GovernmentCollegeofEngineering,Aurangabad

ChhatrapatiSambhajinagar

(AnAutonomousInstituteofGovernmentofMaharashtra)

Station Road, Osmanpura, Aurangabad – 431005 (M.S.)
Phone – (0240) 2366101, 2366111, Fax (0240) 2332835

DEPARTMENTOFCOMPUTERSCIENCEANDENGINEERING

FYB.TECH.(CSE)CURRICULUMSTRUCTUREFROM

ACADEMIC YEAR 2024-25

AsperNEP

Prof. Sudhir Shikalpure
Head,CSE

Dr. Anil Karwankar
Dean Academics

Approved Updated Curriculum in XXIXth Academic Council
Dated: 25th March 2025

VisionoftheInstitute

- Inpursuitofglobalcompetitiveness,theinstituteiscommittedtoexcelinengineeringeducationand research with concern for environment and society.

MissionoftheInstitute

- Provideconduciveenvironment foracademicexcellenceinengineering education.
- Enhanceresearchanddevelopmentalongwithpromotiontosponsoredprojects and industrial consultancy.
- Fosterdevelopmentofstudentsbycreatingawarenessforneedsofsociety, sustainable development and human values.

VisionoftheComputerScience&EngineeringDepartment

- Todevelopculturedandtechnicallycompetentcomputerprofessionalsandscholars with sustainedgrowth inemployability,highimpact researchoutcomeandbecome genuine asset to industry and society

MissionoftheComputerScience&EngineeringDepartment

- DevelopingCreativityandLogicalReasoningamongstthelearner
- Updatingcurriculumaccordingtoindustryrequirementsand standards
- Promoteleadershipquality,socialaccountabilityandethicsindisciplined environment, quality Education.
- Creatingenvironmentconducivetoresearch

ProgramOutcomes

EngineeringGraduateswillbeableto:

- PO1:Applyknowledgeofmathematics,scienceandalgorithmsinsolving complex Computer engineering problems.
- PO2:Generatesolutionsbyconductingexperimentsandapplyingtechniquesto analyze and interpret data.
- PO3:Designcomponents,orprocessestomeetthe needswithinrealisticconstraints.
- PO4:Identify,formulate,andsolveSoftwareEngineering,NetworkingandData Mining problems.
- PO5:Comprehendprofessionalandethicalresponsibilityincomputingprofession.
- PO6:Expresseffectivecommunicationskills.
- PO7:Participateinglobal,economic,environmental,andsocietalcontext.
- PO8:Recognizetheneedfor,and anabilitytoengageinlife-long learning.
- PO9:Knowledgeofcontemporaryissuesandemergingdevelopmentsincomputing profession.
- PO10:Utilizethetechniques,skillsandmoderncomputerEngineeringtools, Software and techniques necessary for Engineering practice.
- PO11:Functioneffectivelyasanindividualandasamemberorleaderindiverse teams and in multidisciplinary settings.
- PO12:Designresearchproblemsandconductresearchincomputingenvironment.

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ProgramSpecificOutcomes

- PSO1: -Ability to apply probability, statistics, programming applications and science inthedevelopmentofcomputingsolutionsinappropriateareasfor systemsoftware, database, networking, web development, network security & Operating system.
- PSO2: - Abilitytoapply standard practices &methodsinsoftwareprojectmanagement and development usingsuitable programming environment &toolsto deliver a quality product for the industry.
- PSO3:-Abletoapplyethical,social,professional,fieldswithpropercommunicationskills & teamwork & pursue lifelong learning

GENERALCOURSESTRUCTURE&THEME

A. DefinitionofCredit

1Hr.Lecture(L)perweek	1 Credit
1Hr.Tutorial(T)perweek	1 Credit
1Hr.Practical(P)perweek	0.5 Credit
2HoursPractical(P)perweek	1 Credit

B. TotalCreditsforthecompletionofB.Tech.inComputerScience&Engineering:

The total number of credits proposed for the four-year B.Tech in Computer Science & Engineering **(**CSE) with 1 Multidisciplinary minor (Compulsory) degree is **176** as per the structure given below**:**

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C. SemesterwiseCreditDistributionStructureforFourYearUGProgramin Computer Science & Engineering with One Multidisciplinary Minor

Semester		I	II	III	IV	V	VI	VII	VIII	Total Credits
BasicScience Course	BSC/ESC	8	8		--	--	--	--	--	16
EngineeringScienceCourse		7	7		--	--	--	--	--	14
ProgrammeCoreCourse(PCC)	ProgramCourses	--	02	11	11	6	12	8	0	50
ProgrammeElectiveCourse(PEC)		--	--			04	08	08	0	20
MultidisciplinaryMinor (MD M)	MultidisciplinaryCourses		-	04	03	04	03	0	00	14
OpenElective(OE)Otherthana particular program		--	--	03	03	02	--	--	--	08
Vocationaland Skill Enhancement Course(VSEC)	SkillCourses	02	02	--	02	--	02	--	--	08
AbilityEnhancementCourse(AEC-01,AEC-02)	HumanitiesSocialScience andManagement(HSSM)		02		02	--	--	--	--	04
Entrepreneurship/Economics/ Management Courses		--		02	02	--	--	--	--	04
IndianKnowledgeSystem(IKS)		02			--	--	--	--	--	02
ValueEducationCourse(VEC)		--	--	02	02	--	--	--	--	04
ResearchMethodology	Experiential LearningCourses	--	--	--	--	--	--		04	04
Comm. Engg. Project (CEP)/FieldProject(FP)		--	--	02	--	--	--	-	-	02
Project		--	--	--	--	--	--	04		04
Internship/OJT		--	---			--	--		12-	12
Co-curricularCourses(CC)	Liberal Learning Courses	02	02		--	--	--	--	-	04
TotalCredits(Major)		**21**	**23**	**27**	**24**	**20**	**25**	**20**	**16**	**170**

Studentscanoptforanyofthefollowingaspertherulesandregulationsgivenby institute:

1. B.TechwithoneMultidisciplinary Minor=Total170 Credits
2. B.Techwithone MultidisciplinaryMinorand HonorinA.I.M.L /programmingparadigm =Total188 Credits
3. B.TechwithoneMultidisciplinaryMinorandHonorbyResearch=Total188 Credits
4. B.TechwithtwoMultidisciplinaryMinors=Total184Credits

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D. Category-wise Courses

1. BASICSCIENCECOURSE [BSC]

S. No	Category	Course Title	Semester	Hoursperweek			Total Credits
				Lecture	Tutorial	Practical	
1	BSC	Mathematics–I	I	3	1	0	**04**
2	BSC	Electrochemistry, Battery Science and Engineering Materials	I	3	0	0	**03**
3	BSC	Lab Chemistry	I	0	0	2	**01**
4	BSC	Mathematics–II	II	3	1	0	**04**
5	BSC	Optics, Semiconductors andQuantummechanics	II	3	0	0	**03**
6	BSC	Lab Physics	II	0	0	2	**01**
TotalCredits							**16**

2. ENGINEERINGSCIENCECOURSE[ESC]

S. No	Category	Course Title	Semester	Hoursperweek			Total Credits
				Lecture	Tutorial	Practical	
1	ESC	Basics of Civil Engineering / Engineering Mechanics/ Basics of Electrical Engineering	I	2	0	0	**02**
2	ESC	Programmingforproblem solving	I	3	0	0	**03**
3	ESC	LabProgrammingfor problem solving	I	0	0	2	**01**
4	ESC	LabBCE / EM/BEE	I	0	0	2	**01**
5	ESC	Basics of Mechanical Engineering/Engineering Graphics	II	2	0	2	**02**
6	ESC	Basics of Electronics Engineering	II	2	0	0	**03**
7	ESC	LabBME/EG	II	0	0	2	**01**
8	ESC	LabBasicsofElectronics Engineering	II	0	0	2	**01**
TotalCredits							**14**

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3. VOCATIONALANDSKILLENHANCEMENTCOURSE (VSEC)

S. No	Category	Course Title	Semester	Hoursperweek			Total Credits
				Lecture	Tutorial	Practical	
1	VSEC	ComputerWorkshop	I	0	0	4	**02**
2	VSEC	Engineering Exploration	II	0	0	4	**02**
3	VSEC	SoftwareLaboratory-I (WT)	IV	0	0	4	**02**
4	VSEC	Competative programming/SDL-2(Javaprogramming)	VI	0	0	4	**02**
TotalCredits							**08**

4. HUMANITIES&SOCIALSCIENCESCOURSES[HSSM]

S.No	Category	Course Title	Semest er	Hoursperweek			Total Credits
				Lecture	Tutorial	Practical	
1.	IndianKnowledge System (IKS)	Indian Knowledge System	I	2	0	0	**02**
2.	Ability Enhancement Course (AEC)	Communication Skills	II	2	0	0	**02**
3.	Entrepreneurship/Economics/ Management Courses	Psychology	III	2	0	0	**02**
4.	Value Education Course (VEC)	Universal Humanvalues	III	2	0	0	**02**
5.	Ability Enhancement Course (AEC)	Technical Communication	IV	2	0	2	**02**
6.	Entrepreneurship/Economics/ Management Courses	Personality Development	IV	2	0	0	**02**
7.	Value Education Course (VEC)	Environmental studies(EVS)	IV	2	0	0	**02**
TotalCredits							**14**

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5. EXPERIENTIALLEARNINGCOURSES(ELC)

S. No	Category	Course Title	Semester	Hoursperweek			Total Credits
				Lecture	Tutorial	Practical	
1	Comm. Engg. Project (CEP)/Field Project(FP)	MiniProject	III	0	0	4	**02**
2	Project	Project	VII	0	0	8	**04**
3	Research Methodology	Research Methodology	VIII	4		0	**04**
4	Internship/OJT	Internship	VIII	-	-	24	**12**
TotalCredits							**22**

6. LIBERALLEARNINGCOURSES(CO-CURRICULARCOURSES(CC))

S. No	Category	Course Title	Semester	Hoursperweek			Total Credits
				Lecture	Tutorial	Practical	
1	CC	Yoga and meditation	I	1	0	2	**02**
2	CC	NSS/Sports/ Clubs Activities	II	0	0	4	**02**
TotalCredits							**04**

7. MULTIDISCIPLINARYMINOR(MDM)and OPENELECTIVE(OE)OTHERTHAN A PARTICULAR PROGRAM

ListofMultidisciplinaryMinorCoursesfromother faculties:Total14Creditsasper GR

Twocoursesof4creditsandtwocoursesof3credits.

Openelectivesof8creditscan beofferedfromtheseother faculties.

Twocoursesof3creditsand01courseof02credits.

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Specialization	Dramatics	FilmMaking	Fine Art	Music
Multi-disciplinary Minor - 01	Dramatic Theory, Literature	Videography + Cinematography	AppliedArt (DigitalArt)	Theory of IndianMusic
Multi-disciplinary Minor – 02	Acting	VideoEditing and Lighting	Painting (Generative Art)	Ancientand Modern Poetry
Multi-disciplinary Minor – 03	Directing	Story telling Storyboarding	Sculpture(3D-Space)	TheEvolution of music
Multi-disciplinary Minor – 04	Playwriting	UI/UXand Animation	Visual Communication (Evolutionary Art)	Musicand Film
Multi-disciplinary Minor – 05	Applied Interactive Theatre	Art of Visual Communication	GraphicsArt (Print & PrintingArt)	Introductionto Electronicand Computer Music
Multi-disciplinary Minor - 06	Technical Theatre	Film& TV Directing	Art Culture	Analysisof TonalMusic

Specialization	Management& Finance	Law	SocialScience	Journalism
Multi-disciplinary Minor - 01	Microeconomics	Constitutional Law	IndianEconomics	Principles of Communication
Multi-disciplinary Minor – 02	CorporateSocial Responsibility	HumanRights& InternationalLaw	Introductionto Sociology	Fundamentalsof Journalism
Multi-disciplinary Minor – 03	Principlesof Accounting	Environmental Law	Geo-Informatics	CyberJournalism
Multi-disciplinary Minor – 04	Business Intelligence	CivilProcedure Code (CPC)	Introduction to PoliticalSciences	BasicsofDesign&Graphics
Multi-disciplinary Minor – 05	Marketing Research	Land Laws includingceiling and other local laws	Corporate sociology	Mass Communication: Concepts and Processes
Multi-disciplinary Minor - 06	Corporate Governanceand BusinessEthics	Cyberlaw	ModernIndia-Political, Economic &SocialEthos	IT and Online Journalism

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InadditiontoabovecoursesfollowingGroupsareofferedasMultidisciplinaryMinorby Computer Science & Engineering Department

A) Artificialintelligence/MachinelearningGroup

S. No	Category	Course Title	Semester	Hoursperweek			Total Credits
				Lecture	Tutorial	Practical	
1	MDM	Introductionto Data Science	III	3	0	1	**04**
2	MDM	IntroductionTo Machine Learning	IV	3	0	0	**03**
3	MDM	Artificial Intelligence	V	3	0	1	**04**
4	MDM	Neuralnetwork	VI	3	0	0	**03**
TotalCredits							**14**

B) ProgrammingGroup

S. No	Category	Course Title	Semester	Hoursperweek			Total Credits
				Lecture	Tutorial	Practical	
1	MDM	C programming	III	3	0	1	**04**
2	MDM	Object oriented programming	IV	3	0	0	**03**
3	MDM	Java programming	V	3	0	1	**04**
4	MDM	Python Programming	VI	3	0	0	**03**
TotalCredits							**14**

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Inadditiontoabovecoursesfollowingcoursesareofferedas OpenElectives(OE)byComputer Science & Engineering Department

S. No	Category	Course Title	Semester	Hoursperweek			Total Credits
				Lecture	Tutorial	Practical	
1	OE	Design Thinking/critical thinking	III	3	0	0	**03**
2	OE	PECL/software development cycle	IV	3	0	0	**03**
3	OE	Behavioral Science &organization	V	2	0	0	**02**
TotalCredits							**08**

8. HONORS

S. No	Category	Course Title	Semester	Hoursperweek			Total Credits
				Lecture	Tutorial	Practical	
1	Honors	Modern Artificial intelligence	V	4	0	0	**04**
2	Honors	Advance Computer Vision	VI	4	0	0	**04**
3	Honors	Deep Learning	VII	4	0	0	**04**
4	Honors	Intelligent System	VIII	4	0	0	**04**
5	Honors	MiniProject	VIII	0	0	4	**02**
TotalCredits							**18**

StudenthastochooseandOneHonoroutoftheFourHonorgroupsprovidedbelow

Intelligent System Group

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GovernmentCollegeofEngineering,Aurangabad (An Autonomous Institute)

Teachingand EvaluationSchemefromyear2023-24asperNEP

B.Tech.PrograminComputerScienceandEngineeringMultidisciplinaryMinor Semester I

Course				Teaching Scheme			ContinuousEvaluationintermsofMarks					
Sr No	**Category**	**Course Code**	**CourseName**	**TH**	**T**	**PR**	**Credits**	**ISE I**	**ISE II**	**ISE III**	**ESE**	**Total (100)**
1	BSC	MABSC 1001	MathematicsI	3	1	-	4	15	15	10	60	100
2	BSC	CHBSC 1001	Electrochemistry, Battery Science and Engineering Materials	3	-	-	3	15	15	10	60	100
3	ESC	#	#BCE/EM/ BEE	2	-	-	2	10	10	-	30	50
4	ESC	CSESC 1001	Programming forproblem solving	3	-	-	3	15	15	10	60	100
5	BSC	CHBSC 1003	Lab Chemistry	-	-	2	1	-	-	25	-	25
6	ESC	CSESC 1002	Lab Programming for problem solving	-	-	2	1	-	-	25	-	25
7	ESC	#	#LabBCE /EM/ BEE	-	-	2	1	-	-	25	-	25
8	VSEC	ITVSE 1001	Computer Workshop	-	-	4	2	-	-	50	-	50
9	IKS	CSIKS 1003	Indian Knowledge System	2	-	-	2	10	10	-	30	50
10	CC	INCCC 1101	Yoga &Meditation	1	-	2	2	-	-	50	-	50
	Total			**14**	**1**	**14**	**21**	**65**	**65**	**205**	**240**	**575**

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#			
CEESC1001	BasicsofCivilEngineering (BCE)	CEESC1002	Lab-BasicsofCivil Engineering
AMESC1002	EngineeringMechanics (EM)	AMESC1004	Lab-EngineeringMechanics
EEESC1011	BasicsofElectrical Engineering (BEE)	EEESC1012	Lab-BasicsofElectrical Engineering

InductionProgram(Mandatory)	**3Weeks Duration**
Inductionprogramtobecompletedatthe start of the first year.	• Physical activity • CreativeArts • UniversalHumanValues • Literary • ProficiencyModules • LecturesbyEminent People • Visitstolocal Areas • FamiliarizationtoDept./Branch&I nnovations

