GVR&S COLLEGE OF ENGINEERING AND TECHNOLOGY
(Approved by AICTE, Affiliated to JNTUK, Govt.of.A.P, India.)
Ganginenipuram, Budampadu, Etukuru (P.O), Guntur (Dt) – 522017, A.P, India.
E-mail: gvrs_cet@yahoo.com, website: www.gvrs.ac.in

1.3.1. Institution integrates crosscutting issues relevant to Professional Ethics, Gender, Human Values, Environment and Sustainability into the Curriculum

2022-2023

Category	Name of the Course	Relevance
Constitution	Constitution of India(MC309)	• The Constitution of India is the supreme Law of India • Parliament of India cannot make any law which violates the Fundamental Rights enumerated under the Part III of the Constitution • The Constitution of India is not only a legal document but it also reflects social, political and economic perspectives of the Indian Society
Ethics	Professional Ethics(MC500HS)	• To enable the students to imbibe and internalize the Values and Ethical Behavior in the personal and Professional lives
Employability Skills	Employability Skills	• Aptitude skill • Soft skills • Skills required for campus placement interview
Environment	Environmental Science and Technology(MC609)	• Understanding The importance of ecological Balance for sustainable Development. • Understanding the Impacts of developmental activities and mitigation measures • Understanding the Environmental policies And regulations
Research Methodology		• To understand the objectives and characteristics of a research problem. • To analyze research related information and to follow research ethics • To understand the types of intellectual property rights. • To learn about the scope of patent rights. • To understand the new developments in IPR.

File Description	Document
Any additional information	VIEW DOCUMENT

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2021-2022

Category	Name of the Course	Relevance
Constitution	Constitution of India(MC309)	• The Constitution of India is the supreme Law of India Parliament of India cannot make any law which violates the Fundamental Rights enumerated under the Part III of the Constitution • The Constitution of India is not only alegal document but it also reflects social, political and economic perspectives of the Indian Society
Ethics	Professional Ethics(MC500HS)	To enable the students to imbibe and internalize the Values and Ethical Behaviour in the personal and Professional lives
Employability Skills	Employability Skills	1.Aptitude skill 2. Soft skills 3. Skills required for campus placement interview
Environment	Environmental Science and Technology(MC609)	Understanding The importance of ecological Balance for sustainable Development. Understanding the Impacts of developmental activities and mitigation measures • Understanding the Environmental policies And regulations
Research Methodology		• To understand the objectives and characteristics of a research problem. • To analyze research related information and to follow research ethics • To understand the types of intellectual property rights. • To learn about the scope of patent rights. • To understand the new developments in IPR.

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2020-2021

Category	Name of the Course	Relevance
Constitution	Constitution of India(MC309)	• The Constitution of India is the supreme Law of India Parliament of India cannot make any law which violates the Fundamental Rights enumerated under the Part III of the Constitution • The Constitution of India is not only alegal document but it also reflects social, political and economic perspectives of the Indian Society
Ethics	Professional Ethics(MC500HS)	• To enable the students to imbibe and internalize the Values and Ethical Behavior in the personal and Professional lives
Employability Skills	Employability Skills	• Aptitude skill • Soft skills • Skills required for campus placement interview
Environment	Environmental Science and Technology(MC609)	• Understanding The importance of ecological Balance for sustainable Development. • Understanding the Impacts of developmental activities and mitigation measures Understanding the Environmental policies And regulations
Research Methodology		To understand the objectives and characteristics of a research problem. To analyze research related information and to follow research ethics To understand the types of intellectual property rights. To learn about the scope of patent rights. To understand the new developments in IPR.

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2019-2020

Category	Name of the Course	Relevance
Employability Skills	Employability Skills	• Aptitude skill • Soft skills • Skills required for campus placement interview
Environment	Environmental Science and Technology(MC400ES)	• Understanding The importance of ecological Balance for sustainable development. • Understanding the Impacts of developmental activities and mitigation measures • Understanding the Environmental policies And regulations
Ethics	Professional Ethics And Human values	• To enable the students to imbibe and internalize the Values and Ethical Behavior in the personal and Professional lives
Essence of Indian Traditional Knowledge	Essence of Indian Traditional Knowledge	• Understand TK and IPR • Apply systems of TK protection. • Analyze legal concepts for the protection of TK. • Evaluate strategies to increase the protection of TK.

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2018-2019

Category	Name of the Course	Relevance
Intellectual	Intellectual Property Rights (MC510)	• Law of copy rights • Law of patents • Trade Secrets • Unfair Competition • New development of intellectual property
Ethics	Professional Ethics And Human values	• To enable the students to imbibe and internalize the Values and Ethical Behavior in the personal and Professional lives • To create an awareness on Engineering Ethics and Human Values. • To instill Moral and Social Values and Loyalty • To appreciate the rights of others • To create awareness on assessment of safety and risk

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DEPARTMENTOFCOMPUTERSCIENCE&ENGINEERING

COURSE STRUCTURE AND SYLLABUS

ForUG –R20

B.TECH-COMPUTERSCIENCE&ENGINEERING

(Applicableforbatchesadmittedfrom2020-2021)

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KAKINADA–533003,AndhraPradesh, India

DEPARTMENTOFCOMPUTERSCIENCE&ENGINEERING

COURSESTRUCTURE

IYear–I SEMESTER						
S.No	**Course Code**	**Courses**	**L**	**T**	**P**	**Credits**
1	HS	CommunicativeEnglish	3	0	0	3
2	BS	Mathematics- I (CalculusAndDifferentialEquations)	3	0	0	3
3	BS	AppliedPhysics	3	0	0	3
4	ES	ProgrammingforProblemSolvingusingC	3	0	0	3
5	ES	ComputerEngineeringWorkshop	1	0	4	3
6	HS	EnglishCommunicationSkillsLaboratory	0	0	3	1.5
7	BS	AppliedPhysics Lab	0	0	3	1.5
8	ES	ProgrammingforProblemSolvingusingCLab	0	0	3	1.5
TotalCredits			**19.5**			

IYear–IISEMESTER						
S.No	**Course Code**	**Courses**	**L**	**T**	**P**	**Credits**
1	BS	Mathematics–II (LinearAlgebraAndNumericalMethods)	3	0	0	3
2	BS	AppliedChemistry	3	0	0	3
3	ES	ComputerOrganization	3	0	0	3
4	ES	PythonProgramming	3	0	0	3
5	ES	DataStructures	3	0	0	3
6	BS	AppliedChemistryLab	0	0	3	1.5
7	ES	PythonProgrammingLab	0	0	3	1.5
8	ES	Data Structures Lab	0	0	3	1.5
9	MC	Environment Science	2	0	0	0
TotalCredits			**19.5**			

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DEPARTMENTOFCOMPUTERSCIENCE&ENGINEERING

IIYear–I SEMESTER						
S.No	Course Code	Courses	L	T	P	Credits
1	BS	MathematicsIII	3	0	0	3
2	CS	ObjectOrientedProgrammingthroughC++	3	0	0	3
3	CS	OperatingSystems	3	0	0	3
4	CS	SoftwareEngineering	3	0	0	3
5	CS	MathematicalFoundationsofComputerScience	3	0	0	3
6	CS	ObjectOrientedProgrammingthroughC++Lab	0	0	3	1.5
7	CS	OperatingSystems Lab	0	0	3	1.5
8	CS	SoftwareEngineering Lab	0	0	3	1.5
9	SO	**Skilloriented Course-I** ApplicationsofPython-NumPy**OR** 2)WebApplicationDevelopmentUsing FullStack-FrontendDevelopment–Module-I	0	0	4	2
10	MC	Constitutionof India	2	0	0	0
TotalCredits			**21.5**			

IIYear–IISEMESTER						
S.No	Course Code	Courses	L	T	P	Credits
1	BS	Probabilityand Statistics	3	0	0	3
2	CS	DatabaseManagementSystems	3	0	0	3
3	CS	FormalLanguagesandAutomataTheory	3	0	0	3
4	ES	JavaProgramming	3	0	0	3
5	HS	ManagerialEconomicsandFinancialAccountancy	3	0	0	3
6	CS	DatabaseManagement SystemsLab	0	0	2	1
7	CS	RProgrammingLab	0	1	2	2
8	ES	JavaProgramming Lab	0	0	3	1.5
9	SO	**SkillOriented Course-II** ApplicationsofPython-Pandas**OR** 2)WebApplicationDevelopmentUsing FullStack-FrontendDevelopment–Module-II	0	0	4	2
TotalCredits			**21.5**			
10	Minor	OperatingSystems$	3	0	2	3+1
11	Honors	AnycoursefromthePool,as pertheoptedtrack	4	0	0	4

$-IntegratedCourse

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DEPARTMENTOFCOMPUTERSCIENCE&ENGINEERING

IIIB.Tech–ISemester						
S.No	CourseCode	Courses	Hoursper week			Credits
			L	T	P	C
1	PC	ComputerNetworks	3	0	0	3
2	PC	DesignandAnalysisofAlgorithms	3	0	0	3
3	PC	DataWarehousingandDataMining	3	0	0	3
4	OpenElective/ Job Oriented	**OpenElective-I** OpenElectivesofferedbyotherdepartments/ Optimization in Operations Research (Joboriented course)	3	0	0	3
5	PE	**Professional Elective-I** Artificial Intelligence SoftwareProjectManagement Distributed Systems AdvancedUnixProgramming	3	0	0	3
6	PC	DataWarehousingandDataMiningLab	0	0	3	1.5
7	PC	ComputerNetworksLab	0	0	3	1.5
8	SO	**SkillOriented Course– III** 1. Animationcourse:AnimationDesign**OR** 2.ContinuousIntegrationandContinuous Delivery using DevOps	0	0	4	2
9	MC	EmployabilitySkills-I	2	0	0	0
10	PR	**SummerInternship2 Months (Mandatory)aftersecondyear(tobe evaluated during V semester**	0	0	0	1.5
		Totalcredits				**21.5**
11	Minor	DatabaseManagementSystems$	3	0	2	3+1
12	Honors	Anycourse fromthe Pool,as pertheopted track	4	0	0	4

