PARUL INSTITUTE OF ENGINEERING & TECHNOLOGY

STUDENT INFORMATION HANDBOOK

DEPARTMENT OF INFORMATION TECHNOLOGY

SEMESTER 4

2021-22

P.O.LIMDA, TA. WAGHODIA, DIST VADODARA
PH.02668 -260338.

PARUL INSTITUTE OF ENGINEERING & TECHNOLOGY

AT & PO: LIMDA, Ta: Waaghodia
Dist-Vadodara
Div-A

BE IT(4TH SEM) ENGINEERING TIME TABLE CLAMM A– UG COURSE

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
09:30 to 10:30	WEEKLY	CN:{RS} :[A-226]	OS:{MK}:[A-226]	4ITA1: CN :{RS}: [A-316] 4ITA2: OS :{MK}: [A-316]	OS:{MK} [A-226]	OS:{MK} [A-226]
10:30 to 11:30	FSE:{HP} [A-226]	FSE:{HP} :[A-226]	CN: {RS} [A-226]		COA:{TS} :[A-226]	COA: {TS} [A-226]
11:30 to 12:15						
12:15 to 1:15	4ITA1: COA:{TS}:[A-316] 4ITA2: FSE:{HP}: [A-316]	COA: {TS} [A-226]	4ITA1:JPW:{DMP}: [A-316] 4ITA2:CN:{RS} : [A-316]	FSE:{HP} :[A-226]	4ITA1: FSE:{HP}:[A-316] 4ITA2: COA:{TS}:[A-316]	PCS-2-2: Tuto –T1:{}:[A-226] PCS-2-2: Tuto – T2:{}:[A-226]
1:15 to 2:15		PSNM:{}:[A-226]		CN:{RS} :[A-226]		PSNM:{}:[A-226]
2:15 to 2:30						
02:30 to 03:30	PSNM:Tuto – B-1:{}:[A-226] PSNM:Tuto – B-2:{:[A-226]	LIBRARY	FACE:{}:[A-316]	LIBRARY	PSNM:{} [A-226]	4ITA1: OS:{ MK}:[A-316] 4ITA2: JPW:{DMP}: [A-316]
03:30 to 04:30					LIBRARY	

PARUL INSTITUTE OF ENGINEERING &TECHNOLOGY

AT &PO: LIMDA, TA: Waghodia
Dist- Vadodara

Div-B

BE IT(4th SEM) ENGINEERING TIME TABLE CLASS B -UG COURSE

TIME						
09:30 to 10:30	**MONDAY**	**TUESDAY**	**WEDNESDAY**	**THURSDAY**	**FRIDAY**	**SATURDAY**
10:30 to 11:30	WEEKLY	LIBRARY	CN:{APK}:[A-227]	4ITB1: FSE:{HP}:[A-315] 4ITB2: COA:{TS}:[A-315]	COA:{N1}:[A-227]	4ITB1: JPW:{DG}: [A-315] 4ITB2: FSE:{HP}: [A-315]
11:30 to 12:15	PSNM:{}:[A-227]		FSE:{HP}: [A-227]		CN:{APK}:[A-227]	
12:15 to 1:15						
1:15 to 2:15	COA:{N1}: [A-227]	FACE:{}:[A-227]	COA:{N1}:[A-227]	PSNM:{}:[A-227]	PSNM:{}:[A-227]	OS:MK:[A-227]
2:15 to 2:30	CN:{APK}:[A-227]		OS:{MK}:[A-227]	OS:{MK}:[A-227]	PCS-2: Tutorial –T1:{}:[A-227] PCS-2: Tutorial – T2:{}:[A-227]	FSE:{HP}:[A-227]
02:30 to 03:30						
03:30 to 04:30	FSE: {HP}: [A-227]	4ITB1: OS:{MK}:[A-315] 4ITB2: CN:{APK}:[A-315]	4ITB1: COA:{TS}[A-315] 4ITB2: JPW:{DKS}:[A-315]	LIBRARY	4ITB1: CN:{APK}: [A-315] 4ITB2:OS:{MK}:[A-315]	PSNM:Tuto – B-1:{}:[A-227] PSNM:Tuto – B-2:{}:[A-227]

PARUL INSTITUTE OF ENGINEERING & TECHNOLOGY

AT & PO: LIMDA, Ta: Waghodia
Dist: Vadodara
Div-C

BE IT(4TH SEM) ENGINEERING TIME TABLE CLASS C – UG COURSE

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
09:30 to 10:30	WEEKLY	CN:{APK}:[A-208]	COA:{N1}:[A-208]	FSE:{JVP}:[A-208]	PSNM:{}:[A-208]	COA:{N1}:[A-208]
10:30 to 11:30	OS:{SS}:[A-208]	COA:{N1}:[A-208]	OS:{SS}:[A-208]	OS:{SS}:[A-208]	PCS-2:Tuto – B-1:{}:[A-208] PCS-2:Tuto – B-2:{}:[A-208]	PSNM:{}:[A-208]
11:30 to 12:15						
12:15 to 1:15	PSNM:Tuto – B-1:{}:[A-208] PSNM:Tuto – B-2:{}:[A-208]	4ITC1: FSE:{JVP}:[A-320] 4ITC2: OS:{SS}: [A-320]	4ITC1: OS:{SS}: [A-320] 4ITC2: CN:{APK}: [A-320]	4ITC1:CN:{APK} :[A-320] 4ITC2:JPW :{TP}:[A-320]	FSE:{JVP}:[A-208]	4ITC1: JPW:{DMP}:[A-320] 4ITC2: COA:{N1}: [A-320]
1:15 to 2:15					CN:{APK}:[A-208]	
2:15 to 2:30						
02:30 to 03:30	FSE:{JVP}:[A-208]	PSNM:{}:[A-208]	4ITC1: COA:{N1}:[A-320] 4ITC2:FSE:{JVP}:[A-320]	LIBRARY	LIBRARY	FACE:[A-208]
03:30 to 04:30	CN:{APK}:[A-208]	LIBRARY				

PARUL INSTITUTE OF ENGINEERING & TECHNOLOGY – FIRST SHIFT
FOURTH SEMESTER INFORMATION TECHNOLOGY STUDENTS HAND-BOOK-2021-22
Faculty of Engineering & Technology
ProposedAcademicCalendarforA.Y.2021-22(EvenSemester)
Bachelor of Technology -4thSemester

Week No.	Teach. Week No	Week Beginning	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	1	NOV	15	16	17	18	19	20
2	2	NOV	22	23	24	25	26	27
3	3	NOV - DEC	29	30	01	02	03	04
4	4	DEC	06	07	08	09	10	11
5	5	DEC	13 Weekly 1	14	15	16 Result Weekly 1	17	18
6	6	DEC	20 - Weekly 2 Assignmentsubmi.of previoussem	21	22	23 Result Weekly 2	24	25 Christmas
7	7	DEC - JAN	27 Weekly 3	28	29	30 Result Weekly 3	31	01
8	8	JAN	03 Rem MidExam 1 Weekly 4	04 Rem MidExam 2	05 Rem MidExam 3	06 Rem MidExam 4	07 Rem MidExam 5	08 Rem MidExam 6
9	9	JAN	10 Weekly 5	11	12	13 Result Weekly 5	14 Makar Sankranti	15
10	EXAM	JAN	17 MidExam 1 &Result Rem Mid Exam	18 MidExam 2	19 MidExam 3	20 MidExam 4	21 MidExam 5	22 MidExam 6
11	10	JAN	24	25	26 Republic Holiday	27	28	29
12	11	JAN - FEB	31	01	02	03	04	05
13	12	FEB	07 Result Mid Exam	08	09	10	11	12
14	13	FEB	14 TW SUB/REM	15 TW SUB/REM	16 TW SUB/REM	17 TW SUB/REM	18 TW SUB/REM	19 TW SUB/REM
15	14	FEB	21	22	23	24	25	26
16	15	FEB - MAR	28	01 MahaShivratri	02	03	04	5 Teaching Ends
17		MAR	7	8	9	10	11	12
18		MAR	14 ES PRACTEXAM	15 ES PRACTEXAM	16 ES PRACTEXAM	17 ES PRACTEXAM	18 Holi / Dhuleti	19 ES PRACTEXAM
19		MAR	21 ES PRACTEXAM	22 ES PRACTEXAM	23 ES PRACTEXAM	24 ES PRACTEXAM	25 ES PRACTEXAM	26 ES PRACTEXAM
20		MAR - APR	28 ESTHEORYEXAM & ESPRACTEXAM REM	29 ESTHEORYEXAM & ESPRACTEXAM REM	30 ESTHEORYEXAM & ESPRACTEXAM REM	31 ESTHEORYEXAM & ESPRACTEXAM REM	01 ESTHEORYEXAM & ESPRACTEXAM REM	02 ESTHEORYEXAM & ESPRACTEXAM REM
21		APR	04 ESTHEORYEXAM & ESPRACTEXAM REM	05 ESTHEORYEXAM & ESPRACTEXAM REM	06 ESTHEORYEXAM & ESPRACTEXAM REM	07 ESTHEORYEXAM & ESPRACTEXAM REM	08 ESTHEORYEXAM & ESPRACTEXAM REM	09 ESTHEORYEXAM & ESPRACTEXAM REM
22		APR	11 ESTHEORYEXAM REM	12 ESTHEORYEXAM REM	13 ESTHEORYEXAM REM	14 ESTHEORYEXAM REM	15 ESTHEORYEXAM REM	16 ESTHEORYEXAM REM
23		APR	18 ESTHEORYEXAM REM	19 ESTHEORYEXAM REM	20 ESTHEORYEXAM REM	21 ESTHEORYEXAM REM	22 ESTHEORYEXAM REM	23 ESTHEORYEXAM REM

Faculty RepresentativeDetail

Sr. No	Name of Faculty	DIV	Mobile No	E-mail ID
1	Prof. Dheeraj Kr. Singh	4IT1	8000503090	dheeraj.singh@paruluniversity.ac.in
2	Prof. Tejal Patel	4IT1	8347066800	tejal.patel@paruluniversity.ac.in
3	Prof. Mahendra Kr. Meena	4IT2	8709485505	mahendra.meena270243@paruluniversity.ac.in
4	Prof. Uma Bhatt	4IT3	9429950684	uma.bhatt2987@paruluniversity.ac.in