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GovernmentCollegeofEngineering,Aurangabad (An Autonomous Institute)

Teachingand Evaluation Schemefromyear2023-24

B.Tech.PrograminComputerScienceandEngineeringMultidisciplinaryMinor

Semester II

Course				Teaching Scheme			ContinuousEvaluationintermsof Marks					
Sr No	**Category**	**Course Code**	**CourseName**	**TH**	**T**	**PR**	**Credits**	**ISE I**	**ISE II**	**ISE III**	**ESE**	**Total (100)**
1	BSC	MABSC1003	MathematicsII	3	1	-	4	15	15	10	60	100
2	BSC	PHBSC1002	Optics, Semiconductors and Quantum mechanics	3	-	-	3	15	15	10	60	100
3	ESC	#	# BME/ EG	2	-	-	2	10	10	-	30	50
4	ESC	ETESC 1003	Basics of Electronics Engineering	3	-	-	3	15	15	10	60	100
5	AEC	INAEC 1001	Communication Skills	2	-	-	2	10	10	-	30	50
6	PCC	CSPCC 1004	Computer Organization	2	-	-	2	10	10	-	30	50
7	BSC	PHBSC1003	Lab Physics	-	-	2	1	-	-	25		25
8	ESC	#	Lab BME/EG	-	-	2	1	-	-	25		25
9	ESC	ETESC 1004	LabBasics of Electronics Engineering	-	-	2	1	-	-	25		25
10	VSEC	ETVSE 1002	Engineering Exploration	-	-	4	2	-	25	25		50
11	CC	INCCC 1002 INCCC 1003 INCCC 1004	NSS Sports Club Activities	-	-	4	2	-	-	50		50
	Total			**15**	**1**	**14**	**23**					

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#			
MEESC1006:	Basics of Mechanical Engineering(BME)	MEESC1007	Lab-BasicsofMechanical Engineering
MEESC1001	EngineeringGraphics (EG)	MEESC1005:	Lab-EngineeringGraphics

Exitoption:

Thecandidateshouldcompletetheinternshipoftwo monthsfor8credits. OR

AwardofUGCertificateinMajorwith44creditsandan additional 8credits

			Credits
1	**DesktopEngineer**	**Online/offlinecertification Course (One course among the list shall be done in summer vacationafterSemesterII)**	**8**
2	**ITSupportEngineer**		**8**
3	**Certified Programmer (C, C++, Java, Python based on language learnedinSem-1and/orSem-2)**		**8**

OR

AfterFirstYear:	**ThecandidateshouldpassthefollowingTwocoursesof8creditsand complete one project to qualify for Certificate** 1. Data Structures 2. ObjectOriented Programming

TentativeTeachingand EvaluationSchemefrom year2024-25asper NEP

SecondYearB.Tech.PrograminComputerScienceandEngineeringMultidisciplinary Minor

SemesterIII

Course				Teaching Scheme			ContinuousEvaluationintermsof Marks					
Sr No	**Category**	**Course Code**	**CourseName**	**TH**	**T**	**PR**	**Credits**	**ISE I**	**ISE II**	**ISEI II**	**ESE**	**Total (100)**
1	PCC		Engineering MathematicsIII (Statistics, Differential Calculus)	2	1	-	3	15	15	10	60	100
2	PCC		Data Structures	3	-	-	3	15	15	10	60	100
3	PCC		OperatingSystem	3	-	-	3	15	15	10	60	100
4	MDM		Multidisciplinary Minor	3	1	-	4	15	15	10	60	100
5	PCC		LabData Structure	-	-	2	1		-	25	25	50
6	PCC		LabOperating System			2	1			25	25	50
7	PCC		LabAdv C&C++	-	-	2	1		-	25	25	50
8	OE1		OpenElective-I	3	-		3	15	15	10	60	100
9	VEC		UniversalHuman value(UHV)	02			02	10	10	--	30	50
10	EECM/HSSM		(Psychology)	02			02	10	10	--	30	50
11	CEP/FP		MiniProject			4	2			50	50	100
12	AEC		Technical communication	02			2	10	10	--	30	50
	Total			**20**	**02**	**10**	**27**	**105**	**105**	**175**	**515**	**900**

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TentativeTeachingandEvaluationSchemefromyear2024-25 asper NEP

SecondYearB.Tech.PrograminComputerScienceand EngineeringMultidisciplinary Minor SemesterIV

Course				Teaching Scheme			ContinuousEvaluationintermsofMarks					
Sr No	**Category**	**Course Code**	**CourseName**	**TH**	**T**	**PR**	**Credits**	**ISE I**	**ISEI I**	**ISEII I**	**ESE**	**Total (100)**
1	PCC		Discrete Mathematic Structure	3	-	-	3	15	15	10	60	100
2	PCC		Database Management System	3		-	3	15	15	10	60	100
3	PCC		Object Oriented Programming	3			3	15	15	10	60	100
4	OE2		Open Elective-II	3	-		3	15	15	10	60	100
5	PCC		Workshop II	-	-	2	1	-	-	25	25	50
6	(MDM)		Multidisciplinary Minor	3	-	-	3	15	15	10	60	100
7	PCC		Lab Database Management System	-	-	2	1	-	-	25	25	50
8	PCC		Lab Object Oriented Programming			2	1			25	25	50
9	VSEC/		Software Laboratory-I (WT)			4	2			50	50	100
10	VEC		Environmental studies (EVS)	2			2	10	10	--	30	50
11	HSSM		Personality Development	2			2	10	10	--	30	50
	Total			**19**	**00**	**10**	**24**	**95**	**95**	**175**	**485**	**850**

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BridgeCoursesforexit:

Thecandidateshouldcompletetheinternshipoftwomonthsfor8 credits.

OR

Exitoption:AwardofUGDiplomainMajorandanadditional8credits

			Credits
1	**WebDeveloper/AppDeveloper**	**Online/Offline certificationCourse Onecourseamongthe listshallbedonein summervacationafter SemesterIV**	**8**
2	**CertifiedDatabaseEngineer**		**8**

OR

After SecondYear:	**Thecandidateshouldpassthefollowing Twocoursesof8creditsand complete one project to qualify for Certificate** SoftwareEngineering Cloud Computing

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TentativeTeachingandEvaluationSchemefromyear2025-26 asper NEP

ThirdYearB.Tech.PrograminComputerScienceandEngineeringMultidisciplinary Minor

SemesterV

Course				Teaching Scheme			ContinuousEvaluationintermsofMarks					
Sr No	**Category**	**Course Code**	**CourseName**	**TH**	**T**	**PR**	**Credits**	**ISE I**	**ISEI I**	**ISEII I**	**ESE**	**Total (100)**
1	PCC		Design& Analysisof Algorithm	3		-	3	15	15	10	60	100
2	PCC		Software Engineering	3	-	-	3	15	15	10	60	100
3	PCC		FormalLanguage andAutomata Theory	3			3	15	15	10	60	100
4	MDM		Multidisciplinary Minor	3	1		4	15	15	10	60	100
5	PEC-I		Program Elective–I Core	3	-		3	15	15	10	60	100
6	OE3		OpenElective-III	2	-	-	2	10	10	--	30	50
7	PCC		LabDesign& Analysis of Algorithm	-	-	2	1		-	25	25	50
8	PEC-I		LabPEC-I			2	1			25	25	50
9												
	Total			**17**	**01**	**04**	**20**	**85**	**85**	**100**	**380**	**650**

ProfessionalElectiveI
1]DataMining&Datawarehousing
2] Cloud Computing
3]ImageProcessing

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GovernmentCollegeofEngineering,Aurangabad

(AnAutonomousInstitute)

TentativeTeachingandEvaluationSchemefromyear2025-26 asper NEP

ThirdYearB.Tech.PrograminComputerScienceandEngineeringMultidisciplinary Minor SemesterV

Course				Teaching Scheme			ContinuousEvaluationinterms of Marks					
Sr No	**Category**	**Course Code**	**CourseName**	**TH**	**T**	**PR**	**Credits**	**ISE I**	**ISEI I**	**ISEII I**	**ESE**	**Total (100)**
1	PCC		Computer Network	3	-	-	3	15	15	10	60	100
2	PCC		Compiler Design	3	-	-	3	15	15	10	60	100
3	PCC		Data Science	3			3	15	15	10	60	100
4	PEC-2		PEC2	3	-	-	3	15	15	10	60	100
5	PEC-3		PEC3	3	-	-	3	15	15	10	60	100
6	PCC		Lab Computer Network			2	1			25	25	50
7	PCC		Labcompiler design			2	1			25	25	50
8	PCC		LabData Science	-	-	2	1		-	25	25	50
9	PEC2		LabPEC2	-	-	2	1		-	25	25	50
10	PEC3		LabPEC3	-	-	2	1		-	25	25	50
11	MDM			3			3	15	15	10	60	100
12	VSEC		Competative programming/ S DL-2(Java programming)			4	2			50	50	100
	Total			**18**		**14**	**25**	**90**	**90**	**235**	**535**	**950**

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ProfessionalElective II
1]MachineLearning
2]Computer Vision
3]SoftwareTestingandQuality Assurance

ProfessionalElective –III
1]Block Chain Technology
2]NeuralNetwork
3]Cryptography&Network Security

BridgeCoursesforexit:

Thecandidateshouldcompletetheinternshipoftwomonthsfor8 credits.

OR

Exitoption:AwardofUGDegreein Majorandanadditional8credits

			Credits
1	**CertiifedNetworkEngineer**	**Online/offline certificationCourse certificationCourse**	**8**
2	**CertifiedCloudEngineer**	**Onecourseamong thelist shall be donein summer vacationafter Semester VI**	**8**
3	**CertifiedSoftwareEngineer**		**8**

OR

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AfterThirdYear:	1. Thecandidateshould passthe following Twocoursesof 8 creditstoqualifyforaB.Voc.Degree. 2. Anytwofromthelistofelectives,exceptregisteredearlier 3.

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FinalYearB.Tech.PrograminComputerScienceandEngineeringMultidisciplinary Minor

SemesterVII

Course				Teaching Scheme			ContinuousEvaluationintermsofMarks					
Sr No	**Category**	**Course Code**	**CourseName**	**TH**	**T**	**PR**	**Credits**	**ISE I**	**ISEII**	**ISEIII**	**ESE**	**Total (100)**
1	PCC		Big Data	3	-	-	3	15	15	10	60	100
2	PCC		Artificial Intelligence	3	-	-	3	15	15	10	60	100
3	PEC-4		PEC-IV	3	-	-	3	15	15	10	60	100
4	PEC-5		PEC-V	3	-	-	3	15	15	10	60	100
6	PE4		LabPEC4	-	-	2	1		-	25	25	50
7	PEC5		LabPEC5	-	-	2	1			25	25	50
8	PCC		LabBigData		-	2	1			25	25	50
9	PCC		LabAI			2	1			25	25	50
10	PR/		Project			8	4			50	50	50
	Total			**12**	**-**	**16**	**20**	**60**	**60**	**190**	**390**	**650**

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ProfessionalElective-IV:
1]DataAnalytics
2]InternetofThings
3]NaturalLanguage Processing
ProfessionalElective-V:
1]Deep Learning
2]Designof LinuxOperating System

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FinalYearB.Tech.PrograminComputerScienceandEngineeringMultidisciplinary Minor
Semester VIII

Course				Teaching Scheme			ContinuousEvaluationintermsofMarks					
Sr No	**Category**	**Course Code**	**Course Name**	**TH**	**T**	**PR**	**Credits**	**ISE I**	**ISEII**	**ISEIII**	**ESE**	**Total (100)**
2	Research Methodology			4			4	15	15	10	60	100
3	Internship/OJT					24	12					
	Total			**4**	**-**	**24**	**16**	**15**	**15**	**10**	**60**	**100**

Total18CreditsasperGR8creditsforResearchProjectI inSemVII and10creditforResearch Project II in Sem VIII

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SemesterVII

Course				Teaching Scheme			ContinuousEvaluationintermsofMarks					
Sr No	**Category**	**Course Code**	**CourseName**	**TH**	**T**	**PR**	**Credits**	**ISE I**	**ISEII**	**ISEIII**	**ESE**	**Total (100)**
1	PCC		Big Data	3	-	-	3	15	15	10	60	100
2	PCC		Artificial Intelligence	3	-	-	3	15	15	10	60	100
3	PEC-4		PEC-IV	3	-	-	3	15	15	10	60	100
4	PEC-5		PEC-V	3	-	-	3	15	15	10	60	100
6	PE4		LabPEC4	-	-	2	1	-		25	25	50
7	PEC5		LabPEC5	-	-	2	1			25	25	50

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8	PCC		LabBigData		-	2	1			25	25	50
9	PCC		LabAI			2	1			25	25	50
10	PR/		ProjectI			4	4			50	50	50
11	PR/		Research Project I			16	8			100	100	200
	Total			**12**	**-**	**12**	**20**	**60**	**60**	**190**	**390**	**650**

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ProfessionalElective-IV:
1]DataAnalytics
2]InternetofThings
3]NaturalLanguage Processing
ProfessionalElective-V:
1]Deep Learning
2]Designof LinuxOperating System
3]Information Retrieval

GovernmentCollegeofEngineering,Aurangabad
(An Autonomous Institute)
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Semester VIII

Course				**Teaching Scheme**			**ContinuousEvaluationintermsofMarks**					
Sr No	**Category**	**Course Code**	**Course Name**	**TH**	**T**	**PR**	**Credits**	**ISEI**	**ISEII**	**ISEIII**	**ESE**	**Total (100)**
1	Research Methodology			4			4	15	15	10	60	100
2	Internship/OJT					24	12					
3	PR/		Research ProjectII			20	10			150	150	300
	Total			**4**	**-**	**24**	**16**	**15**	**15**	**10**	**60**	**100**

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SemesterI

MABSC1001:MATHEMATICSI		
Teaching Scheme	**Teaching Scheme**	
Lectures:03hrs/week	**Lectures:03hrs/week**	**Lectures:03hrs/week**
Tutorial:01hrs/ week	**Tutorial:01hrs/ week**	**Tutorial:01hrs/ week**
Credits:04	**Credits:04**	**Credits:04**

Course Description:

MathematicsIisacompulsorycourseforalltheFirstYearB.Tech.studentsofthe institute as per NEP.

Course Outcomes:

Aftercompletingthe course,studentswillbeable to:

	Course Outcomes	Bloom's Taxonomy Level	Unit
CO1	DefineBeta,Gammaanderrorfunctionsandfindtherootsof Complex Numbers, Rank of Matrix, limit of function, series expansion and maxima – minima of functions, asymptotes of given curves.	K1	1,2,3,4,5
CO2	SummariestheComplexNumbers;ExplaintheRankofMatrix, successive differentiation, Special functions (Beta and Gamma functions)	K2	1,2,3,4,5
CO3	Identifythereal andimaginary partoflogarithmof complex numbers,eigenvaluesandeigen vectors.	K2	1,2
CO4	Solve the system of linear equations using Gauss elimination andGaussJordanMethod,Leibnitz'stheorem,definiteintegrals using Beta and Gamma functions and definite integrals using ruleofDifferentiationunderintegralsign.	K2	2,3,4
CO5	ApplyDe-Moivre'stheorem,CayleyHamiltontheorem,, knowledgeofintegralcalculusandsketchtheapproximate shape of the curves .	K3	1,2,4,5

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DetailedSyllabus:

Unit 1	**Complex Numbers** Definition of complex numbers, Argand Diagram, De-Moivre's theorem and its application to find roots of algebraic equations, expansions of trigonometric functions, Circular and Hyperbolic functions inverse Hyperbolic functions, Logarithm of complex numbers, separation into real and imaginary parts.
Unit 2	**Matrices** Rank of matrix, echelon form of matrix, normal form of matrix, algebraic system of m linear equations in n unknowns, Gauss elimination and Gauss Jordan elimination method, linear dependence and independence of vectors, orthogonal matrix,lineartransformations,matrixoflineartransformation,ranknulitytheorem, Eigen values and Eigen vectors, Cayley Hamilton theorem and its applications.
Unit 3	**DifferentialCalculus** nth order ordinary derivatives of elementary functions, Leibnitz's theorem, expansion of function in power series, Taylor's series, Maclaurin's series indeterminate forms and L'hospital rule, maxima and minima, converge of sequence and series, range of convergence of power series, test of convergence – ratio test and comparison test.
Unit 4	**IntegralCalculus** Betafunction,Gammafunction,rulesofDifferentiationUnderIntegralSign,error function, application of definite integrals to evaluate surface area and volume of revolutions.
Unit 5	**CurveTracingandits applications** Tracingofcartesiancurves,polarcurvesandparametricequations,rectification of plane curves: cartesian and polar.

TextBooks

ErwinKreyszing,AdvancedEngineeringMathematics,10th Edition,Mumbai: Willey Eastern Ltd. 2015.