$-IntegratedCourse

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DEPARTMENTOFCOMPUTERSCIENCE&ENGINEERING

IIIB.Tech– II Semester						
S.No	**Course Code**	**Courses**	**Hoursper week**			**Credits**
			L	**T**	**P**	**C**
1	PC	MachineLearning	**3**	**0**	**0**	**3**
2	PC	CompilerDesign	**3**	**0**	**0**	**3**
3	PC	CryptographyandNetworkSecurity	**3**	**0**	**0**	**3**
4	PE	**ProfessionalElective-II** 1.MobileComputing 2.BigDataAnalytics 3.ObjectOrientedAnalysisand Design 4.Network Programming	**3**	**0**	**0**	**3**
5	Open Elective /Job Oriented	**OpenElective-II** OpenElectivesofferedbyother departments/ MEANStackDevelopment*(JobOriented)*	**3**	**0**	**0**	**3**
6	PC	MachineLearningusingPythonLab	**0**	**0**	**3**	**1.5**
7	PC	CompilerDesignLab	**0**	**0**	**3**	**1.5**
8	PC	CryptographyandNetworkSecurityLab	**0**	**0**	**3**	**1.5**
9	SO	**SkillOriented Course-IV** 1.BigData:Spark **OR** 2.MEANStackTechnologies-ModuleI (HTML5,JavaScript,Node.js,Express.js and TypeScript)	**0**	**0**	**4**	**2**
10	MC	Employabilityskills-II	**2**	**0**	**0**	**0**
Totalcredits						**21.5**
Industrial/ResearchInternship(Mandatory)2Monthsduringsummervacation						
11	Minor	DataStructuresandAlgorithms$	3	0	2	3+1
12	Honors	Anycourse fromthe Pool,as pertheopted track	4	0	0	4
Minorcoursethrough SWAYAM			-	-	-	**2**

$-IntegratedCourse

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DEPARTMENTOFCOMPUTERSCIENCE&ENGINEERING

IVB.Tech–ISemester						
S.No	**CourseCode**	**CourseTitle**	**Hoursperweek**			**Credits**
			L	**T**	**P**	**C**
1	PE	**ProfessionalElective-III** 1.Cloud Computing 2.NeuralNetworksandSoftComputing 3.Ad-hocandSensorNetworks 4.Cyber Security&Forensics	**3**	**0**	**0**	**3**
2	PE	**ProfessionalElective-IV** 1. DeepLearningTechniques 2. SocialNetworks&SemanticWeb 3. ComputerVision 4.MOOCS-NPTEL/SWAYAM%	**3**	**0**	**0**	**3**
3	PE	**ProfessionalElective-V** 1.Block-ChainTechnologies 2.WirelessNetworkSecurity 3.EthicalHacking 4.MOOCS-NPTEL/SWAYAM%	**3**	**0**	**0**	**3**
4	OpenElective /JobOriented	**OpenElective-III** OpenElectivesoffered byotherdepartments/ APIandMicroservices(JobOrientedCourse)	**3**	**0**	**0**	**3**
5	OpenElective /JobOriented	**OpenElective-IV** OpenElectivesofferedbyotherdepartments/ Secure Coding Techniques (Job Oriented Course)	**3**	**0**	**0**	**3**
6	HS	UniversalHumanValues2:Understanding Harmony	**3**	**0**	**0**	**3**
7	SO	1.PYTHON:DeepLearning**OR** 2.MEANStackTechnologies-ModuleII-Angular JS andMongoDB **OR** 3.APSSDCofferedCourses	**0**	**0**	**4**	**2**
8	PR	**Industrial/ResearchInternship2months (Mandatory) after third year (to be evaluatedduringVIIsemester**	**0**	**0**	**0**	**3**
Totalcredits						**23**
11	Minor	SoftwareEngineering$/anyotherfromPART- B For Minor)	3	0	2	3+1
12	Honors	Anycourse fromthe Pool,as pertheopted rack	4	0	0	4
Minorcoursethrough SWAYAM			-	-	-	**2**

$-IntegratedCourse
% - MOOCCourse

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IVB.Tech–IISemester						
S.No	**CourseCode**	**CourseTitle**	**Hoursper week**			**Credits**
			L	**T**	**P**	**C**
1	Project	MajorProjectWork,Seminar Internship	-	-	-	**12**
Totalcredits						**12**

Note:

1. ***For integrated courses***: Theory and laboratory exams will be conducted separately, and the student concernwillget credits ifsuccessfullycompletesboththeoryand laboratory. Onlyexternal exam will be conducted for Laboratory component. Credit based weightage shall be considered while awarding the grade.
2. ***ForMOOCcourses***:Basedonthestudentsinterest,student canregisterandcompletea12week course one year in advance, by prior information to the concern.

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DEPARTMENTOFCOMPUTERSCIENCE&ENGINEERING

SUGGESTEDCOURSESFORHONORSPROGRAM

POOL1-AI&ML 1. MathematicsforMachineLearning 2. TextMiningandTimeSeriesAnalysis 3. NaturalLanguageProcessing 4. ReinforcementLearning	**POOL2-SystemsEngineering** 1. InternetofThings 2. DataCommunicationsandInformation Coding Theory 3. ServiceOriented Architectures 4. DesignofSecureProtocols 5. NetworkCoding
POOL3-Information Security 1. PrinciplesofCyber Security 2. ComputationalNumberTheory 3. Cryptanalysis 4. EllipticCurveCryptography 5. IntroductiontoQuantumComputing and Quantum Cryptography 6. PublicKeyInfrastructureand Trust Management 7. InformationSecurityAnalysisand Audit 6. Cloud and IoT Security 7. WebSecurity 8. BlockChainArchitectureDesignand Use Cases	**POOL4– DataScience** 1. DataVisualization 2. StatisticalFoundationsforDataScience 3. MiningMassiveDataSets 4. MedicalImageDataProcessing

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SUGGESTEDCOURSESMINORENGINEERINGINCSE

Note:

1. AnyTHREEcoursesneedtobestudiedfromPART-A.
2. AnyONEcourseneed tobestudiedfromPART-B.
3. TWO, NPTELcoursesofEIGHT weekdurationcovering atotalof4credits(offeredbyCSE Department only), Student can register at anytime after the completion of II B.Tech. I Sem.
4. StudentscanpursuesuggestedMOOCCoursesvia NPTELfromIIB.TechIISemandonwards, by prior information to the concern.

Eligibility forMinorinCSE:

PARTA					
S.No	**Subject**	**L-T-P**	**Credits**	**Courseavailable in NPTEL**	**NPTEL Link**
1	OperatingSystems	3-0-2	4	OperatingSystems	https://onlinecourses.swayam2.ac.in/cec21_cs20/preview
2	DataStructuresand Algorithms	3-0-2	4	Data Structures Programming,Data Structures and Algorithms using Python	https://onlinecourses.swayam2.ac.in/cec22_cs10/preview https://onlinecourses.nptel.ac.in/noc22_cs26/preview
3	SoftwareEngineering	3-0-2	4	Software Engineering	https://onlinecourses.swayam2.ac.in/cec21_cs21/preview
4	ComputerNetworks	3-0-2	4	ComputerNetworks	https://onlinecourses.swayam2.ac.in/cec22_cs05/preview
5	DatabaseManagement Systems	3-0-2	4	Data Base Management System(noc22-cs51)	https://onlinecourses.nptel.ac.in/noc22_cs51/preview

PARTB					
S.No	**Subject**	**L-T-P**	**Credits**	**Course availablein NPTEL**	**NPTEL Link**
1	ComputationalThinking	4-0-0	4	Physicsthrough Computational Thinking	https://onlinecourses.nptel.ac.in/noc22_ph12/preview
2	ObjectOriented Programming through JAVA	3-0-2	4		
3	DataAnalyticsusingPython	3-0-2	4	DataAnalytics with Python	https://onlinecourses.nptel.ac.in/noc22_cs8/ preview
4	ArtificialIntelligence	4-0-0	4	Artificial Intelligence: Knowledge Representation	1. https://onlinecourses.nptel.ac.in/noc22_cs56/previe...

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				(noc22-cs02), AnIntroductionto Artificial Intelligence (noc22-cs56), AI:Constraint Satisfaction (noc22-cs06)	ses.swayam2.ac.in/cec21_cs08/preview
5	UnixandShellProgramming	3-0-2	4		
6	Cloud Computing	4-0-0	4	CloudComputing and Distributed Systems (noc22-cs18), Cloud computing(noc22-cs20)	1. https://onlinecourses.nptel.ac.in/noc22_cs18/preview 2. https://onlinecourses.nptel.ac.in/noc22_cs20/preview

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DEPARTMENTOFCOMPUTERSCIENCE&ENGINEERING

OpenElectivesto beofferedby CSEforotherBranches:

OpenElective-I: 1. DataStructures 2. ObjectOrientedProgrammingthrough JAVA 3. DataBaseManagementSystems 4. ComputerGraphics 5. AdvancedUNIX Programming 6. ComputerOrganizationandArchitecture 7. OperatingSystems	**OpenElective-II:** 1. PythonProgramming 2. WebTechnologies 3. SoftComputing 4. Distributed Computing 5. AIandML for Robotics 6. ComputerNetworks 7. BigDataAnalytics 8. ComputationalTools
OpenElective-III: 1. AITools &Techniques 2. ImageProcessing 3. InformationSecurity 4. MobileApplicationDevelopment 5. DataScience 6. CyberSecurity 7. Introductionto Internet ofThings	**OpenElective-IV:** 1. MEANStack Technologies 2. DeepLearningTechniques 3. CloudcomputingwithAWS 4. BlockChainTechnologies 5. Cryptography&NetworkSecurity 6. IntroductiontoMachine Learning 7. MachineLearningwithPython

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DEPARTMENTOFCOMPUTERSCIENCE&ENGINEERING

IYear–II Semester		L	T	P	C
		2	0	0	0
ENVIRONMENT SCIENCE					

Course Objectives:
The objectives ofthe coursearetoimpart:

- Overallunderstandingofthenaturalresources.
- Basicunderstanding oftheecosystemanditsdiversity.
- Acquaintanceonvariousenvironmentalchallengesinducedduetounplanned anthropogenic activities.
- Anunderstanding ofthe environmentalimpactofdevelopmentalactivities.
- Awarenessonthesocialissues,environmentallegislationandglobaltreaties.

UNITI
Multidisciplinary nature of Environmental Studies: Definition, Scope and Importance – Sustainability: Stockholm and Rio Summit–Global Environmental Challenges: Global warming and climate change, acid rains, ozone layer depletion, population growth and explosion, effects. Role of information technologyin environment and human health.
Ecosystems: Concept of an ecosystem. - Structure and function of an ecosystem; Producers, consumers and decomposers. - Energy flow in the ecosystem - Ecologicalsuccession. - Food chains, food webs and ecological pyramids; Introduction, types, characteristic features, structure and function of Forest ecosystem, Grassland ecosystem, Desert ecosystem, Aquatic ecosystems.

