

## Savitribai Phule Pune University

## Third Year of Computer Engineering (2019 Course)

(With effect from Academic Year 2021-22)

 Home

## 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											
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>								

## 310245 Elective I Options:

- 310245(A) Internet of Things and Embedded Systems  
 310245(B) Human Computer Interface  
 310245(C) Distributed Systems  
 310245(D) Software Project Management

## 310250 Audit Course 5 Options:

- 310250 (A) Cyber Security  
 310250 (B) Professional Ethics and Etiquettes  
 310250 (C) Learn New Skills  
 310250 (D) Engineering Economics  
 310250 (E) Foreign Language

**Laboratory Practice I**

Assignments from Systems Programming and Operating System and Elective I

**Savitribai Phule Pune University**  
**Third Year of Computer Engineering (2019 Course)**  
**Elective I**

**310245(A): Internet of Things and Embedded Systems**

Teaching Scheme: Credit: 03 Examination Scheme:  
 Theory: 03 Mid-Sem (TH) : 30 Marks  
 Hours/Week End-Sem (TH): 70 Marks

**Prerequisites Courses:** Digital Electronics and Logic Design (210245)

**Companion Course:** Laboratory Practice I (310248)

**Course Objectives:**

- To understand fundamentals of Internet of Things (IoT) and Embedded Systems
- To learn advances in Embedded Systems and IoT
- To learn methodologies for IoT application development
- To learn the IoT protocols, cloud platforms and security issues in IoT
- To learn real world application scenarios of IoT along with its societal and economic impact using case studies and real time examples

**Course Outcomes:**

On completion of the course, learners should be able to

- CO1:** Understand the fundamentals and need of Embedded Systems for the Internet of Things
- CO2:** Apply IoT enabling technologies for developing IoT systems
- CO3:** Apply design methodology for designing and implementing IoT applications
- CO4:** Analyze IoT protocols for making IoT devices communication
- CO5:** Design cloud based IoT systems
- CO6:** Design and Develop secured IoT applications

**Course Contents**

Unit I	Introduction to Embedded Systems	07 Hours
Definition, Characteristics of Embedded System, Real time systems, Real time tasks. <b>Processor basics:</b> General Processors in Computer Vs Embedded Processors, Microcontrollers, Microcontroller Properties, Components of Microcontrollers, System-On-Chip and its examples, Components of Embedded Systems, Introduction to embedded processor.		
#Exemplar/Case Studies	Installation of Real Time Operating System	
*Mapping of Course Outcomes for Unit I	CO1,CO2	
Unit II	Internet of Things : Concepts	07 Hours
<b>Introduction to Internet of Things (IoT):</b> Definition, Characteristics of IoT, Vision, Trends in Adoption of IoT, IoT Devices, IoT Devices Vs Computers, Societal Benefits of IoT, Technical Building Blocks. <b>Physical Design of IoT:</b> Things in IoT, Interoperability of IoT Devices, Sensors and Actuators, Need of Analog / Digital Conversion. <b>Logical Design of IoT:</b> IoT functional blocks, IoT enabling technologies, IoT levels and deployment templates, Applications in IoT.		
#Exemplar/Case Studies	Exemplary device: Raspberry Pi / Arduino: Programming: Arduino IDE/ Python, Interfacing. Other IoT Devices.	
*Mapping of Course Outcomes for Unit II	CO1,CO2	
Unit III	IoT: Design Methodology	07 Hours
<b>IoT Design Methodology:</b> Steps, Basics of IoT Networking, Networking Components, Internet		

Structure, Connectivity Technologies, IoT Communication Models and IoT Communication APIs, Sensor Networks, Four pillars of IoT: M2M, SCADA, WSN, RFID.

#Exemplar/Case Studies	Home Automation using IoT communication models and IoT Communication APIs.
*Mapping of Course Outcomes for Unit III	CO3, CO4

Unit IV	IoT Protocols	07 Hours
Protocol Standardization for IoT, M2M and WSN Protocols, RFID Protocol, Modbus Protocol, Zigbee Architecture. IP based Protocols: MQTT (Secure), 6LoWPAN, LoRa.		

#Exemplar/Case Studies	LoRa based Smart Irrigation System.
*Mapping of Course Outcomes for Unit IV	CO4, CO5

Unit V	Cloud Platforms for IoT	07 Hours
Software Defined Networking, Introduction to Cloud Storage Models, Communication API. <b>WAMP:</b> Auto Bahn for IoT, Xively Cloud for IoT. <b>Python Web Application Framework:</b> Django Architecture and application development with Django, Amazon Web Services for IoT, Sky Net IoT Messaging Platform, RESTful Web Service, GRPC, SOAP.		

#Exemplar/Case Studies	Smart parking, Forest fire detection
*Mapping of Course Outcomes for Unit V	CO4, CO5

Unit VI	Security in IoT	07 Hours
Introduction, Vulnerabilities of IoT, Security Requirements, Challenges for Secure IoT, Threat Modeling. <b>Key elements of IoT Security:</b> Identity establishment, Access control, Data and message security, Non-repudiation and availability, Security model for IoT, Challenges in designing IOT applications, Lightweight cryptography.		

#Exemplar/Case Studies	Home Intrusion Detection
*Mapping of Course Outcomes for Unit VI	CO2, CO6

### Learning Resources

#### Text Books:

1. Arshdeep Bahga, Vijay Madisetti, "Internet of Things – A hands-on Approach", Universities Press, ISBN: 0: 0996025510, 13: 978-0996025515
2. Olivier Hersent, David Boswarthick, Omar Elloumi, "The Internet of Things: Key Applications and Protocols", 2nd Edition, Wiley Publication, ISBN: 978-1-119-9435-0

#### Reference Books:

1. Dawoud Shenouda Dawoud, Peter Dawoud, "Microcontroller and Smart Home Networks", ISBN: 9788770221566, e-ISBN: 9788770221559
2. Charles Crowell, "IoT-Internet of Things for Beginners: An Easy-to-Understand Introduction to IoT", ISBN-13 : 979-8613100194
3. David Hanes, Gonzalo Salgueiro, Robert Barton, Jerome Henry, "IoT Fundamentals: Networking Technologies, Protocols, and Use Cases for the Internet of Things", Cisco Press, ISBN-13: 978-1-58714-456-1 ISBN-10: 1-58714-456-5
4. David Etter, "IoT Security: Practical guide book", amazon kindle Page numbers, source ISBN: 1540335011.
5. Brian Russell, Drew Van Duren, "Practical Internet of Things Security", Second Edition,

Packt Publishing, ISBN: 9781788625821

6. Dr. Shriram K Vasudevan, Abhishek S Nagarajan, RMD Sundaram, "Internet of Things", Wiley publication, 2nd Edition, ISBN: 9789388991018

**e-Books :**

- <https://www.iotforall.com/ebooks/an-introduction-to-iot>
- <https://www.qoryo.com/design-hub/ebooks/internet-of-things-for-dummies>

**MOOCs Courses link**

- <https://nptel.ac.in/courses/106/105/106105166/>
- <https://www.udemy.com/course/a-complete-course-on-an-iot-system-design-and-development/>
- <https://www.coursera.org/learn/iot>
- <https://nptel.ac.in/courses/108/108/108108098/>

**@ The CO-PO Mapping Matrix**

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	1	1	2	-	-	-	-	1	-	1	-
CO2	3	2	1	2	1	-	-	-	-	-	-	-
CO3	2	3	3	3	2	3	-	-	2	-	1	-
CO4	1	2	2	2	3	3	-	-	2	1	2	2
CO5	2	2	2	3	3	3	-	-	2	1	2	2
CO6	2	2	1	2	2	2	-	1	1	-	1	1