B.S.Grewal,HigherEngineeringMathematics,44th Edition,NewDelhi: Khanna publication, 2017.

RamanaB.V.HigherEngineeringMathematics,11thReprint,New Delhi:Tata McGraw Hill, 2010.

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DavidPoole,LinearAlgebra:AModernIntroduction,3rdEdition, USA : BROOKS/COLE CENGAGE Learning, 2011.

Ravish R. Singh, Mukul Bhatt, EngineeringMathematics-Atutorialapproach,4thEdition,NewDelhi:Tata McGraw Hill Education Pvt. Ltd.2018.

ReferenceBooks

DassH.K.AdvancedEngineeringMathematics,22ndEdition,NewDelhi:S. Chand publications, 2018.

P.N.WartikarandJ.N.Wartikar,AtextbookofEngineeringMathematics (Vol. 1 & 2), Reprint, Pune : Pune Vidhyarthi Griha prakashan, 2013.

MappingofCourseoutcomewithProgramOutcomes

(Valuesinthemappingtables:3 –HIGH2-MEDIUM1–LOW)

Course outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	1									1
CO2	2	2	1									1
CO3	2	2	1									1
CO4	2	3	1		2				2			1
CO5	3	3	1		2				2			1

Assessment:ISEI,II,III(ClassTest-1,ClassTest-2,TA)&ESE
TA:Studentswillperformoneormoreofthefollowingactivities

1. SurpriseTest
2. AssignmentusingMathematicaltoolslikeMathematica/MATLABorsimilar.
3. Quize
4. Anyotheractivitysuggestedbycourse coordinator

AssessmentPattern:

Assessment PatternLevel No.	**Knowledge Level**	**ISEI(Class Test-1)**	**ISEII(Class Test-2)**	**ISEIII(TA+ Surprise Test)**	**EndSemester Examination**
K1	Remember	5	5		
K2	Understand	10	10		60
K3	Apply			10	
K4	Analyze				
K5	Evaluate				
K6	Create				

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CHBSC1001:Electrochemistry,BatteryScienceandEngineering Materials				
Teaching Scheme			**ExaminationScheme**	
Lectures	03 Hrs/Week		**ISEI**	15
Total Credits	03		**ISEII**	15
			TA	10
			ESE	60
			DurationofESE	02:30 Hrs

Prerequisite:		
Course Objectives:		
Afterthe completionofthecourse, thelearnerwillbeable to:		
CO1	Understandfundamental ofChemistryrelevantto Engineeringfield.	
CO2	Differentiatebetweenprimaryandsecondarybatteryaswellasbattery and fuelcell.	
CO3	Equippedwithbasicknowledgeofpolymerreinforcedcomposites,Nanomaterials, applications of semiconductor conducting polymers in energy harnessing.	
CO4	AcquireandApplytheprinciplesofgreenchemistryindesigningalternativereaction methodologies to minimize hazards and environmental degradation.	
CO5	Understandwatertreatment,differenttechniquestoremovetemporaryandpermanent hardness,Wastewaterparameters	
	Course Contents	**CO**
Unit 1	**Electrochemistry** Specificconductance,equivalentconductance.variationofequivalentconductance with dilution. migration of ions nernst equation and application.. determination of emf of cell, applications of emf measurements - potentiometric titrations instrumental methods of analysis: introduction, theory, instrumentation and applications flame photometry. **Energy sciences:** Fuels: classification, characteristics of good fuel, comparison between solid, liquid,gaseousfuel.calorificvalue,lowandhigh calorificvalue,unitsofcalorific value, determination of calorific value by Bomb calorimeter and numericals. fuel cells, solar cell and polymer cell	CO1 CO2
Unit2	**BatteryScience** Introduction - classification of batteries primary and secondary batteries, reserve batteries with examples, battery components and their role, characteristics of battery,batteriesandtheirimportance,basicrequirementsforcommercialbatteries, construction, working and applications of ni-cd and lithium ion battery, fuel cells-differencesbetweenbatteryandafuelcell,classificationoffuelcells-basedontype of fuel, construction, working and applications ofsolid oxide fuel cell, hydrogen – oxygen fuel cell electrical vehicle battery construction, working advantagesanddisadvantagesofEVcar.	CO1 CO2

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Unit3	**AdvancedEngineeringMaterials** Advanced polymers: conducting polymers, liquid crystal polymers. definition-classification- intrinsic and extrinsic, mechanism of conduction in doped poly acetylene -applications synthesis & mechanism of conduction in poly acetylene biodegradable polymers: introduction and their requirements. synthesis and properties of poly lactic acid. applications of biodegradable polymers in medical	CO1 CO3
Unit4	**Environmental&Green Chemistry:** **GreenChemistry:**introduction-definitionofgreenchemistry,needofgreen chemistry,basicprinciplesofgreenbasic12principlesofgreenchemistry.various green chemical approaches– microwave synthesis, bio catalyzed reactions **Microwave and ultrasound assisted green synthesis**: advantages and applications microwave assisted reactions in organic solvents apparatus required, examples of MAOS advantages and disadvantages of MAOS.	CO1 CO4
Unit5	**Nanomaterials**: Introduction, Fullerenes, Carbonnanotubes, Nanowires, Electronicandmechanicalproperties,Synthesisofnanomaterials,Applicationsof nanomaterials- Catalysis, Electronics Telecommunication, Medicines, Energy sciences	CO1 CO5

CourseOutcomes(CO):	
AftersuccessfulcompletionofcoursetheStudentswillbe able	
CO1	TounderstandfundamentalofChemistryrelevanttoEngineeringfield.
CO2	Todifferentiatebetweenprimaryandsecondarybatteryaswellasbattery andfuelcell.
CO3	Toequippedwithbasicknowledgeofpolymerreinforced composites,applicationsof Semiconductorconductingpolymersinenergyharnessing.
CO4	ToUnderstandBasicPrincipalsofGreenchemistryforminimizingwaste.
CO5	Toapplytheprinciplesofwatersoftingtohard waterandunderstand consequenceof water qualitydegradation.
TextBooks	
1	F.W.Billmeyer, TextBookofPolymerScience,John Wiley&Sons, 15thEdition, 2020.
2	B.K.Sharma-Atextbookof Industrial Chemistry.15thEdition,2020.G.A.Ozin&A.C. Arsenault,"NanotechnologyAChemicalApproachtoNanomaterials". RSCPublishing,5thEdition,2020.
ReferenceBooks	
1.	UppalM.M,JainandJain.EngineeringChemistry,KhannaPublishers,45thEdition,2020.
2.	P.C.JainandMonicaJain,AtestBookofEngineeringChemistry,DhanpatRai Publications, NewDelhi,20thEdition,2020.
3.	SSDara-ATextbook of EngineeringChemistry,SChand&CompanyLtd.,15thEdition, 2020.

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CEESC1001:Basic of Civil Engineering			
Teaching Scheme		**Evaluation Scheme**	
Theory	02hrs/week	ISEI	10Marks
Tutorial	00	ISEII	10Marks
Total Credits	02	ISEIII	
		EndSemester Examination	30Marks
		Total	50Marks

Pre-requisites–Nil

Course Description: Objective of this course is to provide an insight and inculcate the essentials of civil engineering discipline to the students of all branches of Engineering and to provide the students an illustration of the significance of the civil engineering profession in satisfying the societal needs. Civil engineers plan, design,build,supervise and maintain infrastructure projects such as public and private utilitybuildings,roads, bridges, water supply and sewage treatment schemes, irrigation projects, etc. This course will give an understanding to the students of the vast breadth andvarious area sofengagementavailableinoverallfieldof civil engineering.

CourseOutcomes:

After completingthe course,students will able to:

	Courseoutcomes
CO1	Explaintermsrelatedwithbuildingconstruction
CO2	Illustratevarioussurveyingtechniques
CO3	Explaintheusesofcivilengineeringmaterialsandexplainthetypes ofroads
CO4	Demonstrateconstructionequipment'sandtermrelatedwithearthquake
CO5	SketchEnvironmentandIrrigationworks

Detailedsyllabus:

Unit I	**Building Construction** Early constructions and developments over time, ancient monuments and modern marvels, development of various materials of constructions and methods of constructions Site selection, principles of planning, typical plan of residential building, plinth area, carpet area, floorspace index, cost of building, building bye-laws. Loads coming on structure, types of construction a) load bearing structure b) framed structure. Function of foundation, column footing, combined footing and machine foundation. Superstructureanditscomponentstypicalcrosssectionthroughloadbearingwall,brick andstonemasonryusedforconstruction,technicaltermsrelatedwithdoors,windowsand stairs.

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Unit2	**GeographicalMeasurement** Principles of survey, measurement of distance by chain and tape, laser distance meter base lineandoffset equipment for layingoffsets, prismaticcompass, measurement ofbearingand calculation of inclined angles, study and use of dumpy level, leveling staff, bench mark, determination of reduced levels, modern surveyingequipment,remotesensingandGIS,usesoftoposheetsandcontours
Unit3	**CivilEngineeringMaterialsRoadconstruction** Studyofpropertiesandusesofdifferentengineeringmaterialsa)bricksb)stonesc)aggregates d)sande)cement f)concreteg)steelh)pavingblocksi)autoclavedaeratedconcreteblocksj) paints Classification of roads, Rigid and flexible pavements, typical road sections in cutting and embankment, function of camber, super-elevation, intelligent transport systems and road safety,varioustypesof Bridges.
Unit4	**Majorconstructionequipment**: earthmovingequipment, pavers, readymix concreteplants, automation and robotics in construction, software used in civil engineering. **EnvironmentandWaterresourcesengineering** Definitionofwatershed,necessityofwatershedmanagementworks,differentstructures involvedin watershed management. Classification of dams, Necessityofirrigationandbenefitsofirrigation Watertreatmentunitsandcomponentpartsofwatersupplysystem;sewagetreatmentunitsand sewerage systems; necessity of solid waste management

TextandReferencebooks

1. PCVerghese"Buildingconstruction"2nd PHIlearningpvtltd
2. NNBask"Surveyingandleveling"2nd McGrawhilleducation
3. GargSK"IrrigationEngineeringandHydraulicsstructures"36th KhannaPublishersDelhi
4. JaiKrishna,BrijeshChandra"Elementsofearthquakeengineering"2nd Southasianpublishers
5. ShahKaleandPatki"BuildingDesignandDrawing"5th TataMcGrawHill

Mappingofcourseoutcomeswithprogramoutcomesandprogramspecificoutcomes

Outcomes	PO 1	PO 2	PO 3	PO4	PO5	PO 6	PO 7	PO8	PO 9	PO10	PO11	PO12
CO1	3	2				2			1			
CO2	3	2							1			
CO3	3	2				2			1			
CO4	3	2				2	2		2			
CO5	3	2				2	2		2			

1-low,2-medium,3-high

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AMESC1002-EngineeringMechanics		
Teaching Scheme	**ExaminationScheme**	
Lectures:03hrs/week	**ISEI***	**10 Marks**
Credits:02	**ISEII***	**10 Marks**
	EndSemesterExamination	**30 Marks**

Prerequisites: Knowledgeofvectorsandscalars andpreliminaryknowledgeofmotion.

Course description: Engineering Mechanics is one of the basic subjects for the students of engineering, irrespective of their branches, since it help them to develop the logical thinking, analyticalabilityandenhancetheimaginationpower.Itintroducesthestudentstovarioustypesof forces, their resultant, equilibrium of forces, analysis of various force system and the effect of forces on the state of motion of the body. Students will be exposed to C.G. and M.I. of the area and mass M.I of the bodies. They will also be exposed to dynamics of particle and rigid body.

Course Outcomes:

Aftercompletingthe course,studentswillbeable to:

	Course Outcomes
CO1	Stateandexplaintherelevantlawsofstaticsanddynamics.
CO2	Determineresultant,identifytheforcesystem actingonbodiesandperformstatic analysisof agiven system.
CO3	Determinethe centroidandcomputemomentofinertiaofarea andcentroidof line.
CO4	Establishrelationsbetweenkinematicparametersfordifferenttypesofmotionand compute the motion characteristics.
CO5	Applytheprinciplesofkineticstocomputethemotionparametersorrelatedforcesofa given system.

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DetailedSyllabus:

Unit 1	Fundamental Concepts and Principles, Types of Force systems, Composition and Resolution of Forces, Moment of force, Couple, Resultant of Planar forces, Analytical and Graphical methods.
Unit 2	Freebodydiagrams,EquationsofEquilibrium,TypesofSupportsand suppor t reactions, Equilibrium of Co-planer force systems, Applications to beams, TheoryandLawsofFriction,angleoffriction,angleofrepose,Coneoffriction, application to plane friction.
Unit 3	Centroid of Plane figures and lines, Moment ofInertiaofplanesections, Transformation theorems, Radius of gyration.
Unit 4	Kinematicsofparticles:RectilinearMotion,EquationsofMotion,Curvilinearmotion in Cartesian and normal and tangential components, Motion of projectile.
Unit 5	Kineticsofparticles: Newton's laws of Motion, D'Alembert's Principle, Equations of motion of particle motion of connected bodies. Principle of work and Energy, Principle of Impulse and Momentum and their applications to particles, Direct central impact.

TextBooks

BeerandJohnston,MechanicsforEngineers(StaticsandDynamics),McGrawHill Co.Ltd.

A.K.Tayal,EngineeringMechanics,Umesh publications.

V.S.Mokashi,EngineeringMechanicsVol.IandII,TataMcGrawHillPublishingCo. ltd., New Delhi.

S.S.BhavikuttiandK.G.Rajashekarappa,EngineeringMechanics, NewAge International (P)LimitedPublishers,New Delhi.

ReferenceBooks:

F.L. Singer, Engineering Mechanics, Harper and Row Publishers, USA

TimoshenkoandYoung,EngineeringMechanics,McGrawHillCo.Ltd.

R.C.Hibbeler,EngineeringMechanics(StaticsandDynamics),McMillanpublications

EngineeringMechanicsbyMcLean andNelson,Schaum'sOutlineSeries, McGrawHill Co.Ltd.New Delhi

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MappingofCourseoutcomewithProgramOutcomesandProgramSpecific Outcomes
BE-Computer Science

Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	2										1				
CO2	2										1				
CO3	1										1				
CO4	2										1				

1: Low 2:Medium 3:High

BE-InformationTechnology

Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	2								1						
CO2	2								1						
CO3	1								1						
CO4	2								1						

1: Low 2:Medium 3:High

Assessment: 1) For assessment under ISE-I and ISE-II, two test of 10 marks each, Test-I and Test-II,willbeconductedonprescribedsyllabus(aroundfirst1.5to2UnitsforTest-Iand 3rd and some portion of 4th Unit for Test-II).

AssessmentPattern:

Assessment Pattern LevelNo.	**Knowledge Level**	**ISEI**	**ISEII**	**EndSemester Examination**
K1	Remember	02	-	03
K2	Understand	02	02	03
K3	Apply	06	08	24
K4	Analyze			
K5	Evaluate			
K6	Create			
TotalMarks100		10	10	30

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Dated: 25th March 2025

Assessmenttable:

AssessmentTool	K1 , K2	K3	K2, K3	K3	K3
	CO1	CO2	CO2,CO3	CO4	CO5
ISEI (10 Marks)	04	06	-	-	-
ISEII(10Marks)	02		06	02	
ESEAssessment (30 Marks)	06	06	06	06	06
TotalMarks(50Marks)	12	12	12	08	06

Designed by

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Approved Updated Curriculum in XXIXth Academic Council
Dated: 25th March 2025

EEESC1011 BasicElectrical Engineering	
Teaching Scheme **Lectures:2 Hrs/Week** **Credits:02**	**ExaminationScheme** **ISEI : 10Marks** **ISEII : 10 Marks** **EndSemesterExam : 30 Marks**

Coursedescription:Oncompletionofthiscourse,studentswillhaveknowledgeoffundamentals of electrical Engineering. It includes the Kirchhoff's voltage law, current law, source transformation, network analysis methods and AC circuits.

Course Objectives:

- Toofferbasic understandingforsolvingcircuitsusing KCL,KVL andnetwork theorems.
- ToexplainDCcircuits,magneticcircuitsandACcircuits.

Course Outcomes

Aftercompletingthe course,studentswillbeable to:

CO1	K1	Definethetermsrelated to networktheorems,magneticinductionandAC circuits.
CO2	K2	UnderstandDC,ACandmagneticcircuits.
CO3	K3	ApplyconceptsofDC,ACcircuitsfornetwork analysis.

