Academic Booklet

Academic Year 2024-25

Bachelor of Engineering in Industry Embedded Program (B.Tech. CSE-Microsoft, Oracle, Quick Heal & SAP)

Department of

CSE – Industry Embedded Program

Parul Institute of Engineering & Technology,

Faculty of Engineering & Technology

Parul University

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About the University

VISION

To make successful academic quests through entrepreneurship. research, modernization and partnerships, thus making PU the finest educational destination

MISSION

- Bridging the gap between academia and career, by laying emphasis on development programs for both students and staff.
- Promoting healthy relationships between PU's existing students, alumni, teachers and staff
- Forming associations with other universities and corporate firms of the nation and the world
- Presenting state of the art infrastructure with high quality and work ethics.

QUALITY POLICY

To strive towards attaining the status of global educational university by setting higher benchmarks in quality education to deliver excellence in academics, research, innovation and extension activities through the implementation of best practices adopted by renowned academic institutes in teaching and learning processes by continuously monitoring the effectiveness of the University's practices, fostering a quality learning ecosystem through state-of-the-art facilities to enable the beneficiaries to enhance their skillsets and knowledge, with enhanced emphasis on comprehensive development.

About the Institute

VISION

To develop highly skilled professionals to man positions in the industry responding to technological and scientific advancements

MISSION

To develop centers of excellence through establishment of state-of-the-art laboratories/workshops which will help students learn through hands-on experience the latest advances in technology.

About the Department

VISION

To empower the next generation of tech leaders through a dynamic partnership with Microsoft, Oracle, SAP, and Quick Heal, fostering innovation in Computer Science and Engineering. By integrating cutting-edge tools and expertise, we aim to develop solutions that drive digital transformation, enhance cybersecurity, and shape a sustainable, tech-driven future.

MISSION

To empower students with a cutting-edge education in Computer Science and Engineering by leveraging the expertise and technologies of Microsoft, Oracle, SAP, and Quick Heal. Through industry collaboration, hands-on learning, and innovative research, we aim to develop skilled professionals who can lead in software engineering, enterprise solutions, and cybersecurity, driving digital transformation and shaping the future of technology.

Code of Conduct

- **Academic Integrity:** All students and faculty must uphold academic honesty by avoiding plagiarism, cheating, and falsifying academic work. Assignments, projects, and exams should reflect personal effort and genuine understanding.
- **Professional Behavior:** Students, staff, and faculty are expected to exhibit professionalism in all interactions, both inside and outside the classroom, showing respect for peers, faculty, and the institution.
- **Collaboration and Teamwork:** Cooperation in team projects and lab work is essential. Students are encouraged to share knowledge and support each other, while maintaining individual responsibility for their work.
- **Respect for Diversity and Inclusivity:** Every member of the department should foster an environment of respect for diverse opinions, backgrounds, and cultures, contributing to an

inclusive and supportive community.

Code of Discipline

- **Adherence to Academic Regulations:** All students must follow the university's academic guidelines on attendance, assignment submission, and exam conduct. Regular participation in classes and timely submission of academic work are mandatory.
- **Respect for Technology and Resources:** Use of computers, software, and lab equipment should be responsible, avoiding damage or misuse of institutional resources.

Unaccepted Behavior

- **Academic Misconduct:** Plagiarism, cheating, or any form of dishonesty in academic work will not be tolerated.
- **Disruptive Behavior:** Any behavior that disrupts the learning environment, including bullying, harassment, or abusive language, is unacceptable.
- **Cybersecurity Violations:** Unauthorized access to university systems, sharing confidential information, or any form of cyber misconduct will be strictly prohibited.
- **Substance Abuse or Violence:** Consumption of drugs, alcohol, or any violent conduct on campus or during university-sponsored activities is grounds for disciplinary action.

Disciplinary Measures

- **Warnings:** Minor violations of discipline may result in a verbal or written warning.
- **Probation:** Repeated offenses may lead to academic or behavioral probation, restricting participation in certain activities.
- **Suspension/Expulsion:** Severe violations or persistent misconduct can result in suspension or expulsion from the program or university.
- **Loss of Privileges:** Students may lose access to labs, events, or other university resources as a penalty for disciplinary breaches.

About the Program

Details about NEP 2020

The National Education Policy 2020 (NEP-2020) is a comprehensive framework introduced by the Indian government to guide the development of education in India. It aims to revamp all aspects of the education system, making it more holistic, flexible, multidisciplinary, and aligned with the needs of the 21st century.

Key Highlights:

1. Higher Education:

- Multidisciplinary Approach: Emphasis on flexible subject choices.
- Holistic Undergraduate Programs: 3-4 years, with multiple entry and exit points.
- Higher Education Commission of India (HECI): A single regulator for higher education (excluding medical and legal).

2. Teacher Training and Development:

- Mandatory B.Ed. degree for teaching by 2030.
- Continuous professional development and evaluation.

3. Technology and Digital Learning:

- Use of EdTech platforms for better access and quality.
- Creation of a National Educational Technology Forum (NETF).

4. Inclusion and Equity:

- Focus on education for marginalized communities.
- Gender Inclusion Fund and Special Education Zones.

5. Research and Innovation:

- Establishment of a National Research Foundation (NRF) to foster a research culture.

The NEP-2020 is designed to transform the education landscape in India by 2040, aiming for universal education, improved quality, and innovation.

PEO's, PO's & PSO's

Program Educational Objectives (PEOs)

PEO 1 - Equip students with a solid foundation in core Computer Science and Engineering principles, including programming, algorithms, data structures, databases, networking, and software engineering, while leveraging industry-standard tools and technologies from Microsoft, Oracle, SAP, and Quick Heal.

PEO 2 - Prepare students to meet the technical and managerial demands of the IT and software industry by ensuring they have the skills to design, develop, and deploy real-world solutions using advanced technologies like cloud computing, AI, cybersecurity, and ERP systems, in collaboration with Microsoft, SAP, and Quick Heal.

PEO 3 - Foster the development of leadership skills and a culture of innovation and research, encouraging students to contribute to cutting-edge technological advancements and enterprise solutions through interdisciplinary research in association with Oracle and SAP.

PEO 4 - Instill a sense of ethical responsibility and a commitment to lifelong learning, ensuring graduates are not only technologically adept but also socially responsible and aware of the global impact of their work, especially in areas like cybersecurity (with Quick Heal) and cloud computing(with Microsoft).

Program Outcomes (POs)

PO 1 Engineering Knowledge : Apply the principles of mathematics, science, engineering fundamentals, and computer science specialization to solve complex problems in computer science and engineering using industry-leading tools from Microsoft, Oracle, SAP, and Quick Heal.

PO 2 Problem Analysis : Identify, formulate, and analyze complex computer science and engineering problems, demonstrating the ability to apply principles of computing, cybersecurity, enterprise systems, and AI to devise effective solutions.

PO 3 Design and Development of Solutions : Design and develop systems, components, or processes to meet specific needs, applying modern design and development methodologies and tools from SAP ERP, Oracle Database, Microsoft Azure, and Quick Heal Security Solutions.

PO 4 Modern Tool Usage : Use modern tools, software, and technologies for system design, development, and problem-solving, including cloud platforms (Microsoft Azure), database systems (Oracle), cybersecurity solutions (Quick Heal), and enterprise software (SAP).

PO 5 Ethics : Apply ethical principles, professional ethics, and responsibilities related to computing practices, particularly in the areas of data privacy, cybersecurity, and enterprise resource planning.

PO 6 Communication : Communicate effectively about complex computing activities to a range of audiences, including the ability to write technical documents, create presentations, and collaborate in teams with stakeholders, including industry partners like Microsoft and SAP.

PO 7 Project Management and Finance : Demonstrate knowledge and understanding of engineering and management principles, allowing for effective project management, including budgeting, resource allocation, and timelines, especially in large-scale software and system integration projects, in line with Oracle and SAP technologies.

PO 8 Life-Long Learning : Recognize the importance of continuing professional development and adapt to emerging technologies and industry trends by engaging with resources such as MOOCs, NPTEL, Swayam, and SAP training programs.

Program Specific Outcomes (PSOs)

PSO 1 Cloud Computing and Enterprise Solutions Development : Graduates will be proficient in designing, developing, and deploying scalable software applications on Microsoft Azure and other cloud platforms. They will also be equipped to design and implement SAP ERP and Oracle-based enterprise solutions, enabling organizations to optimize business operations and drive digital transformation.

PSO 2 Cybersecurity and Data Protection : Graduates will be skilled in implementing comprehensive cybersecurity measures, including ethical hacking, encryption, and leveraging Quick Heal tools to safeguard information systems against cyber threats. They will be well-versed in securing sensitive data and ensuring the integrity and privacy of digital assets.

PSO 3 Data Analytics, Artificial Intelligence, and Industry Collaboration : Graduates will gain expertise in data analytics, machine learning, and artificial intelligence by utilizing tools such as Microsoft AI, SAP Analytics, and Oracle Data Science. They will be capable of developing intelligent systems that drive business insights and innovation, while also collaborating with industry partners on real-world projects to address contemporary technological challenges.

ACADEMIC CALENDAR & LIST OF HOLIDAYS

PDF ATTACHED

Faculty of Engineering & Technology

Parul® University NAAC A++ ACCREDITED UNIVERSITY

Academic Calendar (ACY 2024-25) (Even Term)
Bachelor of Technolog/IEDP/M.Tech Courses (Reg Sem - IV, VI, VIII)

Week	MONDAY	Tuesday	Wednesday	Thursday	Friday	Saturday
01 Nov	25 Teaching Start	26	27	28	29	30
02 Dec	02	03	04	05	06	07
03	09	10	11	12	13	14
04	16	17	18	19	20	21 Weekly 1
05	23	24	25 Christmas	26	27	28 Weekly 2
06 Dec/Jan	30	31	01	02 Hackathon	03 Hackathon	04 Weekly 3
07	06	07	08	09	10	11 Weekly 4
08	13	14 Makar Sakranti	15 Sakranti - 2nd Day	16	17	18 Weekly 5
09	20	21	22	23	24	25 Weekly 6
10 Jan/Feb	27 Mid Sem Exam	28 Mid Sem Exam	29 Mid Sem Exam	30 Mid Sem Exam	31 Mid Sem Exam	01 Mid Sem Exam
11	03	04	05	06	07 Tech Expo	08 Tech Expo
12	10	11	12	13	14	15
13	17	18	19	20	21	22
14 Feb/Mar	24	25	26 Maha Shivratri	27	28	01
15	03	04	05	06	07	08
16	10 TW Submission	11 TW Submission	12 TW Submission	13 TW Submission	14 Dhuleti	15 TW Submission
17	17	18	19	20	21	22 Teaching End
18	24 ESE (Practical)	25 ESE (Practical)	26 ESE (Practical)	27 ESE (Practical)	28 ESE (Practical)	29 ESE (Practical)
19 Mar/Apr	31 Eid-ul-Fitra	01 ESE (Practical)	02 ESE (Practical)	03 ESE (Practical)	04 ESE (Practical)	05 ESE (Practical)
20	07 ESE (Theory)	08 ESE (Theory)	09 ESE (Theory)	10 Mahavir Janma Kalyanak	11 ESE (Theory)	12 ESE (Theory)
21	14 Baba Saheb Ambedkar Birthday	15 ESE (Theory)	16 ESE (Theory)	17 ESE (Theory)	18 ESE (Theory)	19 ESE (Theory)
22	21 ESE (Theory)	22 ESE (Theory)	23 ESE (Theory)	24 ESE (Theory)	25 ESE (Theory)	26 ESE (Theory)

Important Notes

1. Marks Locking date by HOD : 17th March, 2025
2. Marks Locking date by Principal and Dean : 18th March, 2025
3. End Sem Practical Dates : 24th - 5th April, 2025
4. End Sem Theory Dates : 7th - 26th Apr, 2025
5. End Sem Supplementary Exam Dates : 27th April, 2025 Onwards
6. Mid Sem-F2(Remedial) grade Exam Dates:17th Feb,2025
7. New Term (Even) Commencement : 2nd week of June, 2025 Onwards

Dean - Faculty of Engg & Tech

PARUL UNIVERSITY

Office of the Registrar
November 21, 2024

R/Circular-945/2024-25

CIRCULAR

Sub: List of Holidays for the Calendar Year-2025
Ref: Orders of the President
The following is the list of General Holidays for the year 2025.

