective I Machining Science and Technology
3	617837210, 617837220	Mechanical Engineering	2021-22	Yes	2021-22	Digital Manufacturing Laboratory
4	617837210, 617837220	Mechanical Engineering	2021-22	Yes	2021-22	Skill Development
5	617837210, 617837220	Mechanical Engineering	2021-22	Yes	2021-22	Audit course-V (Entrepreneurship and IP strategy)
6	617837210, 617837220	Mechanical Engineering	2021-22	Yes	2021-22	Audit course-V (Engineering Economics)
7	617837210, 617837220	Mechanical Engineering	2021-22	Yes	2021-22	Audit course-V (Management of Inventory Systems)
8	617837210, 617837220	Mechanical Engineering	2021-22	Yes	2021-22	Honors Course - Additive Manufacturing Technology
9	617837210, 617837220	Mechanical Engineering	2021-22	Yes	2021-22	Honors Course - Modelling Lab
10	617837210, 617837220	Mechanical Engineering	2021-22	Yes	2021-22	Honors Course - Principles of Industrial Robotics
11	617837210, 617837220	Mechanical Engineering	2021-22	Yes	2021-22	Honors Course - Industrial Robotics Laboratory
12	617837210, 617837220	Mechanical Engineering	2021-22	Yes	2021-22	Honors Course - e-Vehicle Technology
13	617837210, 617837220	Mechanical Engineering	2020-21	Yes	2021-22	Honors Course - EV Lab
<b>BE</b>						
1	617837210, 617837220	Mechanical Engineering	2018-19	Yes	2021-22	Elective-I Finite Element Analysis
2	617837210, 617837220	Mechanical Engineering	2018-19	Yes	2021-22	Elective-I Computational Fluid Dynamics
3	617837210, 617837220	Mechanical Engineering	2018-19	Yes	2021-22	Elective-I Heating Ventilation and Air Conditioning
4	617837210, 617837220	Mechanical Engineering	2018-19	Yes	2021-22	Elective-II Automobile Engineering
5	617837210, 617837220	Mechanical Engineering	2018-19	Yes	2021-22	Elective-II Operation Research
6	617837210, 617837220	Mechanical Engineering	2018-19	Yes	2021-22	Elective-II - Energy Audit and Management
7	617837210, 617837220	Mechanical Engineering	2018-19	Yes	2021-22	Project-I
8	617837210, 617837220	Mechanical Engineering	2018-19	Yes	2021-22	Honors Course - Additive Manufacturing System Design
9	617837210, 617837220	Mechanical Engineering	2018-19	Yes	2021-22	Honors Course - 3D Printing Lab
10	617837210, 617837220	Mechanical Engineering	2018-19	Yes	2021-22	Honors Course - Automation System Design
11	617837210, 617837220	Mechanical Engineering	2018-19	Yes	2021-22	Honors Course - Design of Robotic Systems Laboratory
12	617837210, 617837220	Mechanical Engineering	2018-19	Yes	2021-22	Honors Course - Modelling and Simulation of EHV
13	617837210, 617837220	Mechanical Engineering	2018-19	Yes	2021-22	Honors Course - EV Simulation Lab
<b>2021-22 SEM II</b>						
<b>SE</b>						
1	617837210, 617837220	Mechanical Engineering	2020-21	Yes	2021-22	Audit Course - IV (Language & Mind Emotional Intelligence)
2	617837210, 617837220	Mechanical Engineering	2020-21	Yes	2021-22	Audit Course - IV (Advanced Foreign Language (preferably German/ Japanese))
3	617837210, 617837220	Mechanical Engineering	2020-21	Yes	2021-22	Audit Course - IV (Human Behaviour)
4	617837210, 617837220	Mechanical Engineering	2020-21	Yes	2021-22	Audit Course - IV (Speaking Effectively)
5	617837210, 617837220	Mechanical Engineering	2020-21	Yes	2021-22	Audit Course - IV (Business Ethics)
6	617837210, 617837220	Mechanical Engineering	2020-21	Yes	2021-22	Audit Course - IV (Technical writing/ Research writing)
7	617837210, 617837220	Mechanical Engineering	2020-21	Yes	2021-22	Project Based Learning - II
<b>TE</b>						
1	617837210, 617837220	Mechanical Engineering	2021-22	Yes	2021-22	Elective II Composite Materials
2	617837210, 617837220	Mechanical Engineering	2021-22	Yes	2021-22	Elective II Surface Engineering
3	617837210, 617837220	Mechanical Engineering	2021-22	Yes	2021-22	Mini project Internship
4	617837210, 617837220	Mechanical Engineering	2021-22	Yes	2021-22	Audit course-VI (Business and Sustainable Development)
5	617837210, 617837220	Mechanical Engineering	2021-22	Yes	2021-22	Audit course-VI (Management Information System)
6	617837210, 617837220	Mechanical Engineering	2021-22	Yes	2021-22	Audit course-VI (International Business)
7	617837210, 617837220	Mechanical Engineering	2021-22	Yes	2021-22	Honors Course - Design for Additive Manufacturing