DetailedSyllabus:

Unit 1	**DC Circuits:** Kirchoff's laws, Source conversion, series and parallel circuit, current and voltage division rule, Delta-star and star-delta conversion, Node voltage and Mesh current methods, Superposition theorem, Thevenin's and Norton's theorems, Maximum power transfertheorem.Charginganddischargingofcapacitor,TimeconstantforRCcircuit
Unit 2	**Electromagnetic Induction**: Faraday's laws, statically and dynamically induced emf, selfandmutualinductance,coefficientsofcoupling,dotconvention,inductanceinseries and parallel, principle of operation, constructional details, types and applications ofsinglephaseTransformer,Inductionmotors,DCmotors.
Unit 3	**SinglephaseACCircuits**:ConceptofsinglephasesupplyTermsrelatedwithA.C. quantities, pure resistive, inductive and capacitive circuits, Complex and phasor representationofACquantities,seriesandparallelcircuits,introductiontoresonance

TEXTANDREFERENCEBOOKS

LeonardBobrow"FundamentalsofElectricalEngineering",OxfordUniversitypress.

Vincent Del Toro, "Principles of Electrical Engineering ", Prentice Hall.

D.P. Kothari, I.J Nagrath , "Basic Electrical Engineering" Tata McGraw Hill.

M.S.Naidu,S.Kamakshaiah,"IntroductiontoElectricalEngineering"TataMcGrawHill.

J.P.Tiwari, "Basic Electrical Engineering" New Age Publication.

JosephAdminister,"Schaum'soutlineofElectric circuits",TataMcGraw Hill.

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MappingofCourseoutcomewithProgramOutcomes(PO)andProgramSpecific Outcomes (PSO)

Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	1	1	-	-	-	-	-	-	1	1	-	1	1	2	3
CO2	2	2	-	-	-	-	-	-	1	1	-	1	2	2	2
CO3	3	2	1	-	-	-	-	-	1	1	-	1	2	2	2

3–High, 2– Medium ,1 -Low

Teacher's Assessment: TeachersAssessmentof10marksisbasedononeofthe/or combination of few of following

1) Simulation
2) Prototypedevelopment
3) Powerpointpresentationofcase studies
4) Questionandanswer/Numericalsolution

AssessmentPattern

Assessment Pattern Level No.	Knowledge Level	Test1	Teachers Assessment / Assignment	EndSemester Examination
K1	Remember	04	00	06
K2	Understand	06	05	18
K3	Apply	00	05	06
K4	Analyze	00	00	00
K5	Evaluate	00	00	00
K6	Create	00	00	00
TotalMarks50		10	10	30

AssessmentTable

AssessmentTool	K1	K2	K3
	CO1	CO2	CO3
ClassTest(10Marks)	04	06	00
TeachersAssessment(10Marks)	00	05	05
ESEAssessment(30Marks)	06	18	06

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CSESC1001:ProgrammingforProblem Solving (for ENTC, CSE, IT)		
Teaching Scheme	**ExaminationScheme**	
Lectures:03hrs./week	**ISEI**	**15 Marks**
Credits:03	**ISEII**	**15 Marks**
	ISEIII	**10 Marks**
	EndSemesterExamination	**60 Marks**

Prerequisites:Nil

Course Objectives

- To understand the fundamentals of computer systems and programming.
- Tounderstandthebasic programmingparadigms.
- Tolearnthe conditionalbranching,iterationandrecursion.
- TolearnmethodologywhichareessentialfordevelopingC programs.

Course Outcomes

Studentswillbeableto:

CO1	Understandfundamentalsofcomputersystemsandprogramming.
CO2	Implementthebasicprogrammingparadigms.
CO3	Developthesolutionsfortherangeofproblemsusingbranching,looping& conditional statements
CO4	Applyadvanceddatatypesandusethe conceptof pointers,arrayof structures
CO5	DevelopCprogramsfor problemsolvingusingdifferentalgorithms

DetailedSyllabus:

Unit 1	**Introduction to programming:** Components of a computer system: Memory, processor, I/ODevices,storage,operatingsystem,Conceptofassembler,compiler,interpreter,loader and linker. Idea of Algorithm: Representation of Algorithm, Flowchart, Pseudo code with examples, From algorithms to programs, source code. ProgrammingBasics:StructureofCprogram,writingandexecutingthefirstCprogram, Syntax and logical errors in compilation, object and executable code. Components of C language. Standard I/O in C, and memory locations, Storage classes.
Unit 2	**IntroductiontoCLanguagefundamentals:** TheCcharacterset,variablesandconstants,data types,keywords,expressions,statements, precedence,operators-arithmeticoperators,sizeof()andternaryoperators,relational& logical operators, conditional operators, type conversions , type casting.

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Unit 3	**ConditionalBranching,LoopsandFunction:** if,nestedif,itelse,nestedifelseswitch,gotostatement,Loopexecution–Forloop,while loop, Do while loop, break, and continue statements. Functions-Definingafunction,passingargumentstofunctions,callbyvalue,ideaofcall byreference,returningvaluesfromfunction,commandlinearguments,Local&Global, Formal variables concept, Recursion.
Unit 4	**Arrays:** Array's definition (1-D, 2-D), passing array to the function, String Operation-String copy, String length, String concatenation, String compare, Basic Sorting Algorithms (Bubble, Insertion and Selection).
Unit 5	**Structureand Pointers:** Introductiontostructureandunion.Arrayofstructure,Passingstructureasanobjectto function. Structure as a return type of function. Pointers-pointerasavariable, pointertoarray,pointerasargumenttofunction,notion of linkedlist.

TextandReference Books

E.Balagurusamy;ProgramminginC,3rded,TataMcGraw Hill.

K. R. Venugopal and S R Prasad, Mastering C, 3rd ed, Tata McGrath Hill.

BrianW.KernighanandDennisM.Ritchie,TheCProgrammingLanguage, 2nded, PrenticeHallofIndia.

ProblemSolvingandProgramDesigninC,byJeriR.Hanly,ElliotB. Koffman, Pearson Addison-Wesley, 2006.

LetUsCByYashwantP.Kanetkar.

MappingofCourseoutcomewithProgramOutcomesandProgramSpecific Outcomes

Course outcomes	PO1	PO2	PO 3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1		1	3						2		
CO2	1		1	3				2	1	2		
CO3	1	3	1	2						2		
CO4	1	3	1	2						2	1	
CO5	1		1	3					1	1		2

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Assessment:

ISEI: ClassTest-IofMaximumMarks-15

ISEII: ClassTest-IIof MaximumMarks-15

ISEIII: Teacher'sAssessmentofMaximumMarks-10

TeachersAssessmentof 10 marksisbased onone ofthe/or combination offewof following

1) Quiz
2) Question&answer
3) Powerpointpresentation
4) Anyotheractivitysuggestedbycourse coordinator

ESE:EndSemesterExaminationofMaximumMarks-60

AssessmentPattern:

Assessment Pattern LevelNo.	**Knowledge Level**	**ISEI**	**ISEII**	**ISEIII**	**EndSemester Examination**
K1	Remember	05	00	00	12
K2	Understand	10	05	00	12
K3	Apply	00	10	00	12
K4	Analyze	00	00	05	12
K5	Evaluate	00	00	05	12
K6	Create	00	00	00	00
TotalMarks100		15	15	10	60

Assessmenttable:

AssessmentTool	**K2**	**K3,k4**
	CO1, CO2,CO3	CO3,CO4,CO5
ISEI(15Marks)	15	0
ISEII(15Marks)	15	0
ISEIII(10)	00	10
ESEAssessment(60Marks)	30	30
TotalMarks100		

SpecialInstructionsifany:Nil

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CSESC1005:Programmingforproblem Solving (forCivilandEEdept)		
Teaching Scheme	**ExaminationScheme**	
Lectures:02hrs./week	**ISEI**	**10 Marks**
Credits:02	**ISEII**	**10 Marks**
	EndSemesterExamination	**30 Marks**

Prerequisites:Nil

Course Objectives

- To understand the fundamentals of computer systems and programming.
- Tounderstandthebasic programmingparadigms.
- Tolearnthe conditionalbranching,anditeration.
- TolearnmethodologywhichareessentialfordevelopingC programs.

Course Outcomes

Studentswillbeableto:

CO1	Understandfundamentalsofcomputersystemsandprogramming.
CO2	Abletodefinedatatypes andusetheminsimpledataprocessing applications alsohe/shemust beable to usetheconceptofpointers, arrayof structures
CO3	Developconfidence andabilityforlife-longlearningneededforComputer language.

DetailedSyllabus:

Unit 1	**Introductiontoprogramming:**Componentsofacomputersystem:Memory,processor, I/O Devices, storage, operating system.Idea of Algorithm: Representation of Algorithm, Flowcharts. ProgrammingBasics:StructureofCprogram,writingandexecutingthefirstCprogram, Syntax and logical errors in compilation, object and executable code. Components of C language. Standard I/O in C.
Unit 2	**IntroductiontoCLanguagefundamentals:** The C character set, variables and constants, data types, keywords, expressions, statements, precedence,operators-arithmeticoperators,sizeof(),relational&logicaloperators, conditionaloperators,typeconversions,type casting.

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Unit 3	**ConditionalBranching,LoopsandFunctions:** if,nestedif,itelse,nestedifelseswitch,gotostatement,Loopexecution–Forloop,while loop, Do while loop. Functions-Definingafunction,passingargumentstofunctions,callbyvalue,ideaof call by reference, returning values from function. Array'sdefinition(1-D,2-D). Introductiontostructureandunion. Introductionto Pointers.

TextandReference Books

E.Balagurusamy;ProgramminginC,3rded,TataMcGraw Hill.

K.R.VenugopalandSRPrasad,MasteringC,3rd ed,TataMcGrathHill.

BrianW.KernighanandDennisM.Ritchie,TheCProgrammingLanguage,2nd ed , Prentice Hall of India.

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CSBSC1003:Lab Chemistry		
Teaching Scheme	**ExaminationScheme**	
Practical:02Hrs/Week	**ISEIII**	**25Marks**
Credits:1		

Course Outcomes:

Aftercompletionofthiscoursestudentswillbeableto:

	Course Outcomes
CO1	Perform qualitative and quantitative determination of physical and chemical propertiesoflubricants,polymersandwaterusedfordomesticandindustrial application.
CO2	Explaintheobjectivesofexperiments,performtheexperiments,appropriatelyrecord thedataandanalyzetheresultswithaccuracyandprecision.
CO3	Demonstratelaboratoryskillsbyuseofrelevantinstrumentormodernanalytical methodsforanalysisofchemical compounds.
CO4	Workeffectivelyandsafelyinalaboratory environmentinteamsaswellas independently.
CO5	Recognizetheissuesofsafetyregulations,ethical,societal,economicaland environmental issues in the use of chemicals in their laboratory work.

ListoftheExperiments – Anyeightfromthefollowing

Sr. No.	Titleof theExperiments	Skill / Knowledge Level	CO
1	DeterminationofhardnessofwaterbyEDTAmethod.	S3/K2	CO3, CO4, CO2
2	DeterminationofBODandCODofwatersample	S3/K2	CO3,CO5, CO2
3	DeterminationofCell Constant.	S3/K2	CO3, CO2
4	DeterminationofAcidValueof lubricant.	S1/K1	CO1, CO5, CO2
5	Determinationofchloridecontent ofwaterby Mohr's method	S1/K1	CO1, CO5, CO2
6	DeterminationofViscosityoflubricatingoilsby Redwood Viscometer.	S3/K2	CO3,CO4, CO2
7	Determinationof Flash &Firepointof lubricantoil.	S3/K2	CO3, CO4, CO2
8	ToDeterminationP^{H}valueofsolutionsbyindicator,Paper and by P^{H} meter	S1/K1	CO3,CO5, CO2
9	PreparationofPhenolFormaldehydeResin(Bakelite)/Urea formaldehyde resin.	S2/K2	CO2, CO4, CO5
10	DeterminationofIronby colorimetric method.	S3/K2	CO3, CO2

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11	Separationofchemicals bythinlayerchromatography.	S2/K2	CO3,CO2
12	DerminationofstrengthofacidsbyPotentiometric titrations	S2/K2	CO1,CO4, CO5,CO2
13	DeterminationofCloud&Pourpointoflubricantoil.	S3/K2	CO3,CO2
14	ToverifyLambertBeer'sLawcalorimetrically.	S3/K2	CO3,CO2
15	To determine Rf value and identify phenyl alanine & Glycinemixturebyascending paper chromatography.	S3/K2	CO3,CO2
16	DemonstrationOfTLC/Paperchromatography	S2/K2	CO3,CO2
17	Todetermineconductmetrically,thestrengthofgivenHCl solution by titrating with standard NaOH solution.	S3/K2	CO3,CO2
18	Todeterminetheempiricalformulaofferric-5sulpho salicylate complex by Jobs method.	S3/K2	CO3,CO2

CO-POMAPPING

Course Outcome	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	1											
CO2	1			1	1		1	2			1	
CO3	1	2	2	2	3	2	1		2			2
CO4	2	3	1	3	2	1						2
CO5	1	2	2		3	1				2		2

1-Low,2-Medium,3-High

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1-**CSESC1002:LabProgrammingforProblem Solving (for ENTC,CSE,IT)**		
Teaching Scheme	**ExaminationScheme**	
Practical:2Hrs/Week	**ISEIII**	**25 Marks**
Credits:01		

Course Outcomes:

Aftercompletionofthis coursestudentswillbeableto:

	Course Outcomes
CO1	Understandthedevelopmentenvironmentforcompiling,debugging,linking and executing a C program.
CO2	Analyzingthecomplexityofproblems,Modularizetheproblemsintosmall modules and then convert them into programs
CO3	Applythein-builtfunctionsandcustomizedfunctionsforsolvingthe problems.
CO4	Illustratealgorithms,flowcharts,andprogramsforproblem solving
CO5	Demonstrateusingofvarioustechnologiesandtoolsfordeveloping applications

List ofthe Experiments:

Thestudentshallperformminimumtenexperimentsofthefollowingusing TURBO C&C++/ CodeBlocks

Sr. No.	Titleof theExperiments	Skill / Knowledge Level	CO
1	DevelopingFlowchartand alorithm.	K2	CO1
2	CreatingPseudocodefor C program.	K3	CO1
3	Simpleprogramusingscanf()andprintf()	K3	CO2
4	ProgramusingControl Statements	K3	CO2
5	ProgramusingLoops	K3	CO2,CO3
6	ProgramtogenerateFibonacciseriesand/orfactorialofanumber using recursive function	K3	CO3, CO4
7	ProgramusingSwitch-Case statement	K3	CO3,CO4

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8	Usingarraysforsortingnumbers -WriteaCprogramtoinputelementsinarray andsortarrayelements inascendingordescending order.	K3	CO4
9	Programwhichshowsuseofcall byvalueand callbyreference	K3	CO3 ,CO4
10	Programto acceptand display studentinformation using structure.	K3	CO4, CO5
11	Programtopassstructure/arrayasaparametertoa function	K3	CO5
12	Programto preparemonthly telephonebill	K3	CO5
13	Menudrivenprogramformatrixadditionand subtraction	K3	CO5
14	Programformatrixmultiplication	K3	CO5

MappingofCourseoutcomewithProgramOutcomesandProgramSpecific Outcomes

Course outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO 12
CO1	3	2		2						1		
CO2	2		3	2						1		
CO3	2	2		2						3		
CO4	1	2		2		1				3	1	
CO5	1		3	2					3	3	1	1

2- Low,2-Medium,3-High

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Approved in XXV IIIth Academic Council
Dated: 25th Jun 2024

CSESC1006:LabProgrammingforProblemSolving (forCivilandEE dept)		
Teaching Scheme	**ExaminationScheme**	
Practical:2Hrs/Week	**ISEIII**	**25 Marks**
Credits:01		

Course Outcomes:

Aftercompletionofthis coursestudentswillbeableto:

	Course Outcomes
CO1	Understandthedevelopment environmentforcompiling,debugging, linking andexecutingaCprogramwith thehelpofflowchartsand algorithms.
CO2	Analyzingthecomplexityofproblems,Modularizetheproblemsintosmall modulesand thenconvert theminto programs
CO3	Applythein-builtfunctionsandcustomizedfunctionsforsolvingthe problems.