UNITII
NaturalResources:Naturalresourcesand associatedproblems.
Forest resources: Use and over – exploitation, deforestation – Timber extraction – Mining, dams and other effects on forest and tribal people.
Water resources: Use and over utilization of surface and ground water – Floods, drought, conflicts over water, dams – benefits and problems.
Mineral resources: Use and exploitation, environmental effects of extracting and using mineralresources.
Foodresources: World food problems, changescaused bynon-agriculture activities-effectsof modern agriculture, fertilizer-pesticide problems, water logging, salinity.
Energy resources: Growing energy needs, renewable and non-renewable energy sources use of alternate energy sources.
Land resources: Land as a resource, land degradation, Wasteland reclamation, man induced landslides, soil erosion and desertification; Role of an individual in conservation of natural resources; Equitable use of resources for sustainable lifestyles.

UNITIII
Biodiversity and its conservation: Definition: genetic, species and ecosystem diversity-classification - Value of biodiversity: consumptive use, productive use, social-Biodiversityat national and local levels. India as a mega-diversity nation - Hot-sports of biodiversity - Threats to biodiversity: habitat loss, man-wildlife conflicts. - Endangered andendemic species of India – Conservation of biodiversity: conservation of biodiversity.

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DEPARTMENTOFCOMPUTERSCIENCE&ENGINEERING

UNITIV

Environmental Pollution: Definition, Cause, effects and control measures of Air pollution, Water pollution, Soil pollution, Noise pollution, Nuclear hazards. Role of an individual in prevention of pollution. - Pollution case studies, Sustainable Life Studies. Impact of Fire Crackers on Men and his well being.

Solid Waste Management: Sources, Classification, effects and control measures ofurban and industrial solid wastes. Consumerism and waste products, Biomedical, Hazardous and e – waste management.

UNITV

Social Issues and the Environment: Urban problems related to energy -Water conservation, rain water harvesting-Resettlement and rehabilitation of people; its problems and concerns. Environmental ethics: Issues and possible solutions. Environmental Protection Act -Air (Prevention and ControlofPollution) Act. –Water (Prevention and controlofPollution) Act - Wildlife Protection Act -Forest Conservation Act-Issues involved in enforcement of environmental legislation. -Public awareness.

Environmental Management: Impact Assessment and its significance various stages of EIA, preparation of EMP and EIS, Environmental audit. Ecotourism, Green Campus – Green business and Green politics.

The student should Visit an Industry / Ecosystem and submit a report individually on any **issues related to Environmental Studies course and make a power point presentation.**

Text Books:

1) EnvironmentalStudies,K.V.S.G.MuraliKrishna,VGSPublishers, Vijayawada
2) EnvironmentalStudies,R. Rajagopalan,2nd Edition,2011, OxfordUniversityPress.
3) EnvironmentalStudies, P. N. Palanisamy, P. Manikandan, A. Geetha, and K. Manjula Rani; Pearson Education, Chennai

ReferenceBooks:

1) TextBookofEnvironmentalStudies,DeeshitaDave&P.UdayaBhaskar,Cengage Learning.
2) ATextbookofEnvironmentalStudies,ShaashiChawla,TMH,NewDelhi
3) EnvironmentalStudies,BennyJoseph,TataMcGraw HillCo,New Delhi
4) PerspectivesinEnvironment Studies,AnubhaKaushik,CPKaushik,NewAge InternationalPublishers, 2014

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KAKINADA–533003,AndhraPradesh, India

DEPARTMENTOFCOMPUTERSCIENCE&ENGINEERING

IIYear-ISemester		L	T	P	C
		2	0	0	0
CONSTITUTION OF INDIA					

Course Objectives:

- ToEnablethestudent tounderstandtheimportanceofconstitution
- Tounderstandthestructureofexecutive,legislature andjudiciary
- Tounderstandphilosophyoffundamentalrightsandduties
- Tounderstandtheautonomousnatureofconstitutionalbodieslike SupremeCourt and high court controller and auditor generalofIndia and election commission ofIndia.
- Tounderstandthecentraland staterelationfinancialandadministrative

CourseOutcomes:

Attheend ofthecourse,thestudentwillbeableto haveaclearknowledgeonthefollowing:

- Understandhistorical background of the constitution making anditsimportancefor building a democratic India.
- Understandthefunctioningof threewingsof thegovernmentie.,executive, legislative and judiciary.
- Understand the value ofthe fundamentalrights and duties for becoming good citizen ofIndia
- Analyzethedecentralizationofpower betweencentral, stateand localself-government.
- Apply theknowledgeinstrengtheningoftheconstitutionalinstitutionslikeCAG, Election Commission and UPSC for sustaining democracy.
  1. Knowthesources,featuresandprinciplesofIndianConstitution.
  2. LearnaboutUnionGovernment,Stategovernmentanditsadministration.
  3. Getacquainted withLocaladministrationand PachayatiRaj.
  4. Beaware ofbasicconceptsanddevelopmentsofHumanRights.
  5. Gainknowledge onrolesandfunctioning ofElectionCommission

UNITI

Introduction to Indian Constitution: Constitution meaning of the term, Indian Constitution - Sources and constitutionalhistory, Features - Citizenship, Preamble, FundamentalRights and Duties, Directive Principles of State Policy.

Learningoutcomes:Aftercompletionofthisunitstudentwill

- Understandtheconcept ofIndianconstitution
- Applythe knowledgeondirective principleofstate policy
- Analyzethe History,featuresofIndianconstitution
- EvaluatePreambleFundamentalRightsand Duties

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DEPARTMENTOFCOMPUTERSCIENCE&ENGINEERING

UNITII

UnionGovernment and itsAdministrationStructureoftheIndianUnion:Federalism, Centre-Staterelationship, President:Role, powerandposition, PMandCouncilofministers, Cabinet and CentralSecretariat,LokSabha, RajyaSabha, The Supreme Court and HighCourt:Powers and Functions;

Learningoutcomes: Aftercompletionofthisunitstudentwill

- UnderstandthestructureofIndiangovernment
- Differentiatebetweenthestateandcentralgovernment
- ExplaintheroleofPresidentandPrime Minister
- KnowtheStructureofsupremecourtand Highcourt

UNITIII

State Government and its Administration Governor - Role and Position - CM and Council of ministers, State Secretariat: Organisation, Structure and Functions

Learningoutcomes: Aftercompletionofthisunitstudentwill

- Understandthestructureofstate government
- AnalyzetheroleGovernorandChiefMinister
- Explainthe roleofstateSecretariat
- Differentiatebetweenstructureandfunctionsofstatesecretariat

UNITIV

A.Local Administration - District's Administration Head - Role and Importance, Municipalities - Mayor and role of Elected Representative - CEO of Municipal Corporation PachayatiRaj: Functions PRI: ZilaPanchayat, Elected officials and their roles, CEO ZilaPanchayat:Block levelOrganizationalHierarchy- (Different departments), Village level - RoleofElectedandAppointedofficials - Importanceofgrassrootdemocracy

Learning outcomes:-After completion of this unit student will

- UnderstandthelocalAdministration
- Compareandcontrastdistrictadministrationroleand importance
- AnalyzetheroleofMyer and elected representativesofMunicipalities
- EvaluateZillapanchayatblocklevelorganisation

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UNITV

Election Commission: Election Commission- Role of Chief Election Commissioner and Election Commissionerate State Election Commission:, Functions of Commissions for the welfare of SC/ST/OBC and women

Learningoutcomes: Aftercompletionofthisunitstudentwill

- Knowthe roleofElectionCommissionapplyknowledge
- Contrast and compare the role of Chief Election commissioner and Commissiononerate
- Analyzerole ofstateelectioncommission

References:

1) Durga Das Basu, Introduction to the Constitution of India,Prentice Hall of India Pvt.Ltd.
2) SubashKashyap,IndianConstitution,NationalBookTrust
3) J.A.Siwach, DynamicsofIndianGovernment&Politics
4) D.C.Gupta,IndianGovernmentandPolitics
5) H.M.Sreevai,ConstitutionalLawof India,4theditionin3volumes(UniversalLaw Publication)
6) J.C.Johari,IndianGovernmentandPoliticsHans
7) J.RajIndianGovernmentandPolitics
8) M.V. Pylee, IndianConstitutionDurga DasBasu, HumanRights inConstitutionalLaw, Prentice – Hall of India Pvt. Ltd.. New Delhi
9) Noorani, A.G., (SouthAsia HumanRights DocumentationCentre), Challenges to Civil Right), Challenges to Civil Rights Guarantees in India, Oxford UniversityPress 2012

e-Resources:

1) nptel.ac.in/courses/109104074/8
2) nptel.ac.in/courses/109104045/
3) nptel.ac.in/courses/101104065/
4) www.hss.iitb.ac.in/en/lecture-details
5) www.iitb.ac.in/en/event/2nd-lecture-institute-lecture-series-indian-constitution

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DEPARTMENTOFCOMPUTERSCIENCE&ENGINEERING

IIIYear–I Semester		L	T	P	C
		2	0	0	0
EMPLOYABILITYSKILLS-I					

Course Objectives:
The main objective of this course is to assist students in developing employability skillsand personal qualities related to gaining and sustaining employment.

CourseOutcomes: Theend ofthecoursestudentwillbeableto

- Understandthecorporateetiquette.
- Makepresentationseffectivelywithappropriatebodylanguage
- Becomposedwithpositive attitude
- Understandthecorecompetenciestosucceedinprofessionalandpersonallife

UNITI:
Analytical Thinking & Listening Skills: Self-Introduction, Shaping Young Minds - A Talk by Azim Premji (Listening Activity), Self – Analysis, Developing Positive Attitude, Perception.
CommunicationSkills: VerbalCommunication;NonVerbalCommunication(BodyLanguage)

UNITII:
Self-Management Skills: Anger Management, Stress Management, Time Management, Six Thinking Hats, Team Building, Leadership Qualities
Etiquette: SocialEtiquette,BusinessEtiquette,TelephoneEtiquette,DiningEtiquette

UNITIII:
Standard Operation Methods: NoteMaking, NoteTaking, MinutesPreparation, Email &LetterWriting **Verbal Ability**: Synonyms, Antonyms, One Word Substitutes-Correction of Sentences-Analogies, Spotting Errors, Sentence Completion, Course of Action -Sentences Assumptions, Sentence Arguments, Reading Comprehension, Practice work

UNITIV:
Job-OrientedSkills–I: GroupDiscussion, MockGroupDiscussions

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UNITV:
Job-OrientedSkills–II:ResumePreparation,InterviewSkills,MockInterviews

TextBooksandReferenceBooks:

1. BarunK. Mitra,PersonalityDevelopmentandSoftSkills,OxfordUniversityPress,2011.
2. S.P.Dhanavel,EnglishandSoftSkills,OrientBlackswan,2010.
3. R.S.Aggarwal,AModernApproachto Verbal&Non-VerbalReasoning,S.Chand &Company Ltd., 2018.
4. Raman,Meenakshi&Sharma,Sangeeta,TechnicalCommunicationPrinciplesandPractice, Oxford University Press, 2011.

e-resources:

1. www. Indiabix.com

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DEPARTMENTOFCOMPUTERSCIENCE&ENGINEERING

IIIYear–IISemester		L	T	P	C
		2	0	0	0
EMPLOYABILITYSKILLS-II					

Course Objectives:
Themainobjectiveofthiscourseistoassiststudentsindeveloping employabilityskillsandpersonal qualities related to gaining and sustaining employment.