Faculty List of BE ITSEM-4

Sr No	Name of Faculty	Alias of Faculty	Mobile No	E-mail ID	Subject Code
1	Himani Parmar	HP	8200086949	himani.parmar270199@paruluniversity.ac.in	203124253/54
2	Disha George	DG	9016509921	disha.george2968@paruluniversity.ac.in	203105259
3	Dhenuka Patel	DP	9737717393	dhenuka.patel2962@paruluniversity.ac.in	203105259
4	Shivamallikarjun	RS	9108288132	rayabarapu.shivamallikarjun270239@paruluniversity.ac.in	203105255/56
5	Mahendra Meena	MM	7870529077	mahendra.meena270243@paruluniversity.ac.in	203105203/04
6	Dheeraj Kr. Singh	DKS	8000503090	dheeraj.singh@paruluniversity.ac.in	203105259
7	ShaleenSukla	SS	9428282968	shaleen.shukla270186@paruluniversity.ac.in	203105203/04
8	Jignasha Parmar	JVP	9998964238	jignasha.kapadiya2959@paruluniversity.ac.in	203124253/54
9	Ashish Kumar	APK	8273671779	ashish.kumar270197@paruluniversity.ac.in	203105255/56
10	Ayush Kumar	AK	9911672331	ayush.kumar17703@paruluniversity.ac.in	203105253/54
11	Tejal Patel	TP	8347066800	tejal.patel@paruluniversity.ac.in	203105259
12	Trilok Suthar	TS	9712943414	trilok.suthar270046@paruluniversity.ac.in	203105253/54
13					203193251
14					203193251

BE IT SEM-4 Teaching Scheme

Lect- Lecture, **Tut** - Tutorial, **Lab** - Lab, **T** - Theory, **P** - Practical, **CE** – Continuous Evaluation

Subject Code	Subject	Teaching Scheme			Credit	External Marks		Internal Marks			Total Marks
		Lect	Tut	Lab		T	P	T	CE	P	
203191251	Probability, Statistics and Numerical Methods	3	2	0	5	60	-	20	20	-	100
203105203	Operating System	3	0	0	3	60	-	20	20	-	100
203105204	Operating System Laboratory	0	0	2	1	-	30	-	-	20	50
203105253	Computer Organization & Architecture	3	0	0	3	60	-	20	20	-	100
203105254	Computer Organization & Architecture Laboratory	0	0	2	1	-	30	-	-	20	50
203105255	Computer Networks	3	0	0	3	60	-	20	20	-	100
203105256	Computer Networks Laboratory	0	0	2	1	-	30	-	-	20	50
203105259	Java Programming Laboratory	0	0	2	1	-	60	-	20	20	100
203124253	Fundamentals of Software Engineering	3	0	0	3	60	-	20	20	-	100
203124254	Fundamentals of Software Engineering Laboratory	0	0	2	1	-	30	-	-	20	50
203193251	Professional Communication Skills-2	1	1	0	2	-	-	-	100	-	100
	Total				**24**						**900**

PARUL INSTITUTE OF ENGINEERING & TECHNOLOGY – FIRST SHIFT
FOURTH SEMESTER INFORMATION TECHNOLOGY
STUDENTS HAND-BOOK-2021-22
PARUL UNIVERSITY - Faculty of Engineering and Technology
DEPARTMENT OF INFORMATION TECHNOLOGY
SYLLABUS FOR 4thSEM B. TECH. PROGRAMME

Probability, Statistics and Numerical Methods (203191251)

Type of Course: BTech

Prerequisite:

Rationale:

Teaching and Examination Scheme:

Teaching Scheme			Credit	Examination Scheme					Total
LectHrs/	Tut Hrs/	Lab Hrs/		External		Internal			
				T	P	T	CE	P	
3	2	0	5	60	-	20	20	-	100

Lect- Lecture, **Tut** - Tutorial, **Lab** - Lab, **T** - Theory, **P** - Practical, **CE** - CE, **T** - Theory, **P** - Practical

Contents:

Sr.	Topic	Weightage	Teaching Hrs.
1	**Unit 1**: **Correlation, Regression and Curve Fitting :** Correlation and Regression – Rankcorrelation Curve Fitting by The Method of Least Squares- Fitting of Straight Lines, Second Degree Parabolas and More General Curves	18%	8
2	**Unit 2**: **Probability and Probability Distributions:** Probability Spaces, Conditional Probability, Bayes' Rule, Discrete and Continuous Random Variables, Independent Random Variables, Expectation and Variance of Discrete and Continuous Random Variables, Distribution and Their Properties: Binomial Distribution, Poisson Distribution, Normal Distribution	23%	10
3	**Unit 3**: **Testing of Hypothesis:** Test of significance: Large sample test for single proportion, difference of proportions, single mean, difference of means, and difference of standard deviations. Test for single mean, difference of means, Test for ratio of variances, Chi-square test for goodness of fit and independence of attributes.	26%	12
4	**Unit 4**: **Solution of a System of Linear Equations, Roots of Algebraic and Transcendental Equations:** Gauss-Jacobi and Gauss Seidel Methods, Solution of Polynomial and Transcendental Equations – Bisection Method, Newton-Raphson Method and Regula-Falsi Method	11%	5

5	**Unit 5**: **Finite Differences and Interpolation:** Finite Differences, Relation between Operators, Interpolation using Newton's Forward and Backward Difference Formulae. Newton's Divided and Lagrange's Formulae for Unequal Intervals.	11%	5
6	**Unit 6**: **Numerical Integration:** Trapezoidal rule, Simpson's 1/3rd and 3/8thRules, Gaussian Quadrature Formulae. **Numerical solution of Ordinary Differential Equations:** Taylor's Series, Euler and Modified Euler's Methods. Runge- Kutta Method of Fourth Order for Solving First and Second Order Equations.	11%	5

***Continuous Evaluation:**

It consists of Assignments/Seminars/Presentations/Quizzes/Surprise Tests (Summative/MCQ) etc.

Reference Books:

1. Numerical Methods in Engineering & Science with Programs in C and C++ (TextBook) Dr. B. S. Grewal; Khanna Publishers

Course Outcome:

After Learning the course the students shall be able to:

1. Understand the Importance of numerical method in real world problem where analytic methods fails.
2. Formulate and solve problems involving random variables.
3. Apply statistical methods for analyzing experimental data.

Professional Communication Skills-2 (203193251)

Type of Course: BTech

Prerequisite:

Rationale: Acquiring soft skills, life skills & aptitude skills are crucial for organizational communication as well as for employability respectively.

Teaching and Examination Scheme:

Teaching Scheme			Credit	Examination Scheme					Total
				External		Internal			
LectHrs/ Week	Tut Hrs/ Week	Lab Hrs/		T	P	T	CE	P	
1	1	0	2	0	-	-	100	-	100

Lect- Lecture, **Tut** - Tutorial, **Lab** - Lab, **T** - Theory, **P** - Practical, **CE** - CE, **T** - Theory, **P** - Practical

Contents:

Sr.	Topic	Weightage	Teaching Hrs.
1	**Self Development and Assessment**: Various self-assessments for personal and professional development skills that are relevant to career development: • Change, Grow, Persist, Prioritize, Read, Learn, Listen, Record, Remember, Guess, Think, Communicate, Relate, and Dream	10%	4
2	**Corporate Etiquette**: Tips and guide to develop personality and gain various etiquettes manners, case studies and activities. • Telephone etiquette • Etiquette for foreign business trips • Etiquette for small talks • Respecting privacy • Learning to say‘No’	5%	4
3	**Public Speaking**: It’s process of communicating information to an audience and is helpful in career advancement. Effective Public speaking skills includes: • Choosing appropriate pattern • Selecting appropriate method • Art of persuasion • Making speeches effective • Delivering different types of speeches	5%	4
4	**Reading Skills Activity & Reading Comprehension**: Aims to improve students' Comprehensive Skills in English Language by getting them involved in reading activity and providing practice for reading comprehension.	5%	2

5	**Listening Skills- Inquiry Based Listening Questions**: Aims to improve students' listening skills in English Language providing them practice of various types of inquiry based listening tracks. Students will listen and will be able to find out details from the conversations.	5%	1
6	**Clocks, Calendars, Direction Sense and Cubes**: Students will be able to understand the concepts and able to solve questions based on topicslike: • Clocks • Calendars • Direction Sense • Cubes	5%	2
7	**Data Interpretation, Data Sufficiency**: Students will be able to understand the concepts and able to solve questions based on topics like: • Data Interpretation – Tables • Data Interpretation - Pie Chart • Data Interpretation - Bar Graph • Data Sufficiency	5%	2
8	**Critical Reasoning**: Students will be able to solve the critical reasoning questions based on: • Argument – Identifying the Different Parts (Premise, assumption, conclusion) • Types of Questions	5%	2
9	**Percentages, SI and CI**: Students will be able to understand the concepts and able to solve questions based on topicslike: • Percentages as Fractions and Decimals • Percentage Increase / Decrease • Simple Interest • Compound Interest • Relation Between Simple and Compound Interest	5%	2
10	**Sentence Correction**: Students will be able to understand the Basic grammar of English Language and able to solve questions based on topics like • Subject-Verb Agreement • Modifiers • Parallelism • Pronoun-Antecedent Agreement • Verb Time Sequences • Comparisons • Prepositions • Determiners	5%	2
11	**Ratio & Proportions**: Students will be able to understand the concepts and able to solve questions based on topics like: • Ratio • Proportion • Variation • Simple equations • Problems on Ages	5%	2

12	**Time and Work**: Students will be able to understand the concepts and able to solve questions based on topics like: • Work with different efficiencies • Pipes and cisterns • Work equivalence • Division of wages	5%	2
13	**Logical Connectives, Syllogism, Venn diagrams**: Students will be able to understand the concepts and able to solve questions based on topics like: Logical Connectives Syllogisms Venn Diagrams – Interpretation Venn Diagrams – Solving	5%	2
14	**Numbers**: Students will be able to understand the concepts and able to solve questions based on topics like • Power cycle • Remainder cycle • Factors, Multiples • HCF and LCM	5%	2
15	**Permutation, Combination and Probability**: Students will be able to understand the concepts and solve questions based on topics like • Fundamental Counting Principle • Permutation and Combination • Computation of Permutation • Circular Permutations • Computation of Combination • Probability	5%	2
16	**Logarithms**: Students will be able to understand the concepts and able to solve questions based on topics like • Logarithm • Arithmetic Progression • Geometric Progression • Geometry • Mensuration • Quadratic Equations	5%	2
17	**Time, speed and Distance**: Students will be able to understand the concepts and able to solve questions based on topics like: • Basics of time, speed and distance • Relative speed • Problems based on trains • Problems based on boats and streams • Problems based on races	5%	2
18	**Article Preposition & Interrogatives**: Students will be able to understand the concepts and solve questions based on topicslike • Definite and Indefinite Articles • Omission of Articles • Prepositions • Compound Prepositions and Prepositional Phrases • Interrogatives	4%	2

19	**Sentence Completion & Cloze Passages**: Students will be able to solve questions based on sentence completion and cloze passages with the help of various techniques: • Pro-active thinking • Reactive thinking (signpost words, root words, prefix suffix, sentence structure clues) • Fixed jumbles • Anchored jumbles	4%	2
20	**Extra Worksheet & Revision Session-Quiz**: This session will be helpful for the students to excel in Exam	2%	2

***Continuous Evaluation:**

It consists of Assignments/Seminars/Presentations/Quizzes/Surprise Tests (Summative/MCQ) etc.