8	617837210, 617837220	Mechanical Engineering	2021-22	Yes	2021-22	Honors Course - Robot Programming & Simulation
9	617837210, 617837220	Mechanical Engineering	2021-22	Yes	2021-22	Honors Course - e-Vehicle System Design
DE						
1	617837210, 617837220	Mechanical Engineering	2018-19	Yes	2021-22	Elective-III Tribology
2	617837210, 617837220	Mechanical Engineering	2018-19	Yes	2021-22	Elective-III Industrial Engineering
3	617837210, 617837220	Mechanical Engineering	2018-19	Yes	2021-22	Elective-III Robotics
4	617837210, 617837220	Mechanical Engineering	2018-19	Yes	2021-22	Elective-IV Advanced Manufacturing Processes
5	617837210, 617837220	Mechanical Engineering	2018-19	Yes	2021-22	Elective-IV Solar & Wind Energy
6	617837210, 617837220	Mechanical Engineering	2018-19	Yes	2021-22	Elective-IV Product Design and Development
7	617837210, 617837220	Mechanical Engineering	2018-19	Yes	2021-22	Project-II
8	617837210, 617837220	Mechanical Engineering	2018-19	Yes	2021-22	Honors Course - 3D Printing Applications & Entrepreneurship
9	617837210, 617837220	Mechanical Engineering	2018-19	Yes	2021-22	Honors Course - Seminar
10	617837210, 617837220	Mechanical Engineering	2018-19	Yes	2021-22	Honors Course - Artificial Intelligence in Robotics
11	617837210, 617837220	Mechanical Engineering	2018-19	Yes	2021-22	Honors Course - Seminar
12	617837210, 617837220	Mechanical Engineering	2018-19	Yes	2021-22	Honors Course - e-Vehicle Standards, Charging & Safety
13	617837210, 617837220	Mechanical Engineering	2020-21	Yes	2021-22	Honors Course - Seminar

TSS  
Assistant Professor & Head  
Dept. of Mechanical Engg.  
Smt. Kashibai Navale College  
of Engineering, Pune - 41.





**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>

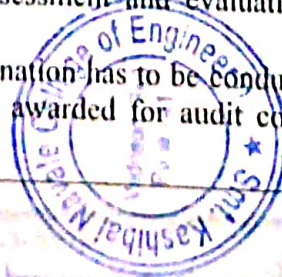
<b>Semester-IV</b>														
207002	Engineering Mathematics - III	3	-	1	30	70	25	-	-	125	3	-	1	4
202047	Kinematics of Machinery	3	2	-	30	70	-	-	25	125	3	1	-	4
202048	Applied Thermodynamics	3	2	-	30	70	-	-	25	125	3	1	-	4
202049	Fluid Mechanics	3	2	-	30	70	-	-	25	125	3	1	-	4
202050	Manufacturing Processes	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.





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

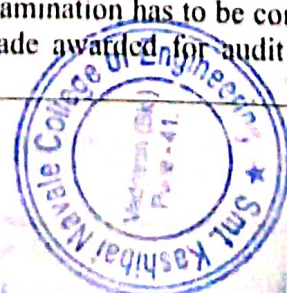
Course Code	Course Name	Teaching Scheme (Hrs./week)			Examination Scheme and Marks					Credit				
		TH	PR	TUT	ISE	ESE	TW	PR	OR	Total	TH	PR	TUT	Total
<b>Semester-V</b>														
302041	Numerical & Statistical Methods	3	-	1	30	70	25	-	-	125	3	-	1	4
302042	Heat & Mass Transfer	3	2	-	30	70	-	50	-	150	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	2	-	30	70	-	-	25	125	3	1	-	4
302046	Digital Manufacturing Laboratory	3	-	-	30	70	-	-	-	100	3	-	-	3
302047	Skill Development	-	2	-	-	-	50	-	-	50	-	1	-	1
302048	Audit course - V <sup>s</sup>	-	2	-	-	-	25	-	-	25	-	1	-	1
	<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.
- <sup>s</sup>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.