**SIR VISVESVARAYA INSTITUTE OF TECHNOLOGY, CHINCHOLI**

**Department of Computer Engineering**

**Elective I choice 2023-24 (SEM-1)**

<b>SR.NO</b>	<b>Timestamp</b>	<b>Name of student</b>	<b>Elective selected</b>
1	7-8-2023 17:27:24	Aniket Arun Gayke	(A) 310245 Internet of Things and Embedded Systems
2	7-8-2023 17:57:48	Jagtap yogeshwaree bharat	(B) 310245 Human Computer Interface
3	7-8-2023 20:13:42	Prathmesh Harish Patil	(A) 310245 Internet of Things and Embedded Systems
4	7-10-2023 9:41:24	Jadhav shaunak	(D) 310245 Software Project Management
5	7-10-2023 9:44:36	kunal chaudhari	(A) 310245 Internet of Things and Embedded Systems
6	7-10-2023 14:47:45	Abhishek ajit Kushwaha	(A) 310245 Internet of Things and Embedded Systems
7	7-10-2023 14:50:40	Surve Shashikant Dilip	(A) 310245 Internet of Things and Embedded Systems
8	7-10-2023 22:27:56	Ugale suraj machhindra	(A) 310245 Internet of Things and Embedded Systems
9	7-10-2023 22:42:11	More Avadhut Prakash	(A) 310245 Internet of Things and Embedded Systems
10	7-10-2023 23:07:25	Aditya Matsagar	(A) 310245 Internet of Things and Embedded Systems
11	7-10-2023 23:51:29	Hon Uddhav Digambar	(A) 310245 Internet of Things and Embedded Systems
12	7-11-2023 0:35:04	Priti sharad ugale	(A) 310245 Internet of Things and Embedded Systems
13	7-11-2023 6:45:31	Sakshi Satish Shewale	(A) 310245 Internet of Things and Embedded Systems
14	7-11-2023 7:18:44	Ranade Gauri Dnyaneshwar	(A) 310245 Internet of Things and Embedded Systems
15	7-11-2023 7:41:58	Mali Mansi Sunil	(A) 310245 Internet of Things and Embedded Systems
16	7-11-2023 10:08:31	Jivitesh Ishwar Kale	(A) 310245 Internet of Things and Embedded Systems
17	7-11-2023 10:36:35	Sejal Yogesh Pawar	(A) 310245 Internet of Things and Embedded Systems
18	7-11-2023 11:45:44	Daware Maheshwari Sampat	(A) 310245 Internet of Things and Embedded Systems
19	7-11-2023 13:48:24	Swanand Gholap	(A) 310245 Internet of Things and Embedded Systems
20	7-11-2023 14:25:45	Tambe Sayali Subhash	(A) 310245 Internet of Things and Embedded Systems
21	7-11-2023 17:55:33	Avhad Nikita Sanjay	(A) 310245 Internet of Things and Embedded Systems
22	7-11-2023 20:59:35	Anushka Sunil Patil	(A) 310245 Internet of Things and Embedded Systems
23	7-12-2023 13:19:59	Rutuja Dnyaneshwar Sanap	(A) 310245 Internet of Things and Embedded Systems
24	7-12-2023 17:29:19	Shubhangi Santosh Pawar	(A) 310245 Internet of Things and Embedded Systems
25	7-12-2023 17:32:37	Nikhil Rajput	(A) 310245 Internet of Things and Embedded Systems
26	7-12-2023 20:15:21	Netra Sunil Walekar	(A) 310245 Internet of Things and Embedded Systems

**SIR VISVESVARAYA INSTITUTE OF TECHNOLOGY, CHINCHOLI**

**Department of Computer Engineering**

**Elective I choice 2023-24 (SEM-I)**

<b>SR.NO</b>	<b>Timestamp</b>	<b>Name of student</b>	<b>Elective selected</b>
1	7-8-2023 17:27:24	Aniket Arun Gayke	(A) 310245 Internet of Things and Embedded Systems
2	7-8-2023 17:57:48	Jagtap yogeshwaree bharat	(B) 310245 Human Computer Interface
3	7-8-2023 20:13:42	Prathmesh Harish Patil	(A) 310245 Internet of Things and Embedded Systems
4	7-10-2023 9:41:24	Jadhav shaunak	(D) 310245 Software Project Management
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6	7-10-2023 14:47:45	Abhishek ajit Kushwaha	(A) 310245 Internet of Things and Embedded Systems
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25	7-12-2023 17:32:37	Nikhil Rajput	(A) 310245 Internet of Things and Embedded Systems
26	7-12-2023 20:15:21	Netra Sunil Walekar	(A) 310245 Internet of Things and Embedded Systems

27	7-13-2023 9:30:40	Mhaske Vaishnavi Babasaheb	(A) 310245 Internet of Things and Embedded Systems
28	7-13-2023 9:31:16	Erande Shubham Ravsaheb	(A) 310245 Internet of Things and Embedded Systems
29	7-13-2023 9:32:16	Andhale Shruti Janardhan	(A) 310245 Internet of Things and Embedded Systems
30	7-13-2023 9:32:41	Aaditya Patil	(A) 310245 Internet of Things and Embedded Systems
31	7-13-2023 9:34:18	Soham girish mokashi	(B) 310245 Human Computer Interface
32	7-13-2023 9:34:59	Patil Harshal Ramesh	(A) 310245 Internet of Things and Embedded Systems
33	7-13-2023 9:37:04	Wable Rutuja Balasaheb	(A) 310245 Internet of Things and Embedded Systems
34	7-13-2023 9:37:09	Rudrani Suryakant Dharankar	(A) 310245 Internet of Things and Embedded Systems
35	7-13-2023 9:37:17	Valvi Vishal Virendra	(A) 310245 Internet of Things and Embedded Systems
36	7-13-2023 9:39:09	Varpe Pooja Babasaheb	(A) 310245 Internet of Things and Embedded Systems
37	7-13-2023 9:40:19	Aditi dattatray shelke	(A) 310245 Internet of Things and Embedded Systems
38	7-13-2023 9:43:27	Mansi Sampat Andhale	(A) 310245 Internet of Things and Embedded Systems
39	7-13-2023 9:43:28	Sanket Girju Tamnar	(A) 310245 Internet of Things and Embedded Systems
40	7-13-2023 9:45:18	Ranade Rutuja Raosaheb	(A) 310245 Internet of Things and Embedded Systems
41	7-13-2023 9:46:14	Tarde Tejasvi Vijay	(A) 310245 Internet of Things and Embedded Systems
42	7-13-2023 9:55:51	Raut Nikita Madhukar	(A) 310245 Internet of Things and Embedded Systems
43	7-13-2023 10:07:39	Mahatme Sakshi Rajendra	(A) 310245 Internet of Things and Embedded Systems
44	7-13-2023 10:10:47	Prutha ravindra bhavsar	(A) 310245 Internet of Things and Embedded Systems
45	7-13-2023 10:14:51	Khatale Tushar Ashok	(A) 310245 Internet of Things and Embedded Systems
46	7-13-2023 10:35:34	Jadhav Chetan Sandip	(A) 310245 Internet of Things and Embedded Systems
47	7-13-2023 10:39:12	Kshirsagar Vaishnavi Dnyaneshwar	(A) 310245 Internet of Things and Embedded Systems
48	7-13-2023 11:03:49	Tambe Sakshi Rajendra	(A) 310245 Internet of Things and Embedded Systems
49	7-13-2023 11:28:23	Ashish Lagad	(A) 310245 Internet of Things and Embedded Systems
50	7-13-2023 11:53:26	Chaitanya Kiran Jadhav	(A) 310245 Internet of Things and Embedded Systems
51	7-13-2023 11:57:29	Rohit Sanjay Mahajan	(A) 310245 Internet of Things and Embedded Systems
52	7-13-2023 13:51:51	Aman Narayan Pawar	(A) 310245 Internet of Things and Embedded Systems
53	7-13-2023 14:11:21	Avhad Krushna Navnath	(A) 310245 Internet of Things and Embedded Systems
54	7-13-2023 15:03:11	Shaikh Mo Zaid Anis	(A) 310245 Internet of Things and Embedded Systems
55	7-13-2023 17:51:16	Shinde Dharmnath Somnath	(B) 310245 Human Computer Interface
56	7-13-2023 19:53:58	Ganesh Dhondiram Ugale	(A) 310245 Internet of Things and Embedded Systems
57	7-14-2023 7:59:58	Gunjal Vishal Shivaji	(A) 310245 Internet of Things and Embedded Systems