Reference Books:

1. Business Correspondence and Report Writing
SHARMA, R. AND MOHAN, K.
2. Communication Skills
Kumar S and Lata P; New Delhi Oxford University Press
3. Practical English Usage
MICHAEL SWAN
4. A Remedial English Grammar for Foreign Student
F.T. WOOD
5. On Writing Well
William Zinsser; Harper Paperbacks,2006; 30th anniversary edition
6. Oxford Practice Grammar,
John Eastwood; Oxford University Press

Course Outcome:

After Learning the course students shall be able to:

1. Understanding of soft skills required for professional growth.
2. Develop aptitude & reasoning skills.

PARUL UNIVERSITY - Faculty of Engineering and Technology
DEPARTMENT OF INFORMATION TECHNOLOGY
SYLLABUS FOR 4thSEM B. TECH. PROGRAMME
Computer Networks (203105255)

Type of Course: B. Tech

Prerequisite: knowledge of Computer and Information system

Rationale: This course is design to provide the basic knowledge about the data & signals. It also provides basic concepts of computer network and firm foundation for understanding how data communication occurs in the Transmission Medium. It will help to develop logical abilities and practically setup the network

Teaching and Examination Scheme:

Teaching Scheme			Credit	Examination Scheme					Total
				External		Internal			
LectHrs/	Tut Hrs/	Lab Hrs/		T	P	T	CE	P	
3	0	0	3	60	-	20	20	-	100

Lect- Lecture, **Tut** - Tutorial, **Lab** - Lab, **T** - Theory, **P** - Practical, **CE** - CE, **T** - Theory, **P** - Practical

Contents:

Sr.	Topic	Weightage	Teaching Hrs.
1	**Unit 1: DATA COMMUNICATION COMPONENTS**: Representation of data and its flow Networks, VariousConnection Topology, Protocols and Standards, OSI model, Transmission Media, LANWired LAN, Wireless LANs, Connecting LAN and Virtual LAN, Techniques forBandwidth utilization: Multiplexing - Frequency division, Time division and Wavedivision, Concepts on spread spectrum.	25%	11
2	**Unit 2: DATA LINK LAYER AND MEDIUM ACCESS SUB LAYER**: Error Detection and Error Correction -Fundamentals, Block coding, Hamming Distance, CRC; Flow Control and Error controlprotocols - Stop and Wait, Goback – N ARQ, Selective Repeat ARQ, Sliding WindowPiggybacking,Random Access, Multiple access protocols - Pure ALOHA, Slotted ALOHA,CSMA/CD,CDMA/CA	25%	11
3	**Unit 3: Network Layer**: Switching, Logical addressing – IPV4, IPV6; Address mapping –ARP, RARP, BOOTP and DHCP–Delivery, Forwarding and Unicast Routing protocols	20%	8
4	**Unit 4: Transport Layer**: Process to Process Communication, User Datagram Protocol(UDP), Transmission Control Protocol (TCP), SCTP Congestion Control; Quality ofService, QoS improving techniques: Leaky Bucket and Token Bucket algorithm.	15%	6
5	**Unit 5: Application Layer**: Domain Name Space (DNS), DDNS, TELNET, EMAIL, File Transfer Protocol (FTP), WWW, HTTP, SNMP, Bluetooth, Firewalls, Basic concepts of Cryptography	15%	6

***Continuous Evaluation:**

It consists of Assignments/Seminars/Presentations/Quizzes/Surprise Tests (Summative/MCQ) etc.

Reference Books:

1. Computer Networks
   Andrew S. Tanenbaum and David J. Wetherall; PEARSON Edition
2. Internetworking with TCP/IP Principles, Protocols and Architecture
   Douglas E Comer
3. TCP/IP Illustrated
   Richard Stevens
4. Data Communication and Networking
   Behrouz A. Forouzan; fourth edition; Tata Mc Graw Hill
5. Data and Computer Communication
   W. Stallings; McMillan

Course Outcome:

After Learning the course students shall be able to:

1. Explain the functions of the different layer of the OSI Protocol.
2. Draw the functional block diagram of wide-area networks (WANs), local areanetworks (LANs) and Wireless LANs (WLANs) describe the function of each block.
3. For a given requirement (small scale) of wide-area networks (WANs), local areanetworks (LANs) and Wireless LANs (WLANs) design it based on the marketavailable component.
4. For a given problem related TCP/IP protocol developed the network programming.
5. Configure DNS DDNS, TELNET, EMAIL, File Transfer Protocol (FTP), WWW,HTTP, SNMP, Bluetooth, Firewalls usingopensource available software and tools.

Computer Networks Laboratory (203105256)

Type of Course: BTech

Prerequisite: Basic knowledge of Computer and Information system

Rationale: This course is design to provide the basic knowledge about the data & signals. It also provides basic concepts of computer network and firm foundation for understanding how data communication occurs in the Transmission Medium. It will help to develop logical abilities and practically setup the network.

Teaching and Examination Scheme:

Teaching Scheme			Credit	Examination Scheme					Total
				External		Internal			
LectHrs/	Tut Hrs/	Lab Hrs/		T	P	T	CE	P	
0	0	2	1	-	30	-	-	20	50

Lect- Lecture, **Tut** - Tutorial, **Lab** - Lab, **T** - Theory, **P** - Practical, **CE** - CE, **T** - Theory, **P** - Practical

Course Outcome:

After Learning the course the students shall be able to:

1. Explain the functions of the different layer of the OSI Protocol.
2. Draw the functional block diagram of wide-area networks (WANs), local areanetworks (LANs) and Wireless LANs (WLANs) describe the function of each block.
3. For a given requirement (small scale) of wide-area networks (WANs), local areanetworks (LANs) and Wireless LANs (WLANs) design it based on the marketavailable component
4. For a given problem related TCP/IP protocol developed the network programming.
5. Configure DNS DDNS, TELNET, EMAIL, File Transfer Protocol (FTP), WWW,HTTP, SNMP, Bluetooth, Firewalls using open source available software and tools.

List of Practical:

1. **Experiments on Simulation Tools: (CISCO PACKET TRACER):**
2. **Experiments of Packet capture tool: Wireshark**
3. **To study behaviour of generic devices used for networking: (CISCO PACKET TRACER)**
4. **Data Link Layer (Error Correction)**
5. **Virtual LAN**
6. **Wireless LAN**
7. **Internetworking with routers: 1: Experiment on same subnet 2: Perform Experiment across the subnet and observe functioning of Router via selecting suitable pair of Source and destination.**
8. **Implementation of SUBNETTING**
9. **Routing at Network Layer**
10. **Experiment on Transport Layer**

PARUL UNIVERSITY - Faculty of Engineering and Technology
DEPARTMENT OF INFORMATION TECHNOLOGY
SYLLABUS FOR 4thSEM B. TECH. PROGRAMME

Computer Organization & Architecture (203105253)

Type of Course: BTech

Prerequisite: Digital Electronics, Basic Understanding of Computer System.

Rationale: This course is concerned with the structure and behaviour of the various functional modules of Computer and how they interact to provide the processing needs of the user. This course also helps to understand basic instruction formats and parallel processing. It will help to develop their understanding about the organization of computer parts.

Teaching and Examination Scheme:

Teaching Scheme			Credit	Examination Scheme					Total
				External		Internal			
LectHrs/	Tut Hrs/	Lab Hrs/		T	P	T	CE	P	
3	0	0	3	60	-	20	20	-	100

Lect- Lecture, **Tut** - Tutorial, **Lab** - Lab, **T** - Theory, **P** - Practical, **CE** - CE, **T** - Theory, **P** - Practical

Contents:

Sr.	Topic	Weightage	Teaching Hrs.
1	**FUNCTIONAL BLOCKS OF A COMPUTER:** CPU, memory, input-output subsystems, control unit. Instruction set architecture of a CPU–registers, instruction execution cycle, RTL Interpretation of instructions, addressing modes, instruction set. Case study – instruction set of some common CPUs	15%	7
2	**DATA REPRESENTATION**: Signed number representation, fixed and floating, point representations,Character representation. Computer arithmetic – integer addition and Subtraction, ripple carry adder, carry look-ahead adder, etc. multiplication – shift-and add, Booth multiplier, carry save multiplier, etc. Division restoring and non-restoring techniques, floating pointarithmetic.	20%	9
3	**INTRODUCTION TO X86 ARCHITECTURE:** **CPU CONTROL UNIT DESIGN:** hardwired and micro-programmed design approaches, Case study – design of a simple hypothetical CPU. **MEMORY SYSTEM DESIGN:** Semiconductor memory technologies, memory organization.	15%	7

4	**PERIPHERAL DEVICES AND THEIR CHARACTERISTICS:** Input-output subsystems, I/O device interface, I/O transfers–program controlled, interrupt driven and DMA, privileged and non-privileged instructions, software interrupts and exceptions. Programs and processes–role of interrupts in process state transitions, I/O device interfaces – SCII, USB	15%	7
5	PIPELINING: Basic concepts of pipelining, throughput and speedup, pipeline hazards. PARALLEL PROCESSORS: Introduction to parallel processors, Concurrent access to memory and cache coherency.	15%	7
6	**MEMORY ORGANIZATION:** Memory organization: Memory interleaving, concept of hierarchical memory organization, cache memory, cache size vs. block size, mapping functions, replacement algorithms, write policies	20%	9

***Continuous Evaluation:**

It consists of Assignments/Seminars/Presentations/Quizzes/Surprise Tests (Summative/MCQ) etc.