CourseOutcomes: After completionofthiscourse
- SolvevariousBasicMathematicsproblemsbyfollowingdifferentmethods
- Follow strategies in minimizing time consumption in problem solving Apply shortcut methods to solve problems
- Confidentlysolveanymathematicalproblemsandutilizethesemathematicalskillsbothintheir professional as well as personal life.
- Analyze,summarizeandpresentinformationinquantitative formsincludingtable,graphsand formulas

UNITI:
Numericalabilityl: Numbersystem,HCF&LCM,Average, Simplification,Problemson numbers
NumericalabilityII: Ratio &Proportion,Partnership,Percentages,Profit&Loss

UNITII:
Arithmeticalabilityl: Problemsonages,Time&Work,Pipes &Cistern,Chain Rule.
Arithmeticalabilityll: Time&Distance,Problemsonboats&Steams,ProblemsonTrains

UNITIII:
Arithmeticalabilitylll: Allegation,Simpleinterestandcompoundinterest,Races&Gamesofskills, Calendar and Clock,
Logicalability: PermutationsandCombinationand Probability.

UNITIV:
Mensuration: Geometry,Areas,Volumes

UNITV:
Datainterpretation: Tabulation,Bargraphs,Piecharts,linegraphs

TextBooksAndReferenceBooks:
1. R. S. Aggarwal "Quantitative Aptitude", Revised ed., S Chand publication, 2017 ISBN:8121924987

E-resources:
1. https://blog.feedspot.com/aptitude_youtube_channels/
2. https://www.tutorialspoint.com/quantitative_aptitude/
3. https://www.careerbless.com/aptitude/qa/home.php

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

COURSE STRUCTURE AND SYLLABUS

For

B.TECH – ELECTRICAL AND ELECTRONICS ENGINEERING

(Applicableforbatchesadmittedfrom2020-2021)

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

I B.Tech – I SEMESTER

Sl. No	Course Components	Subjects	L	T	P	Credits
1	HSMC	Communicative English	3	0	0	3
2	BSC	Mathematics-I (Calculus and Differential Equations)	3	0	0	3
3	BSC	Mathematics-II (Linear Algebra and Numerical Methods)	3	0	0	3
4	ESC	Programming for Problem Solving Using C	3	0	0	3
5	ESC	Engineering Drawing & Design	1	0	4	3
6	HSMC	EnglishCommunicationSkillsLaboratory	0	0	3	1.5
7	BSC	Electrical Engineering Workshop	0	1	3	1.5
8	ESC	Programming for Problem Solving Using C Lab	0	0	3	1.5
		Total Credits				**19.5**

I B.Tech – II SEMESTER

Sl. No	Course Components	Subjects	L	T	P	Credits
1	BSC	Mathematics-III (Vector Calculus, Transforms and PDE)	3	0	0	3
2	BSC	Applied Physics	3	0	0	3
3	ESC	Data Structures Through C	3	0	0	3
4	ESC	Electrical Circuit Analysis-I	3	0	0	3
5	ESC	Basic Civil and Mechanical Engineering	3	0	0	3
6	BSC	Applied Physics Lab	0	0	3	1.5
7	ESC	Basic Civil and Mechanical Engineering Lab	0	0	3	1.5
8	ESC	Data Structures through C Lab	0	0	3	1.5
9	Mandatory Course	Constitution of India	2	0	0	0
		Total Credits				**19.5**

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KAKINADA–533003, Andhra Pradesh, India
DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

II B.Tech – I Semester

Sl. No	Course Components	Subjects	L	T	P	Credits
1	BSC	Mathematics– IV	3	0	0	3
2	PCC	Electronic Devices and Circuits	3	0	0	3
3	PCC	Electrical Circuit Analysis –II	3	0	0	3
4	PCC	DC Machines and Transformers	3	0	0	3
5	PCC	Electro Magnetic Fields	3	0	0	3
6	PCC	Electrical Circuits Lab	0	0	3	1.5
7	PCC	DC Machines and Transformers Lab	0	0	3	1.5
8	PCC	Electronic Devices and Circuits lab	0	0	3	1.5
9	SC	Skill oriented course - Design of Electrical Circuits using Engineering Software Tools	0	0	4	2
10	MC	Professional Ethics & Human Values	2	0	0	0
		Total Credits	**21.5**			

II B.Tech – II Semester

Sl. No	Course Components	Subjects	L	T	P	Credits
1	ESC	Python Programming	3	0	0	3
2	PCC	Digital Electronics	3	0	0	3
3	PCC	Power System-I	3	0	0	3
4	PCC	Induction and Synchronous Machines	3	0	0	3
5	HSMC	Managerial Economics & Financial Analysis	3	0	0	3
6	ESC	Python Programming Lab	0	0	3	1.5
7	PCC	Induction and Synchronous Machines Lab	0	0	3	1.5
8	PCC	Digital Electronics Lab	0	0	3	1.5
9	SC	Skill oriented course- IoT Applications of Electrical Engineering Lab	0	0	4	2
		Total Credits	**21.5**			
		Minors Course*	4	0	0	4
		Honors Course*	4	0	0	4

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

III B.Tech – I Semester

Sl. No	Course Components	Subjects	L	T	P	Credits
1	PCC	Power Systems-II	3	0	0	3
2	PCC	Power Electronics	3	0	0	3
3	PCC	Control Systems	3	0	0	3
4	OEC	Open Elective- I/ Job Oriented Elective-I	3	0	0	3
5	PEC	Professional Elective - I	3	0	0	3
6	PCC	Control Systems Lab	0	0	3	1.5
7	PCC	Power Electronics Lab	0	0	3	1.5
8	SC	Soft Skill Course:Employability Skills	2	0	0	2
9	MC	Environmental Science	2	0	0	0
10	PROJ	Summer Internship 2 Months (Mandatory) after second year (to be evaluated during V semester)	0	0	0	1.5
		TotalCredits	**21.5**			
		Minors Course*	4	0	0	4
		Honors Course*	4	0	0	4

III B.Tech – II Semester

Sl. No	Course Components	Subjects	L	T	P	Credits
1	PCC	Microprocessors and Microcontrollers	3	0	0	3
2	PCC	Electrical Measurements and Instrumentation	3	0	0	3
3	PCC	Power System Analysis	3	0	0	3
4	PEC	Professional Elective - II	3	0	0	3
5	OEC	Open Elective –II/ Job Oriented Elective-II	3	0	0	3
6	PCC	Electrical Measurements and Instrumentation Lab	0	0	3	1.5
7	PCC	Microprocessors and Microcontrollers Lab	0	0	3	1.5
8	PCC	Power Systems and Simulation Lab	0	0	3	1.5
9	SC	**Skill Advanced Course:** Machine Learning with Python	2	0	0	2
10	MC	Research Methodology	2	0	0	0
		Total Credits	**21.5**			
		Minors Course*	4	0	0	4
		Honors Course*	4	0	0	4

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

IV B.Tech – I Semester

Sl. No	Course Components	Subjects	L	T	P	Credits
1	PEC	Professional Elective – III	3	0	0	3
2	PEC	Professional Elective – IV	3	0	0	3
3	PEC	Professional Elective – V	3	0	0	3
4	OEC	Open Elective- III/Job Oriented Elective-III	3	0	0	3
5	OEC	Open Elective-IV /Job Oriented Elective-IV	3	0	0	3
6	HSMC	Universal Human Values-2: Understanding Harmony	3	0	0	3
7	SC	**Skill Advanced Course** Machine Learning with PythonLab	0	0	4	2
8	PROJ	Industrial / Research Internship 2 Months (Mandatory) after third year (to be evaluated during VII Semester)	0	0	3	3
		Total Credits	**23**			
		Minors Course*	4	0	0	4
		Honors Course*	4	0	0	4

IVB.TechIISemester

Sl. No	Course Components	Subjects	L	T	P	Credits
1	Major Project	Project work, seminar and internship in industry (6 Months)	--	--	--	12
		Total Credits	**12**			

HSMC:Humanities and Social Science Including Management Courses
BSC :Basic Science Courses
ESC:Engineering Science Courses
PCC:Professional Core Courses

PEC : Professional Elective Courses
OEC : Open Elective Courses
PROJ : Internship, Seminar, Project Wok
MC : Mandatory Courses
SC : Skill Oriented Courses

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Professional Elective Subjects offered to EEE Branch Students:

Professional Elective – I:

1. Linear IC Applications
2. Utilization of Electrical Energy
3. Computer Architecture and Organization
4. Optimization Techniques
5. Object Oriented Programming through Java

Professional Elective – II:

1. Signal and Systems
2. Electric Drives
3. Advanced Control Systems
4. Switchgear and Protection
5. Big Data Analytics

Professional Elective –III:

1. Digital Signal Processing
2. Renewable and Distributed Energy Technologies
3. Flexible Alternating Current Transmission Systems
4. Power Systems Deregulation
5. Data Base Management Systems

Professional Elective – IV:

1. Hybrid Electric Vehicles
2. High Voltage Engineering
3. Programmable Logic Controllers and Applications
4. Cloud Computing with AWS
5. Deep Learning Techniques

Professional Elective – V:

1. Power System Operation and Control
2. Switched Mode Power Conversion
3. AI Applications toElectrical Engineering
4. Data Science
5. MEAN Stack Technologies

Open Electives offered by EEE Department for Other Branches (Except EEE Branch)

Open Elective-I:

1. Renewable Energy Sources
2. Concepts of Optimization Techniques
3. Concepts of Control Systems

Open Elective-II:

1. Battery Management Systems and Charging Stations
2. Fundamentals of utilization of Electrical Energy
3. Indian Electricity Act

Open Elective-III:

1. Concepts of Microprocessors and Microcontrollers
2. Fundamentals of Electric Vehicles
3. Concepts of Internet of Things

Open Elective-IV:

1. Concepts of Power System Engineering
2. Concepts of Smart Grid Technologies

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KAKINADA–533003, Andhra Pradesh, India
DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

***For Honor's/ Minor Course Fullfillments:**

- The 20 additional Credits need to be acquired, 16/15 credits can be earned by undergoing specified courses listed as pools, with 4/5 courses, each carrying 4/3 credits. The remaining 4/5 credits must be acquired through two online MOOCs (Swayam /NPTEL), which shall be domain specific, with 2/3 credits and with a minimum duration of 8/12weeks as recommended by the Board of Studies.
- Minor Engineering subjects are offered to other branches by EEE Department (except for EEE Students).
- Honors Engineering subjects are offered to EEE Students.
- The head of the department will float the list of allowed MOOC electives in each academic year, based on the list floated by MOOCs (Swayam/NPTEL).

