

VISION OF THE INSTITUTE

To Empower Students With Knowledge, Skills, And Ethical Values, Driving Innovation And Bridge Academic Excellence With Real-World Applications In Engineering Technology And Management.

MISSION OF THE INSTITUTE

1. To provide quality education in engineering technology and management through innovative teaching methodologies and industry collaboration.
2. To develop skilled professionals with strong ethical values, leadership qualities, and a problem-solving mindset.
3. To promote interdisciplinary learning through collaboration with industry, academia, and research institutions.
4. To build a strong alumni network that fosters mentorship, innovation and community engagement.

VISION OF THE DEPARTMENT

“Empowering Learners To Create Intelligent, Ethical, Impactful And Innovative Computing Solutions Through Computer Engineering”

MISSION OF THE DEPARTMENT

M1: Provide quality education in Computer Engineering through outcome-based learning, modern technologies, and practical experiences.

M2: Promote innovation, research, critical thinking, and entrepreneurship to develop intelligent computing solutions for real-world challenges.

M3: Foster ethical values, industry collaboration, lifelong learning, and social responsibility to prepare competent professionals for global needs.

~~Prasanna~~ Ghule ~~Anil~~
 Anjali Prof. A. A. Thakur
 A. K. Bawankule ~~Prof. S. S. Shetkar~~
~~Prade~~ Prof. K. R. Sawade Anjali
 A. K. Bawankule
 @Bomble
 C. A. Bomble

Apply ethical principles, professional responsibilities, and legal standards while developing and deploying computing solutions.

PO7: Communication and Teamwork

Communicate effectively with technical and non-technical stakeholders and collaborate efficiently in multidisciplinary teams.

PO8: Leadership and Project Management

Demonstrate leadership, project management, entrepreneurship, and decision-making skills in professional and organizational sustainability.

PO9: Lifelong Learning

Recognize the importance of lifelong learning and continuously upgrade technical knowledge and professional skills to adapt to evolving computing technologies.

PO10: Innovation and Entrepreneurship

Demonstrate creativity, innovation, and entrepreneurial skills to identify opportunities and develop technology-driven solutions for real-world problems.

PO11: Continuous Learning

Pursue Lifelong Learning and Continuously enhance technical expertise and professional competencies to keep pace with advancements in computing technologies.

Program Specific Outcomes (PSOs)

PSO1

Apply core concepts of Computer Engineering and emerging technologies to analyze, design, develop, and deploy intelligent, secure, and efficient computing solutions for real-world applications.

PSO2

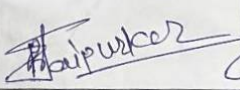
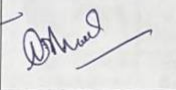
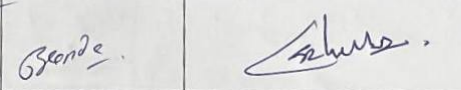
Demonstrate professional competence through innovation, ethical practices, research, teamwork, entrepreneurship, and lifelong learning to address societal and industrial challenges.

Demonstrate professional competence through innovation, ethical practices, research, teamwork, entrepreneurship, and lifelong learning to address societal and industrial challenges.

SANMARG SHIKSHAN SANSTHA'S
SMT. RADHIKATAI PANDAV COLLEGE OF ENGINEERING, BHANDARA
AN AUTONOMOUS INSTITUTE
B.TECH. CREDIT STRUCTURE

All BOS Chairman's of various departments are advised to maintain the credit structure of different semesters as given below
Computer Engineering and Computer Science & Engineering (Choice Based Credit System)

Semester	Total credits	BSC	ESC	PCC	PEC	MDM	OE	VSEC	AEC	ENTR/ ECO/ MANAG.	IKS	VEC	RM	C/PEP	PROJECT	INTER/ OJT	CC	Cumulative credit
B.Tech.-I SEM	22	7	9	-	-	-	-	2	2	-	-	-	-	-	-	-	2	22
B.Tech.-II SEM	22	8	6	2	-	-	-	2	-	-	2	-	-	-	-	-	2	44
B.Tech.-III SEM	21	-	-	10	-	2	3	-	-	2	-	2	-	2	-	-	-	65
B.Tech.-IV SEM	23	-	-	10	-	2	3	2	2	2	-	2	-	-	-	-	-	88
B.Tech.-V SEM	19	-	-	10	4	3	2	-	-	-	-	-	-	-	-	-	-	107
B.Tech.-VI SEM	21	-	-	8	8	3	-	2	-	-	-	-	-	-	-	-	-	128
B.Tech.-VII SEM	20	-	-	4	8	-	-	-	-	-	-	-	4	-	4	-	-	148
B.Tech.-VIII SEM	16	-	-	-	-	4	-	-	-	-	-	-	-	-	-	12	-	164
TOTAL CREDIT S	164	15	15	44	20	14	8	8	4	4	2	4	4	2	4	12	4	164

					
BOS Chairperson	Academic Dean	Nominee By Vice Chancellor	Subject Experts From Outside Parent University	Industrial Expert	Alumni

SMT. RADHIKATAI PANDAV COLLEGE OF ENGINEERING, NAGPUR 40034

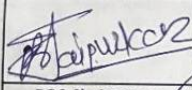
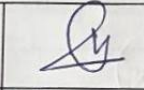
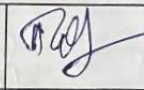
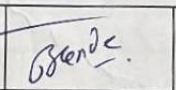
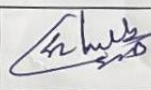
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Teaching Scheme of Examination for

B.Tech. Semester-I Computer Engineering-NEP (Choice Based Credit System)

B.Tech. Semester-I Computer Engineering-NEP (Choice Based Credit System)																		
Sr. No.	Course Category	Course Code	Name of Course	BoS	Teaching Scheme(hrs.)			Total Hrs per Week	Total Credits	Examination Scheme								
					L	T	P			Theory				Practical			Min passing marks	Total Marks
										Exam. Hrs	CIE	ESE	Total	CIE	ESE	Total		
1	BSC-I	BT1CE01T	Engineering Mathematics-I	ASH	3	—	—	3	3	3	40	60	100	—	—	—	50	100
2	BSC-II	BT1CE02T	Applied Chemistry	ASH	3	—	—	3	3	3	40	60	100	—	—	—	50	100
3	BSC-II	BT1CE02P	Applied Chemistry (Lab)	ASH	—	—	2	2	1	—	—	—	—	25	25	50	25	50
4	ESC-I	BT1CE03T	Fundamentals of C Programming	CE&CSE	3	-	—	3	3	3	40	60	100	—	—	—	50	100
5	ESC-I	BT1CE03P	Fundamentals of C Programming (Lab)	CE&CSE	—	—	2	2	1	—	—	—	—	25	25	50	25	50
6	ESC-II	BT1CE04P	Integrated Computer Workshop (Lab)	CE&CSE	—	—	2	2	1	—	—	—	—	25	25	50	25	50
7	ESC-III	BT1CE05T	Basic of Electrical and Electronics Engineering	ETC	3	—	—	3	3	3	40	60	100	—	—	—	50	100
8	ESC-III	BT1CE05P	Basic of Electrical and Electronics Engineering (Lab)	ETC	—	—	2	2	1	—	—	—	—	25	25	50	25	50
9	VSEC-I	BT1CE06P	Web Design Technology (Lab)	CE& CSE	—	—	4	4	2	—	—	—	—	50	50	100	50	100
10	AEC-I	BT1CE07T	Communication Skill	ASH	2	—	—	2	2	2	20	30	50	—	—	—	25	50
11	CC-I	BT1CE08P	Refer CC- I Basket	ASH	—	—	4	4	2	—	—	—	—	100	—	100	50	100
			Total		14		16	30	22		180	270	450	250	150	400		850

Total Credits B-tech -I sem =22

						
BOS Chairperson	Academic Dean	Expert Nominated by Vice-Chancellor	Subject Experts From Outside Parent University	Subject Experts From Outside Parent University	Representative From Industry/Corporate/Allied	Member of the college Alumni

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Email: admin@srpce.ac.in Website: www.srpce.ac.in

B.Tech. Semester-I Computer Engineering (NEP) (Choice Based Credit System)**List of HSSM-I Course (Humanities Social Science and Management):- AEC-I Course**

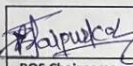
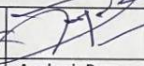
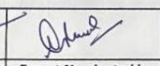
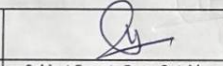
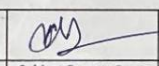
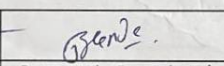
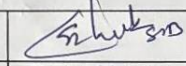
Course Category	Course Code	Name of Course	Total Credits	Semester
Ability Enhancement Course (AEC-I)	BT1CE07T	Communication Skill	2	I

List of VSEC-I Course (Vocational and Skill Enhancement Course):- VSC-I (Vocational Skill Course).

Course Category	Course Code	Name of Course	Total Credits	Semester
Vocational Skill Enhancement Course (VSEC-I)	BT1CE06P	Web Design Technology (Lab)	2	I

List of CC-I Basket (Liberal Learning Courses).

Course Category	Course Code	Name of Course	Total Credits	Semester
Liberal Learning Courses (CC-I)	BT1CE08P	National Social Services (NSS)	2	I
	BT1CE08P	Games & Sports	2	
	BT1CE08P	Cultural Activities	2	
	BT1CE08P	Yoga	2	
	BT1CE08P	Elements of Japanese	2	
	BT1CE08P	Elements of German	2	
	BT1CE08P	Elements of French	2	
	BT1CE08P	Elements of Spanish	2	

						
BOS Chairperson	Academic Dean	Expert Nominated by Vice-Chancellor	Subject Experts From Outside Parent University	Subject Experts From Outside Parent University	Representative From Industry/Corporate/Allied Sector	Member of the college Alumni

SMT. RADHIKATAI PANDAV COLLEGE OF ENGINEERING, NAGPUR-440034

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Teaching Scheme of Examination for

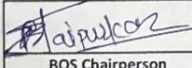
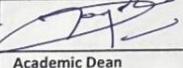
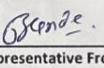
B.Tech. Semester-II Computer Engineering-NEP (Choice Based Credit System)

B.Tech. Semester-II Computer Engineering-NEP (Choice Based Credit System)																		
Sr. No.	Course Category	Course Code	Name of Course	BoS	Teaching Scheme(hrs.)			Total Hrs per Week	Total Credits	Examination Scheme								
					L	T	P			Exam.Hrs.	Theory			Practical			Min Passing Marks	Total Marks
											CIE	ESE	Total	CIE	ESE	Total		
1	BSC-III	BT2CE01T	Probability AND statistics	ASH	3		—	3	3	3	40	60	100	—	—	—	50	100
2	BSC-III	BT2CE01P	Probability AND statistics (Lab)	ASH	—	—	2	2	1	—	—	—	—	25	25	50	25	50
3	BSC-IV	BT2CE02T	Applied Physics	ASH	3	—	—	3	3	3	40	60	100	—	—	—	50	100
4	BSC-IV	BT2CE02P	Applied Physics (Lab)	ASH	—	—	2	2	1	—	—	—	—	25	25	50	25	50
5	ESC-IV	BT2CE03T	Python programming language	CE&CSE	3	—	—	3	3	3	40	60	100	—	—	—	50	100
6	ESC-IV	BT2CE03P	Python programming language (Lab)	CE&CSE	—	—	2	2	1	—	—	—	—	25	25	50	25	50
7	ESC-V	BT2CE04T	Principle Of Digital Electronics	ETC	2	—	—	2	2	2	20	30	50	—	—	—	25	50
8	PCC-I	BT2CE05T	Computer Architecture and Organization	CE&CSE	2	—	—	2	2	2	20	30	50	—	—	—	25	50
9	IKS-I	BT2CE06T	Refer IKS Basket	ASH	2	—	—	2	2	2	20	30	50	—	—	—	25	50
10	VSEC-II	BT2CE07P	Refer VSEC-II Basket	CE&CSE	—	—	4	4	2	—	—	—	—	50	50	100	50	100
11	CC-II	BT2CE08P	Refer CC-II Basket	ASH	—	—	4	4	2	—	—	—	—	100	—	100	50	100
Total					15		14	29	22		180	270	450	225	125	350		800

Total Credits B.tech -II Sem = 22

Cummulative Total Credits till B.Tech. II Semester=44

Exit Option:An Additional 8 credits as per exit basket

 BOS Chairperson	 Academic Dean	 Expert Nominated by Vice-Chancellor	 Subject Experts From Outside Parent University	 Subject Experts From Outside Parent University	 Representative From Industry/Corporate/Allied Sector	 Member of the college Alumni
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B.Tech. Semester-II Computer Engineering NEP (Choice Based Credit System)

List of Indian Knowledge System Courses (IKS)

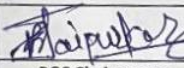
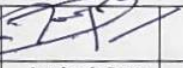
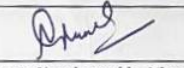
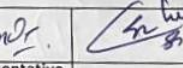
Course Category	Course Code	Name of Subject	Credits	Semester
Indian Knowledge System (IKS)	BTCE06T	Consciousness Studies	2	II SEM
	BTCE06T	Preserving Art, Cultural & Traditional	2	
	BTCE06T	Wellness, Tradition Medicines &	2	
	BTCE06T	Glimses of Ancient Science &	2	

List of VSEC-II (Vocational Skill Enhancement Courses)

Course Category	Course Code	Name of Subject	Credits	Semester
Vocational Skill Enhancement Courses VSEC-II	BT2CE07P	Linux and Shell Programming	2	II SEM
	BT2CE07P	Digital Marketing	2	

List of CC-II Basket (Liberal Learning Courses).

Course Category	Course Code	Name of Subject	Credits	Semester
Liberal Learning Courses(CC-II)	BT2CE08P	National Social Services(NSS)	2	II SEM
	BT2CE08P	Games & Sports	2	
	BT2CE08P	Cultural Activities	2	
	BT2CE08P	Yoga	2	
	BT2CE08P	Elements of Japanese Language(NPTEL Online)	2	
	BT2CE08P	Elements of German Language(NPTEL Online)	2	
	BT2CE08P	Elements of French Language(NPTEL Online)	2	
	BT2CE08P	Elements of Spanish Language(NPTEL Online)	2	

						
BOS Chairperson	Academic Dean	Expert Nominated by Vice-Chancellor	Subject Experts From Outside Parent University	Subject Experts From Outside Parent University	Representative From Industry/Corporate/Allied Sector	Member of the college Alumni

SMT. RADHIKATA PANDAV COLLEGE OF ENGINEERING, NAGPUR-440034

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Teaching Scheme of Examination for

B.Tech. Semester-III Computer Engineering-NEP (Choice Based Credit System)

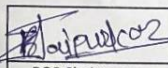
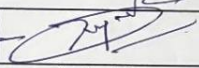
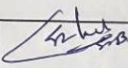
Sr. No.	Course Category	Course Code	Name of Course	BoS	Teaching Scheme(hrs.)			Total Hrs per Week	Total Credits	Examination Scheme								
					L	T	P			Exam. Hrs.	Theory			Practical			Min Passing Marks	Total Marks
											CIE	ESE	Total	CIE	ESE	Total		
1	PCC-II	BT3CE01T	Data Structure	CE&CSE	3	—	—	3	3	3	40	60	100	—	—	—	50	100
2	PCC-II	BT3CE01P	Data Structure (Lab)	CE&CSE	—	—	2	2	1	—	—	—	—	25	25	50	25	50
3	PCC-III	BT3CE02T	Object-Oriented Programming with Java	CE&CSE	3	—	—	3	3	3	40	60	100	—	—	—	50	100
4	PCC-III	BT3CE02P	Object-Oriented Programming with Java (Lab)	CE&CSE	—	—	2	2	1	—	—	—	—	25	25	50	25	50
5	PCC-IV	BT3CE03T	Operating System	CE&CSE	2	—	—	2	2	2	20	30	50	—	—	—	25	50
6	MDM-I	BT3CE04T	Refer MDM Basket *	CE&CSE	2	—	—	2	2	2	20	30	50	—	—	—	25	50
7	OE-I	BT3CE05T	(Open Elective) Refer OE-I Basket **	MBA	3	—	—	3	3	3	40	60	100	—	—	—	50	100
8	HSSM-I	BT3CE06T	Startup and Business development	MBA	2	—	—	2	2	2	20	30	50	—	—	—	25	50
9	VEC-I	BT3CE07T	Constitution of India	CE&CSE	2	—	—	2	2	2	20	30	50	—	—	—	25	50
10	CEP	BT3CE08P	Community Engagement Project	CE&CSE	—	—	4	4	2	—	—	—	—	50	50	100	50	100
Total					17		8	25	21		200	300	500	100	100	200		700

Total Credits B.tech -III Sem = 21

*** Select MDM Basket From Other than CE,CSE & AIDS**

Cummulative Total Credits till B.Tech. III Semester=65

****Refer OE Basket**

						
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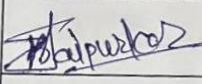
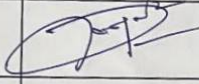
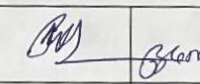
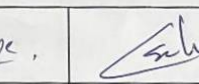
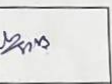
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B.Tech. Semester-III Computer Engineering NEP (Choice Based Credit System)

Open Elective-I Basket (Theory & Practical)

Course Category	Course Code	Name of Subject	Credits	Semester
Open Elective -I(OE-I)	BT3CE05T	Principles of Management	3	III Sem
Open Elective -II(OE-II)	BT4CE05T	Stress Management	3	IV Sem
Open Elective -III(OE-III)	BT5CE06T	IPR Development& Training	2	V Sem

						
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SMT. RADHIKATAI PANDAV COLLEGE OF ENGINEERING, NAGPUR-440034

An Autonomous Institute

Teaching Scheme of Examination for

B.Tech. Semester-IV Computer Engineering-NEP (Choice Based Credit System)