List ofthe Experiments:

Thestudentshallperformminimumtenexperimentsofthefollowingusing TURBO C&C++/ Code Blocks

Sr. No.	Titleof theExperiments	Skill / Knowledge Level	CO
1	DevelopingFlowchartandalgorithm.	K2	CO1
2	CreatingPseudocodefor C program.	K3	CO1
3	Simpleprogramusingscanf()andprintf()	K3	CO1
4	ProgramusingControl Statements	K3	CO2
5	ProgramusingLoops	K3	CO2
6	ProgramtogenerateFibonacciseriesand/orfactorialofa number	K3	CO3
7	Usingarraysforsortingnumbers -WriteaCprogramtoinputelementsinarrayanddisplaythe elements.	K3	CO3
8	Programwhichshowsuseofcall byvalueand callby reference	K3	CO3
9	Programto acceptand display student information using structure.	K3	CO2
10	Menudrivenprogramfor matrixadditionand subtraction	K3	CO3

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CEESC1002:LabBasicofCivil Engineering				
Teaching Scheme		**EvaluationScheme**		
Theory	**2Hrs/ Week**	**ISEIII**	**25 Marks**	
Total Credit	**1**			

Pre-requisites–Nil

CourseDescription: Objectiveofthiscourseistoprovideaninsightandinculcatetheessentials of civil engineering discipline to the students of all branches of Engineering and to provide the students an illustration of the significance of the civil engineering profession in satisfying the societal needs. Civil engineers plan, design, build, supervise and maintain infrastructure projects such as public and private utility buildings, roads, bridges, water supply and sewage treatment schemes, irrigation projects, etc. In this course the students will have to write the information of different civil engineering structures along with sketches wherever necessary. While drawing the sketches, students are expected to see the structures, measure the dimensions and conduct the practical If necessary.

Course Outcomes:

Aftercompletingthecourse,studentswillableto:

	Course outcomes
CO1	Explaintermsrelated withbuildingconstruction
CO2	Demonstratetheusesof basicsurveyingequipments
CO3	Explainthepropertiesof materialsandtypesof roads
CO4	Demonstrateconstructionequipmentsandtermrelatedwith earthquake
CO5	Summarizethewater,wastewatertreatmentunitsandtypesofdams.

Detailedsyllabus:

Thetermworkshallconsistofatleast10exercisesoffollowingnature.Individualsubjectteacher shall have freedom of including additional exercises.

1	Identify5ancientmonumentsand5modernmarvelsandlisttheuniquenessof each
2	Drawlineplansofresidentialbuilding/flats
3	Drawtheplan andsectionalelevationofdoor andwindow
4	Drawtheplan andsectionalelevationofstaircase
5	Drawdifferenttypesoffoundations
6	Measurethedimensions ofRoom/Hallandfurnitureandwriteit
7	Findtheleveldifferentbetweentwostationsbyusinglevel

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8	Findoutthelatitude,longitudeandreducedlevelofdifferentstations,bearingof lineby usingsoftwareapps
9	Drawtypicalroadsectionsincuttingandembankment
10	Identifythreetop newmaterialsandwritetheirpotentialin construction
11	Visit concrete technology laboratory/ strength of materials laboratory/ Geotechnicalengineeringlaboratoryandenlistthe equipmentandtheiruses.
12	Explainthetermsrelatedwithearthquake alongwithsketch
14	Explaindifferenttypesofconstructionequipments
15	Drawthe flowchartofwatersewagetreatmentplant
16	Drawthesectionofearthenandgravity dams
17	Identifythreedifferentirrigationprojectsandwritetheir features
18	Drawdifferenttypesofrooftoprainwaterharvestingworks
19	Enlistthedifferenttypes ofsoftwareusedincivilengineeringandtheiruses.

TextandReferencebooks

1. PCVerghese"Buildingconstruction"2nd PHIlearning pvtltd
2. NNBask"Surveyingand leveling"2nd McGrawhilleducation
3. GargSK"IrrigationEngineeringandHydraulicsstructures"36thKhannaPublishers Delhi
4. JaiKrishna,BrijeshChandra"Elementsofearthquakeengineering"2ndSouthasian publishers
5. ShahKaleandPatki"BuildingDesignandDrawing"5th TataMcGraw Hill

Mappingofcourseoutcomeswithprogramoutcomesandprogramspecificoutcomes

Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3			2		2			2			
CO2	3			2					2			
CO3	3			2		2						
CO4	3			2			2					
CO5	3			2			2					

1-low,2-medium,3-high

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AMESC1004:Lab-Engineering Mechanics		
Teaching Scheme	**ExaminationScheme**	
Practical:2Hrs/Week		
Credits:01	**ISEIII**	**25 Marks**

Course Outcomes:

Aftercompletionofthis coursestudentswillbeableto:

	Course Outcomes
CO1	Applygraphicalmethodtosolveproblemsofstatics.
CO2	DemonstratetheprinciplesofEngineeringMechanicsexperimentally and interpret the experimental results.
CO3	Solvenumericalexamplesinstaticsand dynamics.

ListoftheExperiments/Term Work

The student shall use graphical method to solve the problems of engineering mechanics (Sr. No. 1)andperformtheexperimentsgivenbelow.Theyshouldalsocompletethetutorialproblemsof the subject Engineering Mechanics given by the teacher as a part of laboratory work.

Sr. No.	Titleofthe Experiments/Term Work	Skill / Knowledge Level	CO	Marks for ISE
1	Graphicalsolutionsforthefollowing problems a. ResultantofCoplanarNonConcurrentforce system: i) Atleastoneproblemwith resultant as a force ii) Atleastoneproblemwith resultant as a couple b. Equilibrium of Coplanar Non Concurrentforcesystem:Atleastone Problem c. Friction:AtleastoneProblem	K2, K3	CO1	15
2	Followingexperimentsshallbe conducted.	K1, K2,	CO2	30

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	a. Polygonlawofforces b. Lawofmoments c. Jib crane d. Beam reaction e. Friction f. Screw jack g. Flywheel	K3		
3	TutorialProblems a. Atleastthreeproblemoneachunitof the theory course of Engineering Mechanics. b. Thetutorialproblemneedstobesolvedby thestudentduringthepracticalhoursonly.	K1,K2,K3	CO3	05

ISE-III: Assessmentwillbedoneat the end ofthe term insimilar manner

AssessmentPattern:

Assessment Pattern LevelNo.	**Knowledge Level**	**ISEI**	**EndSemester Examination**
K1	Remember	05	-
K2	Understand	15	-
K3	Apply	30	-
K4	Analyze	-	-
K5	Evaluate	-	-
K6	Create	-	-
Total Marks			-

Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2	PS O3
CO1	1	1									1				
CO2	2	3									1				
CO3	2	1									1				

MappingofCourseoutcomewithProgramOutcomesandProgramSpecific Outcomes:

BE- Computer Science & Engineering

1 : Low 2:Medium 3:High

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EEESC1012:LabElementsofElectricalEngineering		
Teaching Scheme	**ExaminationScheme**	
Practical:2Hrs/Week	**ISEIII**	**25 Marks**
Credit:1		

Course Outcomes:

Aftercompletionofthis coursestudentswillbeableto:

	Course Outcomes
CO1	Applyelectricalsafetymeasuresinthelaboratory
CO2	Verifyvariouselectriclawsandtheoremtodeterminetheelectric circuitandelectromagneticcircuit parameters
CO3	Determinetherelationshipofvariouselectriccircuit parameters
CO4	Demonstratethebasicconceptsofelectromagneticinductionandac circuits
CO5	Demonstratethefundamentalandworkingofelectricalmachines

List ofthe Experiments

ThestudentshallperformminimumEIGHTexperimentsfromthefollowinglist

Sr. No.	Titleof theExperiments	Skill / Knowledge Level	CO	Marks for ISE
1	Introductionoftools,electricalmaterials,safety procedure,symbolsand abbreviations	K1,K2,K3	CO1, CO2, CO3,	3
2	Performanexperimentfortheverificationcurrent andvoltageinseriesandparallelcircuit	K2	CO1, CO2, CO3,	3
3	ToPerformanexperimentforthedemonstration of electromagnetic induction phenomenon OR Describeoneexperimenttodemonstratethe phenomenon of electromagnetic induction.	K2	CO1,CO2, CO3, CO4	4
4	PerformanexperimentforVerification ofThevenin'stheoremandNorton'stheorem	K2	CO1, CO2, CO3	3
5	PerformanexperimentforVerificationof Superpositiontheorem,	K2	CO1, CO2, CO3	3

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6	PerformanexperimentforVerificationof Maximumpowertransfer theorem		CO1, CO2, CO3	
7	ToPerformanexperimenttoplothysteresisloop/B-Hcurveofmagneticmaterial	K2	CO1, CO2, CO3, CO4	3
8	ToperformexperimentforMeasurementof current, voltageandpowerinR-L-Cseriesexitedbysingle phase AC supply	K3	CO1,CO2, CO3, CO4	4
9	ToStudytheR-L-Cseriesresonancecircuit	K2	CO1, CO2, CO3, CO4	3
10	TodemonstratetheconstructionD.C.Shuntmotor.	K2	CO1, CO2, CO3, CO5	3
11	Toperformthe loadteston 1phasetransformer	K3	CO1, CO2, CO3, CO5	4

NOTE:Thestudentswillberequiredtoperformthe8experimentsfromtheabovelistandany other relative experiments designed on the basis course

AssessmentPattern:

Assessment PatternLevelNo.	**Knowledge Level**	**ISEI**	**ISEII**
K1	Remember	5	5
K2	Understand	10	10
K3	Apply	10	10
K4	Analyze		
K5	Evaluate		
K6	Create		
Total Marks		25	25

Assessment PatternLevelNo.	**Knowledge Level**	**ISEI**	**ISEII**
S1	Imitation	5	5
S2	Manipulation	10	10
S3	Precision	10	10
S4	Articulation		
S5	Naturalization		
Total Marks		25	25

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Dated: 25th March 2025

MappingofCourseoutcomewithProgramOutcomesandProgramSpecificOutcomes

Course outcome	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO 12
CO1	2				1	3	2	2	3	2	1	2
CO2	3	1		1	1	2	2	2	3	2	1	2
CO3	3	1		1	1	2	2	2	3	2	1	2
CO4	3	1		1	1	2	2	2	3	2	1	2
CO5	2	1		1	1	2	2	2	3	2	1	2

3-High 2 – Medium 1 – Low

ITVSE1001:Computer Workshop	
Teaching Scheme **04Hrs/Week** **Total Credits:2**	**ExaminationScheme** **ISEI, II, III :50 Marks**

Module1:IntroductiontoComputerHardwaredevices:
Introduction and working of basic components: Motherboard, Processor, Memory and SMPS. IntroductionandworkingofperipheraldevicesKeyboard,Mouse,Monitor,DVDDriveandHardDrive. Understand system configuration. Step by step assembling and de-assembling a desktop computer.

Module2:Bootingand Installation:
UnderstandBIOSsetupandbootingprocess.Installationofoperatingsystemandexternaldevices using device drivers.

Module3:Computermaintenanceandtroubleshooting:
PCMaintenance:Creatingdatabackupdrives,UnderstandingHardDiskDriveSpace,Runningthe Disk Cleanup Program, Running the Disk Defragmenter Program
Audio,Video,Display(Monitor),HardDiskDrive,Hardware Installation, InternetAccess,Keyboard andMouse,Power, Performance

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Dated: 25th March 2025

Module4:Introductiontocomputernetworkcomponents Introductionofnetworkcomponentsandtheirfunctions:Typesoftransmissionmediums,switches and routers, modems. Model network topologies, Understand Types of networks, ,IP Addressing.
Module5:LANsetupandInternetconnectivity PrepareEthernetcablesfornetworking.SetupwiredLANandwirelessLANwithandwithout Internet access.
Module6.Fundamentalsofvisualizationandanalysis IntroductiontospreadsheetapplicationsandExcelinterface.PerformBasicspreadsheetoperationsand functions.Constructionoftablestoorganizedataandintroductiontocharts.ConstructingvariousLine, Bar and Pie charts. Understanding and constructing Histograms and Scatterplots. Introduction to ICTtools

Course Outcome	PO1 Knowledge	PO2 Pro. Analysi	PO3 Desig	PO4 Investi	PO5 Mod. Tools	PO6 Soci	PO7 Envi	PO8 Ethics	PO9 Team	PO10 Comm	PO11 Mgmt	PO12 Long	PSO1	PSO2	PSO3
CO1	1														
CO2	1			1	1		1	2			1				
CO3	1	2	1	2	1				2			2			
CO4	1	3	1	3								2			
CO5	1	2	1		1					2		2			

3– High 2 – Medium 1 – Low

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Dated: 25th March 2025

CSIKS1003:IndianKnowledgeSystem

Teaching Scheme			EvaluationScheme	
Lectures	**2 Hrs/Week**		**ISEI**	**10 Marks**
Tutorial	**0**		**ISEII**	**10 Marks**
			ISEIII	**00 Marks**
Total Credits	**2**		**ESE**	**30 Marks**

Course description: The course aims to provide an appreciation of IKS and its relevance to contemporary society requires a two-part study of IKS. The first is to develop an overall understandingofsomekeycomponentsofIKS.ThisisimportantbeforeweexplorethenatureofIKS applications. Therefore, module one of the course provides a quick introduction to the key components of IKS. The second aspect is the application of IKS for some gainful use.

Course Outcomes:

Aftersuccessfulcompletionthecourse,studentswillbeableto:

	Course Outcomes
CO1	ExplainthehistoricityofIndianKnowledgeSystemandthebroadclassificationof Indian philosophical systems.
CO2	DiscusshowSanskritcanbeusedfornaturallanguageprocessing.
CO3	DescribethecharacteristicsoftheIndiannumbersystemandhowithashelpedimprove science and technology.
CO4	Illustratethebasicelementsofthe Indiancalendar

DetailedSyllabus:

Unit 1	An overview of Indian Knowledge System (IKS): Importance of Ancient Knowledge - Definition of IKS - Classification framework of IKS - Unique aspects of IKS. The vedic corpus:VedasandVedangas-Distinctivefeaturesofvediclife.Indianphilosophicalsystems: Different schools of philosophy. Theknowledgetriangle:Prameya,Pramaṇa,Saṃsaya-Frameworkforestablishingvalid knowledge - Potential fallacies in the reasoning process.
Unit 2	Salient features of the Indian numeral system - Importance of decimal representation - The discoveryofzeroanditsimportance-Uniqueapproachestorepresentnumbers.Uniqueaspects of Indian mathematics - Great mathematicians and their significant contributions in the area of arithmetic, algebra, geometry, trigonometry, combinatorial problems in Chandaḥ-sastra of Pingala, binary mathematics and Magic squares in India.

Unit 3	Linguistics:Componentsofalanguage -Paṇini'sworkonSanskritgrammar-Phoneticsin Sanskrit and the role of Sanskrit in natural language processing. HighlightsofIndian Astronomy:Historical developmentofastronomy inIndia-TheCelestial CoordinateSystem- Astronomicalterminologies -Equinoticalpoints,precessionofeqinoxes, movable and fixed zodiac - Elements of the Indian Calendar - Panchanga.

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TextBooksandReferenceBooks

A.K.Bag,HistoryofTechnologyinIndia,Vol.I, IndianNationalScienceAcademy, New Delhi, 1997.

D.N.Bose,S.N.SenandB.V.Subbarayappa,AConciseHistoryofScienceinIndia, Indian National Science Academy, New Delhi, 2009.

B.DattaandA.N.Singh,HistoryofHinduMathematics:PartsIandII,Asia Publishing House, Bombay, 1962.

M.Hiriyanna,M.,OutlinesofIndianPhilosophy,MotilalBanarsidass,NewDelhi,1994.5.B. Mahadevan,VinayakRajatBhat,andR.N.NagendraPavana,IntroductiontoIndianKnowledge System: Concepts and Applications, PHI Learning Private Limited, New Delhi, 2022.

6.S.N.SenandK.S.Shukla,HistoryofAstronomyinIndia,IndianNationalScienceAcademy, 2nd edition, New Delhi, 2000.

MappingofCourseoutcomewithProgramOutcomes

Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO2	PSO3
CO1															
CO2															
CO3															
CO4															
CO5															

3– High 2– Medium 1-Low

Teacher'sAssessment:TeachersAssessmentof10marks isbasedononeofthe/or combination of few of following

1) Tutorials
2) Problem Solving
3) Powerpointpresentationofcase studies
4) Question&answer/Numericalsolution

Assessmenttable

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Dated: 25th March 2025

AssessmentTool	K1	K2	K3	K1	K3
	C01	C02	C03	CO4	CO5
ISEI& II(20 Marks)	10	10			
ESEAssessment(30Marks)	10	10	10		
Total(50 marks)					

SpecialInstructionsifany:Nil

INCCC1101:YogaandMeditation

Teaching Scheme	**ExaminationScheme**	
Theory :1hr/week **Practice:2hr/week**	**ISEIII**	**50Marks**
Credits:02		

Prerequisites: Minimumageof10yearsandpositiveapproachtowards health

Course Objectives:
Thiscourseaimsatenablingstudents:
1. TogetawarenessofPhysical,Mental,SocialandSpiritualhealth
2. Tounderstand andperform skillof Yog Asanas
3. Togainknowledgeandbenefitsofmeditation
4. Tolearntheskilltomanagethestressthroughart ofYogand Meditation
5. Tolearnimportance of yogicdiet,foodand nutrition.