Reference Books:

1. Computer Organization and Design: The Hardware/Software Interface David A. Patterson and John L. Hennessy, Elsevier; 5thEdition
2. Computer Organization and Embedded Systems CarlHamacher; McGraw Hill Higher Education.; 6thEdition
3. Computer Architecture and Organization John Hayes; McGraw-Hill
4. Computer Organization and Architecture: Designing for Performance William Stallings; Pearson Education; 10thEdition
5. Computer System Design and Architecture Vincent P. Heuring and Harry F. Jordan; Pearson Education; 2nd Edit ion

Course Outcome:

After Learning the course the students shall be able to:

1. Draw the functional block diagram of a single bus architecture of a computer and describe the function of the instruction execution cycle, RTL interpretation of instructions, addressing modes, instruction set.
2. Write assembly language program for specified microprocessor for computing16 bit multiplication, division and I/O device interface (ADC, Control circuit, serial port communication).
3. Write a flowchart for Concurrent access to memory and cache coherency in Parallel Processors and describe the process.
4. Given a CPU organization and instruction, design a memory module and analyze its operation by inter facing with the CPU.
5. Given a CPU organization, assess its performance, and apply design techniques to enhance performance using pipelining, parallelism and RISC methodology

Computer Organization & Architecture Laboratory (203105254)

Type of Course: BTech

Prerequisite: Digital Electronics, Basic Understanding of Computer System.

Rationale: This course is concerned with the structure and behaviour of the various functional modules of Computer and how they interact to provide the processing needs of the user. This course also helps to understand basic instruction formats and parallel processing. It will help to develop their understanding about the organization of computer parts.

Teaching and Examination Scheme:

Teaching Scheme			Credit	Examination Scheme					Total
				External		Internal			
LectHrs/	Tut Hrs/	Lab Hrs/		T	P	T	CE	P	
0	0	2	1	-	30	-	-	20	50

Lect- Lecture, **Tut** - Tutorial, **Lab** - Lab, **T** - Theory, **P** - Practical, **CE** - CE, **T** - Theory, **P** - Practical

Course Outcome:

After Learning the course the students shall be able to:
1. Draw the functional block diagram of a single bus architecture of a computer and describe the function of the instruction execution cycle, RTL interpretation of instructions, addressing modes, instruction set.

2. Write assembly language program for specified microprocessor for computing16 bit multiplication, division and I/O device interface (ADC, Control circuit, serial port communication).

3. Write a flowchart for Concurrent access to memory and cache coherency in Parallel Processors and describe the process.

4. Given a CPU organization and instruction, design a memory module and analyze its operation by inter facing with the CPU.

5. Given a CPU organization, assess its performance, and apply design techniques to enhance performance using pipelining, parallelism and RISC methodology

List of Practical:

1. **Write the working of 8085 simulator GNUsim8085 and basic architecture of 8085 along with small introduction.**
2. **Study the complete instruction set of 8085 and write the instructions in the instruction set of 8085 along with examples.**
3. **Write an assembly language code in GNUsim8085 to implement data transfer instruction.**
4. **Write an assembly language code in GNUsim8085 to store numbers in reverse order in memory location.**
5. **Write an assembly language code in GNUsim8085 to implement arithmetic instruction.**
6. **Write an assembly language code in GNUsim8085 to add two numbers using lxi instruction.**
7. **Write an assembly language code in GNUsim8085 to add two 8 bit numbers stored in memory and also storing the carry.**
8. **Write an assembly language code in GNUsim8085 to find the factorial of a number.**

9. **Write an assembly language code in GNUsim8085 to implement logical instructions.**

10. **Write an assembly language code in GNUsim8085 to implement stack and branch instructions.**

Operating System (203105203)

Type of Course: BTech

Prerequisite: Data Structures and Algorithms, good working knowledge of C, and Fundamentals of Computer Systems.

Rationale: This course is an introduction to the theory and practice behind modern computer operating systems. Topics will include what an operating system does (and doesn't) do, system calls and interfaces, processes, concurrent programming, resource scheduling and management, virtual memory, deadlocks, and algorithms, programming, and security. We will approach the subject from both a theoretical perspective as well as a practical one.

Teaching and Examination Scheme:

Teaching Scheme			Credit	Examination Scheme					Total
				External		Internal			
LectHrs/	Tut Hrs/	Lab Hrs/		T	P	T	CE	P	
3	0	0	3	60	-	20	20	-	100

Lect- Lecture, **Tut** - Tutorial, **Lab** - Lab, **T** - Theory, **P** - Practical, **CE** - CE, **T** - Theory, **P** - Practical

Contents:

Sr.	Topic	Weightage	Teaching Hrs.
1	**UNIT-1**: **INTRODUCTION:** Concept of Operating Systems, Generations of Operating systems, Types of Operating Systems, OS Services, System Calls, Structure of an OS-Layered,Monolithic, Microkernel Operating Systems, Concept of Virtual Machine.	5%	3
2	**UNIT-2**: **PROCESSES, THREAD & PROCESS SCHEDULING:** **Processes:** Definition, Process Relationship, Different states of a Process, Process State transitions, Process Control Block (PCB), Context switching. **Thread:** Definition, Various states, Benefits of threads, Types of threads, Concept of multithreads. **Process Scheduling:** Foundation and Scheduling objectives, Types of Schedulers, Scheduling criteria: CPU utilization, Throughput, Turnaround Time, Waiting Time, Response Time; Scheduling algorithms: Pre-emptive and Non pre-emptive, FCFS, SJF, RR.	20%	9

3	**UNIT-3**: **INTER-PROCESS COMMUNICATION:** Critical Section, Race Conditions, Mutual Exclusion, Hardware Solution, Strict Alternation, Peterson's Solution, The Producer\ ConsumerProblem, Semaphores, Event Counters, Monitors, Message Passing, Classical IPC Problems: Reader's & Writer Problem, Dinning Philosopher Problem etc.	15%	6
4	**UNIT-4**: **DEADLOCKS**: Definition, Necessary and sufficient conditions for Deadlock, Deadlock Prevention, Deadlock Avoidance: Banker's algorithm, Deadlock detection and Recovery.	10%	5
5	**UNIT-5**: **MEMORY MANAGEMENT & VIRTUAL MEMORY**: **Memory Management:** Basic concept, Logical and Physical address map, Memory allocation: Contiguous Memory allocation – Fixed and variable partition–Internal and External fragmentation and Compaction; Paging: Principle of operation – Page allocation – Hardware support for paging, Protection and sharing, Disadvantages of paging. **Virtual Memory:** Basics of Virtual Memory – Hardware and control structures– Locality of reference, Page fault, Working Set, Dirty page/Dirty bit – Demand paging, Page Replacement algorithms: Optimal, First in First Out (FIFO), Second Chance (SC), Not recently used (NRU) and Least Recently used (LRU).	30%	15
6	**UNIT-6**: **I/O SYSTEMS, FILE & DISK MANAGEMENT:** **I/O Hardware:** I/O devices, Device controllers, Direct memory access Principles of I/O Software: Goals of Interrupt handlers, Device drivers, Device independent I/O software. **File Management:** Concept of File, Access methods, File types, File operation, Directory structure, File System structure, Allocation methods (contiguous, linked, indexed), Free-space management (bit vector, linked list, grouping), directory implementation (linear list, hash table), efficiency and performance. **Disk Management:** Disk structure, Disk scheduling algorithms - FCFS, SSTF, SCAN, C-SCAN, Disk reliability, Disk formatting, Boot-block, Bad blocks.	20%	10

***Continuous Evaluation:**

It consists of Assignments/Seminars/Presentations/Quizzes/Surprise Tests (Summative/MCQ) etc.

Reference Books:

1. Operating System Concepts Essentials
   By AviSilberschatz, Peter Galvin, Greg Gagne; 9th Edition Wiley Asia Student Edition.
2. Operating Systems Internals and Design Principles
   William Stallings; PHI; 5thEdition
3. Operating System: A Design-oriented Approach
   Charles Crowley, 1st Edition - IrwinPublishing

4. Operating Systems: A Modern Perspective
by Gary J. Nutt, Addison-Wesley; 2ndEdition
5. Design of the Unix Operating Systems
Maurice Bach, Prentice-Hall of India; 8th Edition
6. Understanding the Linux Kernel
Daniel P. Bovet, Marco Cesati, O'Reilly and Associates; 3rd Edition

Course Outcome:

After learning the course the students shall be able to:

1. Distinguish different styles of operating system design.
2. Understand device and I/O management functions in operating systems as part of a uniform device abstraction.
3. Have an understanding of disk organisation and file system structure
4. Give the rationale for virtual memory abstractions in operating systems.
5. Understand the main principles and techniques used to implement processes and threads as well as the different algorithms for process scheduling.
6. Understand the main mechanisms used for inter-process communication.
7. Understand the main problems related to concurrency and the different synchronization mechanisms available.

Operating System Laboratory (203105204)

Type of Course: BTech

Prerequisite: Data Structures and Algorithms, Good working knowledge of C, and Fundamentals of Computer Systems.

Rationale: This course is an introduction to the theory and practice behind modern computer operating systems. Topics will include what an operating system does (and doesn't) do, system calls and interfaces, processes, concurrent programming, resource scheduling and management, virtual memory, deadlocks, and algorithms, programming, and security. We will approach the subject from both a theoretical perspective as well as a practical one.

Teaching and Examination Scheme:

Teaching Scheme			Credit	Examination Scheme					Total
				External		Internal			
LectHrs/	Tut Hrs/	Lab Hrs/		T	P	T	CE	P	
0	0	2	1	-	30	-	-	20	50

Lect- Lecture, **Tut** - Tutorial, **Lab** - Lab, **T** - Theory, **P** - Practical, **CE** - CE, **T** - Theory, **P** - Practical

Course Outcome:

After Learning the course the students shall be able to:

1. Distinguish different styles of operating system design.
2. Understand device and I/O management functions in operating systems as part of a uniform device abstraction.
3. Have an understanding of disk organisation and file system structure
4. Give the rationale for virtual memory abstractions in operating systems.
5. Understand the main principles and techniques used to implement processes and threads as well as the different algorithms for process scheduling.
6. Understand the main mechanisms used for inter-process communication.
7. Understand the main problems related to concurrency and the different synchronization mechanisms available.