*Honors Engineering Courses offered EEE Branch students

II B.Tech II Semester:

1. Communication Systems
2. Electrical Wiring, Estimation and Costing
3. Electrical Distribution Systems

III B.Tech I Semester:

1. Advanced Computer Networks
2. Power Quality
3. Special Electrical Machines

III B.Tech II Semester:

1. Digital Control Systems
2. Analysis of Power Electronic Converters
3. HVDC Transmission

IV B.Tech I Semester:

1. EHV AC Transmission
2. Smart Grid Technologies
3. Power Electronic Control of Electrical Drives

*Minor Engineering Courses offered by EEE Department for Other Branches (Except EEE Branch)

II B.Tech II Semester:

1. Fundamentals of Electrical Circuits
2. Concepts of Electrical Measurements

III B.Tech I Semester:

1. Analysis of Linear Systems
2. Energy Auditing, Conservation and Management

III B.Tech II Semester:

1. Evolutionary Algorithms
2. Fundamentals of Power Electronics

IV B.Tech I Semester:

1. Neural Networks and Fuzzy Logic
2. Concepts of Electric Drives and Its Applications

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GUNTUR - 522017

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KAKINADA–533003, Andhra Pradesh, India
DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

I Year II Semester		L	T	P	C
		2	0	0	0
CONSTITUTION OF INDIA					

Preamble:

Course Objectives:

- To Enable the student to understand the importance of constitution
- To understand the structure of executive, legislature and judiciary
- To understand philosophy of fundamental rights and duties
- To understand the autonomous nature of constitutional bodies like Supreme Court and high court controller and auditor general of India and election commission of India.
- To understand the central and state relation financial and administrative.

UNIT-I

Introduction to Indian Constitution: Constitution meaning of the term, Indian Constitution - Sources and constitutional history, Features - Citizenship, Preamble, Fundamental Rights and Duties, Directive Principles of State Policy.

Learning outcomes:

After completion of this unit student will

- Understand the concept of Indian constitution
- Apply the knowledge on directive principle of state policy
- Analyze the History, features of Indian constitution
- Evaluate Preamble Fundamental Rights and Duties

UNIT-II

Union Government and its Administration Structure of the Indian Union: Federalism, Centre-State relationship, President: Role, power and position, PM and Council of ministers, Cabinet and Central Secretariat, Lok Sabha, Rajya Sabha, The Supreme Court and High Court: Powers and Functions;

Learning outcomes: -After completion of this unit student will

- Understand the structure of Indian government
- Differentiate between the state and central government
- Explain the role of President and Prime Minister
- Know the Structure of supreme court and High court

UNIT-III

State Government and its Administration Governor - Role and Position - CM and Council of ministers, State Secretariat: Organization, Structure and Functions

Learning outcomes: -After completion of this unit student will

- Understand the structure of state government
- Analyze the role Governor and Chief Minister
- Explain the role of state Secretariat
- Differentiate between structure and functions of state secretariat

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KAKINADA–533003, Andhra Pradesh, India
DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

UNIT-IV

A. Local Administration - District's Administration Head - Role and Importance, Municipalities - Mayor and role of Elected Representative - CEO of Municipal Corporation Pachayati Raj: Functions PRI: Zila Panchayat, Elected officials and their roles, CEO Zila Panchayat: Block level Organizational Hierarchy - (Different departments), Village level - Role of Elected and Appointed officials - Importance of grass root democracy

Learning outcomes: -After completion of this unit student will

- Understand the local Administration
- Compare and contrast district administration role and importance
- Analyze the role of Myer and elected representatives of Municipalities
- Evaluate Zilla panchayat block level organization

UNIT-V

Election Commission: Election Commission- Role of Chief Election Commissioner and Election Commissionerate State Election Commission, Functions of Commissions for the welfare of SC/ST/OBC and women

Learning outcomes: -After completion of this unit student will

- Know the role of Election Commission apply knowledge
- Contrast and compare the role of Chief Election commissioner and Commissionerate
- Analyze role of state election commission
- Evaluate various commissions of viz SC/ST/OBC and women

References:

1. Durga Das Basu, Introduction to the Constitution of India, 12th edition Prentice – Hall of India Pvt. Ltd. New Delhi 2011.
2. Subash Kashyap, Indian Constitution, 2nd edition, National Book Trust, 2011.
3. J.A. Siwach, Dynamics of Indian Government & Politics, 2nd edition, Sterling Pub Private Ltd.,1990.
4. D.C. Gupta, Indian Government and Politics, 8th edition, Vikas Publishing House Pvt Ltd., 2015.
5. H.M.Sreevai, Constitutional Law of India, 4th edition in 3 volumes (Universal Law Publication), 2015.
6. J.C. Johari, Indian Government and Politics Hans, 13th edition, Shoban Lal & Co.2012.
7. J. Raj Indian Government and Politics, 1st edition, SAGE Texts Publication, 2008.
8. M.V. Pylee, Indian Constitution Durga Das Basu, Human Rights in Constitutional Law, 3rd edition, Lexis Nexis Publications, 2008.
9. Noorani, A.G., (South Asia Human Rights Documentation Centre), Challenges to Civil Right), Challenges to Civil Rights Guarantees in India, Oxford University Press 2012

E-resources:

1. nptel.ac.in/courses/109104074/8
2. nptel.ac.in/courses/109104045/
3. nptel.ac.in/courses/101104065/
4. www.hss.iitb.ac.in/en/lecture-details
5. www.iitb.ac.in/en/event/2nd-lecture-institute-lecture-series-indian-constitution

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KAKINADA–533003, Andhra Pradesh, India
DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Course Outcomes:
At the end of the semester/course, the student will be able to have a clear knowledge on the following:

- Understand historical background of the constitution making and its importance for building a democratic India.
- Understand the functioning of three wings of the government i.e., executive, legislative and judiciary.
- Understand the value of the fundamental rights and duties for becoming good citizen of India.
- Analyze the decentralization of power between central, state and local self-government.
- Apply the knowledge in strengthening of the constitutional institutions like CAG, Election Commission and UPSC for sustaining democracy.
  1. Know the sources, features and principles of Indian Constitution.
  2. Learn about Union Government, State government and its administration.
  3. Get acquainted with Local administration and Pachayati Raj.
  4. Be aware of basic concepts and developments of Human Rights.
  5. Gain knowledge on roles and functioning of Election Commission

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA
KAKINADA–533003, Andhra Pradesh, India
DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

II Year I Semester		L	T	P	C
		2	0	0	0
PROFESSIONAL ETHICS & HUMAN VALUES					

Preamble:
This course is a mandatory course introduced to impart the Ethics and Human Values to the students in engineering education.

Course Objectives:

- To create an awareness on Engineering Ethics and Human Values.
- To instill Moral and Social Values and Loyalty
- To appreciate the rights of others
- To create awareness on assessment of safety and risk

UNIT -I
Human Values:
Morals, Values and Ethics-Integrity-Work Ethic-Service learning – Civic Virtue – Respect for others –Living Peacefully –Caring –Sharing –Honesty -Courage-Cooperation– Commitment – Empathy –Self Confidence Character –Spirituality.

Learning outcomes:

1. Learn about morals, values & work ethics.
2. Learn to respect others and develop civic virtue.
3. Develop commitment
4. Learn how to live peacefully

UNIT -II
Engineering Ethics:
Senses of 'Engineering Ethics-Variety of moral issued –Types of inquiry –Moral dilemmas – Moral autonomy –Kohlberg's theory-Gilligan's Theory-Consensus and controversy –Models of professional roles-Theories about right action-Self-interest -Customs and religion –Uses of Ethical theories –Valuing time –Cooperation –Commitment.

Learning outcomes:

1. Learn about the ethical responsibilities of the engineers.
2. Create awareness about the customs and religions.
3. Learn time management
4. Learn about the different professional roles.

UNIT -III
Engineering as Social Experimentation:
Engineering As Social Experimentation –Framing the problem –Determining the facts – Codes of Ethics –Clarifying Concepts –Application issues –Common Ground -General Principles –Utilitarian thinking respect for persons.

Learning outcomes:

1. Demonstrate knowledge to become a social experimenter.
2. Provide depth knowledge on framing of the problem and determining the facts.
3. Provide depth knowledge on codes of ethics.
4. Develop utilitarian thinking

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UNIT -IV

Engineers Responsibility for Safety and Risk:

Safety and risk –Assessment of safety and risk –Risk benefit analysis and reducing risk-Safety and the Engineer-Designing for the safety-Intellectual Property rights (IPR).

Learning outcomes:

1. Create awareness about safety, risk & risk benefit analysis.
2. Engineer's design practices for providing safety.
3. Provide knowledge on intellectual property rights.

UINIT- V

Global Issues:

Globalization –Cross-culture issues-Environmental Ethics –Computer Ethics –Computers as the instrument of Unethical behavior –Computers as the object of Unethical acts – Autonomous Computers-Computer codes of Ethics –Weapons Development -Ethics and Research –Analyzing Ethical Problems in research.

Learning outcomes:

1. Develop knowledge about global issues.
2. Create awareness on computer and environmental ethics
3. Analyze ethical problems in research.
4. Give a picture on weapons development.

Course outcomes:

Students will be able to:

- Identify and analyze an ethical issue in the subject matter under investigation or in a relevant field
- Identify the multiple ethical interests at stake in a real-world situation or practice
- Articulate what makes a particular course of action ethically defensible
- Assess their own ethical values and the social context of problems
- Identify ethical concerns in research and intellectual contexts, including academic integrity, use and citation of sources, the objective presentation of data, and the treatment of human subjects
- Demonstrate knowledge of ethical values in non-classroom activities, such as service learning, internships, and field work
- Integrate, synthesize, and apply knowledge of ethical dilemmas and resolutions in academic settings, including focused and interdisciplinary research.