B.Tech. Semester-IV Computer Engineering-NEP (Choice Based Credit System)																		
Sr. No.	Course Category	Course Code	Name of Course	BoS	Teaching Scheme(hrs.)			Total Hrs per Week	Total Credits	Examination Scheme								
					L	T	P			Exam .Hrs.	Theory			Practical			Min Passing Marks	Total Marks
											CIE	ESE	Total	CIE	ESE	Total		
1	PCC-V	BT4CE01T	Computer Network	CE&CSE	3	—	—	3	3	3	40	60	100	—	—	—	50	100
2	PCC-V	BT4CE01P	Computer Network (Lab)	CE&CSE	—	—	2	2	1	—	—	—	—	25	25	50	25	50
3	PCC-VI	BT4CE02T	Introduction to Data Science	CE&CSE	3	—	—	3	3	3	40	60	100	—	—	—	50	100
4	PCC-VI	BT4CE02P	Introduction to Data Science (Lab)	CE&CSE	—	—	2	2	1	—	—	—	—	25	25	50	25	50
5	PCC-VII	BT4CE03T	Theory of Computation	CE&CSE	2	—	—	2	2	2	20	30	50	—	—	—	25	50
6	MDM-II	BT4CE04T	Refer MDM Basket *	CE&CSE	2	—	—	2	2	2	20	30	50	—	—	—	25	50
7	OE-II	BT4CE05T	(Open Elective-II) Refer OE-II Basket **	MBA	3	—	—	3	3	2	40	60	100	—	—	—	25	100
8	VSEC-III	BT4CE06P	FullStack Development Module-I(Lab)	CE&CSE	—	—	4	4	2	—	—	—	—	50	50	100	50	100
9	AEC-II	BT4CE07P	Aptitude Reasoning and SoftSkills (Lab)	ASH	—	—	4	4	2	—	—	—	—	50	50	100	50	100
10	HSSM-II	BT4CE08T	Fundamental of Economics and Management	MBA	2	—	—	2	2	2	20	30	50	—	—	—	25	50
11	VEC-II	BT4CE09T	Universal Human Values	ASH	2	—	—	2	2	2	20	30	50	—	—	—	25	50
			Total		17		12	29	23		200	300	500	150	150	300		800

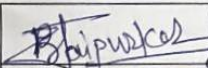
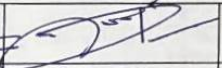
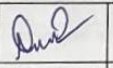
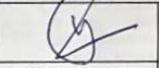
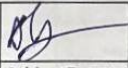
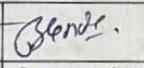
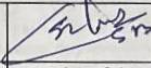
Total Credits B.tech -IV Sem = 23

Exit Option:An Additional 8 credits as per exit basket

* Select MDM Basket From Other than CE,CSE&AIDS

Cummulative Total Credits till B.Tech. IV Semester=88

**Refer OE Basket

						
BOS Chairperson	Academic Dean	Expert Nominated by Vice-Chancellor	Subject Experts From Outside Parent University	Subject Experts From Outside Parent University	Representative From Industry/Corporate/Allied Sector	Member of the college Alumni

SMT. RADHIKATAI PANDAV COLLEGE OF ENGINEERING, NAGPUR

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B.Tech. Semester-IV Computer Engineering NEP (Choice Based Credit System)**Open Elective -II Basket**

Course Category	Course Code	Name of Subject	Credits	Semester
Open Elective -I	BT3CE05T	Principles of Management	3	III SEM
Open Elective -II	BT4CE05T	Stress Management	3	IV SEM
Open Elective -III	BT5CE06T	IPR Development& Training	2	V SEM

Vocational & skill Enhancement Courses Category:- VSEC-III Basket

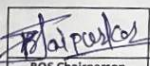
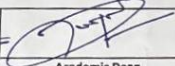
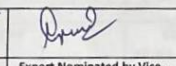
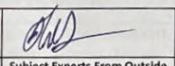
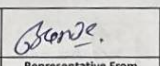
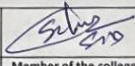
Course Category	Course Code	Name of Subject	Credits	Semester
VSEC-III	BT4CE06P	Fullstack Development Module-I(Lab)	2	IV SEM

AEC(Ability Enhancement Course)-II

Course Category	Course Code	Name of Subject	Credits	Semester
AEC-II	BT4CE07P	Aptitude Reasoning and SoftSkills (Lab)	2	IV SEM

HSSM- Course (Humanities Social Science and Management): II

Course Category	Course Code	Name of Subject	Credits	Semester
HSSM- II	BT4CE08T	Fundamental of Economics and Management	2	IV SEM

 BOS Chairperson	 Academic Dean	 Expert Nominated by Vice-Chancellor	 Subject Experts From Outside Parent University	 Subject Experts From Outside Parent University	 Representative From Industry/ Corporate/Allied Sector	 Member of the college Alumni
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SMT. RADHIKATA PANDAV COLLEGE OF ENGINEERING, NAGPUR-440034

An Autonomous Institute

Teaching Scheme of Examination for

B.Tech. Semester-V Computer Engineering-NEP (Choice Based Credit System)

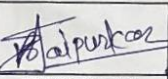
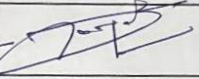
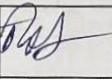
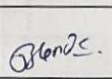
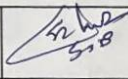
Sr. No.	Course Category	Course Code	Name of Course	BoS	Teaching Scheme(hrs)			Total Hrs per Week	Total Credits	Examination Scheme									
					L	T	P			Exam. Hrs.	Theory			Practical			Min Passing Marks	Total Marks	
											CIE	ESE	Total	CIE	ESE	Total			
1	PCC-VIII	BT5CE01T	Database Management System	CE&CSE	3	—	—	3	3	3	40	60	100	—	—	—	50	100	
2	PCC-VIII	BT5CE01P	Database Management System (Lab)	CE&CSE	—	—	2	2	1	—	—	—	—	25	25	50	25	50	
3	PCC-IX	BT5CE02T	Design & Analysis of Algorithm	CE&CSE	3	—	—	3	3	3	40	60	100	—	—	—	50	100	
4	PCC-IX	BT5CE02P	Design & Analysis of Algorithm (Lab)	CE&CSE	—	—	2	2	1	—	—	—	—	25	25	50	25	50	
5	PCC-X	BT5CE03T	Compiler Design	CE&CSE	2	—	—	2	2	2	20	30	50	—	—	—	25	50	
6	PEC-I	BT5CE04T	Program Elective-I	CE&CSE	3	—	—	3	3	3	40	60	100	—	—	—	50	100	
7	PEC-I	BT5CE04P	Program Elective-I (Lab)	CE&CSE	—	—	2	2	1	—	—	—	—	25	25	50	25	50	
8	MDM-III	BT5CE05T	Refer MDM Basket *	CE&CSE	3	—	—	3	3	3	40	60	100	—	—	—	50	100	
9	OE-III	BT5CE06T	(Open Elective-III)Refer OE-III Basket **	MBA	2	—	—	2	2	2	20	30	50	—	—	—	25	50	
Total						16		6	22	19		200	300	500	75	75	150		650

Total Credit B. Tech-V Sem = 19

Cummulative Total Credits till B.Tech. V Semester=107

*** Select MDM Basket From Other than CE,CSE&AIDS**

****Refer OE Basket**

						
BOS Chairperson	Academic Dean	Expert Nominated by Vice-Chancellor	Subject Experts From Outside Parent University	Subject Experts From Outside Parent University	Representative From Industry/Corporate/Allied Sector	Member of the college Alumni

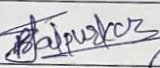
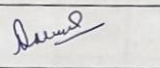
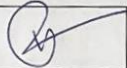
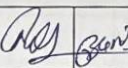
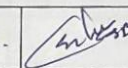
SMT. RADHIKATAI PANDAV COLLEGE OF ENGINEERING, NAGPUR

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B.Tech. Semester-V Computer Engineering NEP (Choice Based Credit System)

Programme Elective Courses -I:- PEC-I Basket				
Course Category	Course Code	Name of Subject	Credits	Semester
Programme Elective Courses -I (PEC-I)	BT5CE04T	Data Visualization Techniques	3	V Sem
	BT5CE04P	Data Visualization Techniques (Lab)	1	
	BT5CE04T	Computer Graphics	3	
	BT5CE04P	Computer Graphics (Lab)	1	
	BT5CE04T	Cloud Computing	3	
	BT5CE04P	Cloud Computing (Lab)	1	

Open Elective -III:- OE-III Basket				
Course Category	Course Code	Name of Subject	Credits	Semester
Open Elective -I (OE-I)	BT3CE05T	Principles of Management	3	III Sem
Open Elective -II (OE-II)	BT4CE05T	Stress Management	3	IV Sem
Open Elective -III (OE-III)	BT5CE06T	IPR Development& Training	2	V Sem

						
BOS Chairperson	Academic Dean	Expert Nominated by Vice-Chancellor	Subject Experts From Outside Parent University	Subject Experts From Outside Parent University	Representative From Industry/Corporate/Allied Sector	Member of the college Alumni

SMT. RADHIKATA RANAV COLLEGE OF ENGINEERING, NAGPUR 440034
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Teaching Scheme of Examination for
B.Tech. Semester-VI Computer Engineering-NEP (Choice Based Credit System)

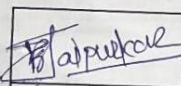
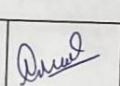
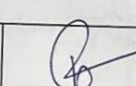
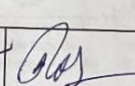
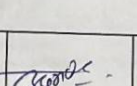
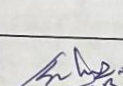
B.Tech. Semester-VI Computer Engineering-NEP (Choice Based Credit System)																		
Sr. No.	Course Category	Course Code	Name of Course	BoS	Teaching Scheme(hrs.)			Total Hrs per Week	Total Credits	Examination Scheme								
					L	T	P			ExamHrs	Theory			Practical			Min Passing Marks	Total Marks
											CIE	ESE	Total	CIE	ESE	Total		
1	PCC-XI	BT6CE01T	Artificial Intelligence and Machine Learning	CE&CSE	3	—	—	3	3	3	40	60	100	—	—	—	50	100
2	PCC-XI	BT6CE01P	Artificial Intelligence and Machine Learning(Lab)	CE&CSE	—	—	2	2	1	—	—	—	—	25	25	50	25	50
3	PCC-XII	BT6CE02T	Cryptography and Network Security	CE&CSE	3	—	—	3	3	3	40	60	100	—	—	—	50	100
4	PCC-XII	BT6CE02P	Cryptography and Network Security(Lab)	CE&CSE	—	—	2	2	1	—	—	—	—	25	25	50	25	50
5	PEC-II	BT6CE03T	Program Elective-II	CE&CSE	3	—	—	3	3	3	40	60	100	—	—	—	50	100
6	PEC-II	BT6CE03P	Program Elective-II(Lab)	CE&CSE	—	—	2	2	1	—	—	—	—	25	25	50	25	50
7	PEC-III	BT6CE04T	Program Elective-III	CE&CSE	3	—	—	3	3	3	40	60	100	—	—	—	50	100
8	PEC-III	BT6CE04P	Program Elective-III(Lab)	CE&CSE	—	—	2	2	1	—	—	—	—	25	25	50	25	50
9	MDM-IV	BT6CE05T	Refer MDM Basket *	CE&CSE	3	—	—	3	3	3	40	60	100	—	—	—	50	100
10	VSEC-IV	BT6CE06P	Fullstack Development Module-II(Lab)	CE&CSE	—	—	4	4	2	—	—	—	—	50	50	100	50	100
			Total		15		12	27	21		200	300	500	150	150	300		800
Total Credits B.Tech-VI Sem = 21																		

Total Credits B.Tech-VI Sem = 21

Exit Option: An Additional 8 credits as per exit basket

* Select MDM Basket From Other than CE, CSE & AIDS

Cummulative Total Credits till B.Tech. VI Semester=128

						
BOS Chairperson	Academic Dean	Expert Nominated by Vice-Chancellor	Subject Experts From Outside Parent University	Subject Experts From Outside Parent University	Representative From Industry/Corporate/Allied Sector	Member of the college Alumni

SMT. RADHIKATAI PANDAV COLLEGE OF ENGINEERING, NAGPUR

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B.Tech. Semester-VI Computer Engineering NEP (Choice Based Credit System)

Programme Elective Courses - II : PEC-II (Theory & Practical) Basket

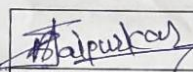
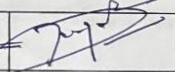
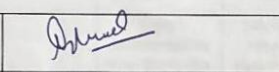
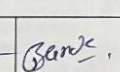
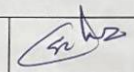
Course Category	Course Code	Name of Subject	Credits	Semester
Programme Elective Courses - II (PEC-II)	BT6CE03T	Software Testing And Quality Assurance	3	VI SEM
	BT6CE03P	Software Testing And Quality Assurance (Lab)	1	
	BT6CE03T	Natural Language Processing	3	
	BT6CE03P	Natural Language Processing (Lab)	1	
	BT6CE03T	Data Warehousing & Mining	3	
	BT6CE03P	Data Warehousing & Mining (Lab)	1	

Programme Elective Courses - III:- PEC-III (Theory & Practical) Basket

Course Category	Course Code	Name of Subject	Credits	Semester
Programme Elective Courses - III(PEC-III)	BT6CE04T	Block Chain	3	VI SEM
	BT6CE04P	Block Chain (Lab)	1	
	BT6CE04T	Data Analytic	3	
	BT6CE04P	Data Analytic (Lab)	1	
	BT6CE04T	Cyber Security	3	
	BT6CE04P	Cyber Security (Lab)	1	

Vocational Skill Enhancement Courses -IV:- VSEC-IV Basket

Course Category	Course Code	Name of Subject	Credits	Semester
Vocational Skill Enhancement Courses -IV	BT6CE06P	Fullstack Development Module-II(Lab)	2	VI SEM

						
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SMT. RADHIKATA PANDAV COLLEGE OF ENGINEERING, NAGPUR-440034

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Teaching Scheme of Examination for

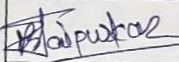
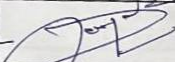
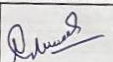
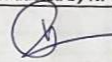
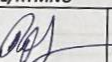
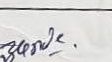
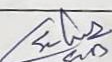
B.Tech. Semester-VII Computer Engineering-NEP (Choice Based Credit System)

Sr. No.	Course Category	Course Code	Name of Course	BoS	Teaching Scheme(hrs.)			Total Hrs per Week	Total Credits	Examination Scheme								
					L	T	P			Exam. Hrs.	Theory			Practical			Min Passing Marks	Total
											CIE	ESE	Total	CIE	ESE	Total		
1	PCC-XIII	BT7CE01T	Cloud Computing	CE&CSE	3	—	—	3	3	3	40	60	100	—	—	—	50	100
2	PCC-XIII	BT7CE01P	Cloud Computing(Lab)	CE&CSE	—	—	2	2	1	—	—	—	—	25	25	50	25	50
3	PEC-IV	BT7CE02T	Program Elective-IV	CE&CSE	3	—	—	3	3	3	40	60	100	—	—	—	50	100
4	PEC-IV	BT7CE02P	Program Elective-IV (Lab)	CE&CSE	—	—	2	2	1	—	—	—	—	25	25	50	25	50
5	PEC-V	BT7CE03T	Program Elective-V	CE&CSE	3	—	—	3	3	3	40	60	100	—	—	—	50	100
6	PEC-V	BT7CE03P	Program Elective-V (Lab)	CE&CSE	—	—	2	2	1	—	—	—	—	25	25	50	25	50
7	RM	BT7CE04T	Research Methodology #	CE&CSE	3	—	—	3	3	3	40	60	100	—	—	—	50	100
8	RM	BT7CE04P	Research Methodology LAB)#	CE&CSE	—	—	2	2	1	—	—	—	—	25	25	50	25	50
9	PROJECT	BT7CE05P	Major Project	CE&CSE	—	—	8	8	4	—	—	—	—	100	100	200	200	200
Total					12		16	28	20		160	240	400	200	200	400		800

Total Credits B.tech -VII Sem = 20

Cummulative Total Credits till B.Tech. IV Semester=148

Indicates that online courses to be done from NPTEL Examination will be conducted by NPTEL/RTMNU

						
BOS Chairperson	Academic Dean	Expert Nominated by Vice-Chancellor	Subject Experts From Outside Parent University	Subject Experts From Outside Parent University	Representative From Industry/Corporate/Allied Sector	Member of the college Alumni

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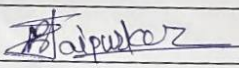
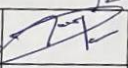
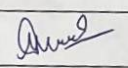
B.Tech. Semester-VII Computer Engineering NEP (Choice Based Credit System)

Programme Elective Courses-IV:- PEC-IV (Theory & Practical) Basket

	Course Code	Name of Subject	Credits	Semester
Programme Elective Courses-IV (PEC-IV)	BT7CE02T	System Administration GPU Computing	3	VII SEM
	BT7CE02P	System Administration GPU Computing(Lab)	1	
	BT7CE02T	Generative Artificial Intelligence	3	
	BT7CE02P	Generative Artificial Intelligence (Lab)	1	
	BT7CE02T	Advance Operating System	3	
	BT7CE02P	Advance Operating System (Lab)	1	

Programme Elective Courses-V:- PEC-V (Theory & Practical) Basket

Course Category	Course Code	Name of Subject	Credits	Semester
Programme Elective Courses-V (PEC-V)	BT7CE03T	Optimization Techniques	3	VII SEM
	BT7CE03P	Optimization Techniques (Lab)	1	
	BT7CE03T	Reinforcement Learning	3	
	BT7CE03P	Reinforcement Learning (Lab)	1	
	BT7CE03T	Salesforce Technology	3	
	BT7CE03P	Salesforce Technology (Lab)	1	

						
BOS Chairperson	Academic Dean	Expert Nominated by Vice-Chancellor	Subject Experts From Outside Parent University	Subject Experts From Outside Parent University	Representative From Industry/Corporate/Allied Sector	Member of the college Alumni

SMT. RADHIKATAI PAWAR AV COLLEGE OF ENGINEERING, NAGPUR-44003
An Autonomous Institute

Teaching Scheme of Examination for
B.Tech. Semester-VIII Computer Engineering-NEP (Choice Based Credit System)

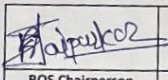
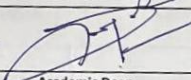
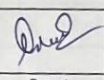
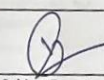
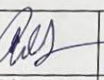
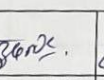
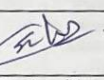
Sr. No.	Course Category	Course Code	Name of Course	BoS	Teaching Scheme(hrs.)			Total Hrs per Week	Total Credits	Examination Scheme								
					L	T	P			Exam. Hrs.	Theory			Practical			Min Passing Marks	Total
											CIE	ESE	Total	CIE	ESE	Total		
1	MDM-V	BT8CE01T	Refer MDM Basket* #	CE&CSE	2	—	—	2	2	2	20	30	50	—	—	—	25	50
2	MDM-VI	BT8CE02T	Refer MDM Basket* #	CE&CSE	2			2	2	2	20	30	50	—	—	—	25	50
3	OJT	BT8CE03P	Internship	CE&CSE	—	—	24	24	12	—	—	—	—	200	200	400	200	400
			Total		4		24	28	16		40	60	100	200	200	400	250	500

Total Credits B.tech -VIII Sem = 16

Cummulative Total Credits till B.Tech. VIII Semester=164

* Select MDM Basket From Other than CE,CSE&AIDS

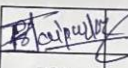
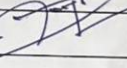
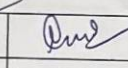
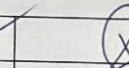
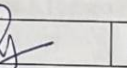
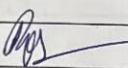
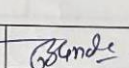
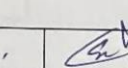
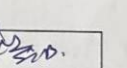
Indicates that online courses to be done from NPTEL Examination will be conducted by NPTEL/RTMNU