List of Practical:

1. **Study of Basic commands of Linux.**
2. **Study the basics of shell programming.**
3. **Write a Shell script to print given numbers sum of all digits.**
4. **Write a shell script to validate the entered date. (eg. Date format is: dd-mm-yyyy).**
5. **Write a shell script to check entered string is palindrome or not.**
6. **Write a Shell script to say good morning/Afternoon/Evening as you log in to system.**
7. **Write a C program to create a child process**
8. **Finding out biggest number from given three numbers supplied as command line arguments**
9. **Printing the patterns using for loop.**
10. **Shell script to determine whether given file exist or not.**
11. **Write a program for process creation using C. (Use of gcc compiler).**
12. **Implementation of FCFS &Round Robin Algorithm.**
13. **Implementation of Banker's Algorithm.**

Fundamental ofSoftware Engineering (203124253)

Type of Course:BTech

Prerequisite: Basic knowledge of software applications.

Rationale: This course provides a broad introduction to software engineering. The various processmodels required to develop software is also being described. Moreover the functional and non-functionalrequirements are also described.

Teaching and Examination Scheme:

Teaching Scheme			Credit	Examination Scheme					Total
				External		Internal			
LectHrs/	Tut Hrs/	Lab Hrs/		T	P	T	CE	P	
3	0	0	3	60	-	20	20	-	100

Lect- Lecture,**Tut** - Tutorial, **Lab** - Lab, **T** - Theory,**P**- Practical, **CE**- CE, **T** - Theory,**P**- Practical

Contents:

Sr.	Topic	Weightage	Teaching Hrs.
1	**Introduction**: Study of Different Models, Software Characteristics, Components,Applications, Layered Technologies, Processes, Methods and Tools,Generic View of Software Engineering, Process Models- Waterfallmodel, Incremental, Evolutionary process models- Prototype, Spiraland Concurrent Development Model **Agile Development:** Agility and Agile Process model, Extreme Programming, Other processmodels of Agile Development and Tools.	10%	6
2	**Software Project Management**: Management Spectrum, People –Product – Process-Project, W5HHPrinciple, Importance of Team Management **Planning a Software Project:** ScopeandFeasibility,EffortEstimation,Scheduleandstaffing,QualityPlanning ,Risk management- identification, assessment,control, project monitoring plan, Detailed Scheduling	10%	5
3	**RequirementsEngineering**: Problem Recognition, Requirement Engineering tasks, Processes,Requirements Specification, Use cases and Functional specification,Requirements, validation, Requirements Analysis	10%	5

4	**Structured System Design**: Design Concepts, Design Model, Software Architecture, Data Design,Architectural Styles and Patterns, Architectural Design, Alternativearchitectural designs, Modeling Component level design and itsmodeling, Procedural Design, Object Oriented Design. **Data Oriented Analysis & Design:** Difference between Data and Information, E-R Diagram, DataflowModel, Control Flow Model, Control and Process Specification, DataDictionary	15%	8
5	**Coding and Unit Testing**: Programming principles and guidelines, Programming practices,Coding standards, Incremental development of code, Management ofcode evaluation, Unit testing- procedural units, classes, CodeInspection, Metrics-size measure, complexity metrics, CyclomaticComplexity, Halstead measure,Knot Count, Comparison Of DifferentMetrics	10%	4
6	**Software Testing**: Concepts, Psychology of testing, Levels of testing, Testing Process-test plan, test case design, Execution, Black-Box testing – Boundaryvalue analysis – Pair wise testing- state based testing, White-Boxtesting – criteria and test case generation and tool support **Quality Assurance:** Quality Control, Assurance, Cost, Reviews, Software QualityAssurance, Approaches to SQA, Reliability, Quality Standards-ISO9000 And 9001	15%	8
7	**CASE Tools and Advance Practices of System Dependability andSecurity**: Computer Aided Software Engineering Tools, SCRUM Developments,Dependable System, Reliability Engineering, Safety Engineering,Security Engineering, Resilience Engineering	15%	7
8	**AdvanceSoftware Engineering**: Software Reuse, Component Based Software Engineering, DistributedSoftware Engineering, Service-Oriented Software Engineering, Real-TimeSoftwareEngineering,SystemsEngineering,SystemsofSystem.	15%	7

***Continuous Evaluation:**

It consists of Assignments/Seminars/Presentations/Quizzes/Surprise Tests (Summative/MCQ) etc.

Reference Books:

1. Software Engineering (TextBook) R.Pressmen; 6th
2. Software EngineeringSommervil le
3. Fundamentals of Software EngineeringRajib Mall; PHI
4. Software EngineeringPankajJalote;Wi leyIndia

Course Outcome:

After Learning the course the students shall be able to:

1. Prepare and do Software Requirement Specification and Software Project Management Plan.
2. To ensure the quality of software product, different quality standards and software review techniques
3. Apply the concept of Functional Oriented and Object Oriented, Approach for Software Design.
4. Understand modern Agile Development and Service Oriented Architecture Concept of Industry
5. Analyze, design, verify, validate, implement and maintain software systems.
6. Execute a Project Management Plan, tabulate Testing Plans and Reproduce effective procedure

Fundamental of Software Engineering Laboratory (203124254)

Type of Course:BTech

Prerequisite: Basic knowledge of software applications.

Rationale: This course provides a broad introduction to software engineering. The various processmodels required to develop software is also being described. Moreover the functional and non-functionalrequirements are also described.

Teaching and Examination Scheme:

Teaching Scheme			Credit	Examination Scheme					Total
				External		Internal			
LectHrs/	Tut Hrs/	Lab Hrs/Week		T	P	T	CE	P	
0	0	2	1	-	30	-	-	20	50

Lect- Lecture,**Tut** - Tutorial, **Lab** - Lab, **T** - Theory,**P**- Practical, **CE**- CE, **T** - Theory,**P**- Practical

Course Outcome:

After Learning the course the students shall be able to:

After learning the course the students shall be able to:
1. Prepare and do Software Requirement Specification and Software Project Management Plan.
2. To ensure the quality of software product, different quality standards and software review techniques
3. Apply the concept of Functional Oriented and Object Oriented Approach for Software Design.
4. Understand modern Agile Development and Service Oriented Architecture Concept of Industry
5. Analyze, design, verify, validate, implement and maintain software systems.
6. Execute a Project Management Plan, tabulate Testing Plans and Reproduce effective procedures.

List of Practical:

1. **Project Definition and objective of the specified module and Perform Requirement Engineering Process.**
2. **Identify Suitable Design and Implementation model from the different software engineering models.**
3. **Prepare Software Requirement Specification (SRS) for the selected module.**
4. **Develop Software project management planning (SPMP) for the specified module.**
5. **Do Cost and Effort Estimation using different Software Cost Estimation models.**
6. **Prepare System Analysis and System Design of identified Requirement specification using structure design as DFD with data dictionary and Structure chart for the specific module.**
7. **Designing the module using Object Oriented approach including Use case Diagram with scenarios, Class Diagram and State Diagram, Collaboration Diagram, Sequence Diagram and Activity Diagram.**
8. **Defining Coding Standards and walk through.**
9. **Write the test cases for the identified module.**
10. **Demonstrate the use of different Testing Tools with comparison.**
11. **Define security and quality aspects of the identified module**

SYLLABUS FOR 4thSEM B. TECH. PROGRAMME

JAVA PROGRAMMING WORKSHOP (203105259)

Type of Course:BTech

Teaching and Examination Scheme:

Teaching Scheme			Credit	Examination Scheme					Total
				External		Internal			
LectHrs/	Tut Hrs/	Lab Hrs/Week		T	P	T	CE	P	
0	0	2	1	-	60	-	20	20	100

Lect- Lecture,**Tut** - Tutorial, **Lab** - Lab, **T** - Theory,**P**- Practical, **CE**- CE, **T** - Theory,**P**- Practical

Sr. No.	Name of Practical
1	**Basics of Java**
	1. Prepare a report on how to set the PATH variable to the javadirectory.
	2. Implement a JAVA program to display “Hello World” on the console.
	3. How to compile and run the aboveprogram.
	4. Write a program to test number is prime or not.
	5. Write a program that creates and initializes four integer element Array. Calculate and display the average of its values.
2	**Class, object and methods in JAVA**
	1. Write classBox a) Define data memberl,b,h b) Define method to set thedata. c) Define display method to display datamember
	2. Write classBox a) Define data memberl,b,h. b) Define default and Parameterized constructor to initialize value of datamember. c) Define display method to display datamember.
	3. Write a java Program for garbage collection.
	4. Write a java program to do sum of command line argument passed two Double numbers.
	5. Write a test program that creates two Fan objects. One with default values and the other with medium speed, radius 6, color brown, and turned on status true. Display the descriptions for two created Fan objects.
	6. Define time class with hour and minute. Also define addition method to add two time objects.
3	**Inheritance**

	1. Write java Program for single level inheritance.
	2. Write java Program for Multilevel inheritance.
	3. Write java program for method Overriding
	4. Write java program to demonstrate use of dynamic method dispatch.
	5. Describe abstract class called Shape which has three subclasses say Triangle, Rectangle and Circle. Define one method area() in the abstract class and override this area() in these three subclasses to calculate area for specific class' object.
4	**Java Keywords**
	1. Write java program to demonstrate the use of this keyword.
	2. Write java program to demonstrate the use of static keyword.
	3. Write java program to demonstrate the use of super keyword.
5	**Abstract class and Interface**
	1. Write java program for Interface.
	2. Describe abstract class called Shape which has three subclasses say Triangle, Rectangle and Circle. Define one method area() in the abstract class and override this area() in these three subclasses to calculate area for specific class' object.
	3. Write a program that illustrates interface inheritance. Interface A is extended by A1 and A2. Interface A12 inherits from both A1 and A2. each interface declares one constant and one method. Class B implements A12.Instantiate B and invoke each of its methods. Each method displays one of the constants
6	**Package**
	1. Write java program for package.
7	**Exception Handling**
	1. Write a program to show divide by zero error through exception, and also try to catch the exception.
	2. Write a Java program that will use try catch and Finally block.
	3. Write a Java program for Custom Exception.