58	7-14-2023 10:57:35	Kadam Prashant Bajirao	(A) 310245 Internet of Things and Embedded Systems
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60	7-14-2023 17:36:10	Pratik Bhausaheb Dhumal	(A) 310245 Internet of Things and Embedded Systems
61	7-15-2023 13:26:07	Nishigandha Ajay Ingle	(A) 310245 Internet of Things and Embedded Systems
62	7-15-2023 18:13:47	Nikita Kiran Thoke	(A) 310245 Internet of Things and Embedded Systems
63	7-16-2023 7:56:15	Namrata Sanjay Waje	(A) 310245 Internet of Things and Embedded Systems
64	7-16-2023 8:21:11	Patole Pratik Suryabhan	(A) 310245 Internet of Things and Embedded Systems

Mr. Sharad M. Rokade  
HOD, Computer Department

Asstt. Prof. & H.O.D  
Computer Engineering Department  
SVIT, Chincholi,  
Tal. Sinnar, Dist. Nashik (422 101)

# BE Electrical (2019 Course)

## SEM-I

Course Code	Course Name	Teaching Scheme				Examination Scheme						Credit				
		Th	Pr	Tu	PW	ISE	ESE	TW	PR	OR	Total	Th	Pr	Tu	PW	Total
403141	Power System Operation & Control	3	2	-	-	30	70	25	-	25	150	3	1	-	-	4
403142	Advanced Control System	3	2	-	-	30	70	-	-	50	150	3	1	-	-	4
403143	Elective-I	3	2	-	-	30	70	-	-	25	125	3	1	-	-	4
403144	Elective-II	3	-	2*	-	30	70	25	-	-	125	3	-	1	-	4
403145	Project Stage-I	-	-	-	4	-	-	50	-	50	100	-	-	-	2	2
403146	MOOCs	-	-	-	-	-	-	50	-	-	50	-	-	-	2	2
403147	Audit Course-VII	2#	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total</b>		<b>12</b>	<b>6</b>	<b>2</b>	<b>4</b>	<b>120</b>	<b>280</b>	<b>150</b>	<b>-</b>	<b>150</b>	<b>700</b>	<b>12</b>	<b>3</b>	<b>1</b>	<b>4</b>	<b>20</b>
<b>403143: Elective-I</b>				<b>403144: Elective-II</b>						<b>403147: Audit Course-VII</b>						
403143A: PLC and SCADA 403143B: Power Quality Management 403143C: High Voltage Engineering 403143D: Robotics and Automation				403144A : Alternate Energy System 403144B : Electrical & Hybrid Vehicle 403144C : Special-purpose Machines 403144D: HVDC & FACTS						403147 A: German Language I 403147B: Engineering Economics I 403147C: Sustainability(IGBC)						

## SEM-II

Course Code	Course Name	Teaching Scheme				Examination Scheme						Credit				
		Th	Pr	Tu	PW	ISE	ESE	TW	PR	OR	Total	Th	Pr	Tu	PW	Total
403148	Switchgear and Protection	3	2	-	-	30	70	25	-	50	175	3	1	-	-	4
403149	Advanced Electrical Drives & Control	3	2	-	-	30	70	25	50	-	175	3	1	-	-	4
403150	Elective-III	3	-	-	-	30	70	-	-	-	100	3	-	-	-	3
403151	Elective-IV	3	-	-	-	30	70	-	-	-	100	3	-	-	-	3
403152	Project stage II	-	-	-	12	-	-	100	-	50	150	-	-	-	6	6
403153	Audit course VIII	2#	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total</b>		<b>12</b>	<b>4</b>	<b>-</b>	<b>12</b>	<b>120</b>	<b>280</b>	<b>150</b>	<b>50</b>	<b>100</b>	<b>700</b>	<b>12</b>	<b>2</b>	<b>-</b>	<b>6</b>	<b>20</b>
<b>403150: Elective-III</b>				<b>403151: Elective-IV</b>						<b>403153: Audit Course-VIII</b>						
403150 A : Digital Control System 403150 B : Restructuring and Deregulation 403150 C: Smart Grid 403150 D: Sensor Technology (Open Elective)				403151A: EHV AC Transmission 403151B : Illumination Engineering 403151C: Electromagnetic Fields 403151D: AI and ML (Open Elective)						403153A: German Language II 403153B: Engineering Economics II 403153C: Green Building						

\* For the tutorial, one credit is given. # Audit Course: Conduct over and above these lectures.

Dept. of Electrical Engg.

Shri Visvesvaraya Institute of Technology  
Chincholi, Nashik - 422101

**Sir Visvesvaraya Institute of Technology, Chincholi**

**ELECTRICAL ENGINEERING DEPARTMENT**

SEM-I

2023-24

Class:BE

Sr.NO	Seat No	Name of the candidate	Name EL-I & II
1	B190272506	EKHANDE YASH VILAS	
2	B190272512	KADAM TEJASHREE YOGESH	
3	B190272513	KALOKHE SWAPNIL HARIBHAI	
4	B190272523	PRACHI RAJU NAGARE	
5	B190272525	SANAP PRATHAMESH RAJENDRA	Elective I 403143 HIGH VOLTAGE ENGINEERING & Elective II 403144B ELECTRIC AND HYBRID VEHICAL
6	B190272544	UGALE SAHIL BHASKAR	

  
ACADEMIC COORDINATOR

  
H.O.D.  
Dept. of Electrical Engg.  
Sir Visvesvaraya Institute of  
Chincholi, Nashik - 422104

**Sir Visvesvaraya Institute of Technology, Chincholi**

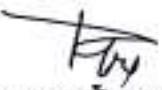
**ELECTRICAL ENGINEERING DEPARTMENT**

Class:BE

SEM-II

2023-24

Sr.NO	Seat No	Name of the candidate	Name EL-III& IV
1	B190272506	EKHANDE YASH VILAS	
2	B190272512	KADAM TEJASHREE YOGESH	
3	B190272513	KALOKHE SWAPNIL HARIBHAU	
4	B190272523	PRACHI RAJU NAGARE	
5	B190272525	SANAP PRATHAMESH RAJENDRA	
6	B190272544	UGALE SAHIL BHASKAR	Elective III 403150C Smart Grid & Elective IV 403151B Illumination Engineering

  
ACADEMIC COORDINATOR

  
H.O.D.  
Dept. of Electrical Engg.  
Sir Visvesvaraya Institute of Technology  
Chincholi - 422101

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

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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 S.P.T.Y., Tatyasaheb Kore  
 Dist. Nashik

**Savitribai Phule Pune University**

**Fourth Year of E & Te Engineering (2019 Course)**

**404191 (E): Mobile Computing (Elective - V)**

Teaching Scheme:	Credit	Examination Scheme:
Theory: 03 Hrs. / Week	03	In-Sem (Theory): 30 Marks End Sem (Theory): 70 Marks

**Prerequisite Courses, if any:**

1. Basics of Communication Technologies.
2. Fundamental of Networking

**Companion Course, if any:**

**Course Objectives:**

1. To learn Wireless technologies and planning Ad-hoc Network.
2. To study the basics of wireless, cellular technology and the working of Mobile IP, ad hoc network, features of mobile operating systems.
3. To understand the use of M-Commerce application.