						
BOS Chairperson	Academic Dean	Expert Nominated by Vice-Chancellor	Subject Experts From Outside Parent University	Subject Experts From Outside Parent University	Representative From Industry/Corporate/Allied Sector	Member of the college Alumni

SMT. RADHIKATAI PANDAV COLLEGE OF ENGINEERING, NAGPUR
An Autonomous Institution
B.Tech. Computer Engineering NEP (Choice Based Credit System)

Multidisciplinary Minor Course

Course Category	Course Code	Name of Subject	Credits	Semester	Applicable to Students
MDM-I	BT3CE04T	Data Structure	2	III	Civil, Electronics & Telecommunication, Mechanical, Electrical Engineering
MDM-II	BT4CE04T	Database Management system	2	IV	
MDM-III	BT5CE05T	Fundamental of Computer Network	3	V	
MDM-IV	BT6CE05T	Artificial Intelligence	3	VI	
MDM-V	BT8CE01T	Data Science	2	VIII	
MDM-VI	BT8CE02T	Cyber Security	2	VIII	

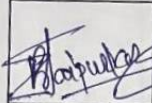
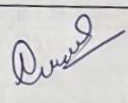
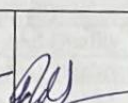
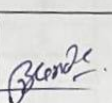
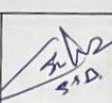
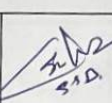
								
BOS Chairperson	Academic Dean	Expert Nominated by Vice-Chancellor	Subject Experts From Outside Parent University	Industrial Expert	Alumni			

SMT. RADHIKATAI PANDAV COLLEGE OF ENGINEERING, NAGPUR
An Autonomous Institution

B.Tech. Computer Engineering NEP (Choice Based Credit System)

Open Elective Course

Course Category	Course Code	Name of Subject	Credits	Semester
Open Elective -I	BT5CE06T	Principles of Management	3	III
Open Elective -II	BT5CE06T	Stress Management	3	IV
Open Elective -III	BT5CE06T	IPR Development& Training	2	V

						
BOS Chairperson	Academic Dean	Expert Nominated by Vice-Chancellor	Subject Experts From Outside Parent University	Subject Experts From Outside Parent University	Representati ve From Industry/ Corporate/Al lied Sector	Member of the college Alumni

SMT. RADHIKATAI PANDAV COLLEGE OF ENGINEERING, NAGPUR

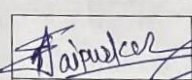
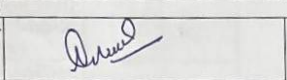
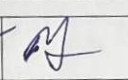
An Autonomous Institution

B.Tech. Computer Engineering NEP (Choice Based Credit System)

Programme Elective Courses - Basket

Course Category	Course Code	Name of Subject	Credits	Semester
Programme Elective Courses - I (PEC-I)	BT5CE04T	Data Visualization Techniques	3	V
	BT5CE04P	Data Visualization Techniques(Lab)	1	
	BT5CE04T	Computer Graphics	3	
	BT5CE04P	Computer Graphics(Lab)	1	
	BT5CE04T	Cloud Computing	3	
	BT5CE04P	Cloud Computing(Lab)	1	
Programme Elective Courses - II (PEC-II)	BT6CE03T	Software Testing And Quality	3	VI
	BT6CE03P	Software Testing And Quality	1	
	BT6CE03T	Natural Language Processing	3	
	BT6CE03P	Natural Language Processing	1	
	BT6CE03T	Data Warehousing & Mining	3	
	BT6CE03P	Data Warehousing & Mining(Lab)	1	
Programme Elective Courses - III (PEC-III)	BT6CE04T	Block Chain	3	
	BT6CE04P	Block Chain(Lab)	1	
	BT6CE04T	Data Analytic	3	
	BT6CE04P	Data Analytic(Lab)	1	
	BT6CE04T	Cyber Security	3	
	BT6CE04P	Cyber Security(Lab)	1	

Programme Elective Courses - IV (PEC-IV)	BT7CE02T	System Administration GPU	3	VII
	BT7CE02P	System Administration GPU	1	
	BT7CE02T	Generative Artificial	3	
	BT7CE02P	Generative Artificial	1	
	BT7CE02T	Advance Operating System	3	
	BT7CE02P	Advance Operating System(Lab)	1	
Programme Elective Courses - V (PEC-V)	BT7CE03T	Optimization Techniques	3	
	BT7CE03P	Optimization Techniques(Lab)	1	
	BT7CE03T	Reinforcement Learning	3	
	BT7CE03P	Reinforcement Learning(Lab)	1	
	BT7CE03T	Salesforce Technology	3	
	BT7CE03P	Salesforce Technology(Lab)	1	

						
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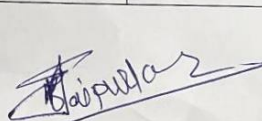
SMT. RADHIKATAI PANDAV COLLEGE OF ENGINEERING, NAGPUR
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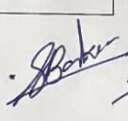
UGC Approved & Affiliated to Rashtrasant Tukdoji Maharaj Nagpur University, Nagpur
Email: admin@srpce.ac.in Website: www.srpce.ac.in

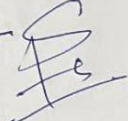
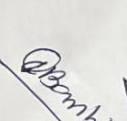
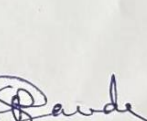
B.Tech. Computer Engineering NEP (Choice Based Credit System)

Programme Core Courses :- PCC Basket

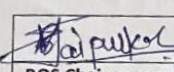
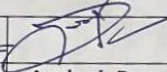
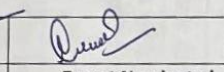
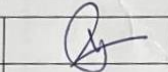
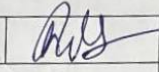
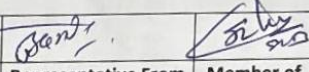
Course Category	Course Code	Name of Subject	Credits	Semester
(PCC-I)	BT2CE05T	Computer Architecture and Organization	2	II
(PCC-II)	BT3CE01T	Data Structure	3	III
	BT3CE01P	Data Structure (Lab)	1	
(PCC-III)	BT3CE02T	Object-Oriented Programming with Java	3	
	BT3CE02P	Object-Oriented Programming with Java (Lab)	1	
(PCC-IV)	BT3CE03T	Computer Network	2	IV
(PCC-V)	BT4CE01T	Operating System	3	
	BT4CE01P	Operating System (LAB)	1	
(PCC-VI)	BT4CE02T	Introduction to Artificial Intelligence	3	
	BT4CE02P	Introduction to Artificial Intelligence (Lab)	1	
(PCC-VII)	BT4CE03T	Theory of Computation	2	
(PCC-VIII)	BT5CE01T	Database Management System	3	V
	BT5CE01P	Database Management System (Lab)	1	
(PCC-IX)	BT5CE02T	Design & Analysis of Algorithm	3	
	BT5CE02P	Design & Analysis of Algorithm(Lab)	1	
(PCC-X)	BT5CE03T	Compiler Design	2	





(PCC-XI)	BT6CE01T	Data Science	3	VI
	BT6CE01P	Data Science (Lab)	1	
(PCC-XII)	BT6CE02T	Software Testing and Quality Assurance	3	
	BT6CE02P	Software Testing and Quality Assurance (Lab)	1	
(PCC-XIII)	BT7CE01T	Cryptography and N/W Security	3	VII
	BT7CE01P	Cryptography and N/W Security (Lab)	1	
(PCC-XIV)	BT7CE02T	Big Data Analytics	3	
	BT7CE02P	Big Data Analytics (Lab)	1	

					
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**SMT. RADHIKATAI PANDAV COLLEGE OF ENGINEERING, BAHADURA, UMRER
ROAD, NAGPUR**

An Autonomous Institute Affiliated to RTMNU, Nagpur

Faculty of Science & Technology

B.Tech. Computer Science & Engineering/Computer Engineering (NEP) (CBCS)

Sem-I	Total Hours Distribution Per Week		
Total Credits : 3	Lecture (L) : 3 Hrs	Tutorial/Activity (T/A) : 0 Hr	
Subject Code	BT1CS01T/BT1CE01T	Engineering Mathematics-I	
Examination Scheme			
CIE	ESE	Minimum Passing Marks:	Examination Duration:
40 Marks	60 Marks	50	3 Hours

Course Objectives

1	Engineering Mathematics intent to equip first-year engineering students with fundamental mathematical tools.
2	To promote and develop the basic mathematics skills of engineering students that is essential for effective understanding of engineering subjects.

Course Outcomes

After completion of syllabus, students would be able to

1	Using the concept of successive differentiation, express the function in series form and evaluation of indeterminate forms.
2	To study the evaluation of definite and improper integrals by using Beta and Gamma function. Also study to trace the curve.
3	By using the concept of matrix operation to study the Eigen values and Eigen vectors
4	To study the basic fundamental concepts of linear algebra, such as inner product space, bases and dimensions, vector space, subspace, linear transformations, and inner product space.
5	To study the nature of different types of sequence and series based on their convergence.

[Signature]
09/07/2026

[Signature]
Dr. D. P. Shastri
09/07/2026

[Signature]
Dr. D. K. Kulkarni
09/07/2026

[Signature]
Mrs. M. S. Palat
09/07/2026

Contd.

[Signature]
Dr. R. V. Harane
09/07/2026

SYLLABUS

Details of Topic	Allotment of Hours		Mapped with CO Number
	L	T/A	CO
Unit-1: Differential Calculus			
Successive differentiation: Leibnitz's Rule, Taylor's and Maclaurin's series for function of one variable, Indeterminate forms and L'Hospital's Rule.	7		1
Unit-2 Integral Calculus			
Evaluation of Definite and Improper Integrals: Beta and Gamma functions and their properties, Mean value, Mean square value and Root mean square value, Tracing of curves (Cartesian), Applications of definite integrals to find length of curve, area, volume.	8		2
Unit-3 Linear Algebra-I			
Linear dependence of vectors, Eigen values and Eigen vectors, Reduction to diagonal form, Largest Eigen value and its corresponding Eigen vector by iteration method, Gaussian elimination, LU Decomposition (Crout's method).	7		3
Unit-4 Linear Algebra-II			
Vector Space; Subspaces; Basis; Dimension; Linear transformation; Range Space and Rank; Null Space and Nullity; Rank nullity theorem, Matrix Representation of a linear transformation; Inner Product Spaces: Norm; Orthonormal Sets, Positive definite matrices, Singular Value Decomposition, Gram-Schmidt process.	7		4
Unit-5 Sequence and Series			
Sequence, Test of convergence of sequences, Cauchy sequence, infinite series, power series, Alternating series, Tests of convergence of series: P-series, Comparison test, D'Alembert's ratio test, Cauchy nth root test and Raabe's test.	7		5

Text/Reference Books:

- Hoffman and Kunze: Linear Algebra, Prentice Hal of India, New Delhi.
- H. K. Dass, Advanced Engineering Mathematics, S. Chand, Reprint, 2014.
- Murray Spiegel, John Schiller, R. A. Srinivasan, Probability and Statistics, Schaum's
- Outline Series, McGraw Hills, 4th Edition, 2016.
- Gilbert Strang: Linear Algebra and Its Applications (Paperback), Nelson Engineering (2007)
- Erwin Kreyszig, Advanced Engineering Mathematics, 9th Edition, John Wiley & Sons, 2006.
- B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010.
- H.K Dass, Rama Verma, Rajnish Verma, V.J. Dagwal, Sajid Anwar and D.F. Shastrakar, Engineering Mathematics, Volume I and II, S. Chand.

Dr. R.V. Harane
09/07/2026

Dr. D.F. Shastrakar
09/07/2026

Mrs. M.S. Palani
09/07/2026

Dr. S. Khan
09/07/2026

Dr. R.V. Harane
09/07/2026

**SMT. RADHIKATAI PANDAV COLLEGE OF ENGINEERING, BAHADURA, UMRER
ROAD, NAGPUR**

An Autonomous Institute Affiliated to RTMNU, Nagpur

Faculty of Science & Technology

B.Tech. Computer Science & Engineering/Computer Engineering (NEP) (CBCS)

Sem-I	Total Hours Distribution Per Week		
Total Credits : 3	Lecture (L) : 3 Hrs	Tutorial/Activity (T/A) : 0 Hr	
Subject Code	BT1CS02T/BT1CE02T	Applied Chemistry	
Examination Scheme			
CIE	ESE	Minimum Passing Marks:	Examination Duration:
40 Marks	60 Marks	50	3 Hours

Course Objectives

1	To provide fundamental knowledge of electrochemistry necessary to understand the function of batteries.
2	To gain an understanding of the rare earth metals and waste handling generated out of their uses.
3	Explain the synthesis and characterization techniques used for nanomaterials.

Course Outcomes

After completion of syllabus, students would be able to

1	Analyze the various industrial problems arising water quality and their remediation.
2	They will understand the role of nanomaterial's and their applications.
3	Students will be able to apply the basics concepts of battery technology & energy storage devices.
4	Understand the degradation of metal kinetics of corrosion and implement corrosion control method.
5	Students will able to solve problems regarding rare earth elements, the correct disposal methods of e-wastes and while creating any tool they will keep this environmental aspect in mind.

Dr. D. V. Kharan
09/07/2026

Dr. D. F. Shastri
09/07/2026

Dr. A. V. Vardhan
09/07/2026

D.P. Chauke
09/07/26

Contd.

P. A. Padhe
09/07/26

SYLLABUS

Details of Topic	Allotment of Hours		Mapped with CO Number
	L	T/A	CO
Unit-1: Water Chemistry			
Introduction, potable water quality parameters hardness types of hardenss sterilization desalination of water by RO softening of water by zeolite process and ion exchange, demineralization of water, numerical based on zeolite process , boiler trouble –Scale and slugde	7		1
Unit-2: Nanomaterial's for engineering applications			
Introduction of nanomaterial's, Synthesis of nanomaterials- Top down and bottom-up approach. Carbon nanomaterials: Types, properties and applications of CNT and graphene. Applications of nanomaterial. Chemical sensor types and application	7		2
Unit-3:Electrochemical Power system			
Fundamental of Electrochemical energy storage and modern battery technologies. Topics include basic electrochemistry, electrochemical cell Lithium cobalt oxide, Super capacitors with examples and applications. Introduction, characteristics of H ₂ -O ₂ fuel cells, amorphous Si and quantum dye sensitized solar cells.	8		3
Unit-4: Corrosion			
Corrosion- Introduction , Cause, Types (dry, wet,diffential aeration) , Prevention method (cathodic protection, Protective coating , galvanizing, Tinning)	7		4
Unit- 5: Sustainable material and E-waste			
Introduction source composition characteristic and need of E-waste management, E- waste environmental and health risks, Extraction of rare earth and precious metals from e-wastes, Twelve principles of Green Chemistry. Green Computing, Role of Green Computing in Environment and Research, Green devices and Green data Servers.	7		5

M. S. P. Patel
09/07/26
Dr. A. N. N. N. N.

K. S. K. K.
09/07/26
Dr. S. K. K. K.

A. P. A. P.
09/07/26
Dr. D. P. A. P.

P. P. P. P.
09/07/26

Text/Reference Books:

1. M AfsharAlam, Sapna Jain, HenaParveen, Green Computing Approach Towards Sustainable Development, Wiley Interscience Publications.
2. S. S. Dara, A Textbook of Engineering Chemistry, S. Chand Publications
3. ShikhaAgrawal, Engineering Chemistry: Fundamentals and Applications, Cambridge University Press.
4. Supercapacitors and Their Applications Fundamentals, Current Trends, and Future Perspectives, Edited By Anjali Paravannoor, Baiju K.V, CRC Press
5. The Rare Earth Elements: An Introduction, JHL Voncken, Springer Link

M. S. Palani
09/07/2026
Dr. N. V. Reddy

Dr. S. Khan
09/07/26

Dr. K. S. Reddy
09/07/26

Dr. P. S. Reddy
09/07/26

Dr. D. S. Shetty
09/07/2026

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**SMT. RADHIKATAI PANDAV COLLEGE OF ENGINEERING, BAHADURA, UMRER
ROAD, NAGPUR**

**An Autonomous Institute Affiliated to RTMNU, Nagpur
Faculty of Science & Technology
B.Tech. Computer Science & Engineering/Computer Engineering**

Sem I	Total Hours Distribution Per Week		
Total Credits :1	Lecture (L) : 0Hrs	Tutorial T : 0 Hr	Practical P: 2Hr
Subject Code	BT1CS02P/BT1CE02P	Applied Chemistry Lab	
Examination Scheme			
CIE	ESE	Minimum Passing Marks:	Examination Duration:
25 Marks	25 Marks	25 Marks	3 Hours

Practical Course Objectives

1	Analyze experimental data, interpret results and draw scientifically valid conclusion.
2	Use modern laboratory techniques analytical tools for the characterization of chemical system and materials.

Practical Course Outcomes

After completion the Practical course, students would be able to

1	Prepare standard solution and perform quantitative analysis using volumetric and instrumental method.
2	Perform quantitative chemical analysis using standard laboratory Procedure with accuracy.

ms. M.S. Patel
09/07/2026

Dr. A. K. Kadam
09/07/26

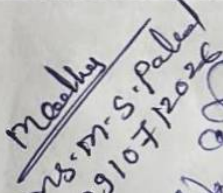
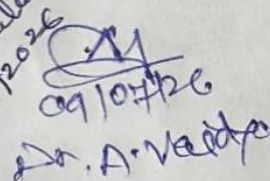
Dr. S. Khan
09/07/26

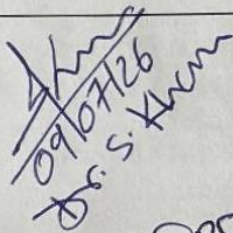
Dr. P. K. Kadam
09/07/26

Dr. D. F. Shastri
09/07/2026

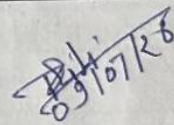
Dr. P. K. Kadam
09/07/26

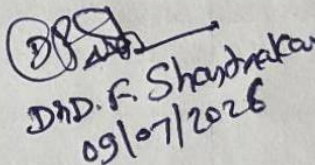
Sr. no	List of Practical (Any 6-performance based and 1 virtual lab experiment)
1.	Estimation of Copper estimation (iodometrically)
2.	Estimation of Ni by complexometry
3.	To determine the rate of corrosion of given metal specimen by the weight-loss method.
4.	Estimate the amount of dissolved oxygen present in water sample.
5.	Acid base titration by Potentiometry.
6.	Acid base titration by conductometry
7.	To determine the total hardness of given water sample by EDTA complexometry method.
8.	Virtual Lab: Beer's Law verification by spectrophotometer.