LESSON PLANNING

Parul Institute of Engineering and Technology					
At & PO Limda, Ta Waghodia, Dt. Vadodara					
Academic Year: 2021-22			**Sem: IV**		
Subject: Computer Networks (203105255)			**Department: IT**		
Faculty Name: R Shivamallikarjun, Ashish Kumar			**Hrs./Week: 3 Hours**		
Sr. No.	Topic	Hrs.	Planned Date		
			IT4A	IT4B	IT4C
	Unit 1: DATA COMMUNICATION COMPONENTS:	**12**			
1	Representation of data and its flow Networks,	1	16/11	15/11	15/11
2	Various Connection Topology,	1	17/11	17/11	16/11
3	Protocols and Standards	1	18/11	19/11	19/11
4	OSI model	1	23/11	22/11	22/11
5	Transmission Media	1	24/11	24/11	23/11
6	LAN: Wired LAN, Wireless LANs	1	25/11	26/11	26/11
7	Connecting LAN and Virtual LAN	1	30/11	29/11	29/11
8	Techniques for Bandwidth utilization: Multiplexing – Frequency division,	1	1/12	1/12	30/11
9	Techniques for Bandwidth utilization: Multiplexing – Frequency division,	1	2/12	3/12	3/12
10	Time division and Wave division	1	7/12	6/12	6/12
11	Time division and wave division	1	8/12	8/12	7/12
12	Concepts on spread spectrum	1	9/12	10/12	10/12
	Unit 2: DATA LINK LAYER AND MEDIUM ACCESS SUB LAYER:	**13**			
13	Error Detection and Error Correction - Fundamentals	1	14/12	13/12	13/12
14	Block coding	1	15/12	15/12	14/12
15	Hamming Distance	1	16/12	17/12	17/12
16	CRC	1	21/12	20/12	20/12
17	Flow Control and Error control protocols - Stop and Wait	1	22/12	22/12	21/12
18	Go back – N ARQ	1	23/12	24/12	24/12
19	Selective Repeat ARQ	1	28/12	27/12	27/12
20	Sliding Window	1	29/12	29/12	28/12
21	Piggybacking	1	30/12	31/12	31/12
22	Random Access, Multiple access protocols	1	04/01	3/01	3/01
23	Pure ALOHA, Slotted ALOHA	1	05/01	5/01	4/01
24	CSMA/CD	1	06/01	7/01	7/01
25	CDMA/CA	1	11/01	10/01	10/01
	Unit 3: NETWORK LAYER:	**9**			
26	Switching	1	12/01	12/01	11/01
27	Logical addressing – IPV4, IPV6	1	13/01	14/01	14/01
28	Logical addressing – IPV4, IPV6	1	18/01	17/01	17/01
29	Address mapping – ARP	1	19/01	19/01	18/01
30	RARP	1	20/01	21/01	21/01
31	BOOTP and DHCP–Delivery	1	25/01	24/01	24/01
32	BOOTP and DHCP–Delivery	1	26/01	26/01	25/01

33	Forwarding and Unicast Routing protocols	1	27/01	28/01	28/01
34	Forwarding and Unicast Routing protocols	1	27/01	31/01	31/01
	Unit 4: TRANSPORT LAYER:	**9**			
35	Process to Process Communication	1	01/02	2/02	1/02
36	User Datagram Protocol (UDP)	1	02/02	4/02	4/02
37	User Datagram Protocol (UDP)	1	03/02	7/02	7/02
38	Transmission Control Protocol (TCP)	1	08/02	9/02	8/02
39	Transmission Control Protocol (TCP)	1	09/02	11/02	11/02
40	SCTP Congestion Control	1	10/02	14/02	14/02
41	Quality of Service	1	15/02	16/02	15/02
42	QoS improving techniques: Leaky Bucket and Token Bucket algorithm	1	16/02	18/02	18/02
43	QoS improving techniques: Leaky Bucket and Token Bucket algorithm	1	16/02	18/02	18/02
	Unit 5: APPLICATION LAYER:	**11**			
44	Domain Name Space (DNS)	1	17/02	21/02	21/02
45	DDNS	1	17/02	21/02	21/02
46	TELNET	1	22/02	23/02	22/02
47	Email	1	22/02	23/02	22/02
48	File Transfer Protocol (FTP)	1	22/02	25/02	25/02
49	WWW	1	23/02	25/02	25/02
50	HTTP	1	24/02	25/02	25/02
51	SNMP	1	01/03	28/02	28/02
52	Bluetooth	1	01/03	2/03	1/03
53	Firewalls	1	01/03	2/03	1/03
54	Basic concepts of Cryptography	1	02/03	2/03	1/03
	Revision	1	03/03	4/03	4/03
		1	03/03	4/03	4/03

Parul Institute of Engineering and Technology	
At & PO Limda, Ta Waghodia, Dt. Vadodara	
Academic Year: 2021-22	**Sem: IV**
Subject: Fundamentals of Software Engineering (203105303)	**Department: IT**
Faculty Name: HIMANI PARMAR, JIGNASHA PARMAR	**Hrs./Week: 3 Hours**

Sr. No.	Name of Topic	Hrs.	Planned Date		
			4ITA	4ITB	4ITC
	Introduction	**6**			
1	Study of Different Models, Software Characteristics, Components, Applications,	1	11/15/2021	11/15/2021	11/15/2021
2	Layered Technologies, Processes, Methods and Tools, Generic View of Software Engineering,	1	11/16/2021	11/17/2021	11/16/2021
3	Process Models- Waterfall model, Incremental model	1	11/18/2021	11/20/2021	11/18/2021
4	Evolutionary process models- Prototype, Spiral and Concurrent Development Model	1	11/22/2021	11/22/2021	11/22/2021
5	Agile DevelopmentAgility and Agile Process model	1	11/23/2021	11/24/2021	11/23/2021
6	Extreme Programming, Other process models of Agile Development and Tools.	1	11/25/2021	11/25/2021	11/25/2021
	Software Project Management	**5**			
7	Management Spectrum, People –Product – Process- Project, W5HH Principle, Importance of Team Management	1	11/29/2021	11/27/2021	11/29/2021
8	Planning a Software Project: Scope and Feasibility, Effort Estimation,	1	11/29/2021	11/29/2021	11/29/2021
9	Schedule and staffing, Quality Planning,	1	11/30/2021	12/1/2021	11/30/2021
10	Risk management- identification, assessment control	1	12/2/2021	12/4/2021	12/2/2021
11	Risk management- identification, assessment control	1	12/6/2021	12/6/2021	12/6/2021
	Requirements Engineering	**5**			
12	Problem Recognition, Requirement Engineering tasks,	1	12/7/2021	12/8/2021	12/7/2021
13	Processes, Requirements Specification	1	12/9/2021	12/11/2021	12/9/2021
14	Use cases and Functional specification	1	12/13/2021	12/13/2021	12/13/2021
15	Requirements Validation	1	12/14/2021	12/15/2021	12/14/2021
16	Requirements Analysis	1	12/16/2021	12/18/2021	12/16/2021
	Structured System Design	**8**			
17	Design Concepts, Design Model, Software Architecture	1	12/16/2021	12/20/2021	12/16/2021
18	Data Design, Architectural Styles and Patterns	1	12/20/2021	12/22/2021	12/20/2021
19	Architectural Design, Alternative architectural designs	1	12/21/2021	12/25/2021	12/21/2021
20	Modeling Component level design and its modeling	1	1/3/2022	12/27/2021	1/3/2022
21	Procedural Design, Object Oriented Design	1	1/4/2022	12/29/2021	1/4/2022
22	Data Oriented Analysis & Design: Difference between Data and Information, E-R Diagram, Dataflow Model,	1	1/6/2022	1/1/2022	1/6/2022
23	Control Flow Model, Control and Process Specification,	1	1/10/2022	1/3/2022	1/10/2022
24	Data Dictionary	1	1/11/2022	1/5/2022	1/11/2022
	Coding and Unit Testing	**4**			
25	Programming principles and guidelines, Programming practices, Coding standards, Incremental development of code	1	1/13/2022	1/8/2022	1/13/2022
26	Management of code evaluation, Unit testing- procedural units, classes, Code Inspection	1	1/17/2022	1/10/2022	1/17/2022
27	Metrics- size measure, complexity metrics,	1	1/18/2022	1/12/2022	1/18/2022
28	Cyclomatic Complexity, Halstead measure, Knot Count,Comparison of Different Metrics	1	1/20/2022	1/15/2022	1/20/2022

	Software Testing	**8**			
29	Concepts, Psychology of testing, Levels of testing,	1	1/20/2022	1/17/2022	1/20/2022
30	Testing Process- test plan, test case design, Execution	**1**	1/24/2022	1/19/2022	1/24/2022
31	Black-Box testing – Boundary value analysis – Pair wise testing-state based testing	1	1/25/2022	1/22/2022	1/25/2022
32	White-Box testing – criteria and test case generation and tool support	1	1/25/2022	1/24/2022	1/25/2022
33	Quality AssuranceQuality Control, Assurance, Cost, Reviews	1	1/27/2022	1/26/2022	1/27/2022
34	Software Quality Assurance, Approaches to SQA	1	1/27/2022	1/29/2022	1/27/2022
35	Reliability, Quality Standards	1	1/27/2022	1/31/2022	1/27/2022
36	ISO9000 And 9001	1	1/31/2022	2/2/2022	1/31/2022
	CASE Tools and Advance Practices of System Dependability and Security	**7**			
37	Computer Aided Software Engineering Tools,	2	2/1/2022	2/5/2022	2/1/2022
38	SCRUM Developments,	2	2/3/2022	2/7/2022	2/3/2022
39	Dependable System, Reliability Engineering,	2	2/7/2022	2/9/2022	2/7/2022
40	Safety Engineering, Security Engineering, ResilienceEngineering	1	2/8/2022	2/12/2022	2/8/2022
	Advance Software Engineering	**7**			
41	Software Reuse	1	2/10/2022	2/14/2022	2/10/2022
42	Component Based Software Engineering	1	2/14/2022	2/16/2022	2/14/2022
43	Distributed Software Engineering,	1	2/17/2022	2/21/2022	2/17/2022
44	Service-Oriented Software Engineering,	1	2/22/2022	2/23/2021	2/22/2022
45	Real-Time Software Engineering,	2	3/1/2022	3/2/2022	3/2/2022
46	Systems Engineering, Systems of System.	1	3/3/2022	3/5/2022	3/4/2022