Sr.No.	Name of Public Holiday	Date	Day
1	Makar Sakranti - Uttarayan	14.01.2025	Tuesday
2	Vaasi Uttrayan	15.01.2025	Wednesday
3	Maha Shivratri (Maha Vad-14)*	26.02.2025	Wednesday
***The holiday denoted for Wednesday, 26th February 2025, has been rescheduled to Monday, 13th January 2025, to allow staff to benefit from linked holiday(s). On Wednesday, 26th February 2025, the university will operate as per its routine timings**			
4	Holi 2nd Day - Dhuleti	14.03.2025	Friday
5	Ramjan Eid (Eid-Ul-Fitra)	31.03.2025	Monday
6	Dr. Babasaheb Ambedkar Birthday	14.04.2025	Monday
7	Good Friday	18.04.2025	Friday
8	Raksha Bandhan	09.08.2025	Saturday
9	Independence Day/ Parsi New Year	15.08.2025	Friday
10	Janmashtami (Shravan Vad-8)	16.08.2025	Saturday
11	Samvatsari (Chaturthi Paksha)	27.08.2025	Wednesday
12	Mahatma Gandhi's Birthday / Dussehra (Vijayadashami)	02.10.2025	Thursday
13	Diwali	20.10.2025	Monday
14	Vikram Samvat New Year's Day	22.10.2025	Wednesday
15	Bhai Dooj	23.10.2025	Thursday
16	Sardar Vallabhbhai Patel's Birthday	31.10.2025	Friday
17	Christmas	25.12.2025	Thursday
Not Declared as Holiday due to Sunday			
1	Republic Day	26.01.2025	Sunday
2	Shree Ram Navami	06.04.2025	Sunday

Time Table

PARUL UNIVERSITY
FACULTY NAME: FACULTY OF ENGINEERING & TECHNOLOGY
INSTITUTE NAME: PARUL INSTITUTE OF ENGINEERING & TECHNOLOGY

ACADEMIC YEAR: 2024-25	YEAR: 2nd YEAR
SEMESTER: 4TH	LEVEL: UG
PROGRAM NAME: B.TECH COMPUTER SCIENCE ENGINEERING	DIVISION: 4IEP1

Parul® University NAAC GRADE A++

EFFECTIVE FROM: 25-11-2024

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
7:30 - 8:30	CODECHEF	4I1:1:CN:VG:LAB-807 4I1:2:PPFD:AB:LAB-813	4I1:1:PPFD:AB:LAB-802 4I1:2:CC:SK:LAB-803	4I1:1:GCF:AKP:L-807 4I1:2:CC:SK:L-813	4I1:PPFD:AB:A-222	4I1:PSNM:RSB:A-222
8:30 - 9:30					4I1:PSNM:RSB:A-222	LIBRARY
9:30-9:45	RECESS TIME: 09:30-09:45					
09:45 - 10:45	CODECHEF	4I1:PGPD:KT:A-222	4I1:1:CC:SK:LAB-413 4I1:2:CN:VG:LAB-804	4I1:CN:VG:A-222	4I1:PSNM:RSB:A-222	4I1:1:OS:DN:LAB-807 4I1:2:GCF:AKP:LAB-813
10:45 - 11:45		4I1:PPFD:AB:A-222		4I1:OS:DN:A-222	4I1:GCF:AKP:A-222	
11:45 - 12:45	RECESS TIME: 11:45 - 12:45					
12:45 - 01:35	CODECHEF	4I1:OS:DN:A-222	4I1:PSNM:RSB:A-222	4I1:1:CC:SK:LAB-806 4I1:2:OS:DN:LAB-805	4I1:GCF:AKP:A-222	LIBRARY
01:35 - 02:25		4I1:GCF:AKP:A-222	4I1:PPFD:AB:A-222		4I1:OS:DN:A-222	

SUBJECT_CODE	SUBJECT_NAME	SHORT_NAME	FACULTY FULL_NAME	FACULTY SHORT NAME	EMAIL ID	MISID
303105251	OPERATING SYSTEM	OS	DR.DHAVAL NIMAVAT	DN	dhaval.nimavat26730@paruluniversity.ac.in	26730
303105252	OPERATING SYSTEM LABORATORY	OS LAB_BATCH_1	DR.DHAVAL NIMAVAT	DN	dhaval.nimavat26730@paruluniversity.ac.in	26730
		OS LAB_BATCH_2	DR.DHAVAL NIMAVAT	DN	dhaval.nimavat26730@paruluniversity.ac.in	26730
303105255	COMPUTER NETWORK	CN	VICKY GUPTA	VG	vicky.gupta35286@paruluniversity.ac.in	35286
303105256	COMPUTER NETWORK LABORATORY	CN LAB_BATCH_1	VICKY GUPTA	VG	vicky.gupta35286@paruluniversity.ac.in	35286
		CN LAB_BATCH_2	VICKY GUPTA	VG	vicky.gupta35286@paruluniversity.ac.in	35286
303105257	PROGRAMMING IN PYTHON WITH FULL STACK DEVELOPMENT	PPFSD	ARITRA BHATTACHARYA	AB	aritra.bhattacharyya36971@paruluniversity.ac.in	36971
303105258	PROGRAMMING IN PYTHON WITH FULL STACK DEVELOPMENT LABORATORY	PPFSD LAB_BATCH_1	ARITRA BHATTACHARYA	AB	aritra.bhattacharyya36971@paruluniversity.ac.in	36971
		PPFSD LAB_BATCH_2	ARITRA BHATTACHARYA	AB	aritra.bhattacharyya36971@paruluniversity.ac.in	36971
303191251	PROBABILITY, STATISTICS AND NUMERICAL METHODS	PSNM	RUPA BHATT	RSB	rupa.purohit@paruluniversity.ac.in	5547
303193252	PROFESSIONAL GROOMING AND PERSONALITY DEVELOPMENT	PGPD	KARMESH THAKKAR	KT	karmesh.thakkar27107@paruluniversity.ac.in	27107
303105259	COMPETITIVE CODING	CC LAB_BATCH_1	SUDHEER KUMAR	SK	sudheer.singh26110@paruluniversity.ac.in	
		CC LAB_BATCH_2				
	Global Certifications - Fundamentals (SC-900 & DP-900)	GCF	ASHOK KUMAR PANDE	AKP	byteXL	byteXL
	Global Certifications - Fundamentals (SC-900 & DP-900) Laboratory	GCF LAB	ASHOK KUMAR PANDE	AKP	byteXL	byteXL

	CLASSROOM NO:	A-222,			FACULTY REPRESENTATIVE / MFT	ARITRA BHATTACHARYA
	LAB/ TUTORIAL LOCATION:	C.V RAMAN (L-805,806,813,807)				
	SIGN		SIGN & SEAL		SIGN & SEAL	
	AKRUTI PANDWAL		DR.DHAVAL NIMAVAT		Dr. Vipul Vekariya	
						
	Time Table Coordinator		Head of Department		Principal / Dean	

PARUL UNIVERSITY
FACULTY NAME: FACULTY OF ENGINEERING & TECHNOLOGY
INSTITUTE NAME: PARUL INSTITUTE OF ENGINEERING & TECHNOLOGY

ACADEMIC YEAR: 2024-25 | YEAR: 2nd YEAR
SEMESTER: 4TH | LEVEL: UG
PROGRAM NAME: B.TECH COMPUTER SCIENCE ENGINEERING | DIVISION: 4IEP2

EFFECTIVE FROM: 25-11-2024

EFFECTIVE FROM: 10-06-2024

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
7:30 - 8:30	4I2:1:CN:VG:LAB-813 4I2:2:OS:SP:LAB-807	4I2:OS:SP:A-223	4I2:1:OS:SP:LAB-804 4I2:2:GCF:AKP:LAB-813	4I2:PPFD:AB:A-223	4I2:1:CC:SP:LAB-813 4I2:2:CN:VG:LAB-807	CODECHEF
8:30 - 9:30		4I2:PSNM:RSB:A-223		4I2:PSNM:RSB:A-223		
9:30-9:45	RECESS TIME: 09:30-09:45					
09:45 - 10:45	4I2:1:GCF:AKP:LAB-813 4I2:2:CC:AM:LAB-807	4I2:PPFD:AB:A-223	4I2:PSNM:RSB:A-222	LIBRARY	4I2:OS:SP:A-223	CODECHEF
10:45 - 11:45		4I2:GCF:AKP:A-223	4I2:OS:SP:A-222	4I2:GCF:AKP:A-223	4I2:PSNM:RSB:A-223	
11:45 - 12:45	RECESS TIME: 11:45 - 12:45					
12:45 - 01:35	4I2:CN:VG:A-222	4I2:1:CC:SP:LAB-807 4I2:2:PPFD:F1:LAB-813	4I2:PGPD:MG:A-223	4I2:1:PPFD:F1:LAB-807 4I2:2:CC:AM:LAB-813	4I2:PPFD:AB:A-223	CODECHEF
01:35 - 02:25	4I2:GCF:AKP:A-222		LIBRARY		LIBRARY	

SUBJECT_CODE	SUBJECT_NAME	SHORT_NAME	FACULTY FULL_NAME	FACULTY SHORT NAME	EMAIL ID	MIS ID
303105251	OPERATING SYSTEM	OS	SUDHENDU PRAKASH PRIENCE	SP	sudhendu.prince35226@paruluniversity.ac.in	35226
303105252	OPERATING SYSTEM LABORATORY	OS LAB_BATCH_1	SUDHENDU PRAKASH PRIENCE	SP	sudhendu.prince35226@paruluniversity.ac.in	35226
		OS LAB_BATCH_2	SUDHENDU PRAKASH PRIENCE	SP	sudhendu.prince35226@paruluniversity.ac.in	35226
303105255	COMPUTER NETWORK	CN	VICKY GUPTA	VG	vicky.gupta35286@paruluniversity.ac.in	35286
303105256	COMPUTER NETWORK LABORATORY	CN LAB_BATCH_1	VICKY GUPTA	VG	vicky.gupta35286@paruluniversity.ac.in	35286
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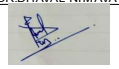
303105258	PROGRAMMING IN PYTHON WITH FULL STACK DEVELOPMENT LABORATORY	PPFSD LAB_BATCH_1	FACULTY 1	F1		
		PPFSD LAB_BATCH_2	FACULTY 1	F1		
303191251	PROBABILITY, STATISTICS AND NUMERICAL METHODS	PSNM	RUPA BHATT	RSB	rupa.purohit@paruluniversity.ac.in	5547
303193252	PROFESSIONAL GROOMING AND PERSONALITY DEVELOPMENT	PGPD	MAHIRPARI GOSWAMI	MG	mahirpari.goswami24608@paruluniversity.ac.in	24608
303105259	COMPETITIVE CODING	CC LAB_BATCH_1	SUDHENDU PRAKASH PRINCE	SP	sudhendu.prince35226@paruluniversity.ac.in	35226
		CC LAB_BATCH_2	ANUSHA MARADA	AM	Anusha.marada31882@paruluniversity.ac.in	31882
	Global Certifications - Fundamentals (SC-900 & DP - 900)	GCF	ASHOK KUMAR PANDE	AKP		byteXL
	Global Certifications - Fundamentals (SC-900 & DP - 900) Laboratory	GCF LAB	ASHOK KUMAR PANDE	AKP		byteXL