# Savitribai Phule Pune University

## B. E. (Mechanical) (2015 Course) Semester – I

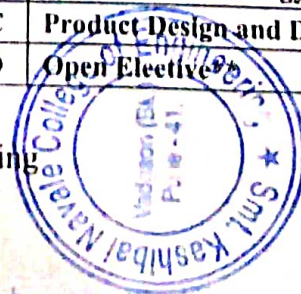
Code	Subject	Teaching Scheme Hrs / week			Examination Scheme					Total Marks	Credits	
		Lecture	Tut	Pract	In Sem	End Sem	TW	PR	OR		Theory	TW/ Pr/OR
402041	Hydraulics and Pneumatics	3	-	2	30	70	25	-	25	150	3	1
402042	CAD CAM Automation	3	-	2	30	70	25	50	-	175	3	1
402043	Dynamics of Machinery	4	-	2	30	70	25	-	25	150	4	1
402044	Elective-I	3	-	2	30	70	25	-	-	125	3	1
402045	Elective-II	3	-	-	30	70	-	-	-	100	3	-
402046	Project-I	-	-	4	-	-	25	-	25	50	-	2
<b>Total</b>		16	-	12	150	350	125	50	75	750	16	6
											22	

## B. E. (Mechanical) (2015 Course) Semester – II

Code	Subject	Teaching Scheme Hrs / week			Examination Scheme					Total Marks	Credits	
		Lecture	Tut	Pract	In Sem	End Sem	TW	PR	OR		Theory	TW/ Pr/OR
402047	Energy Engineering	3	-	2	30	70	25	-	25	150	3	1
402048	Mechanical System Design	4	-	2	30 (1.5 Hrs)	70 (3 Hrs)	25	-	50	175	4	1
402049	Elective-III	3	-	2	30	70	25	-	-	125	3	1
402050	Elective-IV	3	-	-	30	70	-	-	-	100	3	-
402051	Project-II	-	-	12	-	-	100	-	100	200	-	6
<b>Total</b>		13	-	18	120	280	175	-	175	750	13	9
											22	

Elective – I		Elective – II	
Code	Subject	Code	Subject
402044 A	Finite Element Analysis	402045 A	Automobile Engineering
402044 B	Computational Fluid Dynamics	402045 B	Operation Research
402044 C	Heating Ventilation and Air Conditioning	402045 C	Energy Audit and Management
		402045 D	Open Elective**

Elective – III		Elective – IV	
Code	Subject	Code	Subject
402049 A	Tribology	402050 A	Advanced Manufacturing Processes
402049 B	Industrial Engineering	402050 B	Solar & Wind Energy
402049 C	Robotics	402050 C	Product Design and Development
		402050 D	Open Elective**







1.2.1

Sinhgad Institutes

Sinhgad Technical Education Society's  
Smt. Kashibai Navale College of Engineering, Pune – 41

Department of Engineering Sciences

Criteria I

1.2.1 Number of Programs in which Choice Based Credit System (CBCS)

Sr.No.	Particulars	Year	No. of Courses	
			Academic Year 2021-22	
			Semester I	Semester II
NIL				



  
Prof. M. S. Alandkar

HOD, Engineering Sciences

Head of Department  
Engineering Science Department  
Smt. Kashibai Navale College  
of Engineering, Vadgaon, Pune - 41.





Sinhgad Institutes

1.2.1


Sinhgad Technical Education Society's  
**Smt. Kashibai Navale College of Engineering, Pune – 41**

**Department of Management Studies**


**Criteria I**

**1.2.1 Number of Programmes in which Choice Based Credit System (CBCS)**

Sl.No.	Particulars	Year	No.of.Courses	
			Academic Year 2021-22	
			Semester I	Semester II
1	List of 2019 Course	F.Y	6	14
2	List of 2019 Course	S.Y	18	12

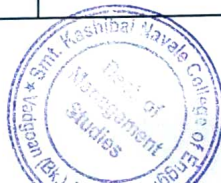
  
**HEAD**  
Dept. of Management Studies  
Smt. Kashibai Navale College of Engg  
Vadgaon (Bk.), Pune - 411 041.




  
**Dr. Sachin Wankhede**  
**HEAD**  
**HOD, MBA**  
Dept. of Management Studies  
Smt. Kashibai Navale College of Engg  
Vadgaon (Bk.), Pune - 411 041.