FACULTY OF ENGG. & TECH. – PIET							
LAB PLAN (Practical)							
Academic Year: 2021-2022		**Sem: 4th sem**					
Subject: Java Programming Workshop		**Department: IT**					
Name of Teacher: Dhenuka Patel, Tejal Patel, Disha George, Dheeraj Kumar Singh		**Hrs./Week: 02**					
Sr. No.	Name of Topic	Planned Date					
		4ITA1 (DMP)	4ITA2 (DMP)	4ITB1 (DG)	4ITB2 (DKS)	4ITC1 (DMP)	4ITC2 (TP)
1	Basics of Java	17/11/21	20/11/21	20/11/21	17/11/21	20/11/21	18/11/21
2	Class, object and methods in JAVA	24/11/21 1/12/21	27/11/21 4/12/21	27/11/21 4/12/21	24/11/21 1/12/21	27/11/21 4/12/21	25/11/21 2/12/21
3	Inheritance	8/12/21 15/12/21	11/12/21 18/12/21	11/12/21 18/12/21	8/12/21 15/12/21	11/12/21 18/12/21	9/12/21 16/12/21
4	Java Keywords	22/12/21 29/12/21	 1/1/22	 1/1/22	22/12/21 29/12/21	 1/1/22	23/12/21 30/12/21
5	Abstract class and Interface	5/1/22	8/1/22	8/1/22	5/1/22	8/1/22	6/1/22
6	Package	12/1/22	15/1/22 22/1/22	15/1/22 22/1/22	12/1/22	15/1/22 22/1/22	13/1/22 20/1/22
7	Exception Handling	19/1/22	29/1/22	29/1/22	19/1/22	29/1/22	27/1/22
8	Concurrent Programming	2/2/22	5/2/22	5/2/22	2/2/22	5/2/22	3/2/22
9	IO Programming	9/2/22	12/2/22	12/2/22	9/2/22	12/2/22	10/2/22
10	Event Driven Programming	16/2/22 23/2/22	19/2/22 26/2/22	19/2/22 26/2/22	16/2/22 23/2/22	19/2/22 26/2/22	17/2/22 24/2/22

Parul Institute of Engineering and Technology					
At & PO Limda, Ta Waghodia, Dt. Vadodara					
Academic Year: 2021-22			**Sem: IV**		
Subject: COA			**Department: IT**		
Faculty Name: Trilok Suthar			**Hrs./Week: 3 Hours**		
Sr. No.	Topic	Hrs.	Planned Date		
			IT4A	IT4B	IT4C
1	**FUNCTIONAL BLOCKS OF A COMPUTER**	**6**			
1	CPU, memory, input-output subsystems	**1**	16/11		
2	control unit. Instruction set	1	19/11		
3	architecture of a CPU	1	20/11		
4	registers, instruction execution cycle, RTL	1	23/11		
5	Interpretation of instructions, addressing modes, instruction set	1	26/11		
6	Case study instruction set of some common CPUs	1	27/11		
2	**DATA REPRESENTATION**	**8**			
7	Signed number representation,	1	30/11		
8	Fixed and floating point, representations,	1	3/12		
9	Character representation. Computer arithmetic	1	4/12		
10	Subtraction, ripple carry adder,	1	7/12		
11	carry look-ahead adder, etc. multiplication shift-and add,	1	10/12		
12	Booth multiplier, carry save multiplier, etc.	1	11/12		
13	Division restoring and non-restoring techniques	1	14/12		
14	floating point arithmetic.	1	**17/12**		
3	**INTRODUCTION TO X86 ARCHITECTURE**	**6**			
15	CPU CONTROL UNIT DESIGN: hardwired and micro-programmed design approaches	**1**	18/12		
16	hardwired and micro-programmed design approaches	**1**	21/12		
17	Case study design of a simple hypothetical CPU.	**1**	24/12		
18	MEMORY SYSTEM DESIGN: Semiconductor memory technologies,	**1**	28/12		
19	Semiconductor memory technologies,	**1**	31/12		
20	memory organization.	**1**	1/1/22		
4	**PERIPHERAL DEVICES AND THEIR CHARACTERISTICS:**	**7**			
21	Input-output subsystems, I/O device interface,	1	4/1/22		
22	I/O transfers controlled,	1	7/1/22		
23	interrupt driven and DMA,	1	8/1/22		
24	privileged and non-privileged instructions,	1	11/1/22		
25	software interrupts and exceptions.	1	25/1/22		
26	Programs and process role of interrupts in process state transitions,	1	28/1/22		
27	I/O device interfaces SCII, USB	1	29/1/22		
5	**PIPELINING**	6			
28	Basic concepts of pipelining	1	1/2/22		
29	throughput and speedup	1	4/2/22		
30	pipeline hazards	1	5/2/22		

31	Introduction to parallel processors	1	8/2/22		
32	Concurrent access to memory	1	11/2/22		
33	cache coherency	1	12/2/22		
6	**MEMORY ORGANIZATION**	**7**			
34	Memory interleaving	1	15/2/22		
35	concept of hierarchical memory organization	1	18/2/22		
36	cache memory,	1	19/2/22		
37	cache size vs. block size,	1	22/2/22		
38	mapping functions,	1	25/2/22		
39	replacement algorithms	1	26/2/22		
40	write policies	1	4/3/22		

FACULTY OF ENGG. & TECH. – PIET							
LAB PLAN (Practical)							
Academic Year: 2021-2022		**Sem: 4th sem**					
Subject: COA Lab		**Department: IT**					
Name of Teacher: Trilok Suthar		**Hrs./Week: 02**					
Sr. No.	Name of Topic	Planned Date					
		4ITA1	4ITA2	4ITB1	4ITB2	4ITC1	4ITC2
1	Write the working of 8085 simulator GNUsim8085 and basic architecture of 8085 along with small introduction.	15/11	19/11				
2	Study the complete instruction set of 8085 and write the instructions in the instruction set of 8085 along with examples.	22/11	26/11				
3	Write an assembly language code in GNUsim8085 to implement data transfer instruction.	22/11	3/12				
4	Write an assembly language code in GNUsim8085 to store numbers in reverse order in memory location.	29/11	10/12				
5	Write an assembly language code in GNUsim8085 to implement arithmetic instruction.	6/12	17/12				
6	Write an assembly language code in GNUsim8085 to add two numbers using lxi instruction.	13/12	24/12				
7	Write an assembly language code in GNUsim8085 to add two 8 bit numbers stored in memory and also storing the carry.	20/12	31/12				
8	Write an assembly language code in GNUsim8085 to find the factorial of a number.	27/12	7/1/22				
9	Write an assembly language code in GNUsim8085 to implement logical instructions.	3/1/22	28/1/22				
10	Write an assembly language code in GNUsim8085 to implement stack and branch instructions.	10/1/22	4/2/22				

FACULTY OF ENGG. & TECH. – PIET							
LAB PLAN (Practical)							
Academic Year: 2021-2022		**Sem: 4th sem**					
Subject: Software Engineering (203105303)		**Department: IT**					
Name of Teacher: HIMANI PARMAR, JIGNASHA PARMAR		**Hrs./Week: 02**					
Sr. No.	Name of Topic	Planned Date					
		4ITA1	4ITA2	4ITB1	4ITB2	4ITC1	4ITC2
1	Project Definition and objective of the specified module and Perform Requirement	11/19/2021	11/15/21	11/18/21	11/20/21	11/16/21	11/17/21
2	Identify Suitable Design and Implementation model from the different softwareengineeringmodels.	11/26/2021	11/22/21	11/25/21	11/27/21	11/23/21	11/24/21
3	Prepare Software Requirement Specification (SRS) for the selected module	12/3/2021	11/29/21	12/02/21	12/04/21	11/30/21	12/01/21
4	Develop Software project management planning (SPMP) for the specified module.	12/10/2021	12/06/21	12/09/21	12/11/21	12/07/21	12/08/21
5	Do Cost and Effort Estimation using different Software Cost Estimation models	12/17/2021	12/13/21	12/16/21	12/18/21	12/14/21	12/15/21
6	Prepare System Analysis and System Design of identified Requirement specificationusing structure design as DFD with data dictionary and Structure chart for the specificmodule.	12/24/2021	12/20/21	12/23/21	12/25/21	12/28/21	12/29/21
7	Designing the module using Object Oriented approach including Use case Diagram withscenarios, Class Diagram and State Diagram, Collaboration Diagram, SequenceDiagram and Activity Diagram	1/7/2022	1/3/22	1/6/22	1/1/22	1/4/22	1/5/22
8	Defining Coding Standards and walk through	1/14/2022	1/17/22	1/20/22	1/15/22	1/18/22	1/19/22
9	Write the test cases for the identified module	1/21/2022	1/31/22	1/3/22	1/29/22	1/1/22	1/2/22
10	Demonstrate the use of different Testing Tools with comparison	2/4/2022	2/14/22	2/17/22	2/12/22	2/15/22	2/16/22
11	Define security and quality aspects of the identified module.	2/18/2022	2/28/22	3/03/22	3/03/22	3/01/22	3/02/22