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

**CO1:** Understand concepts of Mobile Communication.

**CO2:** Analyse next generation Mobile Communication System.

**CO3:** Understand network layers of Mobile Communication.

**CO4:** Understand IP and Transport layers of Mobile Communication.

**CO5:** Study of different mathematical models.

**CO6:** Understand different mobile applications.

**Course Contents**

Unit I	Introduction to Mobile Computing	6 Hrs.
Introduction to Mobile Computing: Applications of Mobile Computing- Generations of Mobile Communication Technologies, Multiplexing: Spread spectrum, MAC Protocols: SDMA, TDMA, FDMA, and CDMA.		
Mapping of Course Outcomes for Unit I	CO1: Understand concepts of Mobile Communication.	
Unit II	Mobile Telecommunication System	7 Hrs.
Introduction to Cellular Systems, GSM architecture, Protocols, Connection Establishment, Frequency Allocation, Routing, Mobility Management, Security, GPRS and UMTS: Architecture, Handover, Security. <b>Introduction to 5G:</b> Introduction, 5G network architecture, Applications, 5G enable technologies, Recent trends in Telecommunication Industries.		
Mapping of Course Outcomes for Unit II	CO2: Analyse next generation Mobile Communication System.	

<b>Unit III</b>	<b>Network Layer</b>	<b>6 Hrs.</b>
Mobile IP, DHCP, AdHoc, Proactive protocol-DSDV, Reactive Routing Protocols: DSR, AODV, Hybrid routing: ZRP, Multicast Routing: ODMRP, Vehicular Ad Hoc networks (VANET), MANET Vs VANET: Security.		
Mapping of Course Outcomes for Unit III	CO3: Understand network layers of Mobile Communication.	
<b>Unit IV</b>	<b>Mobile IP and Transport Layer</b>	<b>8 Hrs.</b>
Mobile IP: Need of mobile IP, IP packet delivery, Agent Discovery, Registration, Tunnelling and encapsulation, Route optimization, IP Handoff.		
Transport Layer: Overview of Traditional TCP and implications of mobility control. Improvement of TCP: Indirect TCP, Snoop TCP, Mobile TCP, Fast Retransmit/fast recovery, Time-out freezing, Selective retransmission, Transaction-oriented TCP.		
Mapping of Course Outcomes for Unit IV	CO4: Understand IP and TCP layers of Mobile Communication.	
<b>Unit V</b>	<b>Fading Channels</b>	<b>7 Hrs.</b>
Rayleigh Fading and Statistical Characterization, Properties of Rayleigh Distribution, BER in Fading, Narrowband vs Wideband Channels, Characterization of Multipath Fading Channels, Choice of Modulation, Coherent versus Differential Detection, BER in Fading, Ricean Fading.		
Mapping of Course Outcomes for Unit V	CO5: Study of different mathematical models.	
<b>Unit VI</b>	<b>Operating System &amp; Applications of Mobile Computing</b>	<b>8 Hrs.</b>
Operating System: A Few Basic Concepts, Special Constraints and Requirements of Mobile OS, A Survey of Commercial Mobile Operating Systems, Windows Mobile, Palm OS, Symbian OS, iOS, Android, Blackberry OS, A Comparative study of Mobile OS, OS for sensor Network.		
Applications: M-Commerce, Business to Consumer (B2C) Applications, Business to Business (B2B) Applications. Structure of M-Commerce, Pros and Cons of M-Commerce, Mobile Payment System, Mobile Payment Schemes, Desirable properties of a Mobile Payment system, Mobile Payment solutions, Process of Mobile Payment, Security Issues.		
Mapping of Course Outcomes for Unit VI	CO6: Understand different mobile applications.	
<b>Learning Resources</b>		
<b>Text Books:</b>		
1. Clint Smith, Daniel Collins, "Wireless Networks", 3 <sup>rd</sup> Edition, McGraw Hill Publications,		
2. Share Conder, Lauren Darcey, "Android Wireless Application Development", Volume 1, 3 <sup>rd</sup> Edition, Pearson.		

#### Reference Books:

1. Jochen Schiller, "Mobile Communications", 2<sup>nd</sup> Edition, Pearson.
2. Paul Bedell, "Cellular networks: Design and Operation – A real world Perspective", Outskirts Press.
3. Zigurd Mednieks, Laird Dornin, G, Blake Meike and Masumi Nakamura, "Programming Android", O'Reilly.
4. Alasdair Allan, "iPhone Programming", O'Reilly.
5. Donny Wals, "Mastering iOS 12 Programming".
6. Reza B'Far, "Mobile Computing principles", Cambridge University Press.

#### MOOC / NPTEL Courses:

1. NPTEL Course "Mobile Computing" by Prof. Sridhar Iyer and Prof. Pushpendra Singh IIT Madras

Link of the Course: <https://nptel.ac.in/courses/106106147>

2. NPTEL Course "Fundamentals of MIMO Wireless Communication" by Prof. Suvra Sekhar Das IIT Kharagpur

Link of the Course: <https://nptel.ac.in/courses/117105132>

3. NPTEL Course "Principles of Modern CDMA/MIMO//OFDM Wireless Communications" by Prof. Aditya. K. Jagannatham IIT Kanpur

Link of the Course: <https://nptel.ac.in/courses/117104115>

H.O.D.  
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Dist. Nashik

# **Electronics and Telecommunication Engineering**

## **Notice**

**Date:** 1.12.2023

All BE E&TC students are hereby informed that following Elective Subjects are offered by PPU and all are requested to give their choice for elective subject in given format

Academic Year	Semester	Name of the Class	Name of Elective Subject
2023 24	Sem 2	B.E. E&TC(2019 Course)	<b>Elective - 5</b> 1. Biomedical Signal Processing 2. Industrial Drives & Automation 3. Android Development 4. Embedded System Design 5. Mobile Computing <b>Elective - 6</b> 1. System on Chip 2. Nano Electronics 3. Remote Sensing 4. Digital Marketing 5. Open Elective



**Class Teacher**

**Mr. Liladhar Bhamare**



**HOD ETC**

**Dr Rana Mahajan**  
H.O.D.  
Department of Electronics & Telecommunication Engg  
Smt. L. T. Engg. College, Nashik  
Dist. Nashik

**H.O.D.**  
Department of Electronics & Telecommunication Engg  
Smt. L. T. Engg. College, Nashik  
Dist. Nashik

Electronics and Telecommunication Engg  
Elective V subject choice B.E. E&TC 2023 24 Sem 2