1.2.1 Number of Programmes in which Choice Based Credit System (CBCS)/ elective course system has been implemented					
Programme Code	Programme name	Year of Introduction	Status of implementation of CBCS / elective course system (Yes/No)	Year of implementation	Link to the relevant document
617810110	Master of Business Administration	GE - UL - 01	Elective-1: Management Fundamentals	2019-20	
617810110	Master of Business Administration	GE - UL - 02	Elective-2: Legal Aspect of Business	2019-20	
617810110	Master of Business Administration	GE - UL - 03	Elective-3: Entrepreneurship Development	2019-20	
617810110	Master of Business Administration	GE - IL - 01	Elective-1: Verbal Communication Lab	2019-20	
617810110	Master of Business Administration	GE - IL - 02	Elective-2: Enterprise Analysis & Desk Research	2019-20	
617810110	Master of Business Administration	GE - IL - 03	Elective-3: Selling & Negotiation Skills Lab	2019-20	
<b>2020-21 SEM-II</b>					
617810110	Master of Business Administration	GE - UL - 07/10	GE - UL-Elective-1	2019-20	
617810110	Master of Business Administration	GE - UL - 08/11	GE - UL-Elective-2	2019-20	
617810110	Master of Business Administration	GE - UL - 09/12	GE - UL-Elective-3	2019-20	
617810110	Master of Business Administration	GE - IL - 09/10/11/12	GE-IL-Elective-1	2019-20	
617810110	Master of Business Administration	SE - IL - MKT- 01/02/03	SE - IL-Elective- MKT-1	2019-20	
617810110	Master of Business Administration	SE - IL - MKT-03/ 04/05/06	SE - IL-Elective- MKT-2	2019-20	
617810110	Master of Business Administration	SE - IL - FIN - 03/01/02	SE - IL-Elective-FIN-1	2019-20	
617810110	Master of Business Administration	SE - IL - FIN - 06/04/05/06/07	SE - IL-Elective-FIN-2	2019-20	
617810110	Master of Business Administration	SE - IL - HRM - 01/03/04	SE - IL-Elective-HRM-1	2019-20	
617810110	Master of Business Administration	SE - IL - HRM - 02/05/06	SE - IL-Elective-HRM-2	2019-20	
617810110	Master of Business Administration	SE - IL - OSCM - 01/02/04	SE - IL-Elective-OSCM-1	2019-20	



  
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 Smt. Kashibai Navale College of Engg  
 Vadgaon (Bk.), Pune - 411 041.



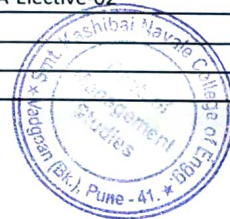
617810110	Master of Business Administration	SE – IL - OSCM - 03/05/06	SE – IL-Elective-OSCM-2	2019-20	
617810110	Master of Business Administration	SE – IL - BA - 04/01	SE – IL-Elective-BA-1	2019-20	
617810110	Master of Business Administration	SE – IL - BA - 05/02/03	SE – IL-Elective-BA-2	2019-20	
<b>2020-21 SEM -III</b>					
617810110	Master of Business Administration	GE - UL - 14/13	GE - UL -Elcative 01	2019-20	
617810110	Master of Business Administration	GE - UL - 17/15	GE - UL -Elcative 02	2019-20	
617810110	Master of Business Administration	GE - UL - 18/16	GE - UL -Elcative 03	2019-20	
617810110	Master of Business Administration	SE – IL - MKT- 07/10	SE – IL - MKT-Elective 01	2019-20	
617810110	Master of Business Administration	SE – IL - MKT- 08/11	SE – IL - MKT-Elective 02	2019-20	
617810110	Master of Business Administration	SE – IL - MKT- 09/12	SE – IL - MKT-Elective 03	2019-20	
617810110	Master of Business Administration	SE – IL - FIN – 12/09/10/11	SE – IL - FIN -Elective 01	2019-20	
617810110	Master of Business Administration	SE – IL - FIN – 15/13/14	SE – IL - FIN -Elective 02	2019-20	
617810110	Master of Business Administration	SE – IL - FIN – 17/16/18/19/20	SE – IL - FIN -Elective 03	2019-20	
617810110	Master of Business Administration	SE – IL - HRM - 07/08/09	SE – IL - HRM-Elective 01	2019-20	
617810110	Master of Business Administration	SE – IL - HRM - 10/12	SE – IL - HRM-Elective 02	2019-20	
617810110	Master of Business Administration	SE – IL - HRM - 11/13/14	SE – IL - HRM-Elective 03	2019-20	
617810110	Master of Business Administration	SE – IL - OSCM – 07/11	SE – IL - OSCM – Elective 01	2019-20	
617810110	Master of Business Administration	SE – IL - OSCM – 08/12	SE – IL - OSCM – Elective 02	2019-20	



  
**HEAD**  
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 Vadgaon (Bk.), Pune - 41.



617810110	Master of Business Administration	SE – IL - OSCM – 10/09	SE – IL - OSCM – Elective 03	2019-20	
617810110	Master of Business Administration	SE – IL - BA – 06/09	SE – IL - BA – Elective 01	2019-20	
617810110	Master of Business Administration	SE – IL - BA – 07/10	SE – IL - BA – Elective 02	2019-20	
617810110	Master of Business Administration	SE – IL - BA – 08/11	SE – IL - BA – Elective 03	2019-20	
<b>2020-21 SEM -IV</b>					
617810110	Master of Business Administration	GE - UL - 21/19	GE - UL - Elective-01	2019-20	
617810110	Master of Business Administration	GE - UL - 22/20	GE - UL - Elective-02	2019-20	
617810110	Master of Business Administration	SE – IL - MKT- 13/15/16	SE – IL - MKT-Elective-01	2019-20	
617810110	Master of Business Administration	SE – IL - MKT- 14/17/18	SE – IL - MKT-Elective-02	2019-20	
617810110	Master of Business Administration	SE – IL - FIN – 21/23/24	SE – IL - FIN-Elective-01	2019-20	
617810110	Master of Business Administration	SE – IL - FIN – 22/25/26/27	SE – IL - FIN-Elective-02	2019-20	
617810110	Master of Business Administration	SE – IL - HRM - 15/17/18/19	SE – IL - HRM-Elective-01	2019-20	
617810110	Master of Business Administration	SE – IL - HRM - 16/20/21	SE – IL - HRM-Elective-02	2019-20	
617810110	Master of Business Administration	SE – IL - OSCM – 14/19/17	SE – IL - OSCM – Elective-01	2019-20	
617810110	Master of Business Administration	SE – IL - OSCM – 15/18/19/20	SE – IL - OSCM – Elective-02	2019-20	
617810110	Master of Business Administration	SE – IL - BA - 13	SE – IL - BA-Elective-01	2019-20	
617810110	Master of Business Administration	SE – IL - BA - 14	SE – IL - BA-Elective-02	2019-20	