 Mrs. M. S. Palani
 09/07/2026

 Dr. A. Vaidya


 09/07/26
 Dr. S. Kumar


 09/07/26


 09/07/26


 Dr. D. F. Shandrasekhar
 09/07/2026

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FACULTY OF SCIENCE & TECHNOLOGY
B.TECH. COMPUTER ENGINEERING

Course Category	Engineering Science Course –I (ESC-I)		
Sem:I	Total Hours Distribution per week - 3		
Total Credit: 3	Lecture (L): 3Hrs	Tutorial/Activity(T/A): --00hrs	
Subject Code	BT1CE03T(Th)	Fundamentals of C Programming	
Examination Scheme			
Continuous Internal Evaluation (CIE)Marks	Semester End Exam(SEE)Marks	Minimum Passing Marks	Examination Duration
40	60	50	3 Hours

Course Objectives

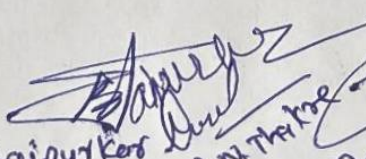
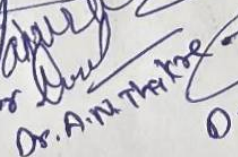
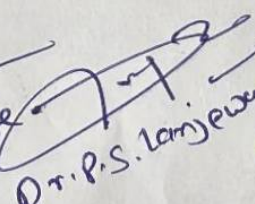
1	To understand the basics, history, and structure of the C programming language
2	Develop simple C programs to illustrate the applications of different data types such as arrays, pointers, functions

Course Outcomes

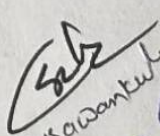
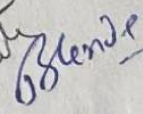
After successful completion of this course the student will be able to:	
CO1	Understand the fundamentals of C programming and apply algorithms, flowcharts, data types, operators, and expressions to solve basic programming problems. Mapped with Unit - I
CO2	Design and implement C programs using conditional and iterative control structures to solve complex computational problems efficiently. Mapped with Unit-II
CO3	Analyze and develop optimized C solutions using arrays, matrices, and string manipulation techniques for computational and data-processing applications. Mapped with Unit-III
CO4	Use and create functions for modular programming. Mapped with Unit-IV
CO5	Design and implement efficient C programs using pointers and file handling techniques for effective memory management and persistent data processing. Mapped with Unit -V

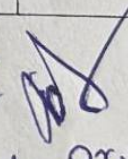
SYLLABUS

Contents	No. of hours
Unit I introduction to C: History of C, Features of C, Structure of C program, Character Set, C Tokens, Keywords, Identifiers, Constants, Variables, data types, Operators, variable declaration, Assigning Value to variable, Introduction to Computing: Algorithm, Flowchart, Representation of Algorithm and Flowchart with examples. Operator and Expression: Arithmetic, Relational, Logical, Assignment, Increment and Decrement, Conditional operator, Bitwise operators, sizeof operator, Arithmetic Expression, Evaluation expression. Expressions, Precedence and Associativity, Expression Evaluation, Type conversion.	9
Unit II: Conditional Statements 'if' Statement, 'if..else' statement, Nested if Statements, ladder if ... else, Ternary operator, switch case. Control Flow Statements The while Statement, The do .. while Statement, The for Statement, The break, continue Statements and goto Statement	8
Unit III One-dimensional Arrays, Declaration of One-dimensional Arrays, Initialization of One-dimensional Arrays, Example programs- Linear search, Binary search, Bubble sort, Selection sort. Two-dimensional Arrays, Declaration of Two-dimensional Arrays, Initialization of Two-dimensional Arrays, Example programs – Matrix Addition, Multiplication, Transpose of a matrix, Character Arrays and Strings: Declaring and Initializing String, String-handling Functions (strlen(), strcpy(), strcmp(), strcat(), strrev()), Example Programs(with and without using built-in string functions), Two-dimensional character arrays.	9
Unit IV Function: Syntax and Declaration of Function, Type of Function, Create a function, Scope of function, return function, call by reference. Recursion: Recursion as a different way of solving problems.. Structure: Defining structures and Array of structures, Declaration and Initialization of structure. Unions: Union Declaration, Initializing Unions	8
Unit V Pointers: Idea of pointers, defining pointers, Declaration and Initialization of pointer, Type of pointer, Pointer using Array, pointer to pointer, Function pointer. File handling Basics Of File Handling In C., Types of Files, File Input/ Output Operations: Modes of file opening, Reading and writing the file, Closing the files, .	8


 P.B. Jaipurkar

 Dr. A.M. Thakre

 Dr. P.S. Lamjewar


 Dr. K. Malpe


 Dr. S.S. Bawankule

 Dr. M. Bhande


 Dr. N. Tale

References –

Text Book-

- 1 B. W. Kernighan and D. M. Ritchie, The C Programming Language , Second Edition, Pearson, June 2015
2. E.Balagurusamy Programming in ANSI C, 5th Edition, Tata McGraw-Hill Publications
3. Yashwant Kanetkar Letus C, 6th Edition, BPB publication
4. H. Schildt, Turbo C: The Complete Reference, 4th Edition, 2000, McGraw Hill Education.

Reference Book

1. An Introduction to Data Structure with Applications, Tremblay J.P. and Sorenson P.G, Tata McGraw Hill Pub Co. Ltd
2. Programming in ANSI C: E. Balguruswami McGraw Hill
3. Understanding Pointers in C, Yashwant P. Kanetkar 4th Edition, 2013 BPB publication.

URL –

- 1 <https://www.w3schools.com/c/>
- 2 <https://www.geeksforgeeks.org/c/c-programming-language/>

P.B. Jaipurkar

Dr. P. S. Lanjewar

Dr. K. Malpe

Dr. S. S. Bawankule

Dr. A. N. Thakore

Dr. T. Gole

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FACULTY OF SCIENCE & TECHNOLOGY
B.TECH COMPUTER ENGINEERING

Course Category	Engineering Science Course –I (ESC-I)		
Sem:I	Total Hours Distribution per week- 2		
Total Credit: 1	Practical(P): 2.Hrs	Tutorial/Activity(T/A):	
Subject Code	BTICE03P (Practical)	Fundamentals of C Programming (Lab)	
Examination Scheme			
Continuous Internal Evaluation (CIE)Marks	Semester End Exam(SEE)Marks	Minimum Passing Marks	Examination Duration
25	25	25	–

Course Outcomes

After successful completion of this course the student will be able to:

CO1	Write simple programs using input and output functions, decision making and looping constructs.
CO2	Implement various concepts of arrays and strings and pointers.
CO3	Create programs using user defined datatypes and functions in C.
CO4	Develop, Debug and Execute programs to demonstrate the basic concepts of pointers in C
CO5	Implement various concepts of files.

List of Practical's

Minimum Eight out of the following practical's shall be performed:

Sr. No.	List of Practical's
01	Execute a program to swap two variables values with and without using third variable.
02	Develop a C Program to implement a simple calculator to perform addition, subtraction, multiplication and division operations using switch construct.
03	Develop a C Program to find the roots of quadratic equation for non-zero co- efficient using if-else ladder construct.
04	Program to calculate the factorial of given number.
05	Program to generate Fibonacci sequence upto n terms.
06	Develop a recursive C function to find the factorial of a number, $n!$, defined by $\text{fact}(n)=1$, if $n=0$. Otherwise $\text{fact}(n)=n*\text{fact}(n-1)$. Using this function, develop a C program to compute the Binomial coefficient nCr . Perform input validation as well.
07	Develop a C program to find the smallest and largest elements in an array using pointers and then swap these elements and display the resultant array

08	Develop a C program to count the vowels & consonants in a given string.
09	Write a C program with a recursive function to calculate the factorial of a given positive integer.
10	Program to create and display employee details using structures.
11	Program to write text to a file.
12	Program to copy contents from one file to another file.

Note:

1. Conduct minimum 08 practical's out of above list and practical no. 1 is mandatory.
2. Viva-voce question should be included in each of the practical.
3. During Continuous Internal Evaluation (CIE) practical Marks, regular performance of practicals for 10 marks, 05 Marks for Journal submission and 10 Marks for internal viva-voce examination.
4. During Semester End Exam(SEE) practical Marks, external practical examination performance must be conducted for 15 marks and 10 Marks for viva.
5. For Eligibility of SEE Practical examination, Internal submission of Journal (Practical File) is mandatory.

P. B. Jagtapkar

Dr. P. B. Lanjewar

Dr. K. malpe

Dr. S. S. Bawankule

Dr. A. N. Thakore

Dr. N. T. Gole

SMT. RADHIKATAI PANDAV COLLEGE OF ENGINEERING NAGPUR**AN AUTONOMOUS INSTITUTE****AFFILIATED TO RASHTRASANT TUKADOJI MAHARAJ NAGPUR UNIVERSITY, NAGPUR****FACULTY OF SCIENCE & TECHNOLOGY****B.TECH. COMPUTER ENGINEERING**

Course Category	Program Core Course -X (PCC-X)		
Sem: I	Total Hours Distribution per week		
Total Credit: 01	Practical(P): 02Hrs	Tutorial/Activity(T/A):Hr.	
Subject Code	BT1CE04P(Practical)	Integrated Computer Workshop Lab	
Examination Scheme			
Continuous Internal Evaluation (CIE)Marks	Semester End Exam(SEE)Marks	Minimum Passing Marks	Examination Duration
25	25	25	—

Course Outcomes	
After successful completion of this course the student will be able to:	
CO1	Identify the components of a PC and Assemble & disassemble the same..
CO2	Experiment with installation of Operating System and Secure a computer from Cyber threats.
CO3	Develop presentation /documentation using Office tools.
CO4	Build dialogs and documents using ChatGPT.
CO5	Improve individual / teamwork skills, communication and report writing skills with ethical values..

List of Practical's**Minimum Eight out of the following practical's shall be performed:**

Sr. No.	List of Practical's
01	To Study of Electronic components ICs, resistor, capacitor, Transistors MOSFET etc.
02	To study of computer peripheral devices . Identify input, output, and storage devices
03	To install and assemble computer hardware components correctly and verify their proper functioning.
04	To install the Microsoft Windows XP operating system on computer system
05	To install the LINUX operating system on a computer system .
06	To create a newsletter using Microsoft Word by applying features like columns, images, textboxes, WordArt, and basic formatting.

07	To learn basic spreadsheet operation and create a scheduler using Microsoft Excel with formatting, summation and autofill features.
08	To install and configure a software application on a computer system.
09	To study and apply the various features of Microsoft PowerPoint for creating a professional and interactive presentation.
10	To learn Local Area Network and access the Internet. In the process they configure the TCP/IP setting. Finally students should demonstrate, to the instructor, how to access the websites and email
11	To understand and practice the use of a web browser such as Google Chrome or MozillaFirefox for accessing websites, searching information, navigating web pages, and using online services effectively
12	To study and use ChatGPT for generating content such as stories, reports, and summaries. To understand how AI tools improve productivity and assist in creative and academic tasks.

Note:

1. Conduct minimum 08 practical's out of above list and practical no. 1 is mandatory.
2. Viva-voce question should be included in each of the practical.
3. During Continuous Internal Evaluation (CIE) practical Marks, regular performance of practicals for 10 marks, 5 Marks for Journal submission and 10 Marks for internal viva-voce examination.

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A. A. A. A.

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Prof. S. B. Borkar

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Dr. S. S. Borkar

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Dr. N. T. J.

SMT. RADHIKATAI PANDAV COLLEGE OF ENGINEERING NAGPUR.*(An Autonomous Institute)*

Affiliated to Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur.

FACULTY OF SCIENCE & TECHNOLOGY**B.TECH. COMPUTER ENGINEERING-Major(NEP) (CBCS)**

Course Category:	Engineering Science Course (ESC)		
Semester: I	Total Hours Distribution per week		
Total Credit: 03	Lecture (L): 3 Hrs.		Tutorial (T): 0 Hr.
Subject Code & Subject Name:	BT1CE05T		Basics of Electrical and Electronics Engineering
EXAMINATION SCHEME			
Continuous Internal Evaluation (CIE)Marks	End Semester Examination (ESE) Marks	Minimum Passing Marks	Examination Duration
40	60	50	3 Hours

Course Objective: -

1. To understand the fundamentals of electrical circuit elements, sources, and DC circuit analysis.
2. To understand the fundamentals of AC signals, waveforms, and AC circuit analysis.
3. To understand the fundamentals of semiconductor devices, diodes, rectifiers, and transistors.
4. To understand the fundamentals of digital logic and microprocessor architecture.
5. To understand the fundamentals of measurement systems, sensors, transducers, and PLCs.

Course Outcomes: -

1. Apply basic electrical laws and circuit reduction techniques to analyze and solve DC circuits.
2. Analyze AC circuits by applying concepts of waveforms, phasors, impedance, power, and power factor.
3. Explain the operation and applications of semiconductor diodes, rectifiers, Zener diodes, and BJTs in basic electronic circuits.
4. Explain basic logic gates, combinational circuits, and the architecture of the 8085 microprocessors.
5. Explain the principles and applications of measurement systems, sensors, transducers, and basic PLCs.

SYLLABUS**Unit I: Circuit Elements and Parameters- (10 Hrs.)**

Active and passive elements, Ideal and practical voltage and current sources, source transformation;

DC Circuits: Types Series, Parallel, Star, Delta and transformation, Energy Sources and Circuit Reduction, Kirchhoff's Laws & Applications, Ohm's laws.

Unit II: AC Circuits & Fundamentals- (08 Hrs.)

Common signals and their waveforms; instantaneous, peak, average, and RMS values; peak factor and form factor of sinusoidal wave; Study of A.C circuits of pure resistance, inductance and capacitance and corresponding voltage-current phasor diagrams; Impedance and Admittance; Power, Power factor and Power Triangle.

Unit III: Diodes and Transistor (10 Hrs.)

Introduction to Semiconductor P-N junction diodes, Biasing and Characteristics of diodes, Zener Diode, Zener diode as a voltage regulator, Photodiode, LED.

Rectifier- Half Wave Rectifier, Full wave Rectifier.

Introduction to BJT, NPN and PNP Transistor, Mode of operation.

Unit IV: Digital Circuits (08 Hrs.)

Analog vs Digital System, Basic Logic Gates (AND, OR, NOT) their Truth Tables, Universal Logic Gates (NAND, NOR) Introduction to Combinational Circuits – Adder and Subtractor.

Introduction to 8085 Microprocessor - Architecture.

Unit V: Electronics Measurement, Sensors and Instruments (08 Hrs.)

Introduction to Measurement System, Generalized block diagram of Measurement system, Static and Dynamic characteristic of measurements System, Measurement Errors and Accuracy.

Sensors and Transducers: Temperature Sensors (RTD, Thermistor, Thermocouple),

Pressure Sensors, Electro mechanical Instruments (PMMC), LVDT

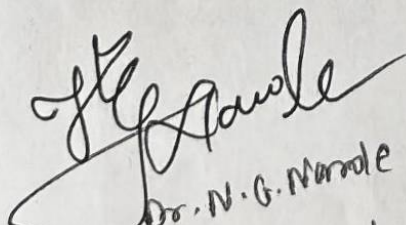
Introduction to PLC (Programmable Logic Controller).

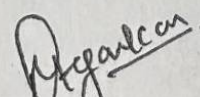
Text Books: -

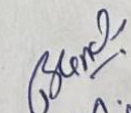
1. D. P. Kothari & I. J. Nagrath, Basic Electrical Engineering, McGraw Hill Education.
2. Rajendra Prasad, Fundamentals of Electrical Engineering, PHI Learning Pvt. Ltd.
3. V. N. Mittle & Arvind Mittle Basic Electrical Engineering, McGraw Hill Education.
4. V. K. Mehta, Rohit Mehta, Principal of Electronics S. Chand Publication.
5. Electronic Devices and Circuits - S. Salivahanan, N. Suresh Kumar, A. Vallavaraj, McGraw Hill Education.
6. R. P. Jain, 'Digital Electronics' McGraw Hill Education.
7. Ramesh S. Gaonkar, Microprocessor Architecture, Programming and Applications with the 8085, McGraw Hill Education.
8. Jon Stenerson, Industrial Automation and Process Control, Pearson Education.
9. A. K. Sawhney and Puneet Sawhney, Electrical and Electronics Measurements and Instrumentation, Dhanpat Rai and Co.

Reference Books: -

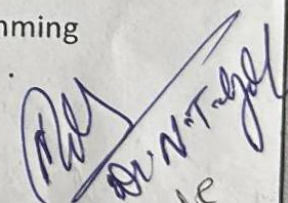
1. William H. Hayt Jr., Jack E. Kemmerly & Steven M., Engineering Circuit Analysis, 10th Edition McGraw Hill Education.
2. James W. Nilsson & Susan A. Riedel, Electric Circuits- Pearson Education.
3. M. E. Van Valkenburg, Network Analysis, Pearson Education.
4. Anand Kumar, Fundamentals of Digital Circuits, PHI Learning.
5. K. Udaya Kumar & B. S. Umashankar, The 8085 Microprocessor: Architecture, Programming and Interfacing, Pearson Education
6. John W. Webb & Ronald A. Reis. Programmable Logic Controllers: Principles and Applications, Pearson Education.
7. John P. Bentley, Principal of Measurement Systems, Pearson Education.


Dr. N. G. Marade
Kulchurde.
N. W. Wankar


(Dr. Poonam Agarkar)


W. M. (Sande)


Mr. Abhraj
(Dishpande)


Dr. S. V. Umale
Chavneson, BUS



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FACULTY OF SCIENCE & TECHNOLOGY

DEPARTMENT OF ELECTRONICS & TELECOMMUNICATION ENGINEERING

**B.TECH. I SEMESTER COMPUTER ENGINEERING/ ARTIFICIAL INTELLIGENCE &
DATA SCIENCE ENGINEERING /COMPUTER SCIENCE ENGINEERING/
MECHANICAL ENGINEERING-Major (NEP) (CBCS)**

Course Category:	Engineering Science Course (ESC-III)		
Semester: I	Total Hours Distribution per week		
Total Credit: 01	Lab (P): 2 Hrs.		Tutorial (T): 0 Hr.
Subject Code & Subject Name:	BT1CE05P / BT1AD05P/ BT1CS05P/ BT1ME05P		Basics of Electrical and Electronics Engineering
EXAMINATION SCHEME			
Continuous Internal Evaluation (CIE)Marks	End Semester Examination (ESE) Marks	Minimum Passing Marks	Examination Duration
25	25	25	-----

COURSE OBJECTIVES:

1. To understand the basics of DC circuits, electrical components, sources, network laws, and simple circuit analysis methods.
2. To learn the basic concepts of AC circuits, waveforms, phasors, impedance, admittance, and power calculations.
3. To study the working and characteristics of semiconductor devices like PN junction diodes, Zener diodes, and transistors through experiments.
4. To learn the fundamentals of digital electronics, logic gates, combinational circuits, and the basic operation of the 8085 Microprocessor.
5. To understand measurement systems, sensors, transducers, and basic PLC techniques used in industrial automation.