Roll No	Name	Subject elected	Signature
1	Darzar Patil	mobile computing	Patil
2	Pramod Karwar	Mobile Computing	Karwar
3	Shubham Ashwini	mobile computing	Ashwini
4	Gavil Nandini	mobile computing	Nandini
5	Rahul Sadgir	Mobile computing	Sadgir
6	Shital Aghav	Mobile computing	Aghav
7	Aditya Shinde	Mobile Computing	Shinde
8	Shubhad Admushni	mobile computing	Admushni
9	Keyur Patil	MC	Keyur
10	Sahil Vaghela	MC	Vaghela
11	Ankit mawga	mobile computing	Mawga
12	Shubhangi Guesal	Mobile computing	Guesal
13	Akash Maity	Mobile Computing	Maity
14	Fite Patil	mobile computing	Fite
15	Shubham mandlik	Mobile computing	mandlik
16	Chaitali kate	Mobile computing	Kate
17	Fakare Patil	mobile computing	Patil
18	Dixon dilotama	mobile computing	Dixon
19	Swinde Shmuti	mobile computing	Shmuti

Class Teacher

Mr. Liladhar Bhamare

Dr Rana Mahajan

H.O.D.  
Department of Electronics & Telecommunication Engg.  
SVIT, Tal. Sunnar,  
Dist. Nashik



### Electronics and Telecommunication Engg

**Elective VI subject choice B.E. E&TC 2023 24**

**Sem 2**

Roll No	Name	Subject elected	Signature
1	Pawar Rutuja	DM	Rutuja
2	Pramod Karwar	Digital Marketing	Pramod
3	Dhatrika Ashwin	DM	Ashwin
4	Mavit Nandini	DM	Mavit
5	Rahul Sadgir	Digital marketing	Rahul
6	Shital Aghav	DM	Shital
7	Aditya Shinde	Digital marketing	Aditya
8	Ashwinini Phelbad	DM	Ashwinini
9	Keyur Patel	DM	Keyur
10	Sai Vaibhav	DM	Sai Vaibhav
11	Antit maurya	Digital marketing	Antit
12	shubhangi Ganesal	Digital marketing	Shubhangi
13	Akash Maity	Digital Marketing	Akash
14	Gupte Rutuja	Digital Marketing	Gupte
15	shubham mandlik	Digital marketing	Shubham
16	chaitali kate	DM	Chaitali
17	Kokane Rutuja	DM	Rutuja
18	Degre Tirtham	DM	Tirtham
19	ghinde shreya	DM	Shreya

Class-Teacher  
Mr. Liladhar Bhamare

HOD ETC  
Dr Rana Mahajan

H.O.D  
Department of Electronics & Telecommunication Engineering  
S.V.T.U., Tal. Somnath,  
Dist. Navsari

**Savitribai Phule Pune University**  
**Third Year of Information Technology (2019 course)**  
**(With effect from Academic Year 2021-22)**

**Semester-V**

<b>Course Code</b>	<b>Course Name</b>	<b>Teaching Scheme (Hours/ week)</b>			<b>Examination Scheme and Marks</b>						<b>Credit Scheme</b>			
		<b>Theory</b>	<b>Practical</b>	<b>Tutorial</b>	<b>Mid-Sem</b>	<b>End-Sem</b>	<b>Term work</b>	<b>Practical</b>	<b>Oral</b>	<b>Total</b>	<b>Lecture</b>	<b>Practical</b>	<b>Tutorial</b>	<b>Total</b>
<u>314441</u>	<b>Theory of Computation</b>	03	-	-	30	70	-	-	-	100	3	-	-	3
<u>314442</u>	<b>Operating Systems</b>	03	-	-	30	70	-	-	-	100	3	-	-	3
<u>314443</u>	<b>Machine Learning</b>	03	-	-	30	70	-	-	-	100	3	-	-	3
<u>314444</u>	<b>Human Computer Interaction</b>	03	-	-	30	70	-	-	-	100	3	-	-	3
<u>314445</u>	<b>Elective-I</b>	03	-	-	30	70	-	-	-	100	3	-	-	3
<u>314446</u>	<b>Operating Systems Lab</b>	-	04	-	-	-	25	25	-	50	-	2	-	2
<u>314447</u>	<b>Human Computer Interaction- Lab</b>	-	02	-	-	-	-	-	50	50	-	1	-	1
<u>314448</u>	<b>Laboratory Practice-I</b>	-	04	-	-	-	25	25	-	50	-	2	-	2
<u>314449</u>	<b>Seminar</b>	-	01	-	-	-	50	-	-	50	-	1	-	1
<u>314450</u>	<b>Audit Course 5</b>	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total Credit</b>											<b>15</b>	<b>06</b>	-	<b>21</b>
<b>Total</b>		<b>15</b>	<b>11</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>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

**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)

**Audit Course 5:**

314450A-Banking and Insurance

314450B-Startup Ecosystems

314450C- Foreign Language-(Japanese Language- III )



Pravara Rural Education Society's  
**SIR VISVEVSRAYA INSTITUTE OF TECHNOLOGY, Nashik**  
DEPARTMENT OF INFORMATION TECHNOLOGY  
TEIT Elective Choice (SEM-I 2023-24)

Sr.No	Roll No	Name of Student	Elective II	Sign
1	1	ANDHALE MAYUR NATHU	Internet of Things	rendha
2	2	BADGUJAR NIRAJ VIJAY	Internet of Things	N V P
3	3	BHABAD NISHANT ANIL	Internet of Things	Telijant
4	4	BHAGAT PIYUSH SANJAY	Internet of Things	Ranil
5	5	BODKE NALINEE SOMANATH	Internet of Things	Naresh
6	6	BODKE SHRADHHA DIRAJ	Internet of Things	Shradhha
7	7	DAWARE RAHUL KIRAN	Internet of Things	Zorga
8	8	DONGARE SNEHAL ANIL	Internet of Things	Alankar
9	9	DAWIKHAR ANUJ RAVINDRA	Internet of Things	Sak horda
10	10	DESHPANDE HARSH PRAVIN	Internet of Things	Nimisha
11	11	DUMBARE VAISHNAVI BABASAHEB	Internet of Things	Devi
12	12	GADAKH NIKHIL BHUSAHEB	Internet of Things	Prayut
13	13	GAWALI TUSHAR DNYANESHWAR	Internet of Things	Thushar
14	14	GHUGE TEJAL SURESH	Internet of Things	Fiona
15	15	GHUGE VAISHNAVI LAHANU	Internet of Things	Fiona
16	16	GODSE RITU MANGESH	Internet of Things	Ritu
17	17	GADAKH MAHESHWARI MADHUKAR	Internet of Things	Maheshwari
18	18	JADHAV RUTUJA KISHOR	Internet of Things	Kishor
19	19	JAWALE ATHARV MANOCHAR	Internet of Things	Akangar
20	20	KANGANE ANKITA SUBHASH	Internet of Things	Ankitha
21	22	KAVTHE TEJAL SUNIL	Internet of Things	Tejal
22	23	MORE RUTUJA ANIL	Internet of Things	Alankar
23	24	NANDE KUNAL DEVIDAS	Internet of Things	Eman
24	25	PANSARE VINAY BABASAHEB	Internet of Things	Vinay
25	26	SONAWANE JAYESH ISHWAR	Internet of Things	Rehan
26	27	SONAWANE PALLAVI SHARAD	Internet of Things	Pallavi
27	28	SADGIR SARITA RAMBHAU	Internet of Things	Sarita
28	29	SANAP GAYATRI AJAY	Internet of Things	Sarita
29	30	SANAP ROHIT CHANDRAKANT	Internet of Things	Rohit
30	31	SAYYED MOHAMMAD ABUTORAB JAFRI	Internet of Things	Abu
31	32	SHELKE ADITI ARUN	Internet of Things	Aditi
32	33	SHINDE BHAKTI DATTATRAY	Internet of Things	Bhakti
33	34	SHIRSAT VIKI PUNJARAM	Internet of Things	Shirsat
34	35	SHIVOM RAJENDRA PANDHARE	Internet of Things	Rajendra
35	36	SONAWANE VISHAKHA ANAND	Internet of Things	Sonja
36	37	TIRPUDE ROHAN BUDDHESHWAR	Internet of Things	Rohan
37	38	THOMBARE SHUBHANGI RADHAKISAN	Internet of Things	Shubhangi
38	39	WAGH HARSHAL PRASHANT	Internet of Things	Likhita
39	40	WAKODE PRANIT SANJAY	Internet of Things	Pranit
40	41	WARUNGASE VARSHA NANDU	Internet of Things	Varsha
41	42	GARJE ASHWINI PRALHAD	Internet of Things	Aswini
42	43	MOHITE SAKSHI BALASAHEB	Internet of Things	Sakshi
43	45	LIPTE GAURI VIJAY	Internet of Things	Gauri
44	46	AGHAV RUTUJA SHARAD	Internet of Things	Rutuja
45	47	PAWAR SIDDHESH NAVNATH	Internet of Things	Siddhesh
46	48	SONAWANE YOGITA NAMDEO	Internet of Things	Yogita
47	49	WAMANE DEVENDRA SURYABHAN	Internet of Things	Devendra
48	P51	GHUMARE AMIT VILAS	Internet of Things	Amit