Text Books:

1) "Engineering Ethics includes Human Values" by M.Govindarajan, S.Natarajan and, V.S.Senthil Kumar-PHI Learning Pvt. Ltd-2009
2) "Engineering Ethics" by Harris, Pritchard and Rabins, CENGAGE Learning, India Edition, 2009.
3) "Ethics in Engineering" by Mike W. Martin and Roland Schinzinger –Tata McGraw-Hill–2003.
4) "Professional Ethics and Morals" by Prof.A.R.Aryasri, DharanikotaSuyodhana-Maruthi Publications.
5) "Professional Ethics and Human Values" by A.Alavudeen, R.KalilRahman and M. Jayakumaran, Laxmi Publications.
6) "Professional Ethics and Human Values" by Prof.D.R.Kiran-"Indian Culture, Values and Professional Ethics" by PSR Murthy-BS Publication

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

III Year –I SEMESTER		L	T	P	C
		2	0	0	0
ENVIRONMENTAL SCIENCE					

Course Objectives:

The objectives of the course are to impart:

- Overall understanding of the natural resources.
- Basic understanding of the ecosystem and its diversity.
- Acquaintance on various environmental challenges induced due tounplanned anthropogenic activities.
- An understanding of the environmental impact of developmental activities.
- Awareness on the social issues, environmental legislation and global treaties.

UNIT I

Multidisciplinary nature of Environmental Studies: Definition, Scope and Importance – Sustainability: Stockholm and Rio Summit–Global Environmental Challenges: Global warming and climate change, acid rains, ozone layer depletion, population growth and explosion, effects. Role of information technology in environment and human health.

Ecosystems: Concept of an ecosystem. - Structure and function of an ecosystem; Producers, consumers and decomposers. - Energy flow in the ecosystem - Ecological succession. - Food chains, food webs and ecological pyramids; Introduction, types, characteristic features, structure and function of Forest ecosystem, Grassland ecosystem, Desert ecosystem, Aquatic ecosystems.

UNIT II

Natural Resources: Natural resources and associated problems.

Forest resources: Use and over – exploitation, deforestation – Timber extraction – Mining, dams and other effects on forest and tribal people.

Water resources: Use and over utilization of surface and ground water – Floods, drought, conflicts over water, dams – benefits and problems.

Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources.

Food resources: World food problems, changes caused by non-agriculture activities-effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity.

Energy resources: Growing energy needs, renewable and non-renewable energy sources use of alternate energy sources.

Land resources: Land as a resource, land degradation, Wasteland reclamation, man induced landslides, soil erosion and desertification; Role of an individual in conservation of natural resources; Equitable use of resources for sustainable lifestyles.

UNIT III

Biodiversity and its conservation: Definition: genetic, species and ecosystem diversity- classification - Value of biodiversity: consumptive use, productive use, social-Biodiversity at national and local levels. India as a mega-diversity nation - Hot-sports of biodiversity - Threats to biodiversity: habitat loss, man-wildlife conflicts. - Endangered and endemic species of India – Conservation of biodiversity: conservation of biodiversity.

UNIT IV

Environmental Pollution: Definition, Cause, effects and control measures of Air pollution, Water pollution, Soil pollution, Noise pollution, Nuclear hazards. Role of an individual in prevention of

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Solid Waste Management: Sources, Classification, effects and control measures of urban and industrial solid wastes. Consumerism and waste products, Biomedical, Hazardous and e – waste management.

UNIT V

Social Issues and the Environment: Urban problems related to energy -Water conservation, rain water harvesting-Resettlement and rehabilitation of people; its problems and concerns. Environmental ethics: Issues and possible solutions. Environmental Protection Act -Air (Prevention and Control of Pollution) Act. –Water (Prevention and control of Pollution) Act - Wildlife Protection Act -Forest Conservation Act-Issues involved in enforcement of environmental legislation. -Public awareness. Environmental Management: Impact Assessment and its significance various stages of EIA, preparation of EMP and EIS, Environmental audit. Ecotourism, Green Campus – Green business and Green politics.

The student should Visit an Industry / Ecosystem and submit a report individually on any issues related to Environmental Studies course and make a power point presentation.

Text Books:

1. Environmental Studies, K. V. S. G. Murali Krishna, VGS Publishers, Vijayawada
2. Environmental Studies, R. Rajagopalan, 2nd Edition, 2011, Oxford University Press.
3. Environmental Studies, P. N. Palanisamy, P. Manikandan, A. Geetha, and K. ManjulaRani; Pearson Education, Chennai

Reference Books:

1. Text Book of Environmental Studies, Deeshita Dave & P. Udaya Bhaskar, CengageLearning.
2. A Textbook of Environmental Studies, Shaashi Chawla, TMH, New Delhi
3. Environmental Studies, Benny Joseph, Tata McGraw Hill Co, New Delhi
4. Perspectives in Environment Studies, Anubha Kaushik, C P Kaushik, New AgeInternational Publishers, 2014

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III Year – II SEMESTER		L	T	P	C
		2	0	0	0
RESEARCH METHODOLOGY					

Course objectives:

- To understand the objectives and characteristics of a research problem.
- To analyze research related information and to follow research ethics
- To understand the types of intellectual property rights.
- To learn about the scope of patent rights.
- To understand the new developments in IPR.

UNIT - I

Research problem: Meaning of research problem, Sources of research problem, Criteria Characteristics of a good research problem, Errors in selecting a research problem, Scope and objectives of research problem. Approaches of investigation of solutions for research problem, data collection, analysis, interpretation, Necessary instrumentations

UNIT - II

Literature study: Effective literature studies approaches, analysis Plagiarism, Research ethics, Technical writing: Effective technical writing, how to write report, Paper Developing a Research Proposal, Format of research proposal, a presentation and assessment by a review committee

UNIT - III

Nature of Intellectual Property: Patents, Designs, Trade and Copyright.
Process of Patenting and Development: technological research, innovation, patenting, development. International Scenario: International cooperation on Intellectual Property. Procedure for grants of patents, Patenting under PCT.

UNIT - IV

Patent Rights: Scope of Patent Rights. Licensing and transfer of technology. Patent information and databases. Geographical Indications.

UNIT - V

New Developments in IPR: Administration of Patent System. New developments in IPR; IPR of Biological Systems, Computer Software etc, Traditional knowledge Case Studies, IPR and IITs.

Course Outcomes:

At the end of the course, student will be able to

- Understand objectives and characteristics of a research problem
- Analyze research related information and to follow research ethics.
- Understand the types of intellectual property rights.
- Learn about the scope of IPR.
- Understand the new developments in IPR.

Text Books:

1. Stuart Melville and Wayne Goddard, "Research methodology: an introduction for science & engineering students'"
2. Wayne Goddard and Stuart Melville, "Research Methodology: An Introduction"

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References Books:

1. Halbert, "Resisting Intellectual Property", Taylor & Francis Ltd ,2007.
2. Mayall, "Industrial Design", McGraw Hill, 1992.
3. Niebel, "Product Design", McGraw Hill, 1974.
4. Asimov, "Introduction to Design", Prentice Hall, 1962.
5. Robert P. Merges, Peter S. Menell, Mark A. Lemley, " Intellectual Property in New Technological Age", 2016.
6. T. Ramappa, "Intellectual Property Rights Under WTO", S. Chand, 2008

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COURSE STRUCTURE-R19

How to handle the Typical Interview Questions; Mock Interviews: Unconventional HR questions, Practice sessions with Feedback, **Simulated Testing:** Previous model papers of companies,
Business Terminology: Financial Terms such as Debt, Equity, Share, Working Capital, Turnover, Net worth etc; Vision, Mission, Objectives, Goals, Targets

Course Outcomes: After studying this course the student should able to
(i) solve aptitude and reasoning problems (ii) apply the soft skills in dealing the issues related to employability (iii) successful in getting employment in campus placement interview

References:

1) B. K. Mitra, Personality Development and Soft Skills, Oxford University Press, 2011.
2) S.P. Dhanavel, English and Soft Skills, Orient Blackswan, 2010.
3) R.S.Aggarwal, A Modern Approach to Verbal & Non-Verbal Reasoning, S.Chand & Company Ltd., 2018.
4) Raman, Meenakshi & Sharma, Sangeeta, Technical Communication Principles and Practice, Oxford University Press, 2011.

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

COURSE STRUCTURE AND SYLLABUS

For

B. Tech COMPUTER SCIENCE &ENGINEERING

(Applicable for batches admitted from 2019-2020)

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COURSE STRUCTURE - R19

I Year – I SEMESTER

S. No	Course Code	Subjects	L	T	P	Credits
1	HS1101	English	3	0	0	3
2	BS1101	Mathematics - I	3	0	0	3
3	BS1106	Applied Chemistry	3	0	0	3
4	ES1112	Fundamentals of Computer Science	3	0	0	3
5	ES1103	Engineering Drawing	1	0	3	2.5
6	HS1102	English Lab	0	0	3	1.5
7	BS1107	Applied Chemistry Lab	0	0	3	1.5
8	ES1105	IT Workshop	0	0	3	1.5
9	MC1101	Environmental Science	3	0	0	0
Total Credits			**16**	**0**	**12**	**19**

I Year – II SEMESTER

S. No	Course Code	Subjects	L	T	P	Credits
1	BS1202	Mathematics – II	3	0	0	3
2	BS1203	Mathematics – III	3	0	0	3
3	BS1204	Applied Physics	3	0	0	3
4	ES1201	Programming for Problem Solving using C	3	0	0	3
5	ES1213	Digital Logic Design	3	0	0	3
6	BS1205	Applied Physics Lab	0	0	3	1.5
7	HS1203	Communication Skills Lab	0	1	2	2
8	ES1202	Programming for Problem Solving using C Lab	0	0	3	1.5
9	PR1201	Engineering Exploration Project	0	0	2	1
10	MC1204	Constitution of India	3	0	0	0
Total Credits			**18**	**1**	**10**	**21**

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II Year – I SEMESTER

S.No	Course Code	Courses	L	T	P	Credits
1	CS2101	Mathematical Foundations of Computer Science	3	1	0	4
2	CS2102	Software Engineering	3	0	0	3
3	ES2101	Python Programming	3	0	0	3
4	CS2103	Data Structures	3	0	0	3
5	CS2104	Object Oriented Programming through C++	3	0	0	3
6	CS2105	Computer Organization	3	0	0	3
7	ES2102	Python Programming Lab	0	0	3	1.5
8	CS2106	Data Structures through C++ Lab	0	0	3	1.5
9	MC2101	Essence of Indian Traditional Knowledge	2	0	0	0
10	MC2102	Employability Skills- I*	2	0	0	0
		Total	23	1	6	22
***Internal Evaluation through Seminar / Test for 50 marks**						