CLASSROOM NO:		A-223			FACULTY REPRESENTATIVE / MFT	VICKY GUPTA
LAB/ TUTORIAL LOCATION:		C.V RAMAN (L-805,806,813,807)				
	SIGN		SIGN & SEAL		SIGN & SEAL	
	AKRUTI PANDWAL		DR.DHAVAL NIMAVAT		Dr. Vipul Vekariya	
						
	Time Table Coordinator		Head of Department		Principal / Dean	

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SEMESTER: 4TH | LEVEL: UG
PROGRAM NAME: B.TECH COMPUTER SCIENCE ENGINEERING | DIVISION: 4IEP3

Parul® University NAAC GRADE A++

EFFECTIVE FROM: 25-11-2024

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
7:30 - 8:30	4I3:PSNM:RSB:A-222	CODECHEF	4I3:PSNM:RSB:A-223	4I3:OS:SP:A-225	4I3:PSNM:RSB:A-223	4I3:1:JDOC:L-211 4I3:2:OS:SP:L-210
8:30 - 9:30	4I3:JDOC:A-222		4I3:PSNM:RSB:A-223	4I3:PPFD:AB:A-225	4I3:PPFD:AB:A-223	
9:30-9:45	RECESS TIME: 09:30-09:45					
09:45 - 10:45	4I3:1:CN:VG:L-405 4I3:2:JDOC:L-406	CODECHEF	4I3:1:PPFD:AB:L-405 4I3:2:PPFD:F1:L-406	4I3:OS:SP:A-225	LIBRARY	4I3:1:CC:PM:L-405 4I3:2:CC:F1:L-406
10:45 - 11:45				4I3:JDOC:A-225	4I3:PGPD:SC:A-225	
11:45 - 12:45	RECESS TIME: 11:45 - 12:45					
12:45 - 01:35	4I3:PPFD:AB:D-320	CODECHEF	4I3:OS:SP:A-224	4I3:1:CC:PM:L-405 4I3:2:CC:F1:L-406	4I3:1:OS:SP:L-405 4I3:2:CN:VG:L-406	4I3:JDOC:A-223
01:35 - 02:25	LIBRARY		4I3:CN:VG:A-224			LIBRARY

SUBJECT_CODE	SUBJECT_NAME	SHORT_NAME	FACULTY FULL_NAME	FACULTY SHORT NAME	EMAIL ID	MISID
303105251	OPERATING SYSTEM	OS	SUDHENDU PRAKASH PRIENCE	SP	sudhendu.prince35226@paruluniversity.ac.in	35226
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		OS LAB_BATCH_2	SUDHENDU PRAKASH PRIENCE	SP	sudhendu.prince35226@paruluniversity.ac.in	35226
303105255	COMPUTER NETWORK	CN	PRAKASHKUMAR MARAVI	PM	prakash.maravi37123@paruluniversity.ac.in	37123
303105256	COMPUTER NETWORK LABORATORY	CN LAB_BATCH_1	PRAKASHKUMAR MARAVI	PM	prakash.maravi37123@paruluniversity.ac.in	37123
		CN LAB_BATCH_2	PRAKASHKUMAR MARAVI	PM	prakash.maravi37123@paruluniversity.ac.in	37123
303105257	PROGRAMMING IN PYTHON WITH FULL STACK DEVELOPMENT	PPFSD	ARITRA BHATTACHARYA	AB	aritra.bhattacharyya36971@paruluniversity.ac.in	36971
303105258	PROGRAMMING IN PYTHON WITH FULL STACK DEVELOPMENT LABORATORY	PPFSD LAB_BATCH_1	ARITRA BHATTACHARYA	AB	aritra.bhattacharyya36971@paruluniversity.ac.in	36971
		PPFSD LAB_BATCH_2	ARITRA BHATTACHARYA	AB	aritra.bhattacharyya36971@paruluniversity.ac.in	36971
303191251	PROBABILITY, STATISTICS AND [illegible]	PSNM	RUPA BHATT	RSB	rupa.purohit@paruluniversity.ac.in	5547
303193252	PROFESSIONAL GROOMING AND PERSONALITY DEVELOPMENT	PGPD	SHIVANI CHOURASIA	SC	SHIVANI.KUMARI36832@paruluniversity.ac.in	36832
303105259	COMPETITIVE CODING	CC LAB_BATCH_1	PRAKASHKUMAR MARAVI	PM	prakash.maravi37123@paruluniversity.ac.in	37123
		CC LAB_BATCH_2	FACULTY 1	F1		

CLASSROOM NO:		A-223,A-225,D-320			FACULTY REPRESENTATIVE / MFT	PRAKASHKUMAR MARAVI
LAB/ TUTORIAL LOCATION:		L-405,L-406,L-221,L-210				
	SIGN		SIGN & SEAL		SIGN & SEAL	
	AKRUTI PANDWAL		DR.DHAVAL NIMAVAT		Dr. Vipul Vekariya	
	Time Table Coordinator		Head of Department		Principal / Dean	

PARUL UNIVERSITY

FACULTY NAME: FACULTY OF ENGINEERING & TECHNOLOGY

INSTITUTE NAME: PARUL INSTITUTE OF ENGINEERING & TECHNOLOGY

ACADEMIC YEAR: 2024-25 | YEAR: 2nd YEAR

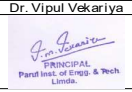
SEMESTER: 4TH | LEVEL: UG

PROGRAM NAME: B.TECH COMPUTER SCIENCE ENGINEERING | DIVISION: 4I EP4

EFFECTIVE FROM: 25-11-2024

EFFECTIVE FROM: 10-06-2024

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
7:30 - 8:30	CODECHEF	4I4:PSNM:RMR:A-222	4I4:PSNM:RMR:A-222	4I4:PPFD:F1:A-222	4I4:PPFD:F1:A-224	4I4:1:CC:SK:LAB-813 4I4:2:CC:PM:LAB-807
8:30 - 9:30		4I4:PPFD:F1:A-222	4I4:PSNM:RMR:A-222	LIBRARY	4I4:PSNM:RMR:A-224	
9:30-9:45	RECESS TIME: 09:30-09:45					
09:45 - 10:45	CODECHEF	LIBRARY	4I4:OS:AM:A-223	4I4:1:CC:SK:L-405 4I4:2:PPFD:AB:L-406	LIBRARY	LIBRARY
10:45 - 11:45		4I4:OS:AM:A-223	LIBRARY			
11:45 - 12:45	RECESS TIME: 11:45 - 12:45					
12:45 - 01:35	CODECHEF	4I4:OS:AM:A-223	LIBRARY	LIBRARY	4I4:1:PPFD:AB:LAB-813 4I4:2:OS:AM:LAB-807	4I4:1:OS:AM:LAB-813 4I4:2:CC:SS:LAB-807
01:35 - 02:25		4I4:PGPD:MC:A-223				

SUBJECT_CODE	SUBJECT_NAME	SHORT_NAME	FACULTY FULL_NAME	FACULTY SHORT NAME	EMAIL ID	MISID
303105251	OPERATING SYSTEM	OS	ANUSHA MARADA	AM	Anusha.marada31882@paruluniversity.ac.in	31882
303105252	OPERATING SYSTEM LABORATORY	OS LAB_BATCH_1	ANUSHA MARADA	AM	Anusha.marada31882@paruluniversity.ac.in	31882
		OS LAB_BATCH_2	ANUSHA MARADA	AM	Anusha.marada31882@paruluniversity.ac.in	31882
303105255	COMPUTER NETWORK	PPFSD	FACULTY 2	F1		
303105256	COMPUTER NETWORK LABORATORY	PPFSD LAB_BATCH_1	ARITRA BHATTACHARYA	AB	aritra.bhattacharyya36971@paruluniversity.ac.in	36971
		PPFSD LAB_BATCH_2	ARITRA BHATTACHARYA	AB	aritra.bhattacharyya36971@paruluniversity.ac.in	36971
303105257	PROGRAMMING IN PYTHON WITH FULL STACK DEVELOPMENT	PSNM	Raj M Raval	RMR	raj.raval30813@paruluniversity.ac.in	30813
303105258	PROGRAMMING IN PYTHON WITH FULL STACK DEVELOPMENT LABORATORY	PGPD	MEHUL CHAUHAN	MC	mehulkumar.chauhan24701@paruluniversity.ac.in	24701
		CC LAB_BATCH_1	SUDHEER KUMAR	SK	sudheer.singh26110@paruluniversity.ac.in	26110
303191251	PROBABILITY, STATISTICS AND NUMERICAL METHODS	CC LAB_BATCH_2	PRAKASH MARAVI	PM	prakash.maravi37123@paruluniversity.ac.in	37123
303193252	PROFESSIONAL GROOMING AND PERSONALITY DEVELOPMENT		MEHUL CHAUHAN	MC	mehulkumar.chauhan24701@paruluniversity.ac.in	24701
303105259	COMPETITIVE CODING		SHARAD SALUNKE	SS	sharad.salunke35027@paruluniversity.ac.in	35027
LAB/ TUTORIAL LOCATION:					FACULTY REPRESENTATIVE / MFT	SUDHEER KUMAR
	SIGN		SIGN & SEAL		SIGN & SEAL	
	AKRUTI PANDWAL		DR.DHAVAL NIMAVAT		Dr. Vipul Vekariya	
						
	Time Table Coordinator		Head of Department		Principal / Dean	

PARUL UNIVERSITY

FACULTY NAME: FACULTY OF ENGINEERING & TECHNOLOGY

INSTITUTE NAME: PARUL INSTITUTE OF ENGINEERING & TECHNOLOGY

ACADEMIC YEAR: 2024-25 | YEAR: 2nd YEAR

SEMESTER: 4TH | LEVEL: UG

PROGRAM NAME: B.TECH COMPUTER SCIENCE ENGINEERING | DIVISION: 4IEP5

EFFECTIVE FROM: 25-11-2024

EFFECTIVE FROM: 10-06-2024

TIME	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
7:30 - 8:30	4I5:1:OS:AM:LAB-208 4I5:2:PPFD:F1:LAB-209	4I5:PPFD:F1:A-224	CODECHEF	4I5:1:CC:PM:LAB-211 4I5:2:CN:VG:LAB-210	4I5:PSNM:RMR:A-225	4I5:1:CC:PM:LAB-209 4I5:2:CC:F1:LAB-208
8:30 - 9:30		4I5:OS:AM:A-224			4I5:PSNM:RMR:A-226	
9:30-9:45	RECESS TIME: 09:30-09:45					
09:45 - 10:45	LIBRARY	4I5:PSNM:RMR:D-408	CODECHEF	4I5:PPFD:F1:A-223	4I5:1:PPFD:F1:LAB-807 4I5:2:OS:AM:LAB-813	4I5:PSNM:RMR:A-223
10:45 - 11:45		4I5:PPFD:F1:D-408		LIBRARY		4I5:CN:VG:A-223
11:45 - 12:45	RECESS TIME: 11:45 - 12:45					
12:45 - 01:35	4I5 :OS:AM:A-223	LIBRARY	CODECHEF	LIBRARY	4I5:PGPD:AR:A-225	4I5:1:CN:VG:LAB-212 4I5:2:CC:PM:LAB-211
01:35 - 02:25	LIBRARY	4I5:OS:AM:A-225			LIBRARY	