	Course Outcomes Thestudentswillableto -
CO1	Increasetheawarenessregardinghealthyandpeacefulliving
CO2	PerformskillofYogAsanasand Meditation
CO3	Awareofbreathingtechniques
CO4	Bringpeaceand harmonyinsocietyatlarge
CO5	Awareofyogic diet,foodand nutrition.

DetailedSyllabus:

Unit1	IntroductionanddefinitionofYog,Fundamentalconceptofyog,relationshipofyogand health, Physical fitness
Unit2	Yogicsukshmavyayam, PatanjaliAshtang YogSutra,differenttypesand benefitsofAsanas(min. three in each pose). Surya Namaskar and its benefits
Unit3	Differenttypesof Pranayam (Min.five)andtheirbenefits.
Unit4	Meditationanditsimportance,typesofMeditation,BenefitsofMeditation,Meditative Asanas
Unit5	Importanceofdiet,foodandnutrition,Typesof foods

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Dated: 25th March 2025

List of Practice Sessions	1. PracticeofYogicSukshma Vyayam 2. PracticeofdifferentAsanas 3. PracticeofdifferentPranayam 4. PracticeofDhyan

TextandRereference books:

1. B.K.S.Iyengar,LightonYoga,HarperCollinsPublisher,NewDelhi, 2005
2. SwamiVivekanand,PatanjaliYogSutra,GeetaPress,Gorakhpur
3. SwamiSatyendraSaraswati,YogaPublicationTrust,1997
4. SwamiRamdev,PranayamRahasya,DivyaPrakashan,2009
5. KamleshPatel&JoshuaPollock,TheHearfulnessWay

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Dated: 25th March 2025

SemesterII

MABSC1003:MATHEMATICSII		
Teaching Scheme	**ExaminationScheme**	
Lectures:03hrs/week	**ISEI***	**15 Marks**
Tutorial:01hrs/week	**ISEII***	**15 Marks**
Credits:04	**ISEIII***	**10 Marks**
	EndSemesterExamination	**60 Marks**

Course description:
MathematicsIIisacompulsorycourseforalltheFirstYearB.Tech.studentsoftheinstituteas per NEP**.**

Course Outcomes:

Aftercompletingthe course,studentswillbeable to:

	Course Outcomes	Bloom's Taxonomy Level	Unit
CO1	Define first order first degree ordinary differential equations, orthogonaltrajectories;partialderivatives,Jacobian,Directional Derivative, Gradients, Curl and divergence; Multiple integrals; Fourier Series.	K1	1,2,3,4,5
CO2	Summaries the First order First degree Linear Differential Equations; Partial, Total Derivatives; methods of solving MultipleIntegrals;FourierSeriesandHalfRangeFourierseries Expansion.	K2	1,2,3,4
CO3	Identify Order of Differential Equation and exactness; Homogeneousfunction,Gradient,DivergenceandCurl;Even andoddfunctions,Euler'scoefficientsforthe FourierSeries.	K2	1,2,4,5
CO4	Solve the First order Linear Differential Equations, Jacobians, MaximaandMinimaoffunctionsoftwovariables;Doubleand Triple Integrations; vector integration	K2	1,2,3,5
CO5	Apply knowledge of Differential equation to different EngineeringProblems,Partialderivative;MultipleIntegralsto find area and volume of solids; surface integral and volume integral using Green's theorem and Stoke's theorem, Fourier SeriestoHarmonicAnalysis.	K3	1,2,3,4,5

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Dated: 25th March 2025

DetailedSyllabus:

Unit 1	**Firstorderordinarydifferentialequationsanditsapplications** Exact, linear and Bernoulli's equations, application of first order ordinary differential equations: orthogonal trajectories, simple electrical circuit, D'Alembert's principle, one dimensional conduction of heat.
Unit 2	**MultivariateCalculus[Differentiation]** Limit,continuity,partialderivatives,Euler'stheoremonhomogeneousfunctions, implicit functions, composite functions, total derivatives, Jacobians and their applications, error and approximations, maxima and minima of functions of two variables, saddle points, Lagrange's method of undermined multipliers.
Unit 3	**Multipleintegralsanditsapplications** Double and triple integrals (Cartesian and polar), change of order of integration in double integrals, change of variables (Cartesian to polar), applications: to find area and volume.
Unit 4	**FourierSeries** Fourier Series (Dirichlet's conditions), Periodic functions, convergence of the Fourier series, Euler's formula, Fourier series expansion with period 2π, 2L,Fourier series of even and odd functions, Half range sine and cosine series, applications to harmonic analysis.
Unit 5	**VectorCalculus** DirectionalDerivative,Gradients,Curlanddivergence.Vectorintegration:Line integral, Surface integral and volume integral, Green's Theorem, Gauss Divergence Theorem and Stoke's Theorem.

TextBooks

ErwinKreyszing,AdvancedEngineeringMathematics,10thEdition,Mumbai:Willey Eastern Ltd. 2015.

B.S.Grewal,HigherEngineeringMathematics,44thEdition,NewDelhi:Khanna publication, 2017.

RamanaB.V.HigherEngineeringMathematics,11thReprint,NewDelhi:Tata McGraw Hill, 2010.

DavidPoole,LinearAlgebra:AModernIntroduction,3rdEdition,USA: BROOKS/COLE CENGAGE Learning, 2011.

RavishR.Singh,MukulBhatt,EngineeringMathematics-Atutorialapproach,4th Edition, New Delhi: Tata McGraw Hill Education Pvt. Ltd.2018.

ReferenceBooks1.DassH.K.AdvancedEngineeringMathematics,22ndEdition,NewDelhi:S.Chand publications, 2018.

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Dated: 25th March 2025

2. . P. N. Wartikar and J. N. Wartikar, Atext book of Engineering Mathematics(Vol.1&2),Reprint,Pune:PuneVidhyarthiGrihaprakashan, 2013.

MappingofCourseoutcomewithprogramoutcomes

Course outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	1									1
CO2	2	2	1									1
CO3	2	2	1									1
CO4	2	3	1		2							1
CO5	3	3	1		2							1

(Valuesin themappingtables:3 –HIGH,2–MEDIUM,1–LOW)

Assessment:ISEI,II,III(ClassTest-1,ClassTest-2,TA)&ESE TA:
Students will perform one or more of the following activities

5. SurpriseTest
6. AssignmentusingMathematicaltoolslikeMathematica/MATLABor similar.
7. Quiz
8. Anyotheractivitysuggestedbycourse coordinator.

AssessmentPattern:

Assessment PatternLevel	**Knowledge Level**	**ISEI(Class Test-1)**	**ISEII(Class Test-2)**	**ISEIII(TA+ Surprise Test)**	**End Semester Examination**
K1	Remember	5	5		10
K2	Understand	10	10	2	38
K3	Apply			8	12
K4	Analyze				
K5	Evaluate				
K6	Create				
TotalMarks100		15	15	10	60

Designed by

Prof.S.P.AtipamuluProf.

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Dated: 25th March 2025

PHBSC1002:Optics,SemiconductorsandQuantummechanics		
Teaching Scheme	**ExaminationScheme**	
Lectures:3hrs/week	**ISEI**	**15 Marks**
Credits:3	**ISEII**	**15 Marks**
	ISEIII	**10 Marks**
	EndSemesterExamination	**60 Marks**

Course description: The course is mandatory course for first year B. Tech. Electronics andTelecommunication,ComputerScience&EngineeringandInformationTechnology programsforsecondsemester.Thecourseobjectiveistolearnfundamentalprinciplesin Physics and to relate it real life situations.

	Course Outcomes	**Bloom's Taxonomy level**
CO1	Define thin film interference, Fraunhofer diffraction, resolving power, double refraction, spontaneous and stimulated emission, numerical aperture, acceptance angle of optical fibre, electric and magnetic fields, polarization, types of energy bands, group and phase velocity	K1
CO2	Explaintheconceptsinterference,diffraction,polarization,optical resonator, propagation of light, semiconductors, uncertainty principle,Schrodingerwaveequations	K2
CO3	Illustrate the engineering applications of interference, diffraction, polarization,lasersinindustrialandmedicalapplications,fibreoptic sensors, semiconductors, uncertainty principle	K3
CO4	Identify, formulate and solve physical problems related to engineering	K4
CO5	Apply thefundamentalprinciplesofinterference,diffraction, polarization, laser, optical fibre, semiconductors, quantummechanicsinengineering context	K5

DetailedSyllabus:

Unit 1	**Optics-**	**(12 L)**
	Interference-interferencedue to thinfilmofuniformthickness,wedgeshapedfilm, newton'sringsformation andtheory,anti-reflectioncoating. Diffraction-fraunhoferdiffractionatsingleslit(geometricalmethod),conditionsfor maxima and minima, double slit diffraction, plane diffraction grating, rayleigh's criterion of resolution, resolving power of grating. Polarization- polarization by reflection, polarization by double refraction, phase difference and path difference, quarter wave plate	

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Dated: 25th March 2025

	ofe-rayando-ray,productionofcircularlyandellipticallypolarizedlight, polaroid sheets.
Unit 2	**LaserandFibreoptics-** **(8 L)** Laser-absorption,spontaneousandstimulatedemissionofradiation, meta-stable state, population inversion, pumping schemes, lasing action, optical resonator,constructionandworkingofHe-Negaslaser,CO2laser,industrialand medical applications. Fibreoptics-principleandpropagationoflightinopticalfibre,numericalaperture and acceptance angle, types of optical fibres (material, refractive index, mode), fibre optical communication system (block diagram), fibre optic sensor
Unit 3	**Semiconductors-** **(8 L)** band theory of solids, classification of solids on the basis of energy band theory, Fermi Dirac statistics, concept of Fermi level and its variation with temperature, density of states, position of fermi level in intrinsic semiconductor (with derivation) and in extrinsic semiconductor, conductivity of semiconductor, workingofP-Njunction fromenergybanddiagram-forwardand reversebiased, Hall effect in semiconductor.
Unit 4	**QuantumMechanics-** **(8 L)** de-Broglie'shypothesisofmatterwaves,propertiesofmatterwaves,wavepacket, phasevelocity and groupvelocity, wavefunction, physical interpretation of wave function, Heisenberg's uncertainty principle, nonexistence of electronin nucleus, Schrodingertimedependentand timeindependentwave equations,particle inan one dimension and three dimension potential well.
Unit 5	**Electromagneticwaves-** **(4 L)** The wave equation, plane electromagnetic waves in vacuum, their transverse nature and polarization, relation between electric and magnetic fields of an electromagnetic wave, energy carried by electromagnetic waves.

TextandRereferencebooks:

M.N.Avadhanulu,andP.G.Kshirsagar.*ATextbookOfEngineering Physics*, 5th ed. NewDelhi: S.Chand and company Ltd., 2014

R.K.Gaur,S.L.Gupta.*EngineeringPhysics*,14thed.NewDelhi:Dhanpat Rai and Sons Publications, 2012

M.R.Srinivasan,*PhysicsForEngineers*,2nded.NewDelhi:New Age International Publishers, 2009.

D.Halliday,andR.Resnic.*FundamentalsofPhysics*,9thed.Noida: John–Wiley and Sons, 2010

ArthurBeiser,*PerspectivesofmodernPhysics*,Mc-GrawHill,US,1969

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Dated: 25th March 2025

MappingofCourseoutcomewithProgramOutcomesandProgramSpecific Outcomes

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2									2		
CO2	2											
CO3	2											
CO4	2											
CO5	2											

1-Low,2-Medium,3-High

Assessment: ISE I-Class Test-I of Maximum Marks-15
ISEII-ClassTest-IIofMaximumMarks-15 ISE
III- Teacher's Assessment:

TeachersAssessmentof 10marksisbasedononeofthe/or combination ofsurprisetest, assignment,quiz,any otheractivitysuggested bycourse coordinator

Assessment PatternLevel	**Knowledge Level**	**ISEI**	**ISEII**	**ISEIII**	**End Semester Examination**
K1	Remember	5	5	2	12
K2	Understand	5	5	6	18
K3	Apply	5	5	2	12
K4	Analyze				12
K5	Evaluate				6
K6	Create				
TotalMarks100		15	15	10	60

ESE-EndSemesterExaminationofMaximumMarks-60

Assessment Pattern:

Assessmenttable:

Course Outcome	CO1	CO2	CO3	CO4	CO5
AssessmentTool	K1	K2	K3	K4	K5
ISEIClassTest-I(15Marks)	5	5	5		
ISEIIClassTest-II(15Marks)	5	5	5		
ISEIIITA(10 Marks)	2	6	2		
ESEAssessment(60Marks)	12	18	12	12	6
TotalMarks100	24	34	24	12	6

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Dated: 25th March 2025

MEESC1006:BasicsofMechanical Engineering (For CSE/IT)		
Teaching Scheme	**ExaminationScheme**	
Lectures:02Hrs/Week	**ISEI**	**10 Marks**
Credits:02	**ISEII**	**10 Marks**
	EndSemesterExamination	**30 Marks**

Prerequisites:Nil

Course Description: After completing this course student will have a fundamental understanding ofthe thermodynamics, thermal machine sourceofenergy,powertransmission elements, identify manufacturing process and machines

Course Outcomes:

Aftercompletingthecoursestudentswillableto

Course Outcomes	
CO1	ExplainbasicconceptstobeusedinMechanical Engineering
CO2	Applytheprinciplesofthermodynamicstosolvenumericalproblems
CO3	ComparetheworkingprinciplesofEnergy conversiondeviceswiththeirapplication inMechanical Engineering
CO4	Explaintheworkingprinciplesofvarioustransmissionelementsandbasic mechanismemployedin MechanicalEngineering.
C05	ComparethemanufacturingProcessbasedonthe requiredapplication

Detailed Syllabus:

Unit 1	**FundamentalsofThermodynamics** Pressure and pressure measurement, Temperature,Forms of energy, work transfer, heat transfer, Laws of thermodynamics, First law for cyclic and non-cyclic process,Concept of Heat Engine, Refrigerator and Heat pump, Statement and explanation of Fourier's law of heat conduction, Overall heat transfer coefficient, Newton's law of cooling, Stefan Boltzmann's law, Concept of heat exchanger, typesofheatexchanger, andconceptofeffectiveness.
Unit 2	**EnergyConversion Devices** Steamgenerationprocess,Boiler:Mountingsandaccessories,workingprinciplesof Internal combustion Engine, two stoke and four stroke engines, Refrigeration – Definitions – Refrigerating effect, Ton of Refrigeration, COP, Relative COP, unit ofRefrigeration.Principleandworkingofvapourcompressionrefrigeration

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Approved Updated Curriculum in XXIXth Academic Council
Dated: 25th March 2025

	Principlesandworkingofsteampowerplantand nuclearpowerplant.
Unit 3	**FundamentalsofPowerTransmittingElementsand Mechanism** Workingprinciplesofshaft,AxleandSpindles.Frictionclutches,Brakes–typesof brakes,Couplings-typesofcouplings,Bearing-typesofbearing,Drives-Beltdrive: Flatand Vbeltdrive, OpenandCrossbeltdrive, Chaindrive,Gears- classification of gears, Simple mechanism: Slider crank mechanism, Pendulum pump,Oscillatingcylinderengine, Whitworthquickreturnmechanism
Unit 4	**FundamentalsofManufacturingProcess** Fundamentals of manufacturing process and their application, Casting, forging, soldering, Brazing and welding. Differences between soldering, brazing and Welding. Description of Electric Arc Welding and Oxy-Acetylene Welding, Adhesives.

TextandReferenceBooks

1. NagP.K.,*"EngineeringThermodynamics"*,3rded.Tata-McGrawHillPublications, 2013.
2. RajputR.K.,*"EngineeringThermodynamics"*,4thed.LaxmiPublications,2014.
3. HajraChoudhary,Bose,*"WorkShopTechnology* (Vol.-I&JI)",3rded.MPP publication,2018.
4. BhandariV.B.,*"MachineDesign"*,3rded.Tata-McGrawHillPublications,2019.
5. KhurmiR.S.,*"MachineDesign*",4thEdition. EurasiaPublishingHouse, 2019.
6. Domkundwar V.M. *"Engineering Thermodynamics"*, 4th ed. Dhanpatrai Publication, 2020.

RaoP.N,*"ManufacturingTechnology*VolumeJ",3rded.Tata-McGrawHill Publications, 2019

HolmanJ.P.,"Heattransfer",McGrawHillPublishing,NewYork

MappingofCourseoutcomeswithProgramoutcomes:

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	2										
CO2	3	1				1						
CO3	1					1						
CO4	1					1						
CO5	1					1						

1–Low,2–Medium,3–High

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Dated: 25th March 2025

MEESC1001:EngineeringGraphics		
TeachingScheme	**ExaminationScheme**	
Lectures:02Hrs /Week	**ISEI**	**10Marks**
Credits:02	**ISEII**	**10Marks**
	EndSemesterExamination	**30Marks**

Prerequisites:Nil

Course Description: All engineering activities (design/ manufacturing/ operation/ servicing) for any product from any discipline involve a team of people who communicate graphically. Hence, every engineer must have exposure and some competence in presenting ideas as pictures, and be able to unambiguously interpret drawing from others. This course will help develop basic visualization competency as well as ability to representing ideas on both paper and computer.