II Year – II SEMESTER

S.No	Course Code	Courses	L	T	P	Credits
1	BS2201	Probability and Statistics	3	0	0	3
2	CS2201	Java Programming	2	1	0	3
3	CS2202	Operating Systems	3	0	0	3
4	CS2203	Database Management Systems	3	1	0	4
5	CS2204	Formal Languages and Automata Theory	3	0	0	3
6	CS2205	Java Programming Lab	0	0	3	1.5
7	CS2206	UNIX Operating System Lab	0	0	2	1
8	CS2207	Database Management Systems Lab	0	0	3	1.5
9	MC2201	Professional Ethics & Human Values	3	0	0	0
10	PR2201	Socially Relevant Project*	0	0	2	1
		Total	17	2	10	21
***Internal Evaluation through Seminar for 50 marks**						

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III Year – I SEMESTER

S.No	Course Code	Courses	L	T	P	Credits
1	CS3101	Data Warehousing and Data Mining	3	0	0	3
2	CS3102	Computer Networks	3	0	0	3
3	CS3103	Compiler Design	3	0	0	3
4	CS3104	Artificial Intelligence	3	0	0	3
5	PE3101	**Professional Elective- I** 1. Computer Graphics 2. Principles of Programming Languages 3. Advanced Data Structures 4. Software Testing Methodologies 5. Advanced Computer Architecture	3	0	0	3
6	CS3105	Computer Networks Lab	0	0	2	1
7	CS3106	AI Tools & Techniques Lab	0	0	3	1.5
8	CS3107	Data Mining Lab	0	0	3	1.5
9	MC3101	Employability Skills -II*	2	0	0	0
		Total	17	0	8	19
***Internal Evaluation through Seminar / Test for 50 marks**						

III Year – II SEMESTER

S.No	Course Code	Courses	L	T	P	Credits
1	CS3201	Web Technologies	3	0	0	3
2	CS3202	Distributed Systems	3	0	0	3
3	CS3203	Design and Analysis of Algorithms	3	0	0	3
4	PE3201	**Professional Elective -II** (NPTEL/SWAYAM) **Duration: 12 Weeks Minimum** ***Course/subject title can't be repeated**	3	0	0	3
5	OE3201	**Open Elective- I** (Inter Disciplinary)	3	0	0	3
6	HS3201	Managerial Economics and Financial Accountancy	3	0	0	3
7	CS3204	Web Technologies Lab	0	0	4	2
9	PR3201	Industrial Training / Skill Development Programmes / Research Project in higher learning institutes	0	0	0	1
		Total	18	0	4	21

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IV Year – I SEMESTER

S.No	Course Code	Courses	L	T	P	Credits
1	CS4101	Cryptography and Network Security	3	0	0	3
2	CS4102	UML & Design Patterns	3	0	0	3
3	CS4103	Machine Learning	3	0	0	3
4	OE4101	**Open Elective -II** (Inter Disciplinary)	3	0	0	3
5	PE4101	**Professional Elective- III** 1. Mobile Computing 2. Data Science 3. NoSQL Databases 4. Internet of Things 5. Software Project Management	3	0	0	3
6	PE4102	**Professional Elective- IV** 1. Web Services 2. Cloud Computing 3. Mean Stack Technologies 4. Ad-hoc and Sensor Networks 5. Cyber Security & Forensics	3	0	0	3
7	CS4104	UML Lab #	0	0	2	1
8	PR4101	Project- I	0	0	0	2
9	MC4101	IPR & Patents	3	0	0	0
		Total	21	0	2	21
# Relevant theory to be taught in the lab						

IV Year – II SEMESTER

S.No	Course Code	Courses	L	T	P	Credits
1	HS4201	Management and Organizational Behavior	3	0	0	3
2	OE4201	**Open Elective- III** (Inter Disciplinary)	3	0	0	3
3	PE4201	**Professional Elective-V** 1. Deep Learning 2. Quantum Computing 3. DevOps 4. Blockchain Technologies 5. Big Data Analytics	3	0	0	3
4	PR4201	Project- II	0	0	0	7
		Total	9	0	0	16

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Open Electives to be offered by CSE for Other Branches:

Open Elective I: 1. Data Structures 2. Java Programming 3. Data Base Management Systems 4. C++ Programming 5. Operating Systems 6. Internet of Things	**Open Elective II:** 1. Problem Solving using Python 2. Web Technologies 3. Machine Learning 4. Distributed Computing 5. AI Tools & Techniques 6. Data Science
Open Elective III: 1. Big Data 2. Image Processing 3. Mobile Application Development 4. Cyber Security 5. Deep Learning 6. ~~Blockchain~~ Technologies	

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

I Year - I Semester		L	T	P	C
		3	0	0	0
ENVIRONMENTAL SCIENCE (MC1101)					

Course Objectives:
The objectives of the course are to impart:

- Overall understanding of the natural resources.
- Basic understanding of the ecosystem and its diversity.
- Acquaintance on various environmental challenges induced due to unplanned anthropogenic activities.
- An understanding of the environmental impact of developmental activities.
- Awareness on the social issues, environmental legislation and global treaties.

UNIT I
Multidisciplinary nature of Environmental Studies: Definition, Scope and Importance – Sustainability: Stockholm and Rio Summit–Global Environmental Challenges: Global warming and climate change, acid rains, ozone layer depletion, population growth and explosion, effects. Role of information technology in environment and human health.
Ecosystems: Concept of an ecosystem. - Structure and function of an ecosystem; Producers, consumers and decomposers. - Energy flow in the ecosystem - Ecological succession. - Food chains, food webs and ecological pyramids; Introduction, types, characteristic features, structure and function of Forest ecosystem, Grassland ecosystem, Desert ecosystem, Aquatic ecosystems.

UNIT II
Natural Resources: Natural resources and associated problems.
Forest resources: Use and over – exploitation, deforestation – Timber extraction – Mining, dams and other effects on forest and tribal people.
Water resources: Use and over utilization of surface and ground water – Floods, drought, conflicts over water, dams – benefits and problems.
Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources.
Food resources: World food problems, changes caused by non-agriculture activities-effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity.
Energy resources: Growing energy needs, renewable and non-renewable energy sources use of alternate energy sources.
Land resources: Land as a resource, land degradation, Wasteland reclamation, man induced landslides, soil erosion and desertification; Role of an individual in conservation of natural resources; Equitable use of resources for sustainable lifestyles.

UNIT III
Biodiversity and its conservation: Definition: genetic, species and ecosystem diversity-classification - Value of biodiversity: consumptive use, productive use, social-Biodiversity at national and local levels. India as a mega-diversity nation - Hot-sports of biodiversity - Threats to biodiversity: habitat loss, man-wildlife conflicts. - Endangered and endemic species of India – Conservation of biodiversity: conservation of biodiversity.

UNIT IV
Environmental Pollution: Definition, Cause, effects and control measures of Air pollution, Water pollution, Soil pollution, Noise pollution, Nuclear hazards. Role of an individual in prevention of

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pollution. - Pollution case studies, Sustainable Life Studies. Impact of Fire Crackers on Men and his well being.

Solid Waste Management: Sources, Classification, effects and control measures of urban and industrial solid wastes. Consumerism and waste products, Biomedical, Hazardous and e – waste management.

UNIT V

Social Issues and the Environment: Urban problems related to energy -Water conservation, rain water harvesting-Resettlement and rehabilitation of people; its problems and concerns. Environmental ethics: Issues and possible solutions. Environmental Protection Act -Air (Prevention and Control of Pollution) Act. –Water (Prevention and control of Pollution) Act - Wildlife Protection Act -Forest Conservation Act-Issues involved in enforcement of environmental legislation. -Public awareness.

Environmental Management: Impact Assessment and its significance various stages of EIA, preparation of EMP and EIS, Environmental audit. Ecotourism, Green Campus – Green business and Green politics.

The student should Visit an Industry / Ecosystem and submit a report individually on any issues related to Environmental Studies course and make a power point presentation.

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2) Environmental Studies, R. Rajagopalan, 2nd Edition, 2011, Oxford University Press.
3) Environmental Studies, P. N. Palanisamy, P. Manikandan, A. Geetha, and K. Manjula Rani; Pearson Education, Chennai

Reference Books:

1) Text Book of Environmental Studies, Deeshita Dave & P. Udaya Bhaskar, Cengage Learning.
2) A Textbook of Environmental Studies, Shaashi Chawla, TMH, New Delhi
3) Environmental Studies, Benny Joseph, Tata McGraw Hill Co, New Delhi

Perspectives in Environment Studies, Anubha Kaushik, C P Kaushik, New Age International Publishers, 2014

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

I Year - II Semester		L	T	P	C
		3	0	0	0
CONSTITUTION OF INDIA (MC1204)					

Course Objectives:

- To Enable the student to understand the importance of constitution
- To understand the structure of executive, legislature and judiciary
- To understand philosophy of fundamental rights and duties
- To understand the autonomous nature of constitutional bodies like Supreme Court and high court controller and auditor general of India and election commission of India.
- To understand the central and state relation financial and administrative

Course Outcomes:

At the end of the course, the student will be able to have a clear knowledge on the following:

- Understand historical background of the constitution making and its importance for building a democratic India.
- Understand the functioning of three wings of the government ie., executive, legislative and judiciary.
- Understand the value of the fundamental rights and duties for becoming good citizen of India.
- Analyze the decentralization of power between central, state and local self-government.
- Apply the knowledge in strengthening of the constitutional institutions like CAG, Election Commission and UPSC for sustaining democracy.
  1. Know the sources, features and principles of Indian Constitution.
  2. Learn about Union Government, State government and its administration.
  3. Get acquainted with Local administration and Pachayati Raj.
  4. Be aware of basic concepts and developments of Human Rights.
  5. Gain knowledge on roles and functioning of Election Commission

UNIT I

Introduction to Indian Constitution: Constitution meaning of the term, Indian Constitution - Sources and constitutional history, Features - Citizenship, Preamble, Fundamental Rights and Duties, Directive Principles of State Policy.