49	52	GUNJAL RUTIK DNYANDEO	Internet of Things	<i>RK Rajesh</i>
50	54	PATIL RUGVED PRADIP	Internet of Things	<i>Lalit Lalitam</i>
51	55	KOLHE PRATIK RAJENDRA	Internet of Things	<i>Pratik Pratikam</i>
52	56	DEORE VIRAJ CHANDRAKANT	Internet of Things	<i>Viraj Virajch</i>
53	P57	LAHANE NIRMALA P.	Internet of Things	<i>Nirmala Nirmalap</i>
54	58	KURHADE OM SHANTARAM	Internet of Things	<i>Om Omshantaram</i>
55	P59	MAPARI DARSHAN ARUN	Internet of Things	<i>Darshan Darshana</i>
56	61	SANGALE PAYAL SAMPAT	Internet of Things	<i>Payal Payalch</i>
57	62	DESHMUKH AKASH SAMBHANJI	Internet of Things	<i>Akash Akashch</i>
58	63	WALVE VIJAYA RAJARAM	Internet of Things	<i>Vijaya Vijayra</i>
59	P64	DHANRAJ ARATI SUNIL	Internet of Things	<i>Arati Aratine</i>
60	P65	CHINE AARTI MOHAN	Internet of Things	<i>Aarti Aartim</i>
61	66	BHAGAT SAKSHI VIJAY	Internet of Things	<i>Sakshi Sakshimore</i>
62	67	RUMANE PRITI GANGARAM	Internet of Things	<i>Priti Pritibach</i>
63	68	JADHAV POOJA GORAKH	Internet of Things	

(Ms. Suvarna Chogare)  
TEIT Class Teacher

(Mr. Rushikesh S. Bhalerao)  
HOD of Department

Department of Information Technology  
Sir Venkateswara Institute of Technology  
Chincholi, Nashik - 422

**Savitribai 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	
<u>314451</u>	<u>Computer Networks &amp; Security</u>	03	-	-	30	70	-	-	-	100	03		03	
<u>314452</u>	<u>Data Science and Big Data Analytics</u>	03	-	-	30	70	-	-	-	100	03		03	
<u>314453</u>	<u>Web Application Development</u>	03	-	-	30	70	-	-	-	100	03		03	
<u>314454</u>	<u>Elective-II</u>	03	-	-	30	70	-	-	-	100	03		03	
<u>314455</u>	<u>Internship</u>	-	04	-	-	-	100	-	-	100		04	04	
<u>314456</u>	<u>Computer Networks &amp; Security-Lab</u>	-	04	-	-	-	25	-	50	75		02	02	
<u>314457</u>	<u>DS &amp; BDA-Lab</u>	-	02	-	-	-	25	25	-	50		01	01	
<u>314458</u>	<u>Laboratory Practice-II</u>	-	04	-	-	-	50	25	-	75		02	02	
<u>314459</u>	<u>Audit Course 6</u>	-	-	-	-	-	-	-	-	-	-	-	-	
<b>Total</b>										<b>Total</b>	<b>12</b>	<b>09</b>	<b>-</b>	<b>21</b>
<b>Total</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)



Pravara Rural Education Society's  
**SIR VISVEVSRAYA INSTITUTE OF TECHNOLOGY, Nashik**  
**DEPARTMENT OF INFORMATION TECHNOLOGY**  
**TEIT Elective Choice (SEM-II 2023-24)**

Roll No	Name of Student	Elective I	Sign
1	AGHAV RUTUJA NEERAJ	Software Modeling & Design	<i>[Signature]</i>
2	ANDHATE MAYUR NAIKH	Software Modeling & Design	<i>[Signature]</i>
3	BALGUJAR NIRAJ VIKAY	Software Modeling & Design	<i>[Signature]</i>
4	BHEEND NISHANT ANIL	Software Modeling & Design	<i>[Signature]</i>
5	BHUAGAT PIYUSH SANJAY	Software Modeling & Design	<i>[Signature]</i>
6	BHUAGAT SAKSHI VIKAY	Software Modeling & Design	<i>[Signature]</i>
7	BUDKI NALINI SOMANATH	Software Modeling & Design	<i>[Signature]</i>
8	BUDKI SHRADDHA DIPAK	Software Modeling & Design	<i>[Signature]</i>
9	DAWARI RAHUL KIRAN	Software Modeling & Design	<i>[Signature]</i>
10	DAWKHAR ANUJ RAVINDRA	Software Modeling & Design	<i>[Signature]</i>
11	DEOKE VIRAJ CHANDRAKANT	Software Modeling & Design	<i>[Signature]</i>
12	DI SHRIK KHAKASH SAMBHAIJI	Software Modeling & Design	<i>[Signature]</i>
13	DISHPANDE HARSH PRAVIN	Software Modeling & Design	<i>[Signature]</i>
14	DONGARE SUNITA ANIL	Software Modeling & Design	<i>[Signature]</i>
15	DUMHARE VAISHNAVI BABASAHEB	Software Modeling & Design	<i>[Signature]</i>
16	GADAKI MAIB SHWARI MADHUKAR	Software Modeling & Design	<i>[Signature]</i>
17	GADAKI NIKHIL BHUSAHEB	Software Modeling & Design	<i>[Signature]</i>
18	GARJE ASHWINI PRALHAD	Software Modeling & Design	<i>[Signature]</i>
19	GHAWALE TEJAS DNYANESHWAR	Software Modeling & Design	<i>[Signature]</i>
20	GHUGE TEJAL SURESH	Software Modeling & Design	<i>[Signature]</i>
21	GHUGE VAISHNAV LALAHANU	Software Modeling & Design	<i>[Signature]</i>
22	GODSE REETI MANGESH	Software Modeling & Design	<i>[Signature]</i>
23	GUNJAI RUTIK DNYANDEV	Software Modeling & Design	<i>[Signature]</i>
24	JADHAV POOJA GURAKH	Software Modeling & Design	<i>[Signature]</i>
25	JADHAV RUTUJA KISHOR	Software Modeling & Design	<i>[Signature]</i>
26	JAWALE AITHARY MANOHAR	Software Modeling & Design	<i>[Signature]</i>
27	KANGANE ANKITA SUBHASH	Software Modeling & Design	<i>[Signature]</i>
28	KAVITHA ILAJI SUNIL	Software Modeling & Design	<i>[Signature]</i>
29	KOHEE PRATIK RAJENDRA	Software Modeling & Design	<i>[Signature]</i>
30	LIPITI GAURI VIKAY	Software Modeling & Design	<i>[Signature]</i>
31	MAPARE DARSHAN ARUN	Software Modeling & Design	<i>[Signature]</i>
32	MORHTE SAKSHI BALASAHEB	Software Modeling & Design	<i>[Signature]</i>
33	MORHTE RUTUJA ANIL	Software Modeling & Design	<i>[Signature]</i>
34	NANDE KUNAL DEVIDAS	Software Modeling & Design	<i>[Signature]</i>
35	PANSARE VINAY BABASAHEB	Software Modeling & Design	<i>[Signature]</i>
36	PATIL JIVAN SURESH	Software Modeling & Design	<i>[Signature]</i>
37	PATIL RUPALI PRADIP	Software Modeling & Design	<i>[Signature]</i>
38	PAWAR SIDHILSHI NAVNATH	Software Modeling & Design	<i>[Signature]</i>
39	PRIHI GANGARAM RUPMANE	Software Modeling & Design	<i>[Signature]</i>
40	SALGIR SABITA RAMBHAIJI	Software Modeling & Design	<i>[Signature]</i>
41	SANAP GAYATHRI AJAY	Software Modeling & Design	<i>[Signature]</i>
42	SANAP ROHIT CHANDRAKANT	Software Modeling & Design	<i>[Signature]</i>
43	SAYYED MOHAMMAD ABUTORAB JAFRI	Software Modeling & Design	<i>[Signature]</i>
44	SHELKE ADITI ARUN	Software Modeling & Design	<i>[Signature]</i>
45	SHINDE BHAKTIDATTATRAY	Software Modeling & Design	<i>[Signature]</i>
46	SHIRSAT VIKEPUNJARAM	Software Modeling & Design	<i>[Signature]</i>
47	SHIVOM RAJENDRA PANDIARE	Software Modeling & Design	<i>[Signature]</i>