SUBJECT CODE	SUBJECT NAME	SHORT NAME	FACULTY FULL NAME	FACULTY SHORT NAME	EMAIL ID	MIS ID
303105251	OPERATING SYSTEM	OS	ANUSHA MARADA	AM	Anusha.marada31882@paruluniversity.ac.in	31882
303105252	OPERATING SYSTEM LABORATORY	OS LAB_BATCH_1	ANUSHA MARADA	AM	Anusha.marada31882@paruluniversity.ac.in	31882
		OS LAB_BATCH_2	ANUSHA MARADA	AM	Anusha.marada31882@paruluniversity.ac.in	31882
303105255	COMPUTER NETWORK	CN	PRAKASHKUMAR MARAVI	PM	prakash.maravi37123@paruluniversity.ac.in	37123
303105256	COMPUTER NETWORK LABORATORY	CN LAB_BATCH_1	PRAKASHKUMAR MARAVI	PM	prakash.maravi37123@paruluniversity.ac.in	37123
		CN LAB_BATCH_2	PRAKASHKUMAR MARAVI	PM	prakash.maravi37123@paruluniversity.ac.in	37123
303105257	PROGRAMMING IN PYTHON WITH FULL STACK DEVELOPMENT	PPFSD	FACULTY 1	F1		
303105258	PROGRAMMING IN PYTHON WITH FULL STACK DEVELOPMENT LABORATORY	PPFSD LAB_BATCH_1	FACULTY 1	F1		
		PPFSD LAB_BATCH_2	FACULTY 1	F1		
303191251	PROBABILITY, STATISTICS AND NUMERICAL [illegible]	PSNM	Raj M Raval	RMR	raj.raval30813@paruluniversity.ac.in	30813
303193252	PROFESSIONAL GROOMING AND [illegible]	PGPD	ARVIND ROHIT	AR	arvindbhai.rohit20036@paruluniversity.ac.in	20036
303105259	COMPETITIVE CODING	CC LAB_BATCH_1	PRAKASHKUMAR MARAVI	PM	prakash.maravi37123@paruluniversity.ac.in	37123
		CC LAB_BATCH_2	FACULTY 1	F1		

CLASSROOM NO:

LAB/ TUTORIAL LOCATION:

FACULTY REPRESENTATIVE / MFT: ANUSHA MARADA

SIGN	SIGN & SEAL	SIGN & SEAL
AKRUTI PANDWAL	DR.DHAVAL NIMAVAT	Dr. Vipul Vekariya
Time Table Coordinator	Head of Department	Principal / Dean

WEEKLY / MID SEMESTER / EXAM SCHEDULE

Weekly Exam: 21st December 2024 to 25th January 2025 on Every Saturday.

Mid Semester Exam: 27th January 2025 to 01st February 2025.

End Semester Practical Exam: 24th March to 05th April, 2025.

End Semester Theory Exam: 07th April to 26th April, 2025.

MFT DETAILS

Sr. no	Name of MFT	Designation	Mobile number	Email id
4IEP1	Aritra Bhattacharya	Asst. Prof	9800748411	aritra.bhattacharyya36971@paruluniversity.ac.in
4IEP2	VICKY GUPTA	Asst. Prof	8318177322	vicky.gupta35286@paruluniversity.ac.in
4IEP3	Prakash Maravi	Asst. Prof	8770647445	prakash.maravi37123@paruluniversity.ac.in
4IEP4	SUDHEER KUMAR	Asst. Prof	8319679455	sudheer.singh26110@paruluniversity.ac.in
4IEP5	ANUSHA MARADA	Asst. Prof	8985076925	Anusha.marada31882@paruluniversity.ac.in

CURRICULUM

PDF ATTACHED

4th Semester Teaching Schema – CSE - Microsoft

Sr. No.	Name of the Subject	Credit	LECT	LAB	TUTO
24	Operating System	3	3	0	0
25	Operating System Laboratory	1	0	2	0
26	Global Certifications - Fundamentals (SC-900 & DP - 900)	3	3	0	0
25	SC-900 & DP - 900 Labs	1	0	2	0
28	Computer Network	3	3	0	0
29	Computer Network Laboratory	1	0	2	0
30	Programming in Python with Full Stack Development	3	3	0	0
31	Programming in Python with Full Stack Development Laboratory	1	0	2	0
32	Probability, Statistics and Numerical Methods	4	4	0	0
33	Professional Grooming and Personality Development	1	0	0	1
34	Competitive Coding	2	0	4	0
	Total	23	16	12	1

4th Semester Teaching Schema – CSE – Oracle

Sr. No.	Name of the Subject	Credit	LECT	LAB	TUTO
24	Operating System	3	3	0	0
25	Operating System Laboratory	1	0	2	0
26	Java Development on Oracle Cloud	3	3	0	0
27	Java Development on Oracle Cloud Lab	1	0	2	0
28	Computer Network	3	3	0	0
29	Computer Network Laboratory	1	0	2	0
30	Programming in Python with Full Stack Development	3	3	0	0
31	Programming in Python with Full Stack Development Laboratory	1	0	2	0
32	Probability, Statistics and Numerical Methods	4	4	0	0
33	Professional Grooming and Personality Development	1	0	0	1
34	Competitive Coding	2	0	4	0
	Total	23	16	12	1

4th Semester Teaching Schema – CSE – SAP

Sr. No.	Name of the Subject	Credit	LECT	LAB	TUTO
23	Operating System	3	3	0	0
24	Operating System Laboratory	1	0	2	0
25	ABAP progrmming for HANA Introduction	3	3	0	0
26	ABAP Programming for HANA Introduction Lab	1	0	2	0
27	Computer Network	3	3	0	0
28	Computer Network Laboratory	1	0	2	0
29	Programming in Python with Full Stack Development	3	3	0	0
30	Programming in Python with Full Stack Development Laboratory	1	0	2	0
31	Probability, Statistics and Numerical Methods	4	4	0	0
32	Professional Grooming and Personality Development	1	0	0	1
33	Competitive Coding	2	0	4	0
	Total	23	16	12	1

4th Semester Teaching Schema – CSE – Quick Heal

Sr. No.	Name of the Subject	Credit	LECT	LAB	TUTO
24	Operating System	3	3	0	0
25	Operating System Laboratory	1	0	2	0
26	Vulnerability and Assessment and penetration testing	3	3	0	0
27	Vulnerability and Assessment and penetration testing Laboratory	1	0	2	0
28	Managing cloud infrastructure and security	3	3	0	0
29	Managing cloud infrastructure and security Laboratory	1	0	2	0
30	Programming in Python with Full Stack Development	3	3	0	0
31	Programming in Python with Full Stack Development Laboratory	1	0	2	0
32	Probability, Statistics and Numerical Methods	4	4	0	0
33	Professional Grooming and Personality Development	1	0	0	1
34	Competitive Coding	2	0	4	0
	Total	23	16	12	1

SYLLABUS OF THE COURSES

PDF ATTACHED

Course: BTech **Semester:** 4

Prerequisite: Basic concepts of Statistics, Probability and Fundamentals of Calculus

Rationale: The course provides introductory numerical, statistical and probability methods

Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					Total
					Internal Marks			External Marks		
Lecture Hrs/Week	Tutorial Hrs/Week	Lab Hrs/Week	Hrs/Week	Credit	T	CE	P	T	P	
4	-	-	-	4	20	20	-	60	-	100

SEE - Semester End Examination, **CIA** - Continuous Internal Assessment (It consists of Assignments/Seminars/Presentations/MCQ Tests, etc.)

Course Content

W - Weightage (%) , **T** - Teaching hours

Sr.	Topics	W	T
1	**UNIT 1Correlation, Regression and Curve Fitting :** Correlation and Regression – Rank correlation Curve Fitting by The Method of Least Squares- Fitting of Straight Lines, Second Degree Parabolas and More General Curves	18	11
2	**UNIT 2Probability 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	13
3	**UNIT 3Testing 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	15
4	**UNIT 4Solution 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	7
5	**UNIT 5Finite 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	7
6	**UNIT 6Numerical Integration:** Trapezoidal rule, Simpson's 1/3rd and 3/8th Rules, 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	7

Reference Books

1.	**Numerical Methods in Engineering & Science with Programs in C and C++ (TextBook)** By Dr. B. S. Grewal | Khanna Publishers
2.	**Introduction to Numerical Analysis** By C.E. Froberg | Addison Wesley Publishing Company
3.	**Introduction to Probability (TextBook)** By P. G. Hoel, S. C. Port and C. J. Stone, | UBS Publishers,
4.	**Fundamentals of Mathematical Statistics (TextBook)** By S.C. Gupta and V. K. Kapoor | Sultan Chand & Sons

Course Outcome

After Learning the Course the students shall be able to:

After learning the course the students will 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.
4. Derive numerical methods for various mathematical operations and tasks, such as interpolation, integration, the solution of linear and nonlinear equations, and the solution of differential equations.
5. Calculate Correlation, Regression of two variables.

Course: BTech **Semester:** 4

Prerequisite: proficiency in a programming language (e.g., C++, Python) and a strong grasp of data structures and algorithms, with a focus on problem-solving skills and efficient code implementation. Familiarity with common coding platforms (e.g., Codeforces, LeetCode) is also beneficial.

Rationale: Competitive coding sharpens problem-solving skills, enhances algorithmic thinking, and fosters quick and efficient coding practices. It provides a platform for continuous learning, challenges individuals to tackle diverse problems, and fosters a competitive spirit that's valuable in technical interviews and real-world software development.

Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					Total
					Internal Marks			External Marks		
Lecture Hrs/Week	Tutorial Hrs/Week	Lab Hrs/Week	Hrs/Week	Credit	T	CE	P	T	P	
-	-	4	-	2	-	-	20	-	30	50

SEE - Semester End Examination, **CIA** - Continuous Internal Assessment (It consists of Assignments/Seminars/Presentations/MCQ Tests, etc.)

Course Outcome

After Learning the Course the students shall be able to:
After Learning the Course the students shall be able to: 1. Develop strong problem-solving skills, improve algorithmic thinking, and enhance proficiency in coding by tackling a variety of challenging problems. 2. Cultivate the ability to write efficient and optimized code under time constraints, honing the skill of quickly translating algorithmic insights into practical solutions. 3. Gain a competitive advantage in technical interviews and coding assessments, showcasing the ability to tackle diverse coding challenges commonly encountered in job placements and coding competitions. 4. Foster a mindset of continuous learning by regularly engaging with new problems, staying updated on emerging algorithms, and adapting to evolving coding paradigms.