**HEAD**  
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**PROF. M. N. NAVALE**  
M.E. (Elect.), MIE, MBA.  
FOUNDER - PRESIDENT

**DR. (MRS.) SUNANDA M. NAVALE**  
B. A., M. P. M., Ph.D.  
FOUNDER - SECRETARY

**DR. A. V. DESHPANDE**  
B. E., M. E. (Computer Engg.), Ph. D.  
PRINCIPAL

#	Bloc k	CIE - ESE (Credits per course)	Course Type	Credits	Courses	Nature
1.1	A1	50-50 (3 Credits)	GENERIC CORE (GC)	42	14	COMPULSORY
1.2	A2	50-50 (3 Credits)	SUBJECT CORE (SC)	18	6	COMPULSORY
1.3	A3	50-50 (3 Credits)	PROJECT	6	1	COMPULSORY
2	B	0 - 50 (2 Credits)	GENERIC ELECTIVE (UNIVERSITY LEVEL) GE - UL	22	11	ELECTIVES
3.1	C1	50-0 (2 Credits)	GENERIC ELECTIVE (INSTITUTE LEVEL) GE - IL	8	4	ELECTIVES
3.4	C2	50-0 (2 Credits)	SUBJECT ELECTIVE (INSTITUTE LEVEL) SE - IL	14	7	ELECTIVES
<b>TOTAL</b>				<b>110</b>	<b>43</b>	
<b>OPTIONAL COURSES (In Lieu of C1 / C2 ONLY)</b>						
4.1	D	25 - 0 (1 Credit)	FOUNDATION COURSES	0 -10	0 - 10	ELECTIVES
4.2	E	25 - 0 (1 Credit)	ENRICHMENT COURSES	0- 14	0 - 14	ELECTIVES
4.3	F	50 - 0 (2 Credits)	ALTERNATIVE STUDY CREDIT COURSES	0 -22	0 -11	ELECTIVES

**Specializations offered:** The following specializations shall be offered as MAJOR /MINOR:

1. Marketing Management(MKT)
2. Financial Management(FIN)
3. Human Resources Management(HRM)
4. Operations & Supply Chain Management(OSCM)
5. Business Analytics(BA)

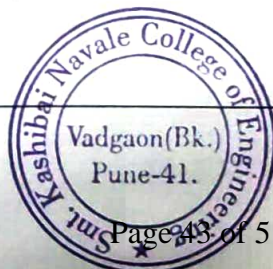
**The following specializations shall be offered ONLY as MINOR Specializations:**

1. Rural & Agribusiness Management(RABM)
2. Pharma & Healthcare Management(PHM)
3. Tourism & Hospitality Management(THM)
4. International Business Management(IB)



**Note:**

1. Institutes may offer ONLY SELECT specializations based on industry needs, faculty strength & competencies, student demands, employability potential, etc.
2. Institutes MAY NOT offer a specialization if a minimum of 20% of students are not registered for that specialization.
3. The Institute MAY NOT offer an elective AICTE course if a minimum of 20% of students are not registered for that elective course.



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ANNEXURE I

Table with 4 columns: Course No., Course Code, Course, Semester. Rows include GC-01 to GC-15 with various course titles like Managerial Accounting, Organizational Behaviour, etc.

\* Six Credits



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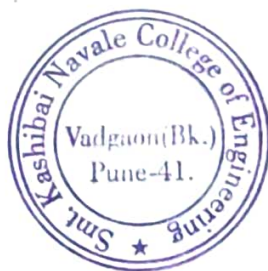


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Table with columns: Course #, Course Code, Course, Semester. Title: GENERIC ELECTIVES UNIVERSITY LEVEL (GE - UL) COURSES - 2 Credits Each. Subtitle: 00 Marks CCE, 50 Marks ESE. Rows include Management Fundamentals, Indian Economy, Entrepreneurship Development, etc.