Course Outcomes:

Aftercompletingthecoursestudentswillableto

Course Outcomes	
CO1	Understandconcept ofprojection oflineapplicationin design.
CO2	Applytheconcepttodrawthebasicviews related toprojectionsofPlanes
CO3	Gainknowledgeaboutorthographicprojections
CO4	Sketchthedifferentconceptsofisometricprojections

Detailed Syllabus:

Unit 1	**ProjectionsofLinesand Planes** Projections of Straight Lines: Introduction to point, Projections of points in four quadrants, projectionsofpointsinreferenceplane,Introductionandconceptofline,cases:-lineparallel to both the plane, line parallel to one plane and perpendicular to the other. Planecases:surfaceparalleltoonereferenceplaneandperpendiculartootherreferenceplane, planesurfaceinclinedtoonereferenceplaneandperpendiculartootherreference,projections of planes inclined to both reference planes
Unit 2	**OrthographicProjections:** Typesoflines,methodsofdimensioningandtypesofdimensioning,Principleoforthographic projections (First and third angle orthographic projection methods) Exercise shall be consist of orthographic projection of different machine parts problem by first angle orthographic projection methods, all types sectional orthographic projections (First angle orthographic projection methods). Sectional view problem shall be solving consist of various mechanical components and by First angle orthographic projection methods.
Unit 3	**Isometric view:** IsometricViews:Introductiontopictorialviews,isometricscale,isometricprojectionsand different machine parts isometric views problems on various mec

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Textand ReferenceBooks

EngineeringGraphicswithanintroductiontocomputeraideddrafting,vol.I& II,
H.G.Phakatkar,NiraliPrakashan,Pune.Feb2007onwards.

ATextbookofEngineeringDrawing,P.J.Shah,S.Chand&companyLtd., New Delhi. 2009

EngineeringDrawing,R.V.Mali&Chaudhari,VrindaPublication,Jalgaon 1998 onwards.

Kulkarni,D.M.,Rastogi,A.P.andSarkar,A.K.,EngineeringGraphicswith AutoCAD, PHI 2009

EngineeringDrawingandGraphics+Autocad,K.Venugopal,New Age International Publishers, New Delhi,2007

EngineeringDrawing,BhattN.D.,PanchalV.M.,CharotarPublishingHouse 2008 onwards

EngineeringGraphics,Vol.-IandVol.-II,DhabhadeM.L.,VisionPublications 2003 onwards

Assessment:

ISEI:ShallbeonthebasisofClassTests/Assignments/Quizzes/Field visits/Presentations/ Course Projects on first and second unit.

ISEII: Shallbebasedonclasstestonthirdandfourth units.

Assessment Pattern:

Assessment Pattern LevelNo.	**KnowledgeLevel**	**ISEI**	**ISEII**	**End Semester Examination**
K1	Remember			
K2	Understand	5	5	9
K3	Apply	5	5	12
K4	Analyze			9
K5	Evaluate			
K6	Create			
TotalMarks50		10	10	30

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Assessmenttable:

AssessmentTool	**K2, K3**	**K2, K3**	**K2, K3**	**K4**
	CO1	CO2	CO3	CO4
ISEI(10Marks)	5	5		
ISEII(10Marks)			10	
	K2 to K4	**K2 to K4**	**K2 to K4**	**K2 to K4**
ESEAssessment(30 Marks)	6	6	6	6
TotalMarks50	11	11	16	6

MappingofCourseoutcomeswithProgramoutcomes:

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1				3							
CO2		2		1						2		
CO3												
CO4	3					1						
CO5												

1 –Low,2 –Medium, 3– High

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ETES1003---:BasicsofElectronicsEngineering		
Teaching Scheme	**ExaminationScheme**	
Lectures:3 Hrs/Week	**ISEI***	**15 Marks**
Credits:03	**ISEII***	**15 Marks**
	ISEIII*	**10 Marks**
	EndSemesterExamination	**60 Marks**

Prerequisites:None

Coursedescription:

After completing this course, students will have a broad and fundamental understanding of basic electronics. Students will be able to discuss the basic concepts of various electronics devices and communication techniques with some basic applications.

Course Objectives:

- Toimpartknowledgeofbasicelectronicsdevices andits applications
- Tocreateawarenessofelectronicscommunicationconcept
- Tointroducebasic conceptsofconsumerelectronicsandinstruments

CourseOutcomesAftercompletingthecourse,studentswillableto:

	Course Outcomes
CO1	Describetheworkingprincipleofelectronicdiodesand transistors
CO2	Explaintransistorconfigurations,theircomparisonandFET devices
CO3	Understandworkingoftransistorasanamplifierandtransistoras switch
CO4	Explainnumber system and logicgates
CO5	Describearithmeticoperationsusingdigitallogic
CO6	Illustratedifferencebetweencombinationalandsequentiallogic

DetailedSyllabus:

Unit 1	**Diodes**: -PN junction diode, diode characteristics, diode as rectifier, half wave and full waverectifier,bridgerectifier,ZenerdiodeOperation,zenerregulator,LEDsandPhoto Diode
Unit 2	**Transistors:**Bipolarjunctiontransistors,NPN&PNPtransistors,structure,workingof NPN transistor. Transistor configurations: common base(CB), common emitter(CE), common collector(CC), comparison of three configurations, common emitter configuration as an amplifier, transistor biasing, dc load line, Q-point, Transistor as a switch, Introduction to JFET, characteristics of MOSFET, CMOS devices
Unit 3	**Digital Fundamentals:** Number systems and codes: Binary, Octal, Hexadecimal; BCD, Excess-3, Gray code, error detecting and correcting codes Alphanumeric code. Basic logic gates; NOT, AND, OR gates, Universal Logic gates: NAND, NOR gates; Ex-OR, Ex-NOR gates
Unit 4	**Adder/Subtractor Circuits** : binary addition and subtraction, one's and two's complementarithmetic,Half/FullAdder,Half/FullSubtractor,4-bitBinaryadderchip, BCD arithmetic, BCD Adder circuit

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Dated: 25th March 2025

Unit 5	**Combinational and Sequential Logic:** Boolean algebraic theorms, minimization using algebraic manipulations, k-maps upto 4-variables, realization of combinational logic circuits,Flip-flops:S-R,J-K,J-Kmaster-Slave,T&DFlipflop,sequentiallogiccircuit as an Asynchronous counter**.**

TextandReferenceBooks

ThomasL.Floyd,"ElectronicDevices",PearsonEducation,9e,2011

R.G.Gupta, "Audio-VideoEngineering", TMG,2e.

R.S.Sedha,"AtextbookofAppliedElectronics",S.ChandPublication.2e. David A Bell, Electronic Devices And Circuits, Oxford University Press Albert Paul Malvino, Electronic Principles, Tata McGraw• Hill

R.P.Jain,ModernDigitalElectronics,McGraw• Hill,4e.

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Dated: 25th March 2025

MappingofCourseoutcomewithProgramOutcomesandProgramSpecificOutcomes

Course outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2	PS O3
CO1	2	1	2												
CO2	2	1	2												
CO3	1	2													
CO4	1	2													
CO5		2	2												
CO6		2	2												

1–Low2 –Medium 3-High

Assessment:

ISE1shallbeeitherawrittenexaminationoraquizoranassignmentpresentationsasdeclared by the course coordinator

ISE2shallbeClassTest

ISE3shallbebasedononeofthefollowingoracombinationofafewofthefollowingas declared by the course coordinator :

1) SoftwareSimulation
2) Application development
3) Powerpointpresentationofcase studies
4) Question&answer/Numericalsolution
5) Miniprojects

ESEshallbeawrittenexaminationbasedonthecomplete syllabus

AssessmentPattern:

Assessment Pattern LevelNo.	**Knowledge Level**	**ISEI**	**ISEII**	**ISEIII**	**EndSemester Examination**
K1	Remember	07	08	03	15
K2	Understand	04	04	03	30
K3	Apply	04	03	04	15
K4	Analyze	00	00	00	00
K5	Evaluate	00	00	00	00
K6	Create	00	00	00	00
TotalMarks100		15	15	10	60

Assessmenttable:

AssessmentTool	**K1**	**K2**	**K2**	**K1**	**K3**	**K2**
	CO1	CO2	CO3	CO4	CO5	CO6
ISEI(15 Marks)	06	04	05	00	00	00
ISEII(15 Marks)	00	00	00	04	07	04
ISEIII (10 Marks)	03	00	00	03	02	02
ESEAssessment (60 Marks)	08	08	09	15	12	08
TotalMarks100	17	12	14	22	21	14

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Dated: 25th March 2025

INAEC1001-COMMUNICATIONSKILLS		
Teaching Scheme	**ExaminationScheme**	
Lectures:02hrs/week	**ISEI**	**10 Marks**
Credits:2	**ISEII**	**10 Marks**
	EndSemesterExamination	**30 Marks**

Course description:

Communication Skills (INHS1001) is a one semester compulsory course for the first year students of all disciplines of the institute.
The course is aimed at introducing the basic of the communication skills. Thegoalofthecourseistoimprovelistening,speaking,readingandwriting skills .Thus the stress in the syllabus in primarily on the development of communicative skills and fostering of ideas.

Course Outcomes:

Aftercompletingthecourse,studentswillbeable to:

	Course Outcomes
CO1	AnalyzethesituationandovercomethebarriersinspeakingEnglishandget theability to communicate in professional as well as day to day life.
CO2	Developpersonalitythroughcorporateetiquettesandtakeactive participation in discussionandotheracademicactivitiesas well.
CO3	ApplyproperwordsandstructureinspeakingEnglishlanguageanddevelop vocabulary anduseofcorrectEnglish.
CO4	Expressthemthroughoralaswellaswrittencommunicationanddevelopwritten communicationforprofessionalandbusiness purpose.
CO5	UseofE-Communicationindaytodayas wellasprofessionallife

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Detailed Syllabus:

Unit 1	**CommunicationSkills&SoftSkills** Basic Concept, Factor[1]s, Process and Types of Communication, Principles of EffectiveCommunication,BarriersofCommunication.Andhowtoovercomethese barriers. BasicofSoft skills.
Unit 2	**NonverbalCommunicationandCorporateEtiquettes** BodyLanguageanditsdifferentaspects,VoiceDynamics&VoiceModulation, Professional Appearance, Clothing Etiquettes and Corporate Dressing.
Unit 3	RemedialGrammarAndVocabulary Building 5h rsPartsofSpeech,TypesofTense,UseofArticles,SynonymsandAntonyms, Find out the Grammatical Errors in the given sentences.
Unit 4	**WritingSkillsAndBusinessCorrespondence** LetterWriting,OfficedocumentslikeCirculars,Notices,Minutes,AgendaAnd Memos ReportWritings-Technicalreport,Academicreport,Accidentreport.Resume Writing
Unit 5	**E-Communication** IntroductiontoMulti-cultural,GlobalCulturaltraits,EmailCommunicationand EmailEtiquettes

TextandReferenceBooks

1. S.M.RaiandUrmilaRai,*BusinessCommunication*,1sted,New York, USA, New royal bookCompany Publication,2010
2. LeenaSen,*Communicationskills*,2ndReviseded,Publisher-PHI Learning,2007
3. WilliamSanborn,*Technicalcommunication*,Delhi,Pearsonpublications ,2014
4. McGrawHillsbriefcasebooks,*PresentationSkillsforManagers*,United states, John A.Hill,1888
5. Pravil S.R. Bhatia and S.Bhatia, *Professional CommunicationSkill*,8thReviseded,SChandPublications,2001
6. DanielG.RiordanandStevenE.Pauley,*TechnicalReport Writing Today*,10th ed, USA,Michael Rosenberg Publisher
7. B.N.Basu22of25,*TechnicalWriting*,1sted,NewDelhi,Prenticehallof India,2008
8. M.APinkandS.E.Thomas.,*EnglishGrammarComposition&Effective Business Communication*,12th ed, S Chand Publication,1998
9. SarahFreeman,*WrittenCommunicationinEnglish*,1sted,OrientBlackswan publication,1996

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Dated: 25th March 2025

MappingofcourseoutcomewithProgramoutcomesandprogramspecific outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1						1				3		
CO2						1				3		
CO3						1				3		
CO4									3	3		
CO5					3					3		1

1-Low,2-Medium,3-High

CSPCC1004:ComputerOrganization	
Teaching Scheme **Lectures:02Hrs/Week** **Credits:02**	**ExaminationScheme** **ISEI 10 Marks** **ISEII 10 Marks** **EndSemesterExam 30 Marks**

Course Objectives: The course will discuss the basic concepts of computer architecture and organization that can help the students to understand working of computer system. It provides architectural framework and foundation needed to understand future trends in computer design.

CourseOutcomes: Studentswillbeableto:

	Course Outcomes
CO1	Discussvarioustrendsin computerdesignandarchitectureofadvanced processors
CO2	DescribetheoperationofcomputersystemforDataprocessing,DataStorage,Data Movement and control
CO3	Summariseinternalstructureofacomputeralongwithconceptsrelatedtodesignof modern processors, ALU, control unit, memories and I/Os
CO4	Awareissuesrelatedtocontrolunitoperations,memoryorganizationandI/O

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DetailedSyllabus:

UNIT1	**Basic Concepts :**Organization and Architecture, Structure and Function, , The Evolution of the Intel x86 Architecture, Embedded Systems, Cloud Computing Ahmdahl's Law and Little's Law, Basic Measures of Computer Performance **Computer Functions, Interconnection and Memory**: Computer Components, ComputerFunction,InterconnectionStructures,BusInterconnection,Principlesof Cache Memory
UNIT2	**Internal Memory:** Semiconductor Main Memory, DDR DRAM, Flash Memory, Newer Non-volatile Solid-State Memory Technologies, **External Memory:** Magnetic Disk, RAID, Solid State Drives, Optical Memory **Input/Output:**ExternalDevices I/OModules,Programmed I/O, Interrupt-Driven I/O, Direct Memory Access, Direct Cache Access, I/O Channels and Processors
UNIT3	**Arithmetic and Logic:** Computer Arithmetic, Integer Representation ,Integer Arithmetic, Floating- Point Representation, Floating-Point Arithmetic, Boolean Algebra ,Gates **Central Processing Unit:** Instruction Sets: Characteristics and Functions Machine Instruction Characteristics, Types of Operands, Types of Operations, Addressing Modes, Processor Organization **Parallel Processing**: Multiple Processor Organizations, Multicore Computers, Multicore Organization, Intel Core i7-990X, Graphic Processing Units: Cuda Basics, GPU versus CPU

TextandReferenceBooks

1. WilliamStallings,ComputerOrganizationandArchitecture:DesigningforPerformance, Pearson Education, 10th Edition

ReferenceBooks:

1. DavidA.PattersonandJohnL.Hennessy,ComputerOrganizationandDesign: The Hardware/Software Interface, Elsevier.
2. CarlHamachar,ZvoncoVranesicandSafwatZaky,ComputerOrganization, McGraw Hill.
3. JohnP.Hayes,ComputerArchitectureandOrganization,McGraw Hill.
4. VincentP.HeuringandHarryF.Jordan,ComputerSystemsDesignand Architecture, Pearson Education.

Referencewebsites:

1. http://nptel.ac.in/courses/106103068/
2. https://archive.nptel.ac.in/courses/106/105/106105163/
3. https://www.tutorialspoint.com/computer_organization/index.asp
4. http://www.cse.iitm.ac.in/~vplab/courses/comp_org.htm

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Dated: 25th March 2025

MappingofCourseoutcomeswithProgramOutcomesandProgramSpecificOutcomes:

Course Outcome	ProgramOutcomes												PSO's		
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO2	PSO3
CO1	1											1	3		
CO2		2													
CO3			1										2		
CO4			1										1		

3 – High 2–Medium1–Low

Assessment:

ISEI: ClassTest-IofMaximumMarks-10

ISEII: ClassTest-IIof MaximumMarks-10

ESE:EndSemesterExaminationofMaximumMarks-30

AssessmentPattern:

Assessment Pattern LevelNo.	Knowledge Level	ISEI	ISEII	EndSemester Examination
K1	Remember	05	00	10
K2	Understand	05	05	15
K3	Apply	00	05	05
K4	Analyze	00	00	00
K5	Evaluate	00	00	00
K6	Create	00	00	00
TotalMarks50		10	10	30

Assessmenttable:

AssessmentTool	K2	K3
	CO1, CO2,CO3,	CO4
ISEI(10 Marks)	10	0
ISEII(10Marks)	10	0
ESEAssessment(30Marks)	15	15
TotalMarks50		

SpecialInstructionsifany:Nil

Designed by:
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PHBSC1003:Lab Physics		
Teaching Scheme	**ExaminationScheme**	
Practical:2Hrs/Week	**ISEIII**	**25 Marks**
Credits:01		

Course Outcomes:

Aftercompletionofthis coursestudentswillbeableto:

	Course Outcomes
CO1	Demonstratebasiclaws ofPhysicswithexperimentalprocess
CO2	Conductexperimentstounderstandtherelationshipbetweenvariablesin physica problems
CO3	Interpret experimentaldatatoexaminethephysicallaws
CO4	Illustratetherelevancebetweentheoreticalknowledgeandmeanstoimplyit in apracticalmannerbyperformingvarious experiments
CO5	Workinteamsand understandtheeffectiveteam dynamics.