48	SONAWANE JAYESH ISHWAR	Software Modeling & Design	<i>Jayesh</i>
49	SONAWANE PALLAVI SHARAD	Software Modeling & Design	<i>Pallavi</i>
50	SONAWANE VISHAKHA ANAND	Software Modeling & Design	<i>Anand</i>
51	SONAWANE YOGITA NAMDEO	Software Modeling & Design	<i>Yogita</i>
52	THOMBARE SHUBHANGI RADHAKRISHNA	Software Modeling & Design	<i>Shubhangi</i>
53	TIRPUDE ROHAN BUDDHUSHWAR	Software Modeling & Design	<i>Rohan</i>
54	WAGHE HARSHAL PRASHANT	Software Modeling & Design	<i>Harshal</i>
55	WAKODE PRANIL SANJAY	Software Modeling & Design	<i>Pranil</i>
56	WALVI VIJAYA RAJARAM	Software Modeling & Design	<i>Vijaya</i>
57	WAMANI DEVENDRA SURYABHIAN	Software Modeling & Design	<i>Devendra</i>
58	WARUNGASI VARSHA NANDU	Software Modeling & Design	<i>Varsha</i>
59	KASAR LANMI PUNAMCHAND	Software Modeling & Design	<i>Punamchand</i>
60	LAHANE NIRMALA PRAKASH	Software Modeling & Design	<i>Nirmla</i>
61	DHANRAJ AARTI SUNIL	Software Modeling & Design	<i>Aarti</i>
62	GUJUMARE AMIT VILAS	Software Modeling & Design	<i>Amit</i>
63	SHINDI DURGESH DEEPAK	Software Modeling & Design	<i>Deepraj</i>

(Ms. Priyanka Ambilwade)  
TEIT Class Teacher

(Dr. Prishtha V. Kashid)  
HOD-IT Department

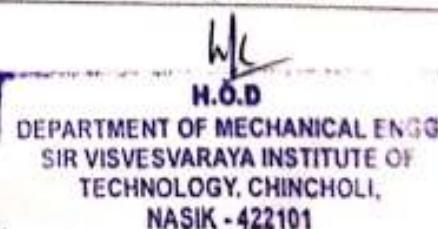
Department of Information Technology  
Government Polytechnic College,  
Dahanu, Dist. - Raigad

**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>3</sup>	-	-	-	-	-	-	-	-	-	-	-	-	NC
Total		14	12	-	120	330	125	-	125	700	14	6	-	20
<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>3</sup>	-	-	-	-	-	-	-	-	-	-	-	-	NC
Total		12	16	-	120	280	175	-	125	700	12	8	-	20
<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.



**Sir Visvesvaraya Institute of Technology, Nashik**  
**Department of Mechanical Engineering**  
**Elective Choice from Students 2023-24 Sem. I**

**Class - BE Mechanical**

All the students of BE Mechanical Engineering are hereby informed that kindly give Elective choice for Academic Year 2023-24 Sem. I by tick mark (✓) in respective box.

**Elec 402044A Automobile Design**

**402044D Industrial Engineering**

**402044B Design of Heat Transfer Equipments**

**402044E Internet of Things**

**402044C Modern Machining Processes**

**402044F Computational Fluid Dynamics**

Roll No.	Name of the Student	Elective III						Sign.
		Automobile Design	Design of Heat Transfer Equipments	Modern Machining Processes	Industrial Engineering	Internet of Things	Computational Fluid Dynamics	
1	Datir Akshay Suresh			✓				<i>(A.S.Datir)</i>
2	Avhad Nikita Bhaskar			✓				<i>(N.Bhaskar)</i>
3	Sahane Vishal Bharat							Fail
4	Galkwad Aditya Ramesh			✓				<i>(A.Galkwad)</i>
5	Ganore Prathamesh Manoj			✓				<i>(P.Ganore)</i>
6	Chavan Darshan Subhash			✓				<i>(D.Chavan)</i>
7	Takate Samadhan Eknath			✓				<i>(S.Takate)</i>
8	Binnar Nilesh Dinkar			✓				<i>(N.Binnar)</i>
9	Avhad Pratik Ashok			✓				<i>(P.Avhad)</i>
10	Varma Pushpak Mahesh			✓				<i>(M.Varma)</i>
11	Soudankar Prathamesh N							Fail

		AD	DOHRE	MMP	IE	IOT	CPD	
12	Gawand Pratik Valmik			✓				<i>Approved</i>
13	Suryawanshi Kunal Rajesh							Fail
14	Surve Sudhir Vinod							Fail
15	Dahale Shubham Arun			✓				<i>Dahale</i>
16	Kale Prajwal Dnyaneshwar			✓				<i>Prajwal</i>
17	Sadgir Kiran Baban			✓				<i>Kiran</i>
18	Hagawane Saurabh Suresh			✓				<del>28/40</del>
19	Sadgir Prashant Pandit							Fail
20	Balak Siddharth Shivnath							Fail
21	Andhale Vishal Santosh							Fail

*W/C*  
Elective Subject Teacher  
(Mr. Kadlag V.L.)