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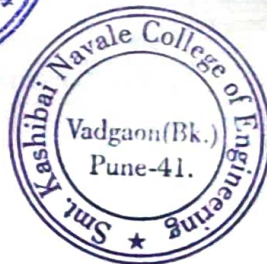


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Table with columns: Course No., Course Code, Course, Semester. Title: GENERIC ELECTIVES INSTITUTE LEVEL (GE - IL) COURSES - 2 Credits Each. Includes sub-sections for Semester I and Semester II.



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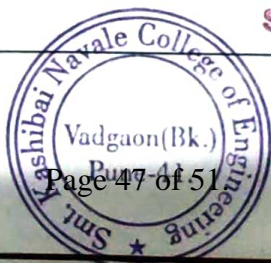
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SUBJECT CORE (SC) COURSES: Specialization – Marketing Management (MKT)			
3 Credits Each, 50 Marks CCE, 50 Marks ESE			
Course No.	Course Code	Course	Semester
205 MKT	SC – MKT- 01	Marketing Research	II
206 MKT	SC – MKT- 02	Consumer Behaviour	II
304 MKT	SC – MKT- 03	Services Marketing	III
305 MKT	SC – MKT- 04	Sales & Distribution Management	III
403 MKT	SC – MKT- 05	Marketing 4.0	IV
404 MKT	SC – MKT- 06	Marketing Strategy	IV

SUBJECT ELECTIVE (SE - IL) COURSES: Specialization – Marketing Management (MKT)			
2 Credits Each, 50 Marks CCE, 00 Marks ESE			
Course No.	Course Code	Course	Semester
<b>Maximum 2 courses to be selected from the following list in Semester II</b>			
217 MKT	SE – IL - MKT- 01	Integrated Marketing Communications	II
218 MKT	SE – IL - MKT- 02	Product & Brand Management	II
219 MKT	SE – IL - MKT- 03	Personal Selling Lab	II
220 MKT	SE – IL - MKT- 04	Digital Marketing - I	II
221 MKT	SE – IL - MKT- 05	Marketing of Financial Services - I	II
222 MKT	SE – IL - MKT- 06	Marketing of Luxury Products	II
<b>Maximum 3 courses to be selected from the following list in Semester III</b>			
312 MKT	SE – IL - MKT- 07	Business to Business Marketing	III
313 MKT	SE – IL - MKT- 08	International Marketing	III
314 MKT	SE – IL - MKT- 09	Digital Marketing - II	III
315 MKT	SE – IL - MKT- 10	Marketing of Financial Services - II	III
316 MKT	SE – IL - MKT- 11	Marketing Analytics	III
317 MKT	SE – IL - MKT- 12	Marketing of High Technology Products	III
<b>Maximum 2 courses to be selected from the following list in Semester IV</b>			
409 MKT	SE – IL - MKT- 13	Customer Relationship Management	IV
410 MKT	SE – IL - MKT- 14	Rural & Agriculture Marketing	IV
411 MKT	SE – IL - MKT- 15	Tourism & Hospitality Marketing	IV
412 MKT	SE – IL - MKT- 16	Retail Marketing	IV
413 MKT	SE – IL - MKT- 17	Retailing Analytics	IV
414 MKT	SE – IL - MKT- 18	Marketing to Emerging Markets & Bottom of the Pyramid	IV



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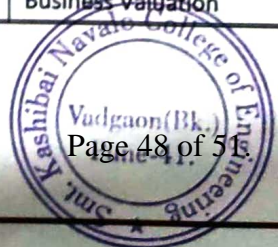
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SUBJECT CORE (SC) COURSES: Specialization – Financial Management (FIN)			
3 Credits Each, 50 Marks CCE, 50 Marks ESE			
Course No.	Course Code	Course	Semester
205 FIN	SC – FIN - 01	Financial Markets and Banking Operations	II
206 FIN	SC – FIN - 02	Personal Financial Planning	II
304 FIN	SC – FIN - 03	Advanced Financial Management	III
305 FIN	SC – FIN - 04	International Finance	III
403 FIN	SC – FIN - 05	Financial Laws	IV
404 FIN	SC – FIN - 06	Current Trends & Cases in Finance	IV