List ofthe Experiments

Thestudentshall performminimumeight experimentsofthe following:

S.N.	Titleof theExperiments	Skill / Knowledge Level	CO
1	e/mbyThomson'smethod.	S1/K2	CO3
2	DeterminationofradiusofcurvatureofPlano-convexlens byNewton's ring.	S1/K1	CO1
3	Determinationofthe wavelengthoflight ofagiven source usingdiffraction grating.	S1/K2	CO1
4	Resolvingpowerof telescope.	S1/K2	CO3
5	StudyofC.R.O(amplitudeandfrequencymeasurement).	S1/K1	CO5
6	SpecificrotationofsugarsolutionbyLaurent'shalfshade polarimeter.	S1/K2	CO4
7	Determinationofbandgapofa semiconductor.	S1/K2	CO3
8	Tostudytemperaturedependenceofresistivityof a semiconductorusingfourprobemethod.	S1/K2	CO3 CO5
9	To determine the Hall coefficient of a semiconductor materialandthenevaluatecarriertypeanditsdensityof charge carrier.	S1,S3/K2	CO1
10	Studyof solarcell characteristics.	S1/K1	CO2

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Dated: 25th March 2025

			CO5
11	DeterminationofwavelengthofLaserusinggrating.	S1,S2/K2	CO3
12	Determinationofnumericalapertureof anopticalfiber.	S1,S3/K2	CO3
13	Toplotthehysteresisloop ofagivenmagneticmaterial (iron).	S1/K2	CO2
14	Tostudycharacteristicsofphotovoltaic cell.	S1/K2	CO3
15	StudyofdivergenceofLaser beam.	S2,S3/K2	CO2 CO5
16	Tomeasurethicknessof finewire andgratingelement with thehelpofLaser source.	S1/K2	CO1
17	TodrawV/Icharacteristicsof forward&reverse biasedP-Njunction diode.	S1,S3/K2	CO3
18	Determinationofvelocityofsoundthroughwaterusing ultrasonicinterferometer.	S1,S3/K2	CO3

Assessment:ISEI-ContinuousAssessmentofindividualstudentinabatch during each experiment Maximum Marks-25

AssessmentPattern:

Assessment Pattern Level No.	**Knowledge Level**	**ISEI**
K1	Remember	10
K2	Understand	15
K3	Apply	
K4	Analyze	
K5	Evaluate	
K6	Create	
Total Marks		25

Assessment Pattern Level No.	**Knowledge Level**	**ISEI**
S1	Imitation	15
S2	Manipulation	05
S3	Precision	05
Total Marks		25

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Dated: 25th March 2025

MappingofCourseoutcomewithProgramOutcomesandProgramSpecific Outcomes

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3			2					3			
CO2	3			2								
CO3	3	3	2	2								
CO4	3	3	2	2								
CO5									2			

1-Low,2-Medium,3-High

MEESC1007:LabBasicsofMechanicalEngineering (For CSE/IT)		
Teaching Scheme	**ExaminationScheme**	
Practical:02Hrs/Week	**ISEIII**	**25Marks**
Credit:01		

CourseDescription: Aftercompletingthiscoursestudentwillhaveafundamentalunderstanding ofthethermodynamics,thermalmachinesourceofenergy,powertransmissionelements,identify manufacturing process and machines

Course Outcomes:

Aftercompletingthecoursestudentswillableto

Course Outcomes	
CO1	Understandtheoperation ofwatertubeboiler
CO2	Understandtheoperation ofICengine
CO3	UnderstandtheoperationofRefrigerator
CO4	Understandtheoperation ofBrakesandclutch
CO5	Understandthemanufacturingoperationoflathe machineandweldingprocess

List ofthe Experiments:

Sr. No.	Titleof theExperiments
1	StudyandDemonstrationofBoiler,Mountingsand Accessories.
2	StudyandDemonstrationofLancashire/Cochran boiler
3	StudyandDemonstrationofBabcock andWilcoxBoiler
4	StudyandDemonstrationoftwostrokepetrolandDieselEngine
5	StudyandDemonstrationofFourstrokepetrolandDieselEngine
6	Studyof Domestic Refrigerator
7	StudyofPowerTransmissionDevices
8	Performingsimpleweldedjoint

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MappingofCourseoutcomeswithProgramoutcomes:

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1											
CO2	1	1				1						
CO3	1	1				1						
CO4	1					1						
CO5	1											
CO6	1											

MEESC1005:EngineeringGraphicsSkills		
Teaching Scheme	**ExaminationScheme**	
Practical:02Hrs/Week	**ISEIII**	**25Marks**
Credit:01		

Course Outcomes:

Aftercompletingthecoursestudentswillableto

Course Outcomes	
CO1	Understandtheconventionsandthemethodsofengineeringdrawing
CO2	Improvetheirvisualizationskillssothattheycan applytheseskillsin developing new Products.
CO3	Becomeproficientindrawingtheprojectionsofvariousmachine components.

List ofthe Experiments:

Thestudent shall perform following experiments:

Sr. No.	Titleof theExperiments
1	IntroductiontoComputerGraphics (CAD)Demonstratingofthe theoryofCADsoftware,Standard Toolbars and Basic operations used like, Object Properties, Draw, Modify and Dimension, Select and erase objects etc. in CAD software package
2	Drawingtwoproblemsbasedonprojectionsoflinesondrawingsheet
3	Drawingtwoproblemsbasedonprojectionsofplanesondrawingsheet
4	Drawingtwoproblemsbasedonsectionalorthographicprojectionsondrawingsheetand2 problemsusingCADsoftwaretool.
5	Drawingtwoproblemsbasedonsectional Isometricprojectionsondrawing sheetand2problems usingCADsoftwaretool.

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Dated: 25th March 2025

AssessmentPattern:

Assessment Pattern Level No.	**KnowledgeLevel**	**ISEIII**	**ESE**
S1	Imitation	5	
S2	Manipulation	10	
S3	Precision	10	
S4	Articulation		
S5	Naturalization		
S6			
TotalMarks25		25	

Assessment table:

AssessmentTool	**S1to S3**	**S1, S2**	**S1**
	CO1	CO2	CO3
ISEIIITW (50Marks)	10	10	5
TotalMarks50	10	10	5

MappingofCourseoutcomeswithProgramoutcomes:

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	2										
CO2			3							1		
CO3	1			2								

1–Low,2–Medium,3–High

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ETESC1004---:LabBasicsofElectronicsEngineering		
Teaching Scheme	**ExaminationScheme**	
Practical:2Hrs/Week	**ISEIII***	**25 Marks**
Credits:01	**EndSemesterEvaluation**	**--**

Course Outcomes:

Aftercompletionofthis coursestudentswillbeableto:

	Course Outcomes
CO1	Explainthecharacteristicsplotofdiodeanditsapplicationasa rectifier/regulator
CO2	Explainthecharacteristicsplotoftransistoranditsapplicationas amplifier
CO3	Interprettheoperationandworkingofvariousgatesasacombinational logic
CO4	Interprettheoperationandworkingofvariousflipflopsasa sequential logic

List oftheExperiments

Thestudent shall perform following experiments

Sr. No.	Titleof theExperiments	Skill / Knowledge Level	CO	Marksfor ISE
1	Plottheinput/outputcharacteristicsofP-N Junction diode	K2,S2	CO1	25
2	Observethediodecircuitasahalfwave and full-waverectifier	K2,S2	CO1	25
3	Observethe zenerdiodecircuitasvoltage regulator	K2,S2	CO1	25
4	Plottheinput/outputcharacteristicsofN-P-N transistor in CB configuration	K2,S2	CO2	25
5	Studyofcommonemittertransistorasanamplifier	K2,S2	CO2	25
6	Verifytheoperationofbasicanduniversallogic gates	K2,S2	CO3	25
7	Realizethehalf/fulladder/subtractorcircuitusinggates	K2,S2	CO3	25
8	Realizethe4-bitbinaryadderusingintegrated circuit	K2,S2	CO3	25
9	RealizethegivenBooleanalgebraicexpressionusing gates	K2,S3	CO3	25
10	Realizethefollowingcombinationallogiccircuits: i) Primenumber detection ii) Binary numberdivisibleby 03/divisible by 04	K2,S3	CO3	25
11	StudyofFlipflops:S-R,J-K,T,D-Flipflop	K2,S3	CO4	25
12	RealizetheasynchronouscountercircuitusingJ-K Flipflop	K2,S3	CO4	25

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Assessment:* ISE III will be evaluation of performance of students during the lab hours, based on timely completion of journals and given tasks, punctuality, attendance, clarity of aim and grasp of the experiment performed. ISEIIImarkswillbeallottedattheendof thesemester.Markswillbetheaverageofthemarks obtained in performing experiments till end of the semester.

AssessmentPattern:

Assessment Pattern LevelNo.	**Knowledge Level**	**ISEIII**	**EndSemester Examination**
S1	Imitation	05	--
S2	Manipulation	05	--
S3	Precision	05	--
S4	Articulation	00	--
S5	Naturalizatio n	00	--
Total Marks		25	--

MappingofCourseoutcomewithProgramOutcomesandProgramSpecificOutcomes

Course outcom e	P O 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PS O3
CO1				1	3										
CO2		1													
CO3		1	2												
CO4				1	2										

3 –High 2 –Medium 1-Low

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ETVSE1002:EngineeringExploration	
TeachingScheme **04Hrs/Week** **Total Credits:2** **ContactHours40**	**ExaminationScheme** **ISE II:25 Marks** **ISEIII:25 Marks**

Course Outcomes

Asanoutcomeof completingthecourse,studentswillbeableto:

CO1	ExplaintheroleofanEngineerasaproblem solver
CO2	Identifymulti-disciplinaryapproach requiredinsolvinganengineeringproblem
CO3	Buildsimplemechanismsusingengineeringdesignprocess
CO4	Interfacedifferentperipheralsto Arduino
CO5	Applybasicsofengineeringprojectmanagementskills
CO6	Analyzeengineeringsolutionsfromethical&sustainabilityperspectives

Engineering Exploration is a Project-based learning (PBL) based course wherein students will apply their technical knowledge, practical skills to develop a project in a team. A group of 5 students(max)normallywillbepermittedinateam.Asetofneedstatementswillbepreparedby team members with the help of course coordinators. These need statements will be converted to Problem Statements. Students will follow Engineering Design process to develop conceptual design and detailed design.

Fewoftheactivitieswhich canbecarriedout are:

- Catapult design, weight bearing structure using newspapers, bridge making, activity with straws, colored paper, box of straws, football with papers, paper plane.
- How do you think Engineering design case studies for designing Panipuri/ tea/ coffee vending/pan making vending machines, grass cutter/mower machine, winding machines, chips making machine, home automation etc (block diagram and components in different blocks), Pugh chart examples.
- Building mechanisms using gears and other components, design mechanisms using linkages, auto inventor for model designing.
- Arduinobasedexperimentationand programming.
- Preparationoftimelinesforproject management.
- Presentationofcasestudiesforethics,sustainability,andcarbon footprint.

DetailedSyllabus:

	Content
Module1	**Introduction to Engineering and Engineering Study** **2 Hrs** Introduction to Engineering and Engineering Study: Difference between science and engineering, scientist and engineer needs and wants, various disciplines of engineering, some misconceptions of engineering, Expectation for the 21st century engineer and Graduate Attributes.
Module2	**EngineeringDesign** **15 Hrs** Engineering Design Process, Multidisciplinary facet of design, Pair wise comparison chart, Introduction to mechatronics system, generation of multiple solution, Pugh Chart, Motor and battery sizing concepts, introduction to PCB design
Module3	**Mechanisms 4 Hrs** BasicComponentsofaMechanism,DegreesofFreedomorMobilityofaMechanism,4Bar Chain, Crank Rocker Mechanism, Slider Crank Mechanism.
Module4	**PlatformBasedDevelopment** **12 Hrs** Introduction to various platform-based development (Arduino) programming and its essentials,Introductiontosensors,transducersandactuatorsanditsinterfacingwithArduino, Introduction to Data Acquisition and Analysis
Module5	**ProjectManagement** **3 Hrs** IntroductiontoAgilepractices,Significanceofteamwork,Projectmanagementtools: Checklist, Timeline, Gantt Chart, Significance of documentation
Module6	**SustainabilityandEthicsin Engineering** **4 Hrs** Introductiontosustainability,Sustainabilityleadership,carbonfootprint IdentifyingEngineeringasaProfession,SignificanceofProfessionalEthics,CodeofConduct forEngineers,IdentifyingEthicalDilemmasindifferenttasksofengineering,Plagiarismcheck for research papers
TotalContactHours	**40 Hrs**
CourseProjectReviewsEvaluationofgroupprojects	**08 Hrs**

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MappingofCourseoutcomewithProgramOutcomesandProgramSpecificOutcomes

Course Outcome	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	2	1				1					1	1			
CO2	2	2	2	1	1				3	1					
CO3	2	2	3	2	2	1	1		3	1	2		1	1	
CO4	2	2	2	2	2				1	1	2	1	3	1	1
CO5		2	2	2	2	1	1	1	3	1	3		1	1	1
CO6						1	3	3							

3– High 2 – Medium 1 – Low

EvaluationScheme			
Nameofthe Module	Hours	Marks	Evaluation
1.IntroductiontoEngineering&EngineeringStudy	02	3	ISE-II
2.EngineeringDesign	15	10	
3.Mechanisms	04	2	
4.Platformbaseddevelopment	12	10	
5.ProjectManagement	03	5	ISE-III
6.SustainabilityandethicsinEngineering	04	5	
7.CourseProjectReviews	08	10	
8.Honorcode	-	5	
TOTAL	48	50	

	CO1	**CO2**	**CO3**	**CO4**	**CO5**	**CO6**	**Total**
ISEII	03	10	02	10			25
ISEIII		05		05	05	10	25

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INCCC1002:NSS/INCCC1003:Sports/INCCC1004:ClubActivities (LiberalLearningCourse)	
Teaching Scheme	**04hrs./ week**
Tutorial:00hrs./ week	
Credits:02	**ISE-III 50 Marks**

CourseDescription: Co-curricularactivitiesareactivitiesthattakeplaceoutsideofacourse's curriculum but are related to academics in some way. Although involvement is not part of classroom instruction, it does supplement and enhance a student's academic experience.

NSS: Aim of NSS activities to Gain skills in mobilizing community participation; To acquire leadershipqualitiesanddemocraticattitude;Todevelopthecapacitytomeetemergenciesand nationaldisasters;Topracticenationalintegrationandsocialharmony.TypesofActivitiesare not limited to Cleaning, Plantation
Blood Donation Camps, Awareness Rallies, Health Care Camps, Stage shows or a procession creatingawarenessofsuchissuesassocialproblems,educationandcleanlinessbutdecidedby Institute NSS Coordinator. Students will participate in NSS Activities throughout semester.

TheevaluationisbasedonparticipationinregularNSSactivities.NSS Coordinatoralongwith departmental NSS coordinator will certify at the end ofsemesterabout participation. Program head will notify the exam section about awarding credits to the students.

Sports activity: Sporting Activities means performing or participating in the Sport in any capacitywhichincludes,butisnotlimitedto,participationintraining,competitions,coachingor as an official.
StudentswillparticipateinSportsActivitiesthroughoutsemester.Gymkhanavicepresidentwill coordinate along with sports coordinator of department. The coordinators will certify at the end of semester about participation. Program head will notify the examination section about awarding credits to the students.The evaluation is based on participation in regular sports activities.

Club activities: Government Engineering CollegeAurangabad has various clubs that focus on specific interests such as robotics, coding, literature, environment, etc. These clubs often organize events, workshops, and competitionsthat provide studentswith opportunitiesto learn new skills and showcase their talents. Students will participate in Club Activities throughout semester.Facultycoordinatorswillcoordinatealongwithstudentsbodiestheactivitiesofclub.

TheFacultycoordinatorswillcertifyattheendof semesteraboutparticipationofstudents . Program head will notify the examination section about awarding credits to the students. Dean Students affairs and all program heads will formulate additional modalities for smooth conduction of co curricular activities as and when required.

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