FACULTY OF ENGG. & TECH. – PIET							
LAB PLAN (Practical)							
Academic Year: 2021-2022		**Sem: 4th sem**					
Subject: CN Lab		**Department: IT**					
Name of Teacher: R Shivamallikarjun, Ashish Kumar		**Hrs./Week: 02**					
Sr. No	Name of Topic	Planned Date					
		4ITA1	4ITA2	4ITB1	4ITB2	4ITC1	4ITC2
1	**Experiments on Simulation Tools: (CISCO PACKET TRACER):**	18/11/2021	17/11/2021	19/11	16/11	17/11	18/11
2	**Experiments of Packet capture tool: Wireshark**	25/11/2021	24/11/2021	26/11	23/11	24/11	25/11
3	**To study behaviour of generic devices used for networking: (CISCO PACKET TRACER)**	02/12/2021	01/12/2021	3/12	30/11	1/12	2/12
4	**Data Link Layer (Error Correction)**	09/12/2021	08/12/2021	10/12	7/12	8/12	9/12
5	**Virtual LAN**	16/12/2021	15/12/2021	17/12	14/12	15/12	16/12
6	**Wireless LAN**	23/12/2021	22/12/2021	24/12	21/12	22/12	23/12
7	**Internetworking with routers**	30/12/2021	29/12/2021	31/12	28/12	29/12	30/12
8	**Implementation of SUBNETTING**	6/01/2022	05/01/2022	7/01-14/01	4/01-11/01	5/1-12/1	6/1-13/1
9	**Routing at Network Layer**	20/01/2022	12/01/2022	21/01	18/01	19/1	20/1
10	**Experiment on Transport Layer**	27/01/2022	19/01/2022	28/01	25/01	26/1	27/1

Parul Institute of Engineering and Technology					
At & PO Limda, Ta Waghodia, Dt. Vadodara					
Academic Year: 2021-22			**Sem: IV**		
Subject: OS			**Department: IT**		
Faculty Name: Mahendra Kumar, ShaleenSukla			**Hrs./Week: 3 Hours**		
Sr. No.	Topic	Hrs.	Planned Date		
			IT4A	IT4B	IT4C
1	**INTRODUCTION**				
1	Concept of Operating Systems, Generations of Operating systems, Types of Operating Systems.	1	17/11/21	17/11/21	15/11/21
2	OS Services, System calls	1	19/11/21	18/11/21	17/11/21
3	Structure of an OS-Layered,	1	20/11/21	20/11/21	18/11/21
4	Monolithic, Microkernel Operating Systems, Concept of Virtual Machine	1	24/11/21	24/11/21	22/11/21
2	**Processes, Threads & Process Scheduling**				
5	Processes: Definition, Process Relationship, Different states of a Process, Process State transitions	1	26/11/21	27/11/21	24/11/21
6	Process Control Block (PCB), Context switching	1	27/11/21	1/12/21	25/11/21
7	Thread: Definition, Various states, Benefits of threads, Types of threads,	1	1/12/21	2/12/21	29/11/21
8	Concept of multithreads. Process Scheduling: Foundation and Scheduling objectives	1	3/12/21	4/12/21	1/12/21
9	Types of Schedulers, Scheduling criteria: CPU utilization, Throughput, Turnaround Time, Waiting Time, Response Time;	1	4/12/21	8/12/21	2/12/21
10	Scheduling algorithms: Pre-emptive and Non pre-emptive	1	8/12/21	9/12/21	6/12/21
11	FCFS	1	10/12/21	11/12/21	8/12/21
12	SJF	2	10/12/21	11/12/21	9/12/21
13	RR	2	11/12/21	15/12/21	13/12/21
3	**Inter-Process Communication**				
14	Critical Section, Race Conditions, Mutual Exclusion	1	15/12/21	16/12/21	15/12/21
15	Hardware Solution, Strict Alternation, Peterson's Solution,	1	17/12/21	18/12/21	16/12/21
16	The Producer\ Consumer Problem,	1	18/12/21	18/12/21	20/12/21
17	Semaphores, Event Counters,	1	22/12/21	22/12/21	22/12/21
18	Monitors	1	24/12/21	23/12/21	27/12/21
19	Classical IPC Problems: Reader's & Writer Problem,	1	29/12/21	29/12/21	29/12/21
20	Dinning Philosopher Problem etc.	1	31/12/21	30/12/21	30/12/21
4	**Deadlocks**				
21	Definition, Necessary and sufficient conditions for Deadlock	**1**	1/1/22	1/1/22	3/1/22
22	Deadlock Prevention	1	1/1/22	1/1/22	5/1/22
23	Deadlock Avoidance: Banker's algorithm	2	5/1/22	5/1/22	6/1/22
24	Deadlock detection, Deadlock Recovery	1	7/1/22	6/1/22	10/1/22
5	**Memory Management & Virtual Memory**				
25	Memory Management: Basic concept, Logical and Physical address map	1	8/1/22	8/1/22	12/1/22
26	Memory Allocation	1	12/1/22	12/1/22	13/1/22
27	Fixed and variable partition	1	15/1/22	13/1/22	17/1/22

28	Internal and External fragmentation and Compaction	1	19/1/22	15/1/22	19/1/22
29	Paging: Principle of operation, Page allocation	1	21/1/22	19/1/22	20/1/22
30	Hardware support for paging, Protection and sharing, Disadvantages of paging.	**1**	22/1/22	20/1/22	24/1/22
31	Virtual Memory: Basics of Virtual Memory	1	28/1/22	22/1/22	27/1/22
32	Hardware and control structures	1	29/1/22	27/1/22	31/1/22
33	Locality of reference, Page fault	1	29/1/22	29/1/22	31/1/22
34	Working Set Dirty page/Dirty bit, Demand paging	1	2/2/22	2/2/22	2/2/22
34	Page Replacement algorithms: Optimal	1	4/2/22	3/2/22	3/2/22
35	First in First Out (FIFO), Second Chance (SC),	1	5/2/22	5/2/22	7/2/22
36	Not Recently Used and Least Recently Used	1	9/2/22	9/2/22	9/2/22
6	**I/O Systems,File & Disk Management**				
37	I/O Hardware: I/O devices, Device controllers,	1	11/2/22	10/2/22	10/2/22
38	Direct memory access,	1	12/2/22	12/2/22	14/2/22
39	Principles of I/O Software: Goals of Interrupt handlers	1	16/2/22	16/2/22	16/2/22
40	Device drivers, Device independent I/O software	1	18/2/22	17/2/22	16/2/22
41	File Management: Concept of File, Access methods, File types	1	19/2/22	19/2/22	17/2/22
42	File operation, Directory structure, File System structure	1	23/2/22	23/2/22	21/2/22
43	Allocation methods (contiguous, linked, indexed)	1	25/2/22	24/2/22	23/2/22
44	Free-space management (bit vector, linked list, grouping)	1	26/2/22	26/2/22	24/2/22
45	Directory implementation (linear list, hash table), efficiency and performance.	1	2/3/22	2/3/22	28/2/22
46	Disk Management: Disk structure, Disk scheduling algorithms - FCFS	1	4/3/22	3/3/22	2/3/22
47	SSTF, SCAN, C-SCAN	1	5/3/22	5/3/22	3/3/22
48	Disk reliability, Disk formatting, Boot-block, Bad blocks	1	5/3/22	5/3/22	3/3/22

FACULTY OF ENGG. & TECH. – PIET							
LAB PLAN (Practical)							
Academic Year: 2021-2022		**Sem: 4th sem**					
Subject: OS Lab		**Department: IT**					
Name of Teacher: Mahendra Kumar, Shaleensukla		**Hrs./Week: 02**					
Sr. No.	Name of Topic	Planned Date					
		4ITA1	4ITA2	4ITB1	4ITB2	4ITC1	4ITC2
1	Study of Basic commands ofLinux.	20/11/21	18/11/21	16/11/21	19/11/21	17/11/21	16/11/21
2	Study the basics of shell programming.	27/11/21	25/11/21	23/11/21	26/11/21	24/11/21	23/11/21
3	Write a Shell script to print given numbers sum of all digits	4/12/21	2/12/21	30/11/21	3/12/21	1/12/21	30/11/21
4	Write a shell script to validate the entered date. (eg. Date format is: dd-mm-yyyy).	11/12/21	9/12/21	7/12/21	10/12/21	8/12/21	7/12/21
5	Write a shell script to check entered string is palindrome or not.	18/12/21	16/12/21	14/12/21	17/12/21	15/12/21	14/12/21
6	Write a Shell script to say good morning/Afternoon/Evening as you log in to system.	1/1/22	23/12/21	21/12/21	24/12/21	22/12/21	21/12/21
7	Write a C program to create a child process	8/1/22	30/12/21 -6/1/22	28/12/21 -4/1/22	31/12/21	29/12/21 -5/1/22	28/12/21 -4/1/22
8	Finding out biggest number from given three numbers supplied as command line arguments	15/1/22	13/1/22	11/1/22	7/1/22	12/1/22	11/1/22
9	Printing the patterns using for loop.	22/1/22	20/1/22	18/1/22	21/1/22	19/1/22	18/1/22
10	Shell script to determine whether given file exist or not.	29/1/22	27/122	25/1/22	28/1/22	2/2/22	25/1/22
11	Write a program for process creation using C. (Use of gcc compiler).	5/2/22	3/2/22	1/2/22	4/2/22	9/2/22	1/2/22
12	Implementation of FCFS &Round Robin Algorithm	12/2/22-19/2/22	10/2/22-17/2/22	8/2/22-15/2/22	11/2/22-18/2/22	16/2/22	8/2/22-15/2/22
13	Implementation of Banker’s Algorithm.	26/2/22	24/2/22	22/2/22	25/2/22	23/2/22	22/2/22

Details of Major Curricular Events (within & Outside the Campus) for Current Semester:

CSR Activities

Sr. No	Nature of Activity	Planned Dates
1.	Engineering Applications using IoT for school kids	Jan–2022
2.	Awareness about IT technology in farming	Feb-2022

One-Day Seminar

Sr. No	Title of Seminar	Planned Dates
1.	Introduction of Machine Learning- Mr. Sagar Jasani	Dec-2021
2.	Introduction to Software testing tools – Mr. Vivek Patel	Jan– 2022

Two Day Workshop

Sr. No	Title of Workshop	Planned Dates
1.	Web Development using NodeJs- Mr. Akash Padhiyar	Feb-2022

Vocational Courses (By Internal Faculty Members)

Sr. No	Course Name	Name of Experts	Planned Dates
1.	Certificate Course on Web Designing	Prof. Shaleen Shukla	01-01-2022 to 15-02-2022
2	Certificate Course on Python Programming	Prof. Pintu Chauhan	05-10-2021 to 30-01-2022 (tentative)

Industrial Visit

Sr. No	Company/Organization	Semester	Planned Dates
1.	BSNL Ahmadabad	4	As per Availability
2.	BISAG, Gandhinagar	6	

Note:
Students interested for participation in above specified events shall give an application to the concerned faculty representative. Deserving students will be encouraged to participate in such events. Final Permission will be granted by the HOD.