COURSE OUTCOMES:

1. Students will be able to solve basic DC circuits using Ohm's law, Kirchhoff's laws, source transformation, and network reduction methods.
2. Students will be able to analyze simple AC circuits, calculate electrical quantities, and understand power and phasor relationships in R, L, and C circuits.

3. Students will be able to study the V-I characteristics of PN and Zener diodes, understand voltage regulation, and analyze transistor characteristics.
4. Students will be able to understand and analyze basic logic circuits, design simple combinational circuits, and explain the working of the 8085 Microprocessors.
5. Students will be able to understand measurement systems, study sensor characteristics, and develop basic PLC ladder programs for control applications.

SYLLABUS

LIST OF EXPERIMENTS

1. To measure Voltage, current and power in single phase circuit with resistive load.
2. To measure Voltage, current and power in single phase circuit with R-L load.
3. Determine transformer ratio (K) of single-phase transformer.
4. To study the forward and reverse bias V-I characteristics of a P-N junction diode and determine the cut-in (knee) voltage.
5. To obtain the V-I characteristics of a Zener diode and verify its operation as a voltage regulator.
6. To study the input and output characteristics of an NPN/PNP transistor in Common Emitter (CE) configuration and identify its regions of operation.
7. To verify the truth tables of **AND, OR, NOT, NAND, and NOR** gates and demonstrate the implementation of basic gates using universal gates (NAND and NOR).
8. To implement and verify the operation of a **Half Adder** and **Half Subtractor** using logic gates.
9. To study the **static characteristics** of a measurement system, determine measurement errors and accuracy.
10. To study the characteristics of **RTD, Thermistor, Thermocouple, and LVDT**, and compare their performance.
11. To study the basic operation of a **Programmable Logic Controller (PLC)** and develop simple ladder Logic programs for industrial control applications.

Dr. Shital V. Wale
BOS chairperson

Dr. N. G. Sawale

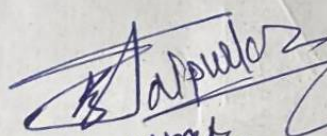
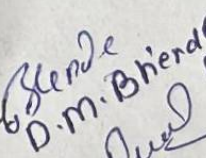
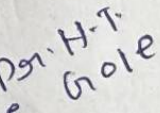
Dr. P. S. Lanjewar
Der (Aq.)

Dr. P. Agarkar

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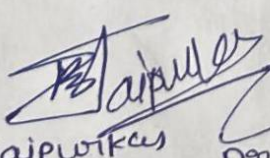
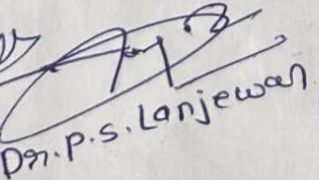
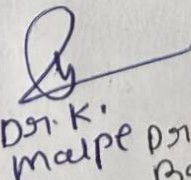
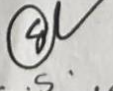
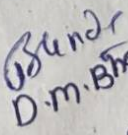
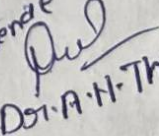
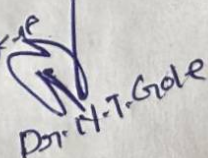
Course Category	Vocational & Skill Enhancement Course -VSEC-I		
Sem:I	Total Hours Distribution per week		
Total Credit: 2	Practical (P): 04 Hrs	Tutorial/Activity(T/A): 0Hr.	
Subject Code:	BT1CE06P	Web Design Technology Lab	
Examination Scheme			
Continuous Internal Evaluation (CIE)Marks	Semester End Exam(SEE) Marks	Minimum Passing Marks	Examination Duration
50	50	50	---

Course Outcomes	
After successful completion of this course the student will be able to:	
CO1	Understand the fundamental concepts of the Internet and the key principles of web design.
CO2	Create basic, well-structured websites using HTML and CSS.
CO3	Develop dynamic web pages by implementing JavaScript objects, along with event handling techniques for form validation and interactivity
CO4	Build modern, interactive web application and deploy them efficiently to a live environment.
CO5	Apply Saas to write modular, acalable, and maintainable CSS, utilizing advanced features like variables, nesting and mixins for enhanced styling flexibility.

 P.B. Jaipurkate
 P.N. S. Lanjewar
 P.N. R. Malpe
 P.N. S. S. Bawade
 P.N. M. Bhende
 P.N. A. N. Thakur
 P.N. H. T. Gole

SYLLABUS

Contents	No. of hours
UNIT I: HTML (Hypertext Markup Language) CSS(Cascading Style Sheets) Basic of HTML, Text formatting, Forms and Input Element, Introduction to CSS, Selector and Properties, Layout and position, CSS Box Model. - To create a basic web page using HTML that demonstrates the use of basic HTML structure, headings, text formatting, semantic elements, lists, and hyperlinks. - To design a web page using HTML that includes forms and input elements along with proper use of headings and structured layout. - To design a structured web page layout using CSS that demonstrates layout techniques, positioning, and the CSS box model for proper spacing and alignment.	10
UNIT II: Responsive Web Design Media Queries, Fluid Layouts, Flexbox and Grid Layout, Mobile-First Design. - To design a responsive web page using media queries and fluid layouts to ensure proper display on different screen sizes. - To create a webpage layout using CSS Flexbox and Grid for effective alignment, spacing, and structured design. - To develop a responsive website using a mobile-first design approach, integrating media queries, fluid layouts, and modern layout techniques for improved user experience across	10
UNIT III: Images and Multimedia Image Formats and Optimization, Working with Images in HTML and CSS, Embedding Audio and Video, Animations and Interactive Media - To create a web page that demonstrates the use of different image formats and techniques for image optimization in HTML. - To create a web page that demonstrates the use of different image formats and techniques for image optimization in HTML. - To develop a multimedia web page that includes embedding audio and video, along with basic animations and interactive media using HTML and CSS.	10
UNIT IV: Web Accessibility Accessibility Principles and Guidelines, ARIA Roles and Attributes, Testing for Accessibility, Designing for All Users. - To design a web page following accessibility principles and guidelines, ensuring content is usable for all users. - To implement ARIA roles and attributes in a web page to improve accessibility for assistive technologies. - To test and enhance a web page for accessibility by applying accessibility testing methods and designing for all users.	09
UNIT V: Web Development Tools and Advanced Topics Text Editors and Integrated Development Environments (IDEs), Version Control with Git and GitHub, Browser Developer Tools, Debugging and Testing, Frameworks and Libraries, CSS Preprocessors (e.g., Sass), JavaScript Basics, Introduction to Content Management Systems (CMS), Web Hosting and Deployment - To explore and use text editors and IDEs, along with browser developer tools, for writing, debugging, and testing web applications. - To Study GIT and GITHUB. - To study about JavaScript.	09

Note: Create One Website After All Practicals Performed. (compulsory to All)

1. Create Ecommerce website
2. Create statics and dynamics website
3. Create user personal information website

References

Reference Book Recommended:

1. HTML & CSS: Design and Build Websites Written by author Jon Duckett
2. HTML & CSS: The Complete Reference Authored by Thomas A.
3. Responsive Web Design with HTML5 and CSS Authored by Ben Frain
4. Learning Web Design: A Beginner's Guide Written by Jennifer Robbins,

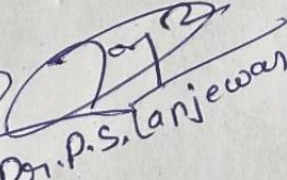
Text Books Recommended:

1. "HTML AND XML FOR BEGINNERS" –Mirrison M. , Presentice Hall Of India-Publication
2. "DYNAMIC HTML IN ACTION WEB TECHNOLOGY"-Schurman E. M. ,Presentice Hall Of India-Publication
3. "HTML and CSS: Design and Build Websites" – Jon Duckett, Wiley Publication

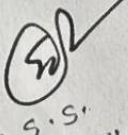
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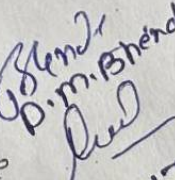
1. <https://www.w3schools.com>
2. <https://www.flux-academy.com/free-resources>
3. <https://wordpress.com/website-builder/>

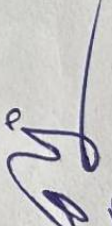

P. B. Jaipurkar


Dr. P. S. Tanjewar


Dr. K. Malpe


Dr. S. S. Bawankule


Dr. A. N. Thake


Dr. H. T. Gole

**SMT. RADHIKATAI PANDAV COLLEGE OF ENGINEERING, BAHADURA, UMRED
ROAD, NAGPUR**

An Autonomous Institute Affiliated to RTMNU, Nagpur

Faculty of Science & Technology

**B. Tech.Mechanical Engineering/CivilEngineering/Electrical Engineering/
Electronics & Telecommunication/ Computer Engineering/ Computer Science &
Engineering(NEP) (CBCS)**

Sem-I	Total Hours Distribution Per Week		
Total Credits : 2	Lecture (L): 2Hrs	Tutorial/Activity (T/A) : 0 Hr	
Subject Code	BT1ME06T/BT1CV06T/BT1EE05T /BT1ET07T/BT1CE07T/BT1CS07T	Communication Skill	
Examination Scheme			
CIE	ESE	Minimum Passing Marks:	Examination Duration:
20 Marks	30 Marks	25	2 Hours

Course Objectives

1	To apply tools and techniques for better communication.
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Course Outcomes

After completion of syllabus, students would be able

1	To apply grammaticallycorrect formation of sentences.
2	To make use of verbal and non verbal communication effectively.
3	To identify and overcome barriers to communication.
4	To apply Public speaking and extempore skills.

M. S. Kulkarni
09/07/2026.

Dr. S. Kulkarni
09/07/2026

Dr. D. D. Shinde
09/07/2026.

Dr. R. M. M. M. M.
09/07/2026.

Dr. S. A. Kulkarni
09/07/2026.

Dr. Monu Aich
9/7/2026

SYLLABUS

Details of Topic	Allotment of Hours		Mapped with CO Number
	L	T/A	CO
Unit-1 : Grammar & Composition			
Subject-Verb Agreement <u>Types Of Tenses</u> & Question Tags, <u>Voice</u> : Active & Passive. <u>Narration</u> : Direct & Indirect. <u>Types Of Sentences</u> : Simple, Compound & Complex Sentences Imperative, Affirmative, Negative & Interrogative. <u>E-Mail Etiquettes, Paragraph & Letter Writing.</u>	6		1
Unit 2:			
Communication Nature & Process, Types Of Communication (Verbal & Non-Verbal), Effective Communication, Types Of Verbal (Written & Oral), Types Of Non-Verbal Communication (Kinesics, Vocalics, Paralanguage, Chronemics, Haptics, Proxemics)	6		2
Unit 3			
Barriers To Communication, Types Of Barriers & Remedies. 7 C's Of Communication (Clear, Concise, Correct, Coherent, Complete & Courteous)	6		3
Unit 4:			
Public Speaking, Necessary Components, Do's & Don'ts, Reading, Hearing, Listening & Debating Skills. Group Discussion: Necessary Components, Do's & Don'ts.	6		4

Text/Reference Books: -

- 1) High School English Grammar & Composition by Wren & Martin. S. Chand & Company Ltd.
- 2) Professional Communication Skills. Dr. A.K. Jain, Dr. Pravin S.R. Bhatia Dr. A. M. Sheikh. S. Chand & Company Ltd.
- 3) Functional English. Dr. M. Sabir. Das Ganu Prakashan,
- 4) Functional English For Technical Students. Dr. Pratibha Mahato, Dr. Dora. Thompson. Himalaya Publishing House.

(Dr. Yusuf Qureshi)

09.07.26

DR. AMOL V. MUSALE

09/07/2026
Dr. D. F. Shastri

09/07/26
Dr. S. Khan

M. S. Patil
09/07/2026

(SUPRIYO AICH)

Pinch
(Dr. Moumuni Aich)
9/7/2026

**SMT. RADHIKATAI PANDAV COLLEGE OF ENGINEERING, BAHADURA, UMRER
ROAD, NAGPUR**

An Autonomous Institute Affiliated to RTMNU, Nagpur

Faculty of Science & Technology

**B.Tech. Mechanical Engineering/Civil Engineering/Electronics & Telecommunication
/Electrical Engineering/**

Computer Science & Engineering/Computer Engineering (NEP) (CBCS)

Sem-I	Total Hours Distribution Per Week		
Total Credits : 2	Lecture (L) :	Tutorial/Activity (T/A) : 4Hrs	
Subject Code	BT1ME08P/BT1CV08P/ BT1ET08P/BT1EE08P/BT1C S08P/BT1CE08P	CC Basket-I (Games & Sports)	
Examination Scheme			
CIE	ESE	Minimum Passing Marks:	Examination Duration:
100 Marks	-	50	-

Course Objectives	
1	Improved knowledge of rules and strategies of particular games and sports.
2	To develop physical fitness, strength, flexibility, and coordination.

SYLLABUS

•**Basics of Games and Sports:** History of games, Classification of games, Importance of games.

•**Indoor Games:** Chess, Carrom, Table-Tennis and Badminton.

•**Outdoor Games:** Cricket, Football, Volleyball, Athletic (track and field), Kabaddi, Tug of war.

•**Role of Sports in Education and Society:** Physical benefits, Safety measure and Injury prevention, Emotional & Mental health.

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Dr. D. Khan
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[Signature]
Dr. D. F. Shastri
09/07/2026

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Sandesh R. Grandhe

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Mr. M. S. Pahal
09/07/2026

SMT. RADHIKATAI PANDAV COLLEGE OF ENGINEERING, BAHADURA, UMRER

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Faculty of Science & Technology

B.Tech. Computer Engineering/Computer Science & Engineering (NEP) (CBCS)

Sem-II	Total Hours Distribution Per Week		
Total Credits : 3	Lecture (L) : 3 Hrs	Tutorial/Activity (T/A) : 0 Hr	
Subject Code	BT2CE01T/BT2CS01T	Probability and Statistics	
Examination Scheme			
CIE	ESE	Minimum Passing Marks:	Examination Duration:
40 Marks	60 Marks	50	3 Hours

Course Objectives

- 1 The aim is the process of managing the random events including the collection of data, its analysis and interpretation.
- 2 The topic covered enhances the analytical thinking power of the students dealing with the real life problems.

Course Outcomes

After completion of syllabus, students would be able to

- 1 Analyze the concept of Discrete and Continuous random variable, conditional probability and able to solve the problems of Probability.
- 2 Apply the concept of probability to analyze the various parameters of probability.
- 3 To understand the types of Probability distributions applying to solve the particular problems.
- 4 To solve the various types of problems having statistical data.
- 5 To solve the problems having statistical data and analyze the various parameters.

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09/07/2024
Dr. Yusuf Ali

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09/07/2024
Dr. D. F. Shasthakar

[Signature]
Mrs. M. S. Patel

[Signature]
Dr. R. V. Harane

SYLLABUS

Details of Topic	Allotment of Hours		Mapped with CO Number
	L	T/A	CO
Unit 1: Theory of Probability			
Axioms of Probability, Conditional Probability, Baye's theorem and its examples, Review of Discrete and Continuous random variables, Joint distribution, Independent random variables, Conditional Distributions.	7		1
Unit 2: Mathematical Expectations			
Mathematical Expectations, Variance and Standard Deviation. Moments, Moment generating function, Moments about origin and about mean, measure of Skewness and Kurtosis. Conditional Expectations, Covariance and Correlation Coefficient.	8		2
Unit 3: Probability Distributions			
Binomial distribution, Poisson's distribution, Normal distribution, Uniform distribution and Exponential distribution.	7		3
Unit 4: Statistical Techniques-I			
Introduction to Correlation and Regression, Multiple correlation and its properties, Multiple regression analysis, Regression equations of three variables. Measures of central tendency: Mean Median, Quartile, Decile, Percentile and Mode.	8		4
Unit-5: Statistical Techniques-II			
Measures of Dispersion: Range, Quartile deviation, Mean deviation, Variance, Standard deviation. Coefficient of dispersion. Skewness: Tests and uses of skewness and types of distributions, Measures of skewness, Karl Pearson's coefficient of skewness, Measure of skewness based on moments.	6		5

Text/Reference Books:

- (1) Erwin Kreyszig, Advanced Engineering Mathematics, 9th Edition, John Wiley & Sons, 2006.
- (2) Probability and Statistics (Schaum's Outline Series), Murray Spiegel, Jhon Schiler, R.A.Srinivasan.
- (3) N.P. Bali and Manish Goyal, A text book of Engineering Mathematics, Laxmi Publications, Eight edition 2011.
- (4) B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36th Edition, 2010. ncy
- (5) Probability, Statistics and Random Process (TMH), T. Veerarajan. P. N. Wartikar and J. N. Wartikar, Applied Mathematics, Volume I and II.
- (6) H.K Dass Advanced Engineering Mathematics Reprint 2016, S. Chand.

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Dr. D. F. Shastri

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COO M. S. Palani

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COO R. V. Harone

SMT. RADHIKATAI PANDAV COLLEGE OF ENGINEERING, BAHADURA, UMRER
ROAD, NAGPUR
An Autonomous Institute Affiliated to RTMNU, Nagpur
Faculty of Science & Technology
B.Tech. Computer Engineering/Computer Science & Engineering (NEP) (CBCS)

Sem-II	Total Hours Distribution Per Week		
Total Credits : 1	Practical (P) : 2 Hrs	Tutorial/Activity (T/A) : 0 Hr	
Subject Code	BT2CE01P/BT2CS01P	Probability and Statistics Lab	
Examination Scheme			
CIE	ESE	Minimum Passing Marks:	Examination Duration:
25 Marks	25 Marks	25 Marks	3 Hours

Practical Course Objectives	
Solving problems using Open-Source Software Programming Language	

Practical Course Outcomes	
After completing the practical course, students will be able to solve the following using Open-Source Software Programming Language.	
1	Problems on the Theory of Probability.
2	Problems on the Mathematical Expectations.
3	Problems on Probability Distributions.
4	Problems on Statistical Techniques-I
5	Problems on Statistical Techniques-II

Sr. No.	List of the Practical: Performance of at least SIX practical is compulsory in a semester.
Unit-1: Theory of Probability (6 Hours)	
1	Write a Program to solve examples on Bayes theorem.
2	Write a Program to solve the examples on Joint Distribution.
Unit 2: Mathematical Expectations (04 Hours)	
3	Write a Program to solve the problem on Mathematical Expectations.
4	Write a Program to solve the problems on Moment generating function.
5	Write a Program to find the Covariance and Correlation Coefficient.
Unit 3: Probability Distributions (05 Hours)	
6	Write a Program to solve problems on Binomial distribution and Poisson's distribution.
7	Write a Program to solve problems on Normal distribution.
8	Write a Program to solve problems on Uniform distribution and Exponential distribution.
Unit-4 Statistical Techniques-I (04 Hours)	
9	Write a Program to solve the Problems on Correlation and Regression.
10	Write a Program to solve the Problems on Measures of central tendency.
Unit-5: Statistical Techniques-II (05 Hours)	
11	Write a Program to solve the problem on Measures of Dispersion.
12	Write a Program to solve the problem on Measures of Skewness.