List of Practical

1.	Write a program for implementing a MINSTACK which should support operations like push, pop, overflow, underflow, display 1. Construct a stack of N-capacity 2. Push elements 3. Pop elements 4. Top element 5. Retrieve the min element from the stack
2.	Write a program to deal with real-world situations where Stack data structure is widely used Evaluation of expression: Stacks are used to evaluate expressions, especially in languages that use postfix or prefix notation. Operators and operands are pushed onto the stack, and operations are performed based on the LIFO principle.
3.	Write a program for finding NGE NEXT GREATER ELEMENT from an array.
4.	Write a program to design a circular queue(k) which Should implement the below functions a. Enqueue b. Dequeue

	c. Front d. Rear
5.	Write a Program for an infix expression, and convert it to postfix notation. Use a queue to implement the Shunting Yard Algorithm for expression conversion.
6.	Write a Program for finding the Product of the three largest Distinct Elements. Use a Priority Queue to efficiently find and remove the largest elements.
7.	Write a Program to Merge two linked lists(sorted).
8.	Write a Program to find the Merge point of two linked lists(sorted).
9.	Write a Program to Swap Nodes pairwise.
10.	Write a Program for Building a Function ISVALID to VALIDATE BST.
11.	Write a Program to Build BST.
12.	Write a Program to determine the depth of a given Tree by Implementing MAXDEPTH.
13.	Write a Program to Understand and implement Tree traversals i.e. Pre-Order Post-Order, In-Order.
14.	Write a Program to perform Boundary Traversal on BST.
15.	Write a program for Lowest Common Ancestors.
16.	Write a Program to verify and validate mirrored trees or not.
17.	Write a Program for a basic hash function in a programming language of your choice. Demonstrate its usage to store and retrieve key-value pairs.
18.	Implement a hash table using separate chaining for collision handling. Perform operations like insertion, deletion, and search on the hash table.
19.	

	Write a Program to Implement Two sums using HASHMAP.
20.	Write a Program to Implement Search, insert, and Remove in Trie.
21.	Write a Program to Implement Huffman coding.
22.	Write a Program to find Distinct substrings in a string.
23.	Write a Program to find The No of Words in a Trie.
24.	Write a Program to view a tree from left View.
25.	Write a Program to Traverse a Tree using Level Order Traversal.

Course: BTech **Semester:** 4

Prerequisite: knowledge of Computer and Information system

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

Teaching and Examination Scheme

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

SEE - Semester End Examination, **CIA** - Continuous Internal Assessment (It consists of Assignments/Seminars/Presentations/MCQ Tests, etc.)

Course Outcome

After Learning the Course the students shall be able to:

After Learning the Course the students shall be able to:
1. Configure and set up different types of networks, including local area networks (LANs) and wide area networks (WANs).
2. Configure routers and switches, and implement routing protocols to understand how data is directed through a network.
3. Use network monitoring tools to analyze network.
4. Apply security measures, such as firewalls, encryption, and intrusion detection systems, to secure network communication.
5. Implement and analyze various network protocols, such as TCP/IP, UDP, and ICMP, through practical exercises.

List of Practical

1.	**Experiments on Simulation Tools: (CISCO PACKET TRACER).**
2.	**Experiments of Packet capture tool: Wireshark.**
3.	**To study behavior of generic devices used for networking: (CISCO PACKET TRACER).**
4.	**Data Link Layer (Error Correction).**
5.	**Virtual LAN**
6.	**Wireless LAN**
7.	**Inter networking 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.**

Miscellaneous

Exam Requirement

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

Course: BTech **Semester:** 4

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					Examination Scheme					Total
Lecture Hrs/Week	Tutorial Hrs/Week	Lab Hrs/Week	Hrs/Week	Credit	Internal Marks			External Marks		
					T	CE	P	T	P	
3	0	0	0	3	20	20	-	60	-	100

SEE - Semester End Examination, **CIA** - Continuous Internal Assessment (It consists of Assignments/Seminars/Presentations/MCQ Tests, etc.)

Course Content

W - Weightage (%) , **T** - Teaching hours

Sr.	Topics	W	T
1	**DATA COMMUNICATION COMPONENTS:** Representation of data and its flow Networks, VariousConnection Topology, Protocols and Standards, OSI model, Transmission Media, LAN:Wired 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	**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 Window,Piggybacking, Random Access, Multiple access protocols - Pure ALOHA, Slotted ALOHA,CSMA/CD,CDMA/CA	25	11
3	**Network Layer:** Switching, Logical addressing 'IPV4, IPV6; Address mapping 'ARP, RARP, BOOTP and DHCP'Delivery, Forwarding and Unicast Routing protocols	20	8
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	**Application Layer:** Domain Name Space (DNS), DDNS, TELNET, EMAIL, File TransferProtocol (FTP), WWW, HTTP, SNMP, Bluetooth, Firewalls, Basic concepts ofCryptography	15	6

Reference Books

1.	**Computer Networks (TextBook)** By Andrew S. Tanenbaum and David J. Wetherall | PEARSON Edition
2.	**Internetworking with TCP/IP Principles, Protocols and Architecture** By Douglas E Comer
3.	**TCP/IP Illustrated** By Richard Stevens
4.	**Data Communication and Networking** By Behrouz A. Forouzan
5.	**"Data and computer communications",** By William Stallings | Prentice Hall

Course Outcome

After Learning the Course the students shall be able to:
After Learning the course the students shall be able to: 1. Draw the functional block diagram of wide-area networks (WANs), local area networks (LANs) and Wireless LANs (WLANs) describe the function of each block. 2. Understand the functions of the different layers of the OSI Protocol 3. Understand and Design For a given requirement (small scale) of wide-area networks (WANs), local area networks (LANs) and Wireless LANs (WLANs) design it based on the market available component 4. Learn on the given problem-related TCP/IP protocol developed for the network programming. 5. Configure DNS DDNS, TELNET, EMAIL, File Transfer Protocol (FTP), WWW, HTTP, SNMP, Bluetooth, and Firewalls using open-source available software and tools.

PARUL UNIVERSITY - Faculty of Engineering and Technology

Department of computer and science Engineering

SYLLABUS FOR

Semester B Tech PROGRAMME

Managing Cloud Infrastructure and Security& PU-

QH-MCIAS04

Type of Course: B.Tech

Prerequisite: Basic understanding of IT concepts and familiarity with networking principles to facilitate comprehensive comprehension of Cloud Computing fundamentals.

Rationale: This course is designed to provide knowledge about the Cloud Computing addresses foundational concepts, infrastructure, security, identity management, monitoring, compliance, and governance, providing learners with a holistic understanding of cloud technologies and preparing them for roles in cloud-related fields by exploring both theoretical and practical aspects of cloud computing.

Teaching and Examination Scheme:

Teaching Scheme				Credit	Examination Scheme					Total
					External		Internal			
Week	Theory Hrs/	Lab Hrs/	Week Hrs/		T	P	T	CE	P	
1	15	25	40							

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

Contents:

Sr.	Topic	Weightage	Teaching Hrs.
A	**Cloud Computing Fundamentals:** Introduction to Cloud Computing, Cloud Service Models (SaaS, PaaS, IaaS), Cloud Deployment Models (Public, Private, Hybrid), Pros and Cons of Cloud Computing, Cloud Technologies in 2023, Cloud Security Concepts, Career in cloud security, Cloud Security Challenges **Cloud Infrastructure and Networking:** Cloud Infrastructure Components (Virtual Machines, Storage, Network), Virtual Networking (VPC, Subnets, Routing, Security Groups), Load Balancing and Autoscaling, Disaster Recovery and High Availability	25	10
B	**Cloud Identity and Access Management:** Identity and Access Management (IAM) in the Cloud, Users, Groups, and Roles, Policies and Permissions, Multi-factor Authentication (MFA)	25	10
C	**Cloud Security:** Cloud Security Risks and Threats, Security Best Practices, Data Protection and Encryption, Network Security and Firewall, Best Cloud Security Solutions	25	10

D	**Cloud Monitoring and Management:** Cloud Monitoring and Logging, Resource Optimization and Cost Management, Cloud Automation and Orchestration, Incident Management and Response **Cloud Compliance and Governance:** Compliance Frameworks (PCI, HIPAA, GDPR), Cloud Audit and Compliance Management, Risk Assessment and Management, Legal and Regulatory Requirements	**25**	**10**

***Continuous Evaluation:**

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

List of Practical's

1. Setting up a Cloud Account and Access Management
2. Creating a VPC, Subnets, EC2 Instances, and Load Balancer
3. Configuring IAM Users, Groups, Roles, and Policies
4. Configuring Security Groups, Firewall Rules, and Data Encryption
5. Setting up CloudWatch, Configuring Auto Scaling, and Creating an Incident Response Plan
6. Implementing Compliance Controls and Performing Cloud Audits

Reference Books:

1. Official Google Cloud Certified Associate Cloud Engineer Study Guide by Dan Sullivan.
2. CSA Guide to Cloud Computing: Implementing Cloud Privacy and Security 1st Edition by Raj Samani.

Course Outcome:

1. Recall the basic concepts and advantages of cloud computing, list the different cloud service providers and their role in cloud security, and identify the layers and capabilities of cloud service activities. Also, identify the various roles and careers available in cloud security.
2. To understand the fundamental concepts and models of cloud computing, different cloud services, deployment models, and emerging technologies. The objective also includes gaining knowledge about the impacts of basic security concepts such as cryptography, access control, network security, and vulnerabilities on cloud security. Additionally, the objective aims to understand the deployment of AWS services, including establishing server connections, key pair generation, identity access management, and securing AWS accounts.
3. Analyze the strategies and architectures for cloud data security and storage, and evaluate the AWS connection and storage configurations for their effectiveness in addressing security issues such as data modification, destruction, and breaches.
4. Evaluate the effectiveness of cloud security measures, disaster recovery and business continuity management planning, risk management and risk frameworks, operations and management practices such as patching and automation, storage backups and monitoring, as well as audit and compliance practices such as gap analysis, audit planning, and recognition of legal requirements and guidelines. Determine areas for improvement and develop strategies to enhance cloud security, data management, and compliance.

Course: BTech **Semester:** 4

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					Examination Scheme					Total
					Internal Marks			External Marks		
Lecture Hrs/Week	Tutorial Hrs/Week	Lab Hrs/Week	Hrs/Week	Credit	T	CE	P	T	P	
0	0	2	0	1	-	-	20	-	30	50

SEE - Semester End Examination, **CIA** - Continuous Internal Assessment (It consists of Assignments/Seminars/Presentations/MCQ Tests, etc.)

Course Outcome

After Learning the Course the students shall be able to:
1. Experiment with Linux commands and shell programming.
2. Able to build shell program for process and file system management with system calls.
3. Able to implement and analyse the performance of CPU scheduling algorithm.
4. Able to implement and analyse the performance of page replacement algorithms.
5. Able to implement and analyse the performance of deadlock avoidance and detection algorithm.

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.**

Course: BTech **Semester:** 4

Prerequisite: 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, algorithms, programming, and security. The approach of the subject is from both a theoretical perspective as well as a practical one.

Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					Total
					Internal Marks			External Marks		
Lecture Hrs/Week	Tutorial Hrs/Week	Lab Hrs/Week	Hrs/Week	Credit	T	CE	P	T	P	
3	0	0	0	3	20	20	-	60	-	100

SEE - Semester End Examination, **CIA** - Continuous Internal Assessment (It consists of Assignments/Seminars/Presentations/MCQ Tests, etc.)