SUBJECT ELECTIVE (SE - IL) COURSES: Specialization – Financial Management (FIN)			
2 Credits Each, 50 Marks CCE, 00 Marks ESE			
Course No.	Course Code	Course	Semester
<b>Maximum 2 courses to be selected from the following list in Semester II</b>			
217 FIN	SE – IL - FIN - 01	Securities Analysis & Portfolio Management	II
218 FIN	SE – IL - FIN - 02	Futures and Options	II
219 FIN	SE – IL - FIN - 03	Direct Taxation	II
220 FIN	SE – IL - FIN - 04	Financial Reporting	II
221 FIN	SE – IL - FIN - 05	Retail Credit Management- Lending & Recovery	II
222 FIN	SE – IL - FIN - 06	Banking Laws & Regulations	II
223 FIN	SE – IL - FIN - 07	Fundamentals of Life Insurance – Products and Underwriting	II
224 FIN	SE – IL - FIN - 08	General Insurance - Health and Vehicle	II
<b>Maximum 3 courses to be selected from the following list in Semester III</b>			
312 FIN	SE – IL - FIN - 09	Behavioural Finance	III
313 FIN	SE – IL - FIN - 10	Technical Analysis of Financial Markets	III
314 FIN	SE – IL - FIN - 11	Commodities Markets	III
315 FIN	SE – IL - FIN - 12	Indirect Taxation	III
316 FIN	SE – IL - FIN - 13	Corporate Financial Restructuring	III
317 FIN	SE – IL - FIN - 14	Financial Modeling	III
318 FIN	SE – IL - FIN - 15	Digital Banking	III
319 FIN	SE – IL - FIN - 16	Treasury Management	III
320 FIN	SE – IL - FIN - 17	Project Finance and Trade Finance	III
321 FIN	SE – IL - FIN - 18	Insurance Laws & Regulations	III
322 FIN	SE – IL - FIN - 19	Marine Insurance	III
323 FIN	SE – IL - FIN - 20	Fire Insurance	III
<b>Maximum 2 courses to be selected from the following list in Semester IV</b>			
409 FIN	SE – IL - FIN - 21	Fixed Income Securities	IV
410 FIN	SE – IL - FIN - 22	Business Valuation	IV



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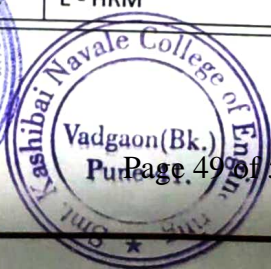
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SUBJECT CORE (SC) COURSES: Specialization – Human Resource Management (HRM)			
3 Credits Each, 50 Marks CCE, 50 Marks ESE			
Course No.	Course Code	Course	Semester
205 HR	SC – HRM – 01	Competency Based Human Resource Management	II
206 HR	SC – HRM – 02	Employee Relations & Labour Legislation	II
304 HR	SC – HRM – 03	Strategic Human Resource Management	III
305 HR	SC – HRM – 04	HR Operations	III
403 HR	SC – HRM – 05	Organizational Diagnosis & Development	IV
404 HR	SC – HRM – 06	Current Trends & Cases in Human Resource Management	IV

SUBJECT ELECTIVE (SE - IL) COURSES: Specialization – Human Resource Management (HRM)			
2 Credits Each, 50 Marks CCE, 00 Marks ESE			
Course No.	Course Code	Course	Semester
<b>Maximum 2 courses to be selected from the following list in Semester II</b>			
217 HRM	SE – IL - HRM – 01	Labour Welfare	II
218 HRM	SE – IL - HRM – 02	Lab in Recruitment and Selection	II
219 HRM	SE – IL - HRM – 03	Learning and Development	II
220 HRM	SE – IL - HRM – 04	Public Relations & Corporate Communications	II
221 HRM	SE – IL - HRM – 05	HR Analytics	II
222 HRM	SE – IL - HRM – 06	Conflict and Negotiation Management	II
<b>Maximum 3 courses to be selected from the following list in Semester III</b>			
312 HR	SE – IL - HRM – 07	Talent Management	III
313 HR	SE – IL - HRM – 08	Psychometric Testing and Assessment	III
314 HR	SE – IL - HRM – 09	HR perspective in Mergers and Acquisition	III
315 HR	SE – IL - HRM – 10	International HR	III
316 HR	SE – IL - HRM – 11	Mentoring and Coaching	III
317 HR	SE – IL - HRM – 12	Compensation and Reward management	III
318 HR	SE – IL - HRM – 13	Performance Management System	III
319 HR	SE – IL - HRM – 14	Change Management & New Technologies in HRM	III
<b>Maximum 2 courses to be selected from the following list in Semester IV</b>			
409 HR	SE – IL - HRM – 15	Labour Legislation	IV
410 HR	SE – IL - HRM – 16	Designing HR Policies	IV
411 HR	SE – IL - HRM – 17	Labour Economics and Costing	IV
412 HR	SE – IL - HRM – 18	Best Practices in HRM	IV
413 HR	SE – IL - HRM – 19	Employee Engagement and Ownership	IV
414 HR	SE – IL - HRM – 20	Leadership and Succession Planning	IV
415 HR	SE – IL - HRM – 21	E - HRM	IV