*W/C*  
**H.O.D.**  
H.O.D.  
DEPARTMENT OF MECHANICAL ENGG  
SIR VISVESVARAYA INSTITUTE OF  
TECHNOLOGY, CHINCHOLI,  
NASIK - 422101



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
512550710	MBA	2019	YES	2019	

Academic Year	Semester	Name of Class with pattern	Name of elective choice available	Name of elective subject selected by students	No. of students
<b>MBA</b>					
<b>Elective-MBA-I (SEM-I)</b>					
1. Management Fundamental-107 2. Indian Economy-108 3. Entrepreneurship development-109 4. Essential of psychology for managers-110 5. Legal Aspects of business-111 6. Demand Analysis and forecasting-112					
* Management Fundamental-107 * Entrepreneurship development-109 * Legal Aspects of business-111					
<b>Elective-MBA-I (SEM-I)-INTERNAL</b>					
1. Verbal communication lab-113 2. Enterprise Analysis & desk Research-114 3. Selling & Negotiation skill lab-115 4. MS Excel-116 5. Business System & Procedures-117 6. Managing innovation-118 7. Foreign Language-I --119					
* Verbal communication lab-113 *Enterprise Analysis & desk Research-114 *Selling & Negotiation skill lab-115					
2023-24 I MBA-I (SEM-I) 2019 Pat					
2023-24 I MBA-I (SEM-II) 2019 Pat					
2023-24 II MBA-I (SEM-II) 2019 Pat					



**Head of Department**

Master Of Business Administration  
**S. V. Institute of Technology, Nashik**



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Head of Department

MBA



IN HONOR OF DR. BALASAHEB VIKHRE PATIL  
(PADMA BHUSHAN Awardee)  
PRAVARA RURAL EDUCATION SOCIETY'S  
SIR VISVESVARAYA INSTITUTE OF TECHNOLOGY  
PRAVARA TECHNICAL EDUCATION CAMPUS NASHIK  
NASHIK

ROLL NO	NAME OF STUDENT	GENERIC ELECTIVES UNIVERSITY LEVEL (GE - UL) COURSES – 2 Credits Each							SEM MBA-I SEM-I	SIGN
		Management Fundamentals 107	Indian Economy 108	Entrepreneurship Development 109	Essentials of Psychology for Managers 110	Legal Aspects of Business 111	Demand Analysis & Forecasting 112			
1	ASWARE AKSHAY RAJENDRA	✓	—	✓	—	✓	—			Asware
2	AVHAD AARTI SOMNATH	✓	—	✓		✓				Aarthi
3	AVHAD BHAGWAN CHANDRABHAN	✓		✓		✓				Avhad
4	AVHAD KIRAN DIPAK	✓		✓		✓				Avhad
5	BHAGAT VAISHNAVI KIRAN	✓	✓	✓		✓				Bhagat
6	BHALERAO SMITA BALASAHEB	✓		✓		✓				Bhalerao Smita
7	BODAKE SAKSHI SIDDHARTH	✓		✓		✓				Bodake Sakshi
8	BODAKE VIKAS GANPAT	✓		✓		✓				Bodake Vikas.
9	BODKE KAVERI DNYANESHWAR	✓		✓		✓				Bodke
10	DANGE AMOL NABAJI	✓		✓		✓				Dange
11	DHONGADE ADITYA VINOD	✓		✓		✓				Dhongade
12	DIXIT ADITYA PURUSHOTTAM	✓		✓		✓				Dixit

Head of Department  
Master Of Business Administration  
S. V. Institute of Technology, Nashik



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# MBA



ETE DR. BALASAHEB VIKHLE PATH  
MA BHUSHAN AWARDEE  
PRAVARA RURAL EDUCATION SOCIETY'S  
SIR VISVESVARAYA INSTITUTE OF TECHNOLOGY  
PRAVARA TECHNICAL EDUCATION CAMPUS NASHIK  
NASHIK

13	GAIDHANI OM DILIP	✓		✓		✓			Gaidhani
14	GAIKWAD ISHWARI NITIN	✓		✓		✓			GaiKwad
15	GAYAKWAD DNYANESHWAR DILIP	✓		✓		✓			GaiKwad
16	GHODEROAO PRATIKSHA CHANDRAKANT	✓	✓	✓		✓		✓	ghoderao
17	GITE SAMADHAN ARJUN	✓		✓		✓			gite
18	HARDIK SHARAD ADHANGALE	✓		✓		✓			Adhagale
19	JADHAV SANTOSH RAJESH	✓		✓		✓			Jadhav
20	JOSHI KAUSTUBH KISHOR	✓		✓		✓			Joshs
21	KANDARE KHUSHAL RAVINDRA	✓		✓		✓			Kandare
22	KARPE KIRTI KAILAS	✓		✓	✓				Karpeki
23	KATKADE PRATIK UTTAM	✓		✓		✓			Katkade
24	KEKAN TEJAL BALU	✓		✓					
25	KEKANE KRUSHNA ASHOK	✓	.	✓		✓			kekane
26	MALI AMOL GANPAT	✓		✓		✓			mali bunt
27	MANOJ ASHOK GHUMARE	✓		✓		✓			manoju
28	MUTHAL KISHOR SOMNATH	✓		✓		✓			muthalk

# MBA



LODGE DR. BALASAHEB VIKHÉ PATIL  
(PADMA BHUSHAN AWARDEE)  
PRAVARA RURAL EDUCATION SOCIETY'S  
**SIR VISVESVARAYA INSTITUTE OF TECHNOLOGY**  
PRAVARA TECHNICAL EDUCATION CAMPUS NASHIK  
NASHIK

29	OMKAR NAMDEV ADHAV	✓	✓	✓				Adhav
30	PALVE PRAJAKTA DATTU	✓		✓		✓		Palve D.
31	PAWAR PRATHMESH AMBADAS	✓		✓		✓		Pawar PA
32	RAKH EKTA KAILAS	✓		✓		✓		Rah.
33	SAHANE RUSHIKESH BHAUSAHEB	✓		✓		✓		Sahane
34	SAMRUT KRUSHNA SHIVAJI	✓		✓		✓		Samrud
35	SANAP DNYANESHWARI VISHNU	✓		✓		✓		Sanap
36	SANKET NILESH SALI	✓		✓		✓		Sanket
37	SATBHAI YASH ASHOK	✓		✓		✓		Satbhai
38	SHAikh MADIHA YASIN	✓		✓		✓		Shaikhny
39	SHALMAL SANDEEP LANDE	✓		✓		✓		Shalmal
40	SHEJWAL SHUBHAM SHIVAJI	✓		✓		✓		Shejwal
41	SHINDE AKANKSHA SUNIL	✓		✓		✓		Shinde
42	SHINDE SHIVAM MADHUKAR	✓		✓		✓		Shinde sl.

Head of Department  
Master Of Business Administration  
Sir Visvesvaraya Institute of Technology  
Nashik



# MBA



NETYETE DR. BALASAHEB VIKHÉ PATIL  
(JAYMA BHUSHAN AWARDEE)  
PRAVARA RURAL EDUCATION SOCIETY'S  
**SIR VISVESVARAYA INSTITUTE OF TECHNOLOGY**  
PRAVARA TECHNICAL EDUCATION CAMPUS NASHIK  
NASHIK

43	SHINDE ASHUTOSH RAMKRUSHNA	✓		✓		✓			Shinde
44	SHIRSATH KAVERI DEEPAK	✓		✓		✓			Shirsath.
45	SONAWANE PRATHAMESH SUDHAKAR	✓		✓		✓			Sonawane
46	SONAWANE TUSHAR SHIVAJI	✓		✓	✓				Sonawane
47	TEJAS NAMDEV SANGALE	✓		✓		✓			Tejash S
49	UGALE ABHISHEK SAMPAT	✓		✓		✓			Ugale sp.
50	UGALE ROHINI BHAUSAHEB	✓		✓	✓				Ugale Rohini
51	WAGH KRUSHNA BALU	✓		✓	✓				Wagh Balu
52									
53									