Course Content

W - Weightage (%) , **T** - Teaching hours

Sr.	Topics	W	T
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	**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	**INTER-PROCESS COMMUNICATION:** Critical Section, Race Conditions, Mutual Exclusion, Hardware Solution, Strict Alternation, Peterson̓ s Solution, The Producer\ ConsumerProblem, Semaphores, Event Counters, Monitors, Message Passing, Classical IPC Problems: Reader̓ s & Writer Problem, Dinning Philosopher Problem etc	15	6
4	**DEADLOCKS:** Definition, Necessary and sufficient conditions for Deadlock, Deadlock Prevention, Deadlock Avoidance: Banker̓ s algorithm, Deadlock detection and Recovery.	10	5
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	13
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	9

Reference Books

1.	**Operating System Concepts Essentials (TextBook)** By byAviSilberschatz, Peter Galvin,Greg Gagne | 9th Edition Wiley Asia Student Edition.
2.	**Operating Systems Internals and Design Principles** By William Stallings | PHI | 5th Edition
3.	**Operating System: A Design-oriented Approach** By Charles Crowley, | 1st Edition - Irwin Publishing
4.	**Operating Systems: A Modern Perspective** By by Gary J. Nutt | Addison-Wesley; 2nd Edition | 2nd Edition
5.	**Design of the Unix Operating Systems** By Maurice Bach, | Prentice-Hall of India | 8th Edition
6.	**Understanding the Linux Kernel** By Daniel P. Bovet, Marco Cesati, | O'Reilly and Associates | 3rd Edition

Course Outcome

After Learning the Course the students shall be able to:

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. Understand disk organization 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.

Miscellaneous

Exam Requirement

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

Parul® University

Subject Syllabus

Professional Grooming and Personality Development

Course: BTech **Semester:** 4

Prerequisite: Knowledge of communication theories and basic management skills are essential.

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					Examination Scheme					Total
Lecture Hrs/Week	Tutorial Hrs/Week	Lab Hrs/Week	Hrs/Week	Credit	Internal Marks			External Marks		
					T	CE	P	T	P	
-	1	-	-	1	-	100	-	-	-	100

SEE - Semester End Examination, **CIA** - Continuous Internal Assessment (It consists of Assignments/Seminars/Presentations/MCQ Tests, etc.)

Course Content

W - Weightage (%) , **T** - Teaching hours

Sr.	Topics	W	T
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	25	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'	25	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	20	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.	15	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.	15	1

Course Outcome

After Learning the Course the students shall be able to:

After Learning the course the students shall be able to:
1. Identity and develop soft skills required for personal and professional growth.
2. Develop professional etiquette & desired behaviour at the workplace
3. Speak and participate effectively in oral organizational communication
4. Improve comprehensive skills for reading
5. Know how to be assertive in professional environment

Course: BTech **Semester:** 4

Prerequisite: Basic knowledge of Programming and web applications

Rationale: This course provides a broad introduction to Python programming and development of web applications. Developing and using Python as a scripting language for automating tasks and data processing. Moreover Building and deploying web applications using popular Python frameworks such as Django and Flask

Teaching and Examination Scheme

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

SEE - Semester End Examination, **CIA** - Continuous Internal Assessment (It consists of Assignments/Seminars/Presentations/MCQ Tests, etc.)

Course Outcome

After Learning the Course the students shall be able to:

After Learning the Course the students shall be able to:
1. Demonstrate a strong understanding of Python programming language fundamentals, including syntax, data types, control structures, and functions.
2. Understand the basics of web development, including HTML, CSS, and JavaScript, and demonstrate the ability to create static web pages.
3. Design and implement RESTful APIs using Python for communication between the front-end and back-end components.
4. Identify and resolve issues in both front-end and back-end code, and optimize the performance of web applications.
5. Integrate AJAX techniques into Django applications to enable dynamic updates and improve interactivity without full page reloads.

List of Practical

1.	**Set-1** 1. A program that converts temperatures from Fahrenheit to Celsius and vice versa. 2. A program that calculates the area and perimeter of a rectangle. 3. A program that generates a random password of a specified length. 4. A program that calculates the average of a list of numbers. 5. A program that checks if a given year is a leap year. 6. A program that calculates the factorial of a number. 7. A program that checks if a given string is a palindrome. 8. A program that sorts a list of numbers in ascending or descending order. 9. A program that generates a multiplication table for a given number. 10. A program that converts a given number from one base to another.
2.	**Set-2** 1. A program that models a bank account, with classes for the account, the customer, and the bank. 2. A program that simulates a school management system, with classes for the students, the teachers, and the courses. 3. A program that reads a text file and counts the number of words in it. 4. A program that reads a CSV file and calculates the average of the values in a specified column. 5. A program that reads an Excel file and prints the data in a tabular format.
3.	**Set-3** 1. A program that creates a simple web server and serves a static HTML page. 2. A program that creates a web application that allows users to register and login. 3. A program that creates a web application that allows users to upload and download files. 4. A program that creates a web application that displays data from a database in a tabular format. 5. A program that creates a web application that accepts user input and sends it to a server-side script for processing.
4.	**Set-4** 1. A program that creates a web application that uses a template engine to generate dynamicHTML pages. 2. A program that creates a web application that supports AJAX requests and updates the page without reloading. 3. A program that creates a web application that uses Django's built-in debugging features to troubleshoot errors and exceptions. 4. A program that creates a web application that implements user authentication and authorization. 5. A program that creates a web application that integrates with third-party APIs to provide additional functionality.
5.	**Set-5** 1. A program that creates a simple RESTful API that returns a list of users in JSON format. 2. A program that creates a RESTful API that allows users to create, read, update, and delete resources. 3. A program that creates a RESTful API that authenticates users using a JSON Web Token. 4. A program that creates a RESTful API that paginates the results of a query to improve performance. 5. A program that creates a RESTful API that supports data validation and error handling.

Miscellaneous

Exam Requirement

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

Course: BTech **Semester:** 4

Prerequisite: Basic knowledge of Programming and web applications

Rationale: This course provides a broad introduction to Python programming and development of web applications. Developing and using Python as a scripting language for automating tasks and data processing. Moreover Building and deploying web applications using popular Python frameworks such as Django and Flask.

Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					Total
Lecture Hrs/Week	Tutorial Hrs/Week	Lab Hrs/Week	Hrs/Week	Credit	Internal Marks			External Marks		
					T	CE	P	T	P	
3	0	0	0	3	20	20	-	60	-	100

SEE - Semester End Examination, **CIA** - Continuous Internal Assessment (It consists of Assignments/Seminars/Presentations/MCQ Tests, etc.)

Course Content

W - Weightage (%) , **T** - Teaching hours

Sr.	Topics	W	T
1	**Introduction to python programing:** Introduction to Python and basic programming concepts, variables, data types, conditionals statements and loops Lists,Sets,Tuples,Dictionaries: Working with strings, lists, sets, tuples and dictionaries, including common operations and built-in functions	15	6
2	**Functions :** Defining and using functions, including the use of arguments and return values OOPS Concepts : Object, class, abstraction, encapsulation, polymorphism, Inheritence. Exceptions and File handling: Handling exceptions and working with files	20	5
3	**Modules and Packages:** Working with modules and packages in Python Introduction to popular Python libraries for specific tasks, such as data analysis, web development, or game development. PyCharm IDE : GIT- Git Integration with PyCharm IDE, PyTests. Python connectivity with Databases MYSQL, MongoDB CRUD operations.	15	5
4	**Flask Framework:** Introduction to Flask and web development with Python, Installation in Virtual Environment. Creation Routing App Settings URL Building HTTP methods Templates Working with Static, Media Files. Sending Form Data to Template. Flask App with Database connectivity Sqlite3, MySQL. Handling Exceptions and Errors Flash Message Working with Mails. Authenticating and authorizing users with Flask-Login, Deploying a Flask application to a web server.	20	10
5	**Django Framework:** Introduction to Django framework, Django Project Installation in Virtual Environment. Phases in Django Project Creation Create a Project. Creation of Apps and their Structure. Working with ADMIN Console. Creating Views URL Mapping. Template System Working with Models. Form Processing static, media files, Django App Deployment.	20	10
6	**RESTful APIs:** Introduction to RESTful APIs and the REST architectural style Understanding the HTTP protocol and its role in RESTful APIs Designing and implementing RESTful APIs using common HTTP methods, such as GET, POST, PUT, and DELETE Using URLs and resource representations to identify and transfer data in RESTful APIs Implementing best practices for designing and implementing RESTful APIs, such as using HTTP status codes,	10	6

	versioning, and error handling Consuming RESTful APIs using common tools and libraries, such as cURL, Postman, and the requests library in Python Building scalable and secure RESTful APIs using common frameworks and libraries Flask or FastAPI.		

Reference Books

1.	**Fluent Python, 2nd Edition by Luciano Ramalho (TextBook)**
2.	**Learn Python3 the Hard Way By Zed Shaw**
3.	**"Django for Beginners: Build websites with Python and Django" by William S. Vincent.**
4.	**"Learning Django Web Development" by Samuli Natri.**
5.	**"Flask Web Development with Python" by Miguel Grinberg.**
6.	**"Mastering Flask" by Jack Stouffer.**
7.	**"Building RESTful Python Web Services" by Gastón C. Hillar.**
8.	**Building Web APIs with FastAPI" by Samuel Colvin.**

Course Outcome

After Learning the Course the students shall be able to:
After learning this course students are able to: 1. Understand the fundamental concepts of web development. 2. Create and manipulate data using a variety of databases, including SQL and NoSQL 3. Build and deploy web applications using a popular Python web framework, such as Django or Flask. 4. Design and implement APIs (application programming interfaces) that enable different applications to communicate with each other. 5. Test and debug web applications, and to deploy them to production environments.

PARUL UNIVERSITY - Faculty of Engineering and Technology

Department of Computer Science and Engineering

Syllabus for 4th Semester B Tech Programme with specialization in SAP

ABAP Programming for HANA Introduction & subject code 6

Type of Course: BTech

Prerequisite: Basic knowledge of Business IT

Rationale: SAP being a business management ERP application, need for knowledge about usage of information technology in business context

Teaching and Examination Scheme:

Teaching Scheme			Credit	Examination					Total
				External		Internal			
Lect Hrs/ Week	Tut Hrs/	Lab Hrs/		T	P	T	CE	P	
2	0	0	2	40	0	20	20	0	80

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

Contents:

Sl. No.	Topic	Weightage (%)	Teaching Hours
1.	**SAP HANA Introduction** 1. Describing SAP HANA 2. Technical requirements of SAP HANA 3. Data management with SAP HANA 4. Analytical processing with SAP HANA 5. Powering data warehouses with SAP HANA 6. Running SAP applications on SAP HANA 7. Developing Applications of SAP HANA 8. Monitoring SAP HANA 9. Security and data privacy with SAP HANA 10. Migration to SAP HANA	25	10
2.	1. Calculation Views • Introducing Calculation Views • Understanding the Different Types of Views • Working with Common View Design Features 2. Using Nodes in Calculation Views • Using Projection Nodes • Using Join Nodes • Working with Data Sets • Aggregating Data • Creating CUBE with Star Join Calculation Views • Extracting Top Values with Rank Nodes 3. Modeling Functions • Create Restricted and Calculated Columns • Filtering Data • Using Variables and Input Parameters • Implementing Hierarchies • Implement Currency Conversion • Defining Time-Based Dimension Calculation Views 4. Using SQL in Models	75	30