09/07/2020
 Dr. S. K. Kulkarni

Dr. D. F. Shastri

Ms. M. S. Patil

Dr. R. V. Hanare

**SMT. RADHIKATAI PANDAV COLLEGE OF ENGINEERING, BAHADURA, UMRER
ROAD, NAGPUR**
An Autonomous Institute Affiliated to RTMNU, Nagpur
Faculty of Science & Technology
**B.Tech. Second Semester Computer Engineering, Computer Science & Engineering, Civil
Engineering (NEP)(CBCS)**

Sem-II	Total Hours Distribution Per Week		
Total Credits : 3	Lecture (L) : 3 Hrs	Tutorial/Activity (T/A) : 0 Hr	
Subject Code	BT2CE02T/BT2CS02T BT2CV02T	Applied Physics	
Examination Scheme			
CIE	ESE	Minimum Passing Marks:	Examination Duration:
40 Marks	60 Marks	50	3 Hours

Course Objectives	
1	To Provide a Strong Foundation in physics to provide technical knowledge
2	To gain an understanding of the phenomenon of Optical Fibre used for advanced applications in Engineering
3	To familiarize prospective engineers with fundamental concepts of semi-conductors and their applications in semiconductor technology
4	To gain an understanding of the total internal reflection in electron optical system
5	To make acquainted with the Nano technology

Course Outcomes	
After completion of syllabus, students would be able to	
1	Learn the basic concepts of the dual nature of matter and wave packet and apply them to analyze various relevant phenomena and to solve related numerical problems.
2	Apply concepts in optical fibre to solve relevant numerical problems and to relate to relevant engineering applications
3	Identify and explain different types of diodes, transistors, and its applications.
4	Learn and explain Motion Of Electron in Various Electrical Devices.
5	Learn Various types of Nonmaterial and their different types.

Contd.

[Signature]

Dr. C. L. Dabholkar
(09/07/2026)

[Signature]
(09/07/2026)
(Dr. S. Khan)

[Signature]
Dr. D. F. Shrivastava
09/07/2026

[Signature]
Ashutosh Raut
09/07/2026

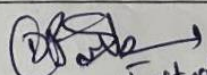
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Mrs. M. S. Patel

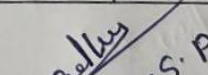
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09/07/2026
Sanket Londhe

SYLLABUS

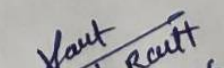
Details of Topic	Allotment of Hours		Mapped with CO Number
	L	T/A	CO
Unit-1 Quantum Mechanics & Quantum Computing			
De-Broglie Hypothesis, Concept of wave-particle duality, Matter Waves, Davisson-Germer Experiment. Concept of wave packets, Heisenberg Uncertainty Principle, Significance of Wave function Ψ and normalization condition, Schrodinger wave equation (Expression for time dependent and time independent), Application to one dimensional infinite potential well, Introduction about Quantum Computer, Explain Bit & Qubits, Quantum Entanglement, & Numerical	7		1
Unit 2: Optical Fibre			
Structure of optical fiber, total internal reflection, modes of propagation, Classification of Fibre, Graded index profile, Single Mode and Multi Mode Numerical aperture, classification of optical fiber, Acceptance angle and cone, attenuation and dispersion, fiber optic communication system. & Numerical.	7		2
Unit 3: Semiconductor Devices			
Basic idea of free electron theory of metals, expression of conductivity of a metals Semiconductor, Classification, Pure and doped semiconductors. Types of Semiconductor diodes - P-N junction Diode, Tunnel Diode, Zener Diode, Light Emitting Diode (LED). Transistors and it's type PNP and NPN transistors, Hall Effect, Hall voltage, and Hall coefficient; its applications. & Numericals	8		3
Unit 4: Electron optics			
Motion of electron in magnetic and electric field, Bethe's law, Electrostatic lens, CRT : Block diagram and functions of each part of CRT. CRO: Block diagram and functions of each part like trigger circuit and time base circuit. Applications of CRO	7		4
Unit 5: Nanotechnology			
Basic Concept of nanotechnology, Classification of Nano Materials, Comparison Of Properties Of Nonmaterial's With Bulk Materials, Top-down and bottom-up approach, comparison of properties of bulk and nano-materials, sol gel process and ball mill process, special types of materials, Zeolite and Graphene, applications of nanotechnology.	7		5

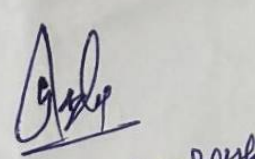
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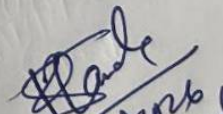

 Dr. D.F. Shastri
 09/07/2026


 Mrs. M.S. Patel


 Dr. S. V. Khan
 09/07/2026


 Ashutosh Raut
 09/07/2026


 Dr. C. L. Chakrabarti
 09/07/2026


 Dr. S. V. Khan
 09/07/2026

Text/Reference Books:

1. P. M. Mathews and K. Venkatesan, A Textbook of Quantum Mechanics, Tata Mc Graw Hill (1977).
2. J. L. Powell and B. Crasemann, Quantum Mechanics, Narosa Publishing House (1993).
3. Applied Physics, M. N. Avdhanulu, Shilpa A. Pande, Arti R. Golhar, Mohan Giriya, S. Chand
4. D. J. Griffiths, Quantum mechanics, Prentice Hall of India Private Limited, New Delhi
5. Charles Kittel, Introduction to Solid State Physics, Wiley Eastern, 5th edition, (1983).
6. Engineering Physics - Dr.N. S. Ugemuge, Dr. (Mrs.) S.U.Bhonsule and Dr.ShrutiPatle DNA Publication(2019)
7. David Halliday, Robert Resnick, Jearl Walker, Principles of Physics, 10th Edition, John Wiley and Sons (2017)
8. A. J. Dekker, Solid State Physics, Prentice Hall of India (1971).
9. A Textbook of Engineering Physics, Dr. M. N. Avdhanulu, Dr. P. G. Kshirsagar, S. Chand Publication
10. A Text Book of Engineering Physics Dr. DevashreeHardas& Dr. Ashish Panat, Das Ganu Publication ISBN-978-81-921757-7-5 (2011)
11. Applied Physics, - Dr. (Mrs)S.P. Wankhede, Dr.ShrutiPatle, Dr.(Mrs.)S.U.Bhonsule and Dr.N. S. Ugemuge DNA Publication ISBN-978-81-945174-6-7 (2020)
12. Quantum Physics of Atoms, Molecules, Solids, Nuclei, and Particles by R. Eisberg and R. Resnick, Wiley and Sons
13. Text book of Applied Physics, Dr. D. S. Hardas, Dr. D. S. Bhounmik, Dr.S. Shastri, Das Ganu Publication ISBN-978-93-84336-59-2 (2021)
14. Engineering Physics, second edition, Sanjay Jain, G. Sahasrabudhe, University's Press(India) Pvt. Ltd.(2016)
15. L. I. Schiff, Quantum Mechanics, TMH Publications
16. Advanced Engineering Materials - Dr. Sangeeta G. Itankar, Dr. Manjusha Dandekar, Dr. Tushar R. Shelke, Dr. Swati Fartode, Alliance & Co. ISBN 978-93-91322-12-0 (2023)
17. Applied Physics- Dr. Sangeeta G. Itankar, Dr. Manjusha Dandekar, Dr. Tushar R. Shelke, Dr. Swati Fartode, Alliance &Co. ISBN 978-93-91322-97-7 (2023)
18. Advanced physics - Dr.ShrutiPatle, Dr.(Mrs).S.U.Bhonsule, Dr.Ashish N. Bodhaye, Dr.ManoharD.Mehare DNA Publication (2019)
19. Text book of Advanced Engineering Physics – Alliance & Company Publication by Dr. Chandrakant Khobragade (2025-26)

Dr. C. V. Khobragade
(09/07/2026)

Dr. D. S. Shastri
09/07/2026
(Dr. S. Khobragade)

M. S. Pal
Mrs. M. S. Pal

Ashutosh Raut
09/07/2026

Sanket Lunde
09/07/2026

**SMT. RADHIKATAI PANDAV COLLEGE OF ENGINEERING, BAHADURA,
UMRER ROAD, NAGPUR**

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Faculty of Science & Technology

**B. Tech. Second Semester Computer Engineering, Computer Science & Engineering, Civil
Engineering (NEP) (CBCS) (Practical)**

Sem-II	Total Hours Distribution Per Week		
Total Credits :1	Lecture (L) : 0Hrs	Tutorial/Activity (T/A) : 2 Hrs	
Subject Code	BT2CE02P/BT2CS02P /BT2CV02P	Applied Physics Lab	
Examination Scheme			
CIE	ESE	Minimum Passing Marks:	Examination Duration:
25 Marks	25 Marks	25	3 Hours

List of Experiments: Performance of at least eight experiments is compulsory in a semester.

Name of the Experiments	
1	Energy gap of semiconductor /thermistor.
2	To Study the V-I characteristics of PN junction diode.
3	To Study the V-I characteristics of Zener diode.
4	To Study the Input/Output of PNP/NPN transistor in CB and CE mode
5	To Study the V-I Characteristics of Tunnel diode..
6	To Study V-I Characteristics of Light Emitting Diodes/ Determination of Plank's constant by using LEDs.
7	Study the Diode rectification
8	Study of Hall Effect and determination of Hall Voltage of a given sample.
9	To determine the Hall coefficient (RH) with temperature
10	To study the B-H curve and find out the values of coercivity, retentivity, and saturation magnetization of the experimental material..
11	Determination of NA in optical fiber
12	Calibration of Time Base circuit of CRO and determination of AC, DC voltage & frequency of electrical signals using CRO
13	To determine the Wavelength of laser by using diffraction grating
Virtual Lab	
14	Experiment on the determination of the thickness of a thin foil using an air wedge arrangement
15	Experiment on the determination of the refractive indices of the material corresponding to ordinary and extra - ordinary rays.

Sanket Lante
09/07/2022

Dr. D. F. Shastri
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SMT. RADHIKATAI PANDAV COLLEGE OF ENGINEERING NAGPUR

AN AUTONOMOUS INSTITUTE

AFFILIATED TO RASHTRASANT TUKADOJI MAHARAJ NAGPUR UNIVERSITY, NAGPUR

FACULTY OF SCIENCE & TECHNOLOGY

B. TECH. COMPUTER ENGINEERING

Course Category	Engineering Science Course - ESC -IV		
Sem:II	Total Hours Distribution per week		
Total Credit: 03	Lecture (L): 03 Hrs	Tutorial/Activity(T/A): ----- Hr.	
Subject Code:	BT2CE03T	Python programming language	
Examination Scheme			
Continuous Internal Evaluation (CIE)Marks	Semester End Exam(SEE) Marks	Minimum Passing Marks	Examination Duration
40	60	50	03 Hrs

Course Objectives

- 1 Understand the basic principles of Python programming language.
- 2 Equip students with the knowledge and skills required to write, debug, and maintain Python programs for real-world applications and problem-solving.
- 3 Enable the students to develop the applications using the concepts of Python.

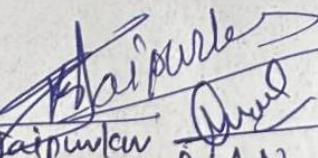
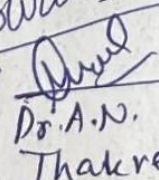
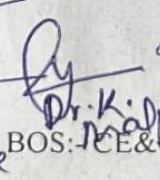
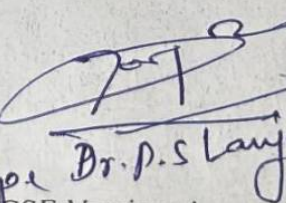
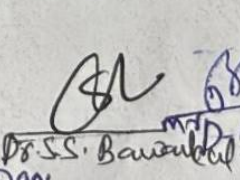
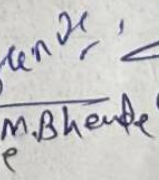
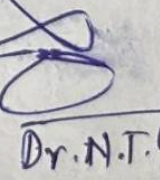
Course Outcomes

After successful completion of this course the student will be able to:

- | | |
|-----|---|
| CO1 | Apply Python programming concepts to develop solutions for computational problems.
mapped with CO1 |
| CO2 | Use different data types to design programs involving decisions, loops, and functions.
mapped with CO2 |
| CO3 | To enable students to work with Python's built-in data structures such as lists, tuples, sets, and dictionaries.
mapped with CO3 |
| CO4 | Manipulate data effectively using Python data structures and file handling
mapped with CO4 |
| CO5 | To introduce object-oriented programming concepts using Python classes and objects.
mapped with CO5 |

Session:2026-27
Dr. A.W. Thakur
Dr. K. Malpe
Dr. P.S. Lajekar
Dr. S.S. Bhandarkar
Dr. N.T. Gole
W.e.f.:01/July/2026

SYLLABUS	
Contents	No. of hours
Unit I : Introduction To Python Importance of Python, Installing Python in Windows & Ubuntu, Executing Python programs, Comments in Python, Indentation in Python, Python character set, Tokens, Python Core Data Types, The print () function, Assignment of values to variables, The input() function. Operators, (arithmetic operator, relational operator, Boolean operator, assignment.	08
Unit II : Control Statements And Functions Decision making statements; if, if else and nested if else. Loop Control Statements: for loop ,while loop, range() function ,break statement, continue statement, pass statement. Functions- Syntax , Use of a function, Parameters and arguments in a function, Recursive functions, lambda function.	08
Unit III : Lists ,Tuples And Sets Lists-Creating Lists, Accessing the elements of a List, List slicing, Python in-built functions for lists, List Methods, Passing list to a function, Returning a list to function. Tuples - Creating tuples, tuple() function, Inbuilt functions for tuples, Indexing and Slicing, Operations on tuples, Passing variable length arguments to tuples, Sort tuples, Traverse tuples from a list, The zip() function, The Inverse zip(*) function; Sets - Creating sets, The Python Set Class, Set operations.	08
Unit IV : Dictionaries , String And File Handling Dictionaries- Basics of Dictionaries, Creating a Dictionary, Adding and replacing values, Retrieving values, Formatting dictionaries, Deleting items, Comparing two dictionaries, Methods of dictionary class, Traversing dictionaries, Nested dictionaries, Strings- Creating and Storing Strings, Basic String Operations, Accessing Characters in String by Index Number, String Slicing and Joining, String Methods, Formatting Strings. File Handling -Text files, Reading and Writing files, Writing numbers to a file, Reading Text, Reading numbers from a file, seek() function.	08
Unit V : Oops Concepts Introduction to OOP- Procedural vs Object-Oriented Programming features of oops, Advantages of OOP ,Classes and Objects -Creating classes and objects, Class attributes and instance attributes.	08


 Dr. P.B. Jaiswal
 Session:2026-27

 Dr. A.N. Thakre

 Dr. K. K. Jaiswal

 Dr. P.S. Langewar

 Dr. S.S. Bawankule

 Dr. M.B. Bheude

 Dr. N.T. Gole
 BOS: CE&CSE Version:-I
 W.e.f.:-01/July/2026

References Books Recommended:

1. Gowrishankar S, Veena A, "Introduction to Python Programming", 1st Edition, CRC Press/Taylor & Francis, 2018. ISBN-13: 978-0815394372
2. Reema Thareja "Python Programming" 2nd Edition.
3. Mark Summerfield ."Programming In Python 3" , 2nd Edition
4. Kamthane, A. N., &Kamthane, A.A. (2017) Programming and Problem Solving with Python, McGraw Hill Education.

URL:

1. <https://www.w3schools.com>
2. <https://www.learnpython.org/>
3. <https://www.python.org/about/gettingstarted/>

ms D.B. Gaikwad
Dr. A.N. Thakur
Dr. K. Malpe
Dr. P.S. Langewar
Dr. S. S. Bawantale
Mrs. D. M. Bheude
Dr. N.T. Gole

Session:2026-27
BOS:- CE&CSE Version:-I
W.e.f.:-01/July/2026

SMT. RADHIKATAI PANDAV COLLEGE OF ENGINEERING NAGPUR
AN AUTONOMOUS INSTITUTE
 AFFILIATED TO RASHTRASANT TUKADOJI MAHARAJ NAGPUR UNIVERSITY, NAGPUR
FACULTY OF SCIENCE & TECHNOLOGY
B. TECH. COMPUTER ENGINEERING

Course Category	Engineering Science Course - ESC -IV		
Sem:II	Total Hours Distribution per week		
Total Credit:1	Practical (P): 02 Hrs	Tutorial/Activity(T/A):	
Subject Code:	BT2CE03P	Python Programming Language Lab	
Examination Scheme			
Continuous Internal Evaluation (CIE)Marks	Semester End Exam(SEE) Marks	Minimum Passing Marks	Examination Duration
25	25	50	

Course Outcomes	
After successful completion of this course the student will be able to:	
CO1	Demonstrate the installation, configuration, and execution of Python programs using an appropriate Python IDE.
CO2	Develop Python programs using variables, operators, decision-making statements, and looping constructs to solve basic computational and mathematical problems.
CO3	Apply Python data structures and string manipulation techniques to perform data processing and problem-solving tasks..
CO4	Implement recursive functions and file handling operations to develop efficient Python applications.
CO5	Design simple object-oriented Python programs using classes and objects to solve real-world problems.

List of Practical's

Minimum Eight out of the following practical's shall be performed:

Sr. No.	List of Practical's
01	To study python programming and install python IDE in windows.
02	Write a program to find out the total marks in average and calculate percentage of a student.
03	Find a Largest of Three Numbers in python Using Nested if Else.
04	Write a program to calculate total cost of item in shopping cart with discount based on the total amount.
05	Write a program to check whether a number is a palindrome.

Session:2026-27

BOS:- CE&CSE Version:2

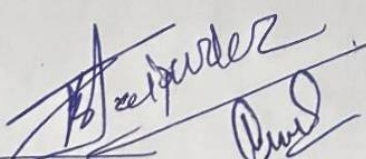
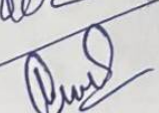
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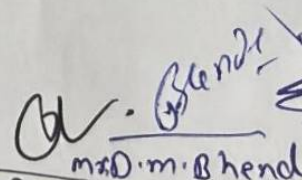
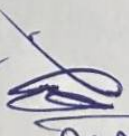
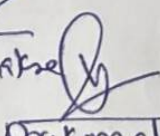
ms. P.B. Jadhavkar Dr. A.N. Thakre Dr. M. S. Lanjewar Dr. P. S. Lanjewar Dr. M. B. Bhande Dr. N. T. Gule

06	Create a list of student marks and perform insertion, deletion, updating, and sorting.
07	Write a program to count vowels and consonants in a string.
08	Write a program to reverse a string.
09	Write a recursive function to calculate the factorial of a number.
10	Write a program to copy the contents of one file to another.
11	Write a program to find area and perimeter of rectangle using class and object.
12	Write a Program to merge two text files into a third file.