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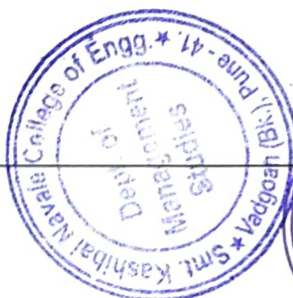
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SUBJECT CORE (SC) COURSES: Specialization – Operations & Supply Chain Management (OSCM)			
3 Credits Each, 50 Marks CCE, 50 Marks ESE			
Course No.	Course Code	Course	Semester
205 OSCM	SC – OSCM - 01	Services Operations Management - I	II
206 OSCM	SC – OSCM - 02	Supply Chain Management	II
304 OSCM	SC – OSCM - 03	Services Operations Management - II	III
305 OSCM	SC – OSCM - 04	Logistics Management	III
403 OSCM	SC – OSCM - 05	E Supply Chains & Logistics	IV
404 OSCM	SC – OSCM - 06	Industry 4.0	IV

SUBJECT ELECTIVE (SE - IL) COURSES : Specialization – Operations & Supply Chain Management (OSCM)			
2 Credits Each, 50 Marks CCE, 00 Marks ESE			
Course No.	Course Code	Course	Semester
<b>Maximum 2 courses to be selected from the following list in Semester II</b>			
217 OSCM	SE – IL - OSCM - 01	Planning & Control of Operations	II
218 OSCM	SE – IL - OSCM - 02	Productivity Management	II
219 OSCM	SE – IL - OSCM - 03	Inventory Management	II
220 OSCM	SE – IL - OSCM - 04	Theory of Constraints	II
221 OSCM	SE – IL - OSCM - 05	Quality Management Standards	II
222 OSCM	SE – IL - OSCM - 06	Service Value Chain Management	II
<b>Maximum 3 courses to be selected from the following list in Semester III</b>			
312 OSCM	SE – IL - OSCM – 07	Manufacturing Resource Planning	III
313 OSCM	SE – IL - OSCM – 08	Sustainable Supply Chains	III
314 OSCM	SE – IL - OSCM – 09	Business Excellence	III
315 OSCM	SE – IL - OSCM – 10	Toyota Production System	III
316 OSCM	SE – IL - OSCM – 11	Operations and Services Strategy	III
317 OSCM	SE – IL - OSCM – 12	Six Sigma for Operations	III
<b>Maximum 2 courses to be selected from the following list in Semester IV</b>			
409 OSCM	SE – IL - OSCM – 14	Enterprise Resource Planning	IV
410 OSCM	SE – IL - OSCM – 15	World Class Manufacturing	IV
411 OSCM	SE – IL - OSCM – 16	Supply Chain Strategy	IV
412 OSCM	SE – IL – OSCM – 17	Financial Perspectives in Operations Management	IV
413 OSCM	SE – IL - OSCM – 18	Facilities Planning	IV
414 OSCM	SE – IL - OSCM – 19	Purchasing and Supplier Relationship Management	IV
415 OSCM	SE – IL - OSCM - 20	Strategic Supply Chain Management	IV



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SUBJECT CORE (SC) COURSES: Specialization – Business Analytics (BA)			
3 Credits Each, 50 Marks CCE, 50 Marks ESE			
Course No.	Course Code	Course	Semester
205 BA	SC – BA - 01	Basic Business Analytics using R	II
206 BA	SC – BA - 02	Data Mining	II
304 BA	SC – BA - 03	Advanced Statistical Methods using R	III
305 BA	SC – BA - 04	Machine Learning & Cognitive Intelligence using Python	III
403 BA	SC – BA - 05	Economics of Network Industries	IV
404 BA	SC – BA - 06	Artificial Intelligence in Business Applications	IV

SUBJECT ELECTIVE (SE - IL) COURSES: Specialization – Business Analytics (BA)			
2 Credits Each, 50 Marks CCE, 00 Marks ESE			
Course No.	Course Code	Course	Semester
Maximum 2 courses to be selected from the following list in Semester II			
217 BA	SE – IL - BA - 01	Marketing Analytics	II
218 BA	SE – IL - BA - 02	Retailing Analytics	II
219 BA	SE – IL - BA - 03	Workforce Analytics	II
220 BA	SE – IL - BA - 04	Tableau	II
221 BA	SE – IL - BA - 05	Data Warehousing Project Life Cycle Management	II
Maximum 3 courses to be selected from the following list in Semester III			
312 BA	SE – IL - BA – 06	Social Media, Web & Text Analytics	III
313 BA	SE – IL - BA – 07	Industrial Internet of Things	III
314 BA	SE – IL - BA – 08	Supply Chain Analytics	III
315 BA	SE – IL - BA – 09	Cognos Analytics	III
316 BA	SE – IL - BA – 10	Predictive Modelling using SPSS Modeler	III
317 BA	SE – IL - BA – 11	E commerce Analytics - I	III
Maximum 2 courses to be selected from the following list in Semester IV			
409 BA	SE – IL - BA - 13	E Commerce Analytics - II	IV
410 BA	SE – IL - BA - 14	Healthcare Analytics	IV
411 BA	SE – IL - BA – 15	Watson	IV
412 BA	SE – IL - BA – 16	Scala and Spark	IV



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