	• Introducing SAP HANA SQL • Query a Modeled Hierarchy Using SQLScript • Working with SQLScript • Creating and Using Functions • Creating and Using Procedures 5. Persistence Layer • Defining the Persistence Layer • Loading Data into Tables • Accessing Remote Data 6. Optimization of Models • Implementing Good Modeling Practices • Implementing Static Cache • Controlling Parallelization • Implementing Union Pruning • Using Tools to Check Model Performance • Developing a Data Management Architecture 7. Management and administration of Models • Working with Modeling Content in a Project • Creating and Managing Projects • Enabling Access to External Data • Working with GIT Within the SAP Web IDE • Migrating Modeling Content 8. Security in SAP HANA Modeling • Understanding Roles and Privileges • Defining Analytic Privileges • Defining Roles • Masking Sensitive Data ○ Anonymizing Data		
	Total	**100**	**40**

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

Tutorials: None

Syllabus for 4th Semester B Tech Programme with specialization in SAP

ABAP Programming for HANA Introduction Lab & subject code 7

Type of Course: BTech

Prerequisite: Basic knowledge of Business IT

Rationale: SAP being a business management ERP application, need for knowledge about usage of information technology in business context

Teaching and Examination Scheme:

Teaching Scheme			Credit	Examination					Total
				External		Internal			
Lect Hrs/ Week	Tut Hrs/	Lab Hrs/		T	P	T	CE	P	
0	0	2	1	0	30	0	20	20	70

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

List of Practicals: **19 hours**

Taking ABAP to SAP HANA
Database independent code to data
SAP HANA specific code to data
Calculation Views
Using nodes in calculation views
Modeling functions
Using SQL in models
Persistence Layer
Optimization of models
Management and administration of models
Security in SAP HANA modelings

Reference Books:
HA100 – ABAP Objects
HA300 – SAP HANA Implementation and Modeling

Course Outcome:

After Learning the course, the students shall be able to:

1. Understand the key technology of SAP HANA
2. Understand the key roles and their responsibilities in an SAP HANA project
3. Work with the various SAP HANA interfaces used by developers and administrators
4. Create a data model using SAP HANA modeling tools
5. Acquire and enrich data and load to SAP HANA
6. Build a report that runs on an SAP HANA data model
7. Get started with the application development environment
8. Develop information models following SAP best practices for maximum performance and flexibility
9. Get started with SQL and SQL-Script based modeling
10. Manage projects and modeling content in the SAP Web IDE for SAP HANA
11. Implement security and data access controls around SAP HANA data models

PARUL UNIVERSITY - Faculty of Engineering and Technology

Department of Computer Science and Engineering

Syllabus for 4th Semester B Tech Programme with specialization in SAP

ABAP Programming for HANA & subject code 8

Type of Course: BTech

Prerequisite: Introductory knowledge to SAP HANA Programming

Rationale: Introductory knowledge required for advanced learning on programming

Teaching and Examination Scheme:

Teaching Scheme			Credit	Examination					Total
				External		Internal			
Lect Hrs/ Week	Tut Hrs/	Lab Hrs/		T	P	T	CE	P	
2	0	0	2	40	0	20	20	0	80

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

Contents:

Sl. No.	Topic	Weightage (%)	Teaching Hours
1.	**ABAP Programming for SAP HANA** 1. Introduction • Understanding SAP HANA and how it impacts the ABAP development paradigm • Introduction to ABAP development tools (also known as ABAP in Eclipse) 2. Taking ABAP to SAP HANA • Accessing SAP HANA as a secondary database • Tools to detect potential functional and performance issues when migrating to SAP HANA: code inspector and ABAP test cockpit, ABAP trace and ABAP profiler, SQL trace • Tools to prioritize performance issues: SQL monitor, SQL performance tuning worklist • Performance rules and guidelines for ABAP in the context of SAP HANA 3. Database independent code-to-data • Enhanced open SQL • Defining advanced views using core data services (CDS) and CDS associations in ABAP • Incorporating authorization checks with CDS in ABAP 4. SAP HANA specific code-to-data • Using native SQL and ABAP data base connectivity (ADBC) • Creating, using and debugging ABAP managed database procedures • Using SAP HANA information models in ABAP 5. Advanced topics • ABAP transport of SAP HANA	33	10

	objects (HTC and HTA) • Using SAP HANA full text search in ABAP • Enabling input fields for type-ahead search • SAP list viewer (ALV) optimized for SAP HANA		
2.	**ABAP Programming in Eclipse** 1. Introduction to Eclipse • Understanding How SAP Uses Eclipse; -> Installing Eclipse • Defining an ABAP Project; -> Working With the Eclipse Workbench 2. The ABAP Development Cycle in Eclipse • Creating Repository Objects; -> Editing a Repository Object • Debugging ABAP in Eclipse 3. Function Groups and Function Modules • Creating a Function Group and a Function Module 4. ABAP Dictionary Objects in Eclipse • Working with Data Elements; -> Working with Structures • Modelling Views with ABAP Core Data Services 5. ABAP Objects and Eclipse • Creating a Global Class; -> Refactoring 6. Web Dynpro Development • Creating Web Dynpro Components 7. Utilities in Eclipse • Navigating in Eclipse; -> Searching in Eclipse • Managing Version Control • Identifying Sources of Help and Information 8. Testing and Analysis • Performing Static Testing with the Syntax Check • Performing Static Testing with the ABAP Test Cockpit • Performing ABAP Unit Tests • Analyzing Performance with the ABAP Profiler 9. Eclipse: An Extensible Toolkit • Extending Eclipse Functionality with Other SAP Tools	67	20
	Total	**100**	**30**

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

Tutorials: None

Syllabus for 4th Semester B Tech Programme with specialization in SAP

ABAP Programming for HANA Lab & subject code 9

Type of Course: BTech

Prerequisite: Introductory knowledge to SAP HANA Programming

Rationale: Introductory knowledge required for advanced learning on programming

Teaching and Examination Scheme:

Teaching Scheme			Credit	Examination					Total
Lect Hrs/ Week	Tut Hrs/	Lab Hrs/		External		Internal			
				T	P	T	CE	P	
0	0	2	1	0	30	0	20	20	70

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

List of Practicals: **12 hours**

ABAP development cycle in Eclipse
Function Groups and Function Modules
ABAP Dictionary Objects in Eclipse
ABAP Objects and Eclipse
Webdynpro Development
Utilities in Eclipse
Testing and Analysis
Extensible Toolkit

Reference Books:
HA400 – ABAP programming for SAP HANA
BC404 – ABAP programming in Eclipse

Course Outcome:

After Learning the course, the students shall be able to:

1. Develop more concise and well-performing ABAP programs using new features of the ABAP programming language
2. Develop and optimize ABAP applications that access data stored in the SAP HANA database
3. Learn how to develop custom ABAP applications using the ABAP Development Tools for Eclipse (ADT)

PARUL UNIVERSITY - Faculty of Engineering and Technology

Department of computer and science Engineering

SYLLABUS FOR 4th Semester B Tech

PROGRAMME
Java Development on Oracle Cloud

Type of Course: BTech

Prerequisite:

A fundamental understanding of computer operations, file management, and basic software usage.
A basic familiarity with the command line can be useful.

Rationale:

This course helps students to learn about OOPs concepts, use Java programming language and core Java APIs to develop and deploy the application and prepares them to earn the **Oracle Java SE 11 Developer Certified Professional** certification credential.

Teaching and Examination Scheme:

Teaching Scheme			Credit	Examination Scheme					Total
				External		Internal			
Lect Hrs/ Week	Tut Hrs/	Lab Hrs/		T	P	T	CE	P	
3		2	4	50			20	30	100

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

Note: In-class session will be delivery for two weeks - 12 Days - 6 Hrs/Day-First week (Monday to Saturday) in second month of semester and second week (Monday to Saturday) in fourth month of semester

Contents:

Sr.	Topic	Weightage	Teaching Hrs.
1	**Introduction to Java** This topic Covers Java language origins and use-cases, Java portability and provider neutrality , basics of object-oriented concepts, Java Syntax and coding conventions, Creating Java class with main method, Compile and execute a Java application **Primitive Types, Operators, and Flow Control Statements** This topic covers primitive data types, operators, primitive type casting, Math class, implementing flow control with if/else and switch statement, working with Jshell	10	7
2	**Text, Date, Time, and Numeric Objects** This topic covers manipulate text values using String and StringBuilder class, primitive wrapper classes, performing string and primitive conversions, handling decimal numbers using BigDecimal class, handling date and time values, Localization and Formatting classes **Classes and Objects** This topic covers modelling business problem using classes, defining instance methods and variables, "this" object reference, object instantiation, local variables and local variable type inference, static variables and methods, invoking methods and access variables, using NetBeans IDE	12	8
3	**Improved Class Design** This topic covers method overloading, creating constructors, encapsulation and immutability, using enumerations, parameter passing, memory allocation and	13	9

	cleanup.		
	Inheritance This topic covers extending classes, reusing code through inheritance, use of instanceof operator, "super" object reference, defining subclass constructors, overriding superclass methods, understanding polymorphism, defining abstract classes and methods, defining final classes and methods, overriding methods of the Object class		
4	**Interfaces** This topic covers implementing an interface, describing non abstract interface methods, generics, utilizing some of the common used Java Interfaces, implementing the Composition Design pattern **Arrays and Loops** This topic covers declaring, initializing and accessing arrays of Object and primitive types, using the wile, do/while, for and forEach loops, processing arrays using the loop, using multidimensional arrays, using embedded loops, using break and continue operators	10	7
5	**Collections** This topic covers basics of Java Collection API interfaces and implementation classes, using List, Set, Deque and Map collections, iterating through collection content, using Collections class, accessing collection concurrently **Nested Classes and Lambda Expressions** This topic covers Nested Classes of type Static, Member, Local, Anonymous, Lambda expressions	13	9
6	**Java Streams API** This topic describes Java Stream API, processing stream pipelines, Implementing functional interfaces using Lambda expressions, understanding parallel stream processing **Handle Exceptions and Fix Bugs** This topic covers using Java logging API, describe exception and error type, creating custom exceptions, working with try/catch/finally syntax, Throw exception and [ass exceptions to invokers, implementing try with parameters, using debugger, testing the code with assertions	15	11
7	**Java IO API** This topic describes Java IO, reading and writing text and binary data, using Java Serialization, Working with the file system **Java Concurrency and Multithreading** This topic describes multithreading, managing thread life cycle and execution order, automating management and execution of concurrent tasks, ensuring thread-safety using volatile variables, atomic actions and locks	12	8
8	**Java Modules** This topic covers comparison between modular and non-modular Java application, describing Java Platform Module System (JPMS), creating modules dependencies, defining and using module services, creating runtime images, deploy and execute modular Java application **Java Advance Topics** **Annotation:** Understanding Annotations, creating custom annotation, dynamically discover annotations	15	11

	JDBC: JDBC API structure, managing database connections and execute SQL statements, processing query result **Java Security:** security policies and code protection, protecting sensitive data, discovering and document security issues **Advance Generics:** understanding Generic erasure, using generics with wildcards **Oracle Cloud Deployment:** describing Cloud Application Design principals, deploy Java SE application to Oracle Cloud"		

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

Tutorials:

List of Practical's

1) Manipulate Data with Primitive Types
2) Use the if/else and switch Constructs and a Ternary Operator
3) Explore String, StringBuilder and BigDecimal Objects and Format Numeric, Date and Time Values
4) Create the Product Management Application and Enhance the Product Class
5) Create Enumeration to Represent Product Rating and add Custom Constructors to the Product Class
6) Create Food and Drink Classes That Extend Product and Override Methods and Use Polymorphism, then Create Factory Methods
7) Design the Rateable Interface and Enable Products Review and Rating
8) Create Loop to Allow Multiple Reviews for the Product
9) Organize Products and Reviews into a HashMap, then Implement Review Sort and Product Search Features
10) Refactor ProductManger to use a Nested Class and Produce Customized Product Reports
11) Modify ProductManager to use Streams and Add Discount Per Rating Calculation
12) Use Exception Handling to Fix Logical Errors and add Text Parsing Operations

Reference Books:

1) Head First Java: A Brain-Friendly Guide 3ed: by Kathy Sierra, Bert Bates, Trisha Gee: O'Reilly Media
2) Java: A Beginner's Guide, Eighth Edition 8th Edition : by Herbert Schildt ; McGraw Hill;
3) Oracle Official Java 11 Documentation: https://docs.oracle.com/en/java/javase/11/

Course Outcome:

After completing this course, student should able to:

- Describe the object-oriented programming approach
- Explain Java syntax and coding conventions
- Use Java constructs and operators
- Use core Java APIs, such as Collections, Streams, IO, and Concurrency
- Deploy Java SE application to Oracle Cloud

Course: B. Tech Semester:

Prerequisite: Familiarity with cybersecurity fundamentals and basic knowledge of networking, and operating systems.