Note:

1. Conduct minimum 10 practical's out of above list and practical no. 1 is mandatory.
2. Viva-voce question should be included in each of the practical.
3. During Continuous Internal Evaluation (CIE) practicalMarks, regular performance of practicals for 10 marks, 05 Marks for Journal submission and 10 Marks for internal viva-voce examination.
4. During Semester End Exam(SEE)practicalMarks,external practical examination performance must be conducted for 15 marks and 10 Marks for viva.
5. For Eligibility of SEE Practical examination, Internal submission of Journal (Practical File)is mandatory.


 ms P. S. Jaisurkar

 Dr. A. N. Thakre

 Dr. P. S. Lanjewar

 Dr. S. S. Bawankule

 Dr. N. T. Gale

 Dr. K. Malpe

SMT. RADHIKATAI PANDAV COLLEGE OF ENGINEERING NAGPUR.

(An Autonomous Institute)

Affiliated to Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur.

FACULTY OF SCIENCE & TECHNOLOGY

B.TECH. COMPUTER ENGINEERING-Major (NEP) (CBCS)

Course Category	Engineering Science Course		
Semester: II	Total Hours Distribution per week		
Total Credit: 02	Lecture (L): 2 Hrs	Tutorial/Activity(T/A):0. Hr.	
Subject Code:- BT2CE04T		Course-Principle of Digital Electronics	
Examination Scheme			
Continuous Internal Evaluation (CIE)Marks	End Semester Exam(ESE) Marks	Minimum Passing Marks	Examination Duration
20	30	25	2 Hours

Course Objective:

1. To discuss the fundamentals of digital systems, number systems, and signed number representation used in digital electronics.
2. To develop an understanding of Boolean algebra, logic gates, and logic simplification techniques for digital circuit design.
3. To justify knowledge of the design and analysis of combinational logic circuits using standard digital building blocks.
4. To discuss memory elements and sequential logic circuits used in digital system design.

Course Outcome:

CO1: Apply number system conversions and signed number representations to solve digital arithmetic problems.

CO2: Implement Boolean expressions and design minimized logic functions using Boolean algebra and Karnaugh maps.

CO3: Design and analyze combinational logic circuits using adders, subtractors, multiplexers, decoders, encoders, and code converters.

CO4: Analyze and design sequential logic circuits using latches, flip-flops, registers, and counters

Syllabus

Unit I: Digital Systems and Number Systems (8 Hours)

Introduction to Digital Systems, Analog vs. Digital Systems
Number Systems: Decimal Number System, Binary Number System, Octal Number System, Hexadecimal Number System, Number System Conversions
Signed Number Representation: 1's Complement, 2's Complement.

Unit II: Boolean Algebra and Logic Simplification (8 Hours)

Logic Gates: AND, OR, NOT Gates, Universal Gates (NAND and NOR)
 Boolean Algebra, Boolean Identities and Theorems
 De Morgan's Theorems
 Canonical Forms: Sum of Products (SOP), Product of Sums (POS)
 Logic Function Minimization, Karnaugh Maps (2, 3, and 4 Variables)
 Don't Care Conditions.

Unit III: Combinational Logic Circuits (8 Hours)

Design of Combinational Logic Circuits-Half Adder, Full Adder Half Subtractor, Full Subtractor
Multiplexers and Demultiplexers, Encoders and Priority Encoders
Decoders, Code Converters

Unit IV: Sequential Logic Circuits (8 Hours)

Introduction to Sequential Circuits, Latches: SR Latch, D Latch
Flip-Flops: SR, JK, D, and T Flip-Flops, Characteristic Tables Excitation Tables,
Flip-Flop Conversions
Registers: Shift Registers (SISO, SIPO, PISO, PIPO)
Counters: Asynchronous (Ripple) Counters, Synchronous Counters,
Mod-N Counters.

Text Books:

1. Morris Mano, 'Digital Electronics' 6th Edition, Pearson Education.
2. Anand Kumar, 'Fundamentals of Digital Circuits' 4th Edition, PHI Learning Pvt. Ltd.
3. R.P. Jain, 'Modern Digital Electronics' 4th Edition, McGraw-Hill Education(India)
4. Anil K. Maini, 'Digital Electronics Principles: Devices and Applications, Wiley India, 2007.

Reference Books:-

1. Thomas L. Floyd, 'Digital Fundamentals' 11th Edition (2015), Pearson Education.
2. Brian Holdsworth 'Digital Logic Design', 4th Edition, Newnes Publication.

2. Brian Holdsworth

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(Dr. Poonam Agarkar)

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Dr. S. V. Umale,
~~Chairman~~
Chairperson, BOS

**SMT. RADHIKATAI PANDAV COLLEGE OF ENGINEERING
NAGPUR**

AN AUTONOMOUS INSTITUTE

AFFILIATED TO RASHTRASANT TUKADOJI MAHARAJ NAGPUR UNIVERSITY, NAGPUR

**FACULTY OF SCIENCE & TECHNOLOGY
B.TECH. COMPUTER ENGINEERING**

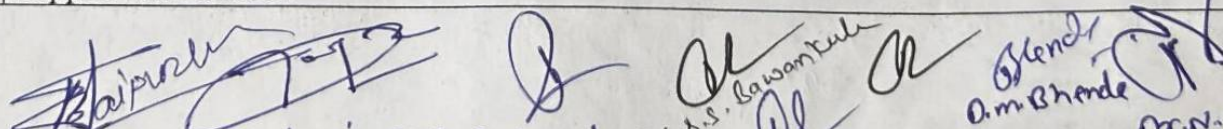
Course Category	Program Core Course -PCC-I		
Sem:II	Total Hours Distribution per week		
Total Credit: 02	Lecture (L): 02 Hrs	Tutorial/Activity(T/A): 00Hrs.	
Subject Code:	BT2CE05T(Th)	Computer Architecture And Organization	
Examination Scheme			
Continuous Internal Evaluation (CIE)Marks	Semester End Exam(SSE) Marks	Minimum Passing Marks	Examination Duration
20	30	25	02 Hours

Course Objectives

1	Enhance the knowledge of computer, instructions, handling data, performing ALU operations in Hardware, memory optimization of system behavior and understand the awareness in role of operating system.
2	To develop and enhance the skill in hardware and I/ O operations.

Course Outcomes

After successful completion of this course the student will be able to:	
CO1	Interpret Register Transfer Language (RTL) statements to analyze the execution of basic computer instructions and data transfer operations,addressing modes. Mapped with Unit-I
CO2	Analyze data representation techniques, instruction sets, and computer arithmetic algorithms, including integer and floating-point operations, arithmetic circuits, multiplication, and division techniques, to explain data processing in computer systems. Mapped with Unit-II
CO3	Illustrate memory organization concepts, including memory hierarchy, cache memory organization, mapping techniques, replacement algorithms, and write policies to analyze and improve memory access performance in computer systems. Mapped with Unit-III
CO4	Apply concepts of input-output organization, I/O transfer methods, interrupt handling, instruction privileges, and process state transitions to analyze peripheral device communication and system performance. Mapped with Unit-IV


 Dr. B. Jaipurkar Dr. P. S. Langewar Dr. K. Malpe Dr. S. S. Bawankule Dr. A. N. Thakre Dr. N. T. Gole

SYLLABUS	
Contents	No. of hours
Unit I: Basic Structure of Computers: Basic Functional blocks of a computer, CPU, Memory, Input-Output subsystems, control unit. Instruction set architecture of CPU, registers, instruction execution cycle, RTL Interpretation of instruction.	10
Unit II: Data Representation & Addressing Modes: Signed number, Fixed and floating point and character representation, addressing modes, Instruction set, Computer arithmetic-integer addition, subtraction, multiplication, shift and add, ripple carry adder, look-ahead carry adder, Floating point arithmetic, Booth's multiplier, carry save multiplier, Division- Restoring and Non Restoring techniques.	10
Unit III: Memory Organization: Concept of Memory hierarchy and Memory Interleaving, Cache memory (mapping techniques: direct, associative, set-associative) Cache size vs Block size, Mapping functions Replacement Algorithm, Write Policy.	09
Unit IV: Peripheral Devices: Input-Output subsystems, Characteristic, I/O Transfers program Controlled , DMA and Interrupt driven Privileged and Non Privileged Instructions, Software interrupts and Exceptions, Programs and process (role of interrupts in process state transition)	09

References Book Recommended:

1. **Computer Organization and Architecture:** by William Stallings, First Edition Published in 1987.
2. **Computer Organization and Design:** by David A. Patterson, John L. Hennessy, First Edition Published in 1993.
3. **Computer System Architecture:** by Morris Mano, Published October 19th 1992 by Prentice Hall.
4. **Structured Computer Organization:** by Andrew S. Tanenbaum, Published July 25th 2012, Todd Austin

Text Book Recommended:

1. **Computer Organization and Design:** (RISC-V edition): The Hardware/Software Interface (RISC-V edition) by Patterson and Hennessy.
2. **Computer Architecture:** A Quantitative Approach by John L. Hennessy.

E-Book Recommended:

1. **Computer Architecture And Organization:**
<https://os.ecci.ucr.ac.cr/ci0114/material/Stallings/Computer-Organization-Architecture-11th.pdf>.
2. **Computer System Architecture:**
<https://www.mbit.edu.in/wp-content/uploads/2020/05/computer-systems-Architecture.pdf>

**SMT. RADHIKATAI PANDAV COLLEGE OF ENGINEERING, BAHADURA, UMRED
ROAD, NAGPUR**

An Autonomous Institute Affiliated to RTMNU, Nagpur

Faculty of Science & Technology

**B. Tech. Mechanical Engineering/Civil Engineering/Electrical Engineering/
Electronics & Telecommunication/Computer Sci. Engineering/Computer Engineering
(NEP) (CBCS)**

Sem-II	Total Hours Distribution Per Week		
Total Credits : 2	Lecture (L): 2Hrs	Tutorial/Activity (T/A) : 0 Hr	
Subject Code	BT2ME06T/BT2CV06T/BT2EE06T /BT2ET07T/BT2CS06T/BT2CE06T	REFER TO IKS (Preserving Art, Culture and Traditions)	
Examination Scheme			
CIE	ESE	Minimum Passing Marks:	Examination Duration:
20 Marks	30 Marks	25 Marks	2 Hours

Course Objectives	
1	To recognize the perspective of Indian Knowledge System v(IKS) for national pride.
2	Sensitize the students to the contributions made by Indians in the field of philosophy, art and health.

Course Outcomes	
After completion of syllabus, students would be able	
1	Interpret basics of Indian Knowledge system.
2	Integrate the teaching of Indian culture and civilization.
3	Appreciate Indian artistic tradition.
4	Analyze Indian health and wellness system for healthy living.

DR. AMR MUSALE

[Signature]
09/07/2026
Dr. S. Khur

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Dr. D. F. Shasthakar
09/07/2026

[Signature]
(Supriya Nay)
09/07/2026

[Signature]
Mrs. M. S. Palekar

SYLLABUS.(REFER TO IKS)

DETAILS OF TOPIC	Allotment of Hours		Mapped with CO Number
	L	T/A	CO
Unit-1			
Introduction to Indian Knowledge System: Introduction and overview of Indian Knowledge Sysatem , Vedic Corpus-Vedas, Types of Vedas, Upvedas, Types of Upvedas.	6		1
Unit-2			
Indian Culture and Civilization: Indian Culture and Civilization, Its characteristics, Difference between Culture and Civilization, Indus Valley Civilization, Vedic Civilization.	6		2
Unit-3			
Indian Artistic Traditions: Indian Artistic Traditions, Chitrakala- Indian Style Painting (Madhubani, Warli, Phad, Kalamkari, Gond, Mandana), Nritya: Indian Dance Forms(Bharat natyam , Kathak, Kathakali, Kuchipudi, Manipuri, Mohiniattyam). Sangeet: Carnatic Music & Hindustani Music.	6		3
Unit-4			
Health And Wellness: Wellbeing, Mental And Physical, Dimensions of Wellness, Concept of Healthy Living In Ayurveda, Tri-Doshas-Relationship To Health.	6		4

Text/Reference Books: -

- 1) Indian Knowledge Systems Ancient Wisdom For The Modern World, Dr. Madhukar Nikam, DATTSONS.
- 2) Indian Knowledge Systems Concepts And Applications. B. Mahadevan, Vinayak Rajat Bhat, Nagendra Pavana R.N.PHI Learning Private Limited.
- 3) Indian Knowledge Systems. Dr. Vilas Gajbe. Dr. Sanjiv Khondekar. Dr. Vinay Upadhayay. Dr. Prashant Raut. Nutan Akash Publication.

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DR. AMOL MUSACE

[Signature]
09/07/2026
Dr. D.F. Shastri
09/07/2026

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(SUPRIYO HEN)
09/07/2026

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Mrs. M. S. Palani

**SMT. RADHIKATAI PANDAV COLLEGE OF ENGINEERING, BAHADURA, UMRED
ROAD, NAGPUR**

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Faculty of Science & Technology

**B. Tech. Mechanical Engineering/Civil Engineering/Electrical Engineering/
Electronics & Telecommunication/Computer Sci. Engineering/Computer Engineering
(NEP) (CBCS)**

Sem-II	Total Hours Distribution Per Week		
Total Credits : 2	Lecture (L): 2Hrs	Tutorial/Activity (T/A) : 0 Hr	
Subject Code	BT2ME06T/BT2CV06T/BT2EE06T /BT2ET07T/BT2CS06T/BT2CE06T	REFER TO IKS (Consciousness Studies)	
Examination Scheme			
CIE	ESE	Minimum Passing Marks:	Examination Duration:
20 Marks	30 Marks	25	2 Hours

Course Objectives	
1	To recognize the perspectives of Consciousness Studies

Course Outcomes	
After completion of syllabus, students would be able	
1	To define the primary fundamentals of Consciousness Studies.
2	To explain the pros and cons of the effects of Consciousness Studies.
3	To classify the consequences of Consciousness studies to promote behavioural science.
4	To relate the basics of Consciousness Studies to better understanding the problems of individual and society.


DR AMOL MUSAGE
 09/07/2026
 (Dr. Skhan)

M. S. Patel
 09/07/2026

Dr. D. P. Shastri
 09/07/2026

(Supriya Aher)
 09/07/2026

SYLLABUS (REFER TO IKS)

DETAILS OF TOPIC	Allotment of Hours		Mapped with CO Number
	L	T/A	CO
Unit-1			
Introduction to Psychology: An introduction to Psychology, Definition of Psychology, History of Psychology, Psychological methods, Sub-divisions of Psychology, Application of Psychology.	6		1
Unit-2			
Basic Cognitive Processes Sensory Process-general characteristics of senses, visual sense, auditory sense, other senses, Perpetual organization-principles of Perceptual organization, object perception and perceptual, object perception and perceptual constancies, influences upon perception, extra sensory perception.	6		2
Unit-3			
Classical conditioning, theories about classical conditioning, Reinforcement and Punishment.	6		3
Unit-4			
Theories about memory, brain and memory, long term memory, forgetting.	6		4

Text/Reference Books: -

1. Clifford T Morgan, King, Weiss and Schopler, Introduction to Psychology, McGraw Hill Education (India) Private Limited.
2. Hilliard Atkinson and Atkinson, (1977) Introduction to Psychology, Tatty McGraw Hill.
3. Kao H.S.R. & Sin had. (Ends) (1977) Asian Perspectives on Psychology

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Mrs. M. S. Paley

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Dr. D. F. Shankar
09/07/2026

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(SUPRIYO HEN)
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DR. AMOL
MUSALE

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09/07/2026
(Dr. S. Venk)

SMT. RADHIKATAI PANDAV COLLEGE OF ENGINEERING, BAHADURA, UMRED ROAD,
NAGPUR

An Autonomous Institute Affiliated to RTMNU, Nagpur

Faculty of Science & Technology

B. Tech. Mechanical Engineering/Civil Engineering/Electrical Engineering/
Electronics & Telecommunication/Computer Sci. Engineering/Computer Engineering
(NEP) (CBCS)

Sem-II	Total Hours Distribution Per Week		
Total Credits : 2	Lecture (L): 2Hrs	Tutorial/Activity (T/A) : 0 Hr	
Subject Code	BT2ME06T/BT2CV06T/BT2EE06T /BT2ET07T/BT2CS06T/BT2CE06T	REFER TO IKS (Glimpse of Ancient Science & Technology)	
Examination Scheme			
CIE	ESE	Minimum Passing Marks:	Examination Duration:
20 Marks	30Marks	25 Marks	2 Hours

Course Objectives	
1	To recognize the Glimpse of Ancient Science & Technology

Course Outcomes	
After completion of syllabus, students would be able	
1	To understand about great mathematicians and to help students to trace, indentify, practice, and develop the significant Indian mathematics
2	To understand the concept of motion and its application in Indian ancient physics literature.
3	To understand the concept of basic chemicals & metallurgical process of ancient and medieval India.

SR AMUL MUSAJE

Ms. M. S. Patel

Dr. D. F. Shastri

09/07/2026

(SUPRIYA ACH)

09/07/2026

Dr. A. B. Gurusami

09/07/26

Dr. S. K. Khair

09/07/2026

SYLLABUS (REFER TO IKS)

DETAILS OF TOPIC	Allotment of Hours		Mapped with CO Number
	L	T/A	CO
Unit-1			
Mathematics in India: Introduction of inception of Mathematics from Vedic periods. Great mathematician and their contribution (e.g. Aryabhatta, Bhaskara, Bhramagupta, Ramanujan, Pingala, Bhaskara-II, Sulabhasutras (Pythagoras theorem), Square, Square root of imperfect squares, Value of Pi.	6		1
Unit-2			
India: Vaisheshikadarshan Atomic Theory & law of motion, Theory of Panchamahabhoota, BrihatShathaka (division of time, unit of distance), Bhaskaracharya (Introduction to theory of gravity, Suryasidhanta & Sidhantasjhiromani), Lilavati (Gurutvakarshan shakti)	6		2
Unit-3			
Chemistry of India: Vatsyayana, Nagarjuna, Vagbhata – building of Theras-Shala (laboratory), working arrangements of Ras-Shala, material and equipment, YashoDharaBhatta-process of distillation, apparatus. Metallurgy in India, Suvarna(gold) and its different types of properties, Rajata (Silver), Tamra (Copper), Loha (Iron), Jasta (Zinc) Naga/Sisa (lead), Pittala (brass)	6		3
Unit-4			
Medicines and yog in India : Importance and benefits of yoga purpose of yoga traditional knowledge of medicinal plant, use of home available herbs and spices.	6		4

Text/Reference Books: -

1. R. P Kularani, Glimpse of Indian Engineering and Technology (Ancient & Medieval period, Munshiram Manoharlal Publishers Pvt. Ltd, 2018
2. A.K. Pathak, Science and Technology in India, Anshikaparakashnpratapgarh ,2016.
3. PB Sharma, S Narnia, Doctors Scientists and Engineers of Ancient India, Kalpaz Publications 2017.
4. NVP, Unithiri.Indian Scientific Traditions(Professor K.N. NeelkantanElayath Felicitation Volume), publicatio9n division, University of Calicut,2006.
5. Anonymous, History of Science in India-Volume-I, Part-I(Physics, Mathematics & Statistics), the national academy of science, India & the Ramakrishna Mission Institute of culture, 2014.
6. Kaptur K and Singh A.K.(Eds 2005), Indian Knowledge Systems, Vol-1, Indian Institute of Advanced Study, Shimla. Tatvabodh of Snakaracharya, Central Chimney Mission Trust, Bombay, 1995.
7. Dharmpal, Indian Science & Technology in the 18th century, Rashtrottahanasahitya, 1983.
8. S Biswal, B L Ray, Vedic Science and Technology, DK Porint world, 2009.