Rationale: This course is designed to provide knowledge about the coverage of Vulnerability Assessment and Penetration Testing (VAPT) along with specialized areas such as cloud, database, wireless, social engineering, and smartphone penetration testing provides a holistic understanding of cybersecurity methodologies, tools, and techniques essential for identifying and mitigating security threats across diverse environments and technologies.

Teaching and Examination Scheme

Teaching Scheme					Examination Scheme					Total
					Internal Marks			External Marks		
Week	Theory Hrs/Week	Lab Hrs/Week	Hrs/Week	Credit	T	CE	P	T	P	
1	15	25	40							

SEE - Semester End Examination, **CIA** - Continuous Internal Assessment (It consists of Assignments/Seminars/Presentations/MCQ Tests, etc.)

Course Content

W - Weightage (%) , **T** - Teaching hours

Sr.	Topics	W	T
1	**Introduction to VAPT** Basic concepts of VAPT such as What, Why, and How we do, Cybersecurity Technologies: Threat and Vulnerability Assessment, Cloud Encryption, Zero Trust, Different Types of VAPT, Phases of VAPT, Pros and Cons of VAPT, Difference Between VA and PT, PT Tester, Types of Penetration Tester, Tools and Techniques Used in VAPT.**Penetration Testing Scoping and Engagement**: Defining Scope and Objectives, Rules of Engagement and Client Communication and Consent.	5	5
2	**Planning and Reconnaissance** Basic concept of Planning and Reconnaissance, Explain Types of Reconnaissance: Passive and Active Reconnaissance, Understand the two Different Passive Information Gathering methods: OSINT, Web Server and DNS passive information gathering (DNS lookups), Perform OS Fingerprinting, Tools for Passive Reconnaissance: Information Gathering through Google Database, Maltego, Recon-ng and Shodan, Active Information Gathering by using tools such as Netcat, Nikto, OpenVAS, Metasploit, MITRE ATT&CK and Burp Suite.	10	6
3	**Scanning & Enumeration** Understanding the Network Before Scanning, Gain a basic idea about the Vulnerability Scanning process, Understand the types of Vulnerability Scanning Perform Vulnerability Scanning with Nmap and Nessus, Reviewing Scan Reports, Web Application Vulnerability Scanning (OWASP Top 10) and also learn about the impact of these Vulnerabilities, Perform common enumeration techniques on web applications: debug web application source code, Enumerate and inspect Source codes, Cookies, and Headers, Bypassing Antivirus Software.	10	6
4	**Exploitation and Post- Exploitation** Understand the basic concept, When to exploit, Selecting targets, Recognizing exploits, Exploit resources, Explain types of exploits like public and fixed exploits, Using Nmap Scripting Engine (NSE scripts) for public exploitation, Fixing memory corruption: Explain the concept of buffer overflow, Fixing Web Application exploits: Troubleshoot common web application exploits issues. Understand the concept of Post-Exploitation, Phase of Post-Exploitations, and Gathering sensitive information, Dumping Passwords and Hashes, Intercepting Communications, Common Post-Exploit Attacks: Data Exfiltration, Rootkits, Credential theft, Backdoors, Lateral movement (Pass the Hash, Pass the ticket by using Mimikatz), Remote Access and Denial of Service, and Trojans Perform Post-Exploitations by using Bloodhound, Mimikatz and Empire.	20	6
5	**Privilege escalation and Escalating an Attack with Exploitation** **U**nderstand the concept of Privilege escalation, Explain the Different types of Privilege escalation, Understand the concept of XSS and also perform the privilege Escalation via Cross-Site Scripting. Overview of Metasploit Framework, Installing and Configuring Metasploit, Exploiting Vulnerabilities with Metasploit, Meterpreter Commands, Reporting and Communicating Results.	20	6

6	**Network and Wireless Penetration Testing** Introduction to Network Penetration Testing, Network Penetration Testing Methodology, Explain Different Network Penetration Testing Tools, Perform Network Penetration Testing by using nmap, Wireshark, Nessus and Burp Suite. Network Penetration Testing Challenges and Best Practices in Network Penetration Testing. Introduction to Wireless Penetration Testing, Wireless Penetration Testing Methodology, Explain Different Wireless Penetration Testing Tools, Perform Wireless Penetration Testing by using Aircrack-ng suite, Wireshark, Kismet, and Wifiphisher, Challenges and Best Practices in Wireless Penetration Testing.	**20**	**6**
7	**Social Engineering Penetration Testing** Introduction to Social Engineering Penetration Testing, Social Engineering Penetration Testing Methodology, Explain Different Social Engineering Penetration Testing Tools, Perform Social Engineering Penetration Testing by using SE ToolKit and MSFvenom, Challenges and Best Practices in Social Engineering Penetration Testing. **Recommending Remediation and Report Writing and Post Testing Actions** Employ Technical Controls, Administrative, Operational Controls, Physical Controls, Report Writing, Performing Post-Report Delivery Activities and Follow-Up Actions.	**15**	**5**

List of Practical's

1. Lab Setup for the Vulnerability Assessment and Penetration Testing.
2. Practical's on Reconnaissance
3. Performing Social Engineering using SET
4. Discovering Information using Nmap
5. Performing Vulnerability Scans and Analysis
6. Penetrating an Internal Network
7. Exploiting Web Authentication
8. Exploiting Weaknesses in a Website
9. Exploiting Weaknesses in a Database
10. Using SQL Injection
11. Performing an AitM Attack
12. Performing Password Attacks
13. Performing Post-Exploitation Activities
14. Solve CTF challenges with respect to information security.
15. Challenges to get root level access of the system and bypass it.
16. Practical's on Bypassing Firewall with the Help of Flagged TCP Packets

Reference Books

1. Penetration Testing: A Hands-On Introduction to Hacking by Georgia Weidman
2. Basic Security Testing with Kali Linux 2 by Daniel W. Dieterle
3. Practical Guide to Vulnerability Assessment and Penetration Testing (VAPT) by John Smith, Emily Jones, Michael Davis | Publisher: Cybersecurity Publications
4. Metasploit: The Penetration Tester's Guide" by David Kennedy, Jim O'Gorman

Course Outcome

After Learning the Course the students shall be able to:

After learning the course, the students should be able to:

1. Understanding the basic concepts of VAPT, including the What, Why, and How of Vulnerability Assessment and Penetration Testing, as well as various cybersecurity technologies like Threat and Vulnerability Assessment, Cloud Encryption, and Zero Trust.
2. Apply VAPT methodologies, tools, and techniques effectively, including planning and reconnaissance, scanning and enumeration, exploitation and post-exploitation, privilege escalation, network and wireless penetration testing, and social engineering penetration testing.
3. Analytical skills to review and interpret VAPT scan reports, identify vulnerabilities, assess risks, and prioritize remediation efforts based on the severity and impact of discovered vulnerabilities.
4. Create comprehensive VAPT reports, including findings, recommendations for remediation, and post-testing actions. They will also learn how to communicate these results effectively to stakeholders.
5. Apply technical controls, such as configuring firewalls, implementing intrusion detection systems, and patching vulnerabilities, to enhance network security and mitigate risks.
6. Understanding of best practices in VAPT, including ethical considerations, adherence to rules of engagement, client communication and consent, and post-testing actions to ensure continuous improvement of security posture.

NPTEL / Swayam / MOOCs Courses List and Details

1. Computer Network – 303105255 will be handled by NPTEL MOOC
(Compulsory for all the students to Register and Appear for the Exam and Clear it)

Details of Value-added courses and Professional courses

1. Value Added Course on Microsoft AZ900, PL900 (Global Certification) for students and faculties both.

Student Chapter / Council Details and Planned Activity

1. Student Chapter – AWS Academy

Co-curricular and extra-curricular events during the semester

1. NSS Activities like Plantation, Books & Clothes Donation.

Details of visits planned during semester

1. Visit to Adani (Project Udaan / Rishabh Software, Vadodara/VMC, Vadodara/Balaji Wafers, Rajkot) in February 2025

Details of Expert Talk / Workshop during the semester

1. 2 Days Hands-on Workshop on iOS Application Development using Swift.

Flagship Events of Concerned Institute, Faculty and University

1. PU Code Hackathon in January 2025
2. Tech Expo 2025 in February 2025
3. DHOOM – 2025 in March 2025

Prominent academic competition (Outside PU)

1. Participation in SIH – Smart India Hackathon 2025

Departmental Committee Coordinators

Sr. No	Committee	Name of Coordinator
1	Internal Affairs	Dr. Dhaval Nimavat(HoD)
2	Time Table	Akruti Pandwal
3	Exam (Weekly, Mid & ESE)	Sudheer Kumar
4	Internal Quality Assurance Cell	Abhirup Sinha
5	Anti Ragging	Aritra Bhattacharya
6	Women Development Cell	Anusha Marda
7	Centre of International Relations (IRC) & International Affairs	Sumit Bumbak
8	PUMIS	Akruti Pandwal
9	Research & Faculty Development	Sharad Salunke
10	Board of Studies (BoS)	CHANDR SHEKHAR
11	Mentoring	CHANDR SHEKHAR
12	Innovation & Entrepreneurship Cell	Vicky Gupta
13	Scholarship	Prakash Maravi
14	Cultural & Co-curricular	Anusha Marda
15	GATE, IELTS, TOEFL Coaching	SUDHEER KUMAR IEP
16	Student Development (Workshops & Expert Talk)	Aritra Bhattacharya

Interaction of Various Media Platforms

Platforms	Links
Facebook	https://www.facebook.com/ParulUniversity
Instagram	https://www.instagram.com/paruluniversity/?hl=en
Linkedin	https://in.linkedin.com/school/paruluniversity/
Youtube	https://www.youtube.com/channel/UCeXQgKg0qhTKbNRi5hpIL9A
Dean Sir's WhatsApp channel	https://whatsapp.com/channel/0029VaAvUeYC6ZvoQ8cyox0x
MOOC Course-CN-Swayam NPTEL	https://onlinecourses.nptel.ac.in/noc22_cs19/preview