DR. AMALMUSACE

ms. M. S. Palani

DR. D. R. Shanmugan
09/07/2026

(SUPRIYO AICH)
09/07/2026

(Dr. Monami Aich)
09/07/26

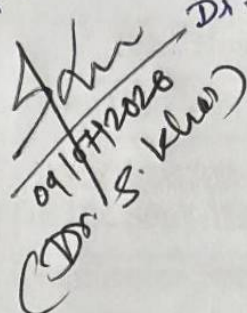
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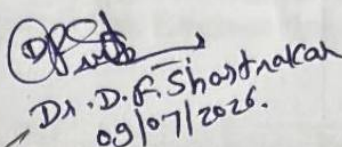
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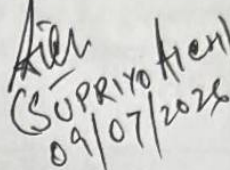


DR. ANIL M. S. PATIL

Received
Mrs. M. S. Patil


09/07/2026
(Dr. S. K. Kulkarni)


Dr. D. R. Shastri
09/07/2026


(Supriya)
09/07/2026

Received
(Dr. Monu) 09/07/2026

**SMT. RADHIKATAI PANDAV COLLEGE OF ENGINEERING, BAHADURA, UMRED
ROAD, NAGPUR**

An Autonomous Institute Affiliated to RTMNU, Nagpur

Faculty of Science & Technology

**B. Tech. Mechanical Engineering/Civil Engineering/Electrical Engineering/
Electronics & Telecommunication/Computer Sci. Engineering/Computer Engineering
(NEP) (CBCS)**

Sem-II	Total Hours Distribution Per Week		
Total Credits : 2	Lecture (L): 2Hrs	Tutorial/Activity (T/A) : 0 Hr	
Subject Code	BT2ME06T/BT2CV06T/BT2EE06T /BT2ET07T/BT2CS06T/BT2CE06T	REFER TO IKS (Wellness, traditional medicines & yoga)	
Examination Scheme			
CIE	ESE	Minimum Passing Marks:	Examination Duration:
20 Marks	30 Marks	25 Marks	2 Hours

Course Objectives

1	To recognize the perspective
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Course Outcomes

After completion of syllabus, students would be able

1	To define the primary fundamentals Wellness, Traditional Medicines & Yoga.
2	To relate the overall elements of nature around human life & livelihood.
3	To classify and rectify the problems related to body .
4	To explain benefits of wellness.

*Dr. Anur
MUSACE*

*Dr. D. F. Shastri
09/07/2026
(Dr. S. K. K)*

*Supriya
(Supriya)
09/07/2026*

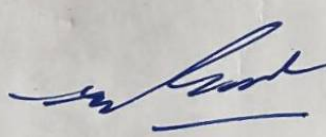
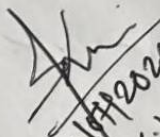
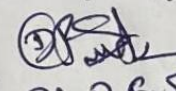
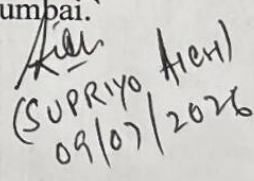
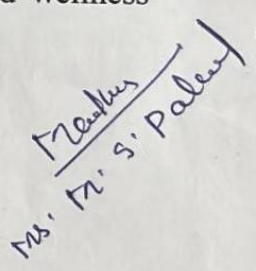
Ms. M. S. Palani

SYLLABUS (REFER TO IKS)

DETAILS OF TOPIC	Allotment of Hours		Mapped with CO Number
	L	T/A	CO
Unit-1			
Importance of health and wellness, Essential components of balance diet for healthy living, Processed foods and unhealthy eating habits.	6		1
Unit-2			
Body systems and common disease, Sedentary lifestyle and its risk of disease, Stress, Anxiety and depression, Factors affecting mental health.	6		2
Unit-3			
Importance and benefits of Yoga, Purpose of Yoga, traditional knowledge of medicinal plant, use of home available herbs and spices.	6		3
Unit-4			
Vedas and its types, Social change in Indian society, Social stratification and class conflicts.	6		4

Text/Reference Books:

1. Sociology in India- Surendra Sharma, Rawat Publication.
2. Bradford B, Strand and Others, Fitness Education Arizona GorsuchSeani; sbrick Publishers, 1997.
3. Scott K Powers and Stephen L Dodd. Total Fitness; Exercise; Nutrition and wellness Boston: Ally and Bacon, 1999.
4. RigvedaSamhita with SayanaBhashya, VaidikSamshodhanMandal, Pune.
5. Riksuktashati, H. D. Velankar, BharatiyaVidyaBahavan, Mumbai.

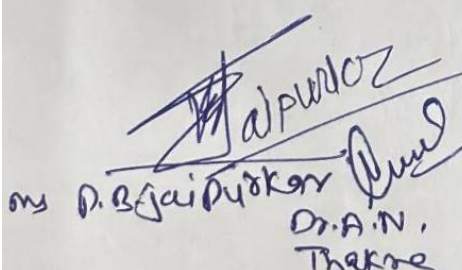
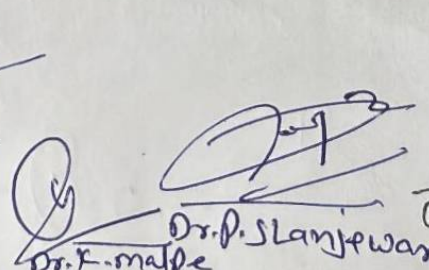
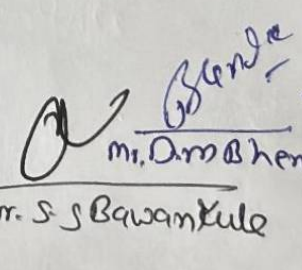
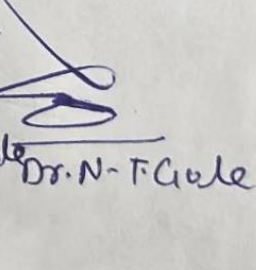
Dr. D.P. Shastri
 09/07/2026
 (S. K. Kulkarni)
 Dr. D.P. Shastri
 09/07/2026
 (SUPRIYO HEN)
 09/07/2026
 Dr. D.P. Shastri
 09/07/2026

DR. AMRUTSALU
 09/07/2026

SMT. RADHIKATAI PANDAV COLLEGE OF ENGINEERING NAGPUR
AN AUTONOMOUS INSTITUTE
AFFILIATED TO RASHTRASANT TUKADOJI MAHARAJ NAGPUR UNIVERSITY, NAGPUR
FACULTY OF SCIENCE & TECHNOLOGY
B.TECH. COMPUTER ENGINEERING

Course Category	Vocational & Skill Enhancement Course -VSEC-II		
Sem:II	Total Hours Distribution per week		
Total Credit: 02	Practical (P): 04 Hrs	Tutorial/Activity(T/A):	
Subject Code:	BT2CE07P	Linux &Shell Programming Lab	
Examination Scheme			
Continuous Internal Evaluation (CIE)Marks	Semester End Exam(SEE) Marks	Minimum Passing Marks	Examination Duration
50	50	50	

Course Outcomes	
After successful completion of this course the student will be able to:	
CO1	Understand the fundamental concepts of the operating system and linux operating system.
CO2	Develop proficiency in using Linux terminal commands and utilities.
CO3	Enable students to write and execute shell scripts using Bash.
CO4	Design and implement automation solutions using shell scripting to perform routine Linux system administration tasks.

SYLLABUS

Contents	No. of hours
Unit I: Linux and Different Types Of Operating Systems: Introduction to Operating Systems, Types of OS : Windows, Linux, Mac OS, DOS ,History of Linux, Linux Architecture, Linux Distributions, Linux Installation Steps. Practical List : 1. Study and compare different operating system(Window, Linux , Mac OS, DOS, and Android) based on features, architecture, licensing and applications. 2. Explore the Linux boot process and verify basic system information such as kernel version, hostname, logged-in user, and operating system details. 3. Install Ubuntu Linux on a virtual machine (Virtual Box/VMware) or a physical system and explore the Linux desktop environment.	12
Unit II: Linux Terminal and Commands : Introduction to Terminal File Commands : ls, cd, pwd, head, tail, touch ,rm, cp, cat, more, chmod, dir Process Management : ps, top, kill, bg, fg. System Information: date, cal, uptime, whoami, df, manfree, clear .Network Commands : ping, whois, dig. Shortcut Keys: Ctrl+C, Ctrl+Z, Ctrl+D, Ctrl+W, Ctrl+U Practical List : 1. Access the Linux operating system and execute basic terminal commands to retrieve user, system, and directory information. 2. Create, view, copy, rename, and delete files and directories using Linux file management commands. 3. Study process management by executing commands such as ps, top, bg, fg, and kill.	14
Unit III: Introduction To Shell Programming : Shell basics, types of shell, shell script, Variables and environment variables, Conditional statements(if, if-else), Loops(for, while,), Functions in shell scripts, Command-line arguments Writing and executing shells scripts. Practical List : 1. Identify different types of Linux shells and write, save, and execute a simple shell script. 2. Write a shell script to calculate the factorial of a given number using a for loop. 3. Write a shell script using functions to perform arithmetic operations (addition, subtraction, multiplication, and division). 4. Write a shell script to generate the Fibonacci series.	12
Unit IV: Shell Scripting and Linux Administration : Shell and Shell Scripts, Linux Sessions, Standard Streams, Input/Output Redirection Pipes and Tee Command, Command Execution , Command-Line Editing, Quotes and Command Substitution , Job Control, Aliases and Variables , Environment Customization Introduction to: Apache Server, Mail Server , FTP Server.	10

Practical List :

1. Study Linux sessions, standard streams (stdin, stdout, stderr), and perform input/output redirection.
2. Study the installation and basic configuration of Mail Server and FTP Server services in Linux.

Case study: Create Linux control panel using Ubuntu Linux virtual machine (Virtual Box/VMware) system and explore the Linux desktop environment.

Reference Books Recommended:

1. "Operating Systems Linux" NIIT, Prentice Hall of India.
2. "Linux Kernel Development " Robert Love, 3rd Edition.
3. "Ubuntu Linux Toolbox" Christopher Negus ,2nd Edition.
4. "The Linux Programming Interface – A Linux and UNIX System Programming Handbook" by Michael Kerrisk
5. "Linux Command Line and Shell Scripting Bible" by Richard Blum and Christine Bresnahan

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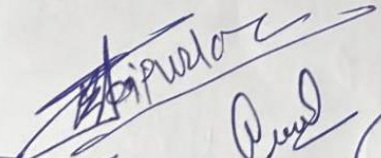
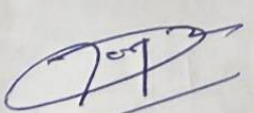
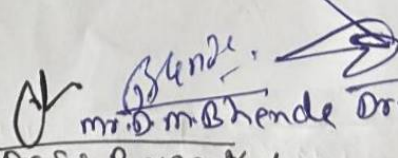
1. <https://www.w3schools.com>
2. <https://www.geeksforgeeks.org/linux>
3. <https://www.tutorialspoint.com>

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FACULTY OF SCIENCE & TECHNOLOGY
B.TECH. COMPUTER ENGINEERING

Course Category	Vocational & Skill Enhancement Course -VSEC-II		
Sem:II	Total Hours Distribution per week		
Total Credit: 02	Practical (P): 04 Hrs	Tutorial/Activity(T/A):	
Subject Code:	BT2CE07P	Digital Marketing Lab	
Examination Scheme			
Continuous Internal Evaluation (CIE)Marks	Semester End Exam(SEE) Marks	Minimum Passing Marks	Examination Duration
50	50	50	

Course Objective	
After successful completion of this course the student will be able to:	
CO1	Understand the fundamentals of digital marketing, online platforms, and digital business strategies.
CO2	Develop practical skills in creating digital content, social media campaigns, websites, and online advertisements using modern digital tools.
CO3	Analyze digital marketing performance using SEO, analytics, email marketing, and AI-based marketing tools to improve business growth.

Course Outcomes	
After successful completion of this course the student will be able to:	
CO1	Explain the concepts and importance of digital marketing and various online marketing channels.
CO2	Create and optimize websites, blogs, and social media pages for digital promotion..
CO3	Apply SEO, content marketing, and email marketing techniques to improve online visibility.
CO4	Design and execute digital advertising campaigns using Google Ads and social media platforms.
CO5	Analyze marketing performance using Google Analytics and AI tools to make data-driven marketing decisions.

my P. B. Jaipurkar Dr. A.N. Thakre Dr. P.S. Lanjewar Dr. S. B. Bhande Dr. N. F. Gole

Session:2026-27 BOS:- CE & CSE Version:-1 W.e.f:-01/July/2026

SYLLABUS

Contents	No. of hours
Unit I Introduction to Digital Marketing Topics : Fundamentals of Digital Marketing ,Traditional Marketing vs Digital Marketing 'Digital Marketing Ecosystem ,Digital Customer Journey ,Types of Digital Marketing ,Digital Marketing Channels ,Creating Google Account ,Creating Business Gmail ,Introduction to Canva , Digital Ethics and Cyber Security Practical List : 1. Create a professional Gmail account for business. 2. Design a digital poster using Canva. 3. Create a Google Business Profile (Demo). 4. Compare traditional marketing with digital marketing using PowerPoint.	10
Unit II: Website Development & Social Media Marketing Topics: Introduction to Websites ,Domain and Hosting,Website Builders ,Google Sites, WordPress Basics, Blogging,Social Media Platforms ,Facebook Business Page, Instagram Business Account ,LinkedIn Company Page . Practical List : 1. Create a personal website using Google Sites. 2. Create a blog using Blogger or WordPress. 3. Create a Facebook Business Page. 4. Create an Instagram Business Profile and prepare five promotional posts.	10
Unit III: Search Engine Optimization (SEO) & Content Marketing Topics: Introduction to SEO ,On-page SEO ,Off-page SEO ,Keyword Research,Google Search Console ,Content Marketing , Blog Writing ,AI Content Writing Tools ,Email Marketing Newsletter Design. Practical List : 1. Perform keyword research using Google Keyword Planner. 2. Write and publish an SEO-friendly blog. 3. Design an email newsletter using Canva. 4. Create an email marketing campaign using Mailchimp (Free Version).	10
Unit IV: Online Advertising & Digital Campaigns Topics: Google Ads ,Search Ads ,Dsplay Ads , Video Marketing , YouTube Marketing Facebook Ads , Instagram Ads , Influencer Marketing , Affiliate Marketing ,Campaign Budget Planning . Practical List : 1. Create a Google Ads campaign (Demo Mode).	10

2. Design a Facebook advertisement.
3. Create a YouTube promotional video.
4. Prepare a digital marketing campaign for a local business.

Unit V: Analytics, AI & Emerging Trends

Topics: Google Analytics, Website Traffic Analysis , Performance Metrics , ROI, Conversion Rate , AI in Digital Marketing , ChatGPT for Marketing , AI Image Generation , Marketing Automation, Future Trends in Digital Marketing .

08

Practical List :

1. Analyze website traffic using Google Analytics Demo Account.
2. Generate marketing content using ChatGPT.
3. Create AI-generated promotional images using Canva AI.
4. Prepare a complete Digital Marketing Report for a product or service.

Suggested Mini Project

Each student (or group of 2 students) should complete **one mini project** by applying the concepts learned during the course.

Examples:

- Digital Marketing Campaign for Engineering College
- Social Media Promotion for Local Business
- Product Branding using Canva
- SEO Optimization for College Website
- Online Promotion of Startup Idea

Suggested Software / Tools

- Google Workspace
- Canva
- Google Sites
- Blogger / WordPress
- Google Keyword Planner
- Google Search Console
- Google Analytics
- Google Ads
- ChatGPT
- Canva AI

All Are Online Free Vision Tools. Canva AI is Paid version.

Reference Books Recommended:

1. Seema Gupta, Digital Marketing, McGraw Hill.
2. Puneet Singh Bhatia, Fundamentals of Digital Marketing, Pearson.
3. Damian Ryan, Understanding Digital Marketing, Kogan Page.
4. Philip Kotler, Marketing 5.0, Wiley.
5. Ian Dodson, The Art of Digital Marketing, Wiley.

URL :

1. <https://www.w3schools.com>
2. <https://www.geeksforgeeks.org/linux>
3. <https://www.tutorialspoint.com>

/July/2026

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ROAD, NAGPUR**

An Autonomous Institute Affiliated to RTMNU, Nagpur

Faculty of Science & Technology

**B.Tech. Mechanical Engineering/Civil Engineering/Electronics & Telecommunication
/Electrical Engineering/**

Computer Science & Engineering/Computer Engineering (NEP) (CBCS)

Sem-II	Total Hours Distribution Per Week		
Total Credits : 2	Lecture (L) :	Tutorial/Activity (T/A) : 4Hrs	
Subject Code	BT2ME08P/BT2CV08P/ BT2ET08P/BT2EE08P/BT2CS08P/ BT2CE08P	CC Basket-II (Yoga & Cultural Activities)	
Examination Scheme			
CIE	ESE	Minimum Passing Marks:	Examination Duration:
100 Marks	-	50	-

Course Objectives	
1	To understand the fundamental and benefits of yoga and cultural activities.
2	To develop physical fitness, strength, flexibility, and coordination.

SYLLABUS

1. **Yoga Practices:** Importance and types of yoga, Warm up and stretching exercise, Pranayam techniques, Suryanamaskar, safety precaution during yogapractice.

2. **Health and Wellness:** Stress management through yoga, Healthy lifestyle and nutrition, mindfulness and emotional balance.

3. **Cultural Activities:** Meaning and importance of culture activities, Indian art, music, dance, drama, folk tradition.

4. **Cultural Excellence and Creative Expression:** National festival, Regional festivals, college cultural festivals and competitions and Innovation.

Handwritten: Mrs. M. S. Palani

Handwritten: Dr. D. P. Shinde
09/07/2026

Handwritten: Sandesh R. Grandhe
09/07/2026