Learning outcomes:After completion of this unit student will

- Understand the concept of Indian constitution
- Apply the knowledge on directive principle of state policy
- Analyze the History, features of Indian constitution
- Evaluate Preamble Fundamental Rights and Duties

UNIT II

Union Government and its Administration Structure of the Indian Union: Federalism, Centre-State relationship, President: Role, power and position, PM and Council of ministers, Cabinet and Central Secretariat, LokSabha, RajyaSabha, The Supreme Court and High Court: Powers and Functions;

Learning outcomes:After completion of this unit student will

- Understand the structure of Indian government
- Differentiate between the state and central government

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UNIT III

State Government and its Administration Governor - Role and Position - CM and Council of ministers, State Secretariat: Organisation, Structure and Functions

Learning outcomes: After completion of this unit student will

- Understand the structure of state government
- Analyze the role Governor and Chief Minister
- Explain the role of state Secretariat
- Differentiate between structure and functions of state secretariat

UNIT IV

A.Local Administration - District's Administration Head - Role and Importance, Municipalities - Mayor and role of Elected Representative - CEO of Municipal Corporation PachayatiRaj: Functions PRI: ZilaPanchayat, Elected officials and their roles, CEO ZilaPanchayat: Block level Organizational Hierarchy - (Different departments), Village level - Role of Elected and Appointed officials - Importance of grass root democracy

Learning outcomes:-After completion of this unit student will

- Understand the local Administration
- Compare and contrast district administration role and importance
- Analyze the role of Myer and elected representatives of Municipalities
- Evaluate Zillapanchayat block level organisation

UNIT V

Election Commission: Election Commission- Role of Chief Election Commissioner and Election Commissionerate State Election Commission:, Functions of Commissions for the welfare of SC/ST/OBC and women

Learning outcomes: After completion of this unit student will

- Know the role of Election Commission apply knowledge
- Contrast and compare the role of Chief Election commissioner and Commissiononerate
- Analyze role of state election commission
- Evaluate various commissions of viz SC/ST/OBC and women

References:

1) Durga Das Basu, Introduction to the Constitution of India, Prentice Hall of India Pvt. Ltd.
2) SubashKashyap, Indian Constitution, National Book Trust
3) J.A. Siwach, Dynamics of Indian Government & Politics
4) D.C. Gupta, Indian Government and Politics
5) H.M.Sreevai, Constitutional Law of India, 4th edition in 3 volumes (Universal Law Publication)
6) J.C. Johari, Indian Government andPolitics Hans
7) J. Raj IndianGovernment and Politics
8) M.V. Pylee, Indian Constitution Durga Das Basu, Human Rights in Constitutional Law, Prentice – Hall of India Pvt. Ltd.. New Delhi
9) Noorani, A.G., (South Asia Human Rights Documentation Centre), Challenges to Civil Right), Challenges to Civil Rights Guarantees in India, Oxford University Press 2012

e-Resources:

1) nptel.ac.in/courses/109104074/8
2) nptel.ac.in/courses/109104045/
3) nptel.ac.in/courses/101104065/
4) www.hss.iitb.ac.in/en/lecture-details
5) www.iitb.ac.in/en/event/2nd-lecture-institute-lecture-series-indian-constitution

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KAKINADA – 533 003, Andhra Pradesh, India

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

III Year – I Semester		L	T	P	C
		2	0	0	0
EMPLOYABILITY SKILLS -II					

Course Objectives:
The main of this course is

- To learn how to make effective presentations and impressive interviews
- To learn skills for discussing and resolving problems on the work site
- To assess and improve personal grooming
- To promote safety awareness including rules and procedures on the work site
- To develop and practice self management skills for the work site

Course Outcomes:
By the end of this course, the student

- Recite the corporate etiquette.
- Make presentations effectively with appropriate body language
- Be composed with positive attitude
- Apply their core competencies to succeed in professional and personal life

A list of vital employability skills from the standpoint of engineering students with discussion how to potentially develop such skills through campus life.

1) Interview Skills: Interviewer and Interviewee – in-depth perspectives. Before, During and After the Interview. Tips for Success.
2) Presentation Skills: Types, Content, Audience Analysis, Essential Tips – Before, During and After, Overcoming Nervousness.
3) Etiquette and Manners – Social and Business.
4) Time Management – Concept, Essentials, Tips.
5) Personality Development – Meaning, Nature, Features, Stages, Models; Learning Skills; Adaptability Skills.
6) Decision-Making and Problem-Solving Skills: Meaning, Types and Models, Group and Ethical Decision-Making, Problems and Dilemmas in application of these skills.
7) Conflict Management: Conflict - Definition, Nature, Types and Causes; Methods of Conflict Resoultion.
8) Stress Management: Stress - Definition, Nature, Types, Symptoms and Causes; Stress Analysis Models and Impact of Stress; Measurement and Managemet of Stress
9) Leadership and Assertiveness Skills: A Good Leader; Leaders and Managers; Leadership Theories; Types of Leaders; Leadership Behaviour; Assertivness Skills.
10) Emotional Intelligence: Meaning, History, Features, Components, Intrapersonal and Management Excellence; Strategies to enhance Emotional Intelligence.

Reference Books:

1) Barun K. Mitra, Personality Development and Soft Skills, Oxford University Press, 2011.
2) S.P. Dhanavel, English and Soft Skills, Orient Blackswan, 2010.
3) R.S.Aggarwal, A Modern Approach to Verbal & Non-Verbal Reasoning, S.Chand & Company Ltd., 2018.
4) Raman, Meenakshi & Sharma, Sangeeta, Technical Communication Principles and Practice, Oxford University Press, 2011.

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KAKINADA – 533 003, Andhra Pradesh, India

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

II Year – I Semester		L	T	P	C
		2	0	0	0
EMPLOYABILITY SKILLS -I					

Course Objectives:

The aim of this course is

- To explore and practice basic communication skills
- To learn skills for effective discussions & team work
- To assess and improve personal grooming

Course Outcomes:

By the end of this course, the student

- Establish effective communication with employers, supervisors, and co-workers
- Identify to explore their values and career choices through individual skill assessments
- Adapts positive attitude and appropriate body language
- Interpret the core competencies to succeed in professional and personal life

A list of vital employability skills from the standpoint of engineering students with discussion how to potentially develop such skills through campus life.

1) Soft Skills: An Introduction – Definition and Significance of Soft Skills; Process, Importance and Measurement of Soft Skill Development.
2) Self-Discovery: Discovering the Self; Setting Goals; Beliefs, Values, Attitude, Virtue.
3) Positivity and Motivation: Developing Positive Thinking and Attitude; Driving out Negativity; Meaning and Theories of Motivation; Enhancing Motivation Levels.
4) Interpersonal Communication: Interpersonal relations; communication models, process and barriers; team communication; developing interpersonal relationships through effective communication; listening skills; essential formal writing skills; corporate communication styles – assertion, persuasion, negotiation.
5) Public Speaking: Skills, Methods, Strategies and Essential tips for effective public speaking.
6) Group Discussion: Importance, Planning, Elements, Skills assessed; Effectively disagreeing, Initiating, Summarizing and Attaining the Objective.
7) Non-Verbal Communication: Importance and Elements; Body Language.
8) Teamwork and Leadership Skills: Concept of Teams; Building effective teams; Concept of Leadership and honing Leadership skills.

References Books:

1) Barun K. Mitra, Personality Development and Soft Skills, Oxford University Press, 2011.
2) S.P. Dhanavel, English and Soft Skills, Orient Blackswan, 2010.
3) R.S.Aggarwal, A Modern Approach to Verbal & Non-Verbal Reasoning, S.Chand & Company Ltd., 2018.
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5) Managing Soft Skills for Personality Development – edited by B.N.Ghosh, McGraw Hill India, 2012.
6) English and Soft Skills – S.P.Dhanavel, Orient Blackswan India, 2010.

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MASTER OF BUSINESS ADMINISTRATION

(Applicable for the batch admitted from 2019-20)

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KAKINADA
KAKINADA-533003, Andhra Pradesh (India)

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i) 25 marks for internal assessment, 10 marks are for seminar/presentation and 15 marks are based on **average** of two mid- term examinations.

ii) 10 marks for presentation (5 marks are for report content and 5 marks are for presentation).

iii) Each mid-term examination is conducted for 15 marks with one and half hours (90 mins) duration. Each mid-term examination consists of three questions, each for 5 marks. All questions need to be answered.

iv) The final marks are the sum of average of two mid-term examinations for 15 marks and 10 marks for presentation.

b) External Assessment

The semester end examination shall be conducted for a duration of three hours with 5 questions and one case study which is compulsory. All questions are to be answered and for each question has **"either or"** option except case study. All 5 questions carry 12 marks each and case study carries 15 marks, total becomes 75 marks.

c) Laboratory Course

i) For practical subjects distribution shall be 20 marks for internal evaluation and 30 marks for the end semester examinations. There shall be continuous evaluation by the internal subject teacher during the semester for 20 internal marks. Out of 20 marks for internal, 10 marks shall be for day-to-day performance (5 marks for day-to-day evaluation and 5 marks for Record) and 10 marks shall be evaluated by conducting an internal test conducted at the end of semester.

ii) End semester laboratory examination shall be conducted for 30 marks with two examiners, one of them being the Laboratory Class Teacher and second examiner shall be appointed by the University. The total 30 marks are break-up as 5 marks for procedure, 15 marks for experimentation and 5 marks each for results and Viva-Voce.

) Comprehensive Viva-Voce

Comprehensive Viva-Voce examination is conducted in all the subjects of four semester course for 50 marks at the end of fourth semester by a committee consisting of an external examiner appointed by university, senior faculty member of the department and HOD. There are no internal marks for this course. A student shall secure minimum 50% of marks for successful completion. In case, if a student fails, he/she shall reappear as and when semester supplementary examinations are conducted by the University.

e) Project Work (Industrial Project based on Summer Internship)

i) Project Work (Industrial Project based on Summer Internship) shall be completed in collaboration with an industry. Student shall pursue project work in the industry during summer vacation after completion of first year. The student shall register for the course as per course structure after

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c) When a student has shortage of attendance, he/she may be re-admitted into the same semester/year in which he has been detained. However, the academic regulations under which he was **first admitted** shall continue to be applicable to him.

8. **Criteria for passing a course and award of grades**

a) **Criteria for passing a course**

i) A candidate shall be declared to have passed in individual theory/ laboratory / project course if he secures a minimum of 50% aggregate marks (internal & semester end examination marks put together), subject to a minimum of 40% marks in the semester end examination.

ii) A candidate shall be declared to have passed in comprehensive viva- voce, if he secures a minimum of 50% marks.

iii) In case the candidate does not secure the minimum academic requirement in any subject (as specified in (i) & (ii) above) he/she has to re-appear for the end semester examination in that subject. A candidate shall be given **one** chance to re-register for each subject provided the internal marks secured by a candidate **are less than 50% and has failed in the end examination.** In such a case, the candidate must re-register for the subject(s) and secure the required minimum attendance. The attendance in the re-registered subject(s) shall be calculated separately to decide upon his eligibility for writing the end examination in those subject(s). In the event of the student taking another chance, his internal marks and end examination marks obtained in the previous attempt shall **stands cancelled**. For re-registration the candidates have to apply to the University through college by paying the requisite fees and get approval from University before start of semester in which re-registration is sought.

b) **Award of grades:** Method of awarding grade point and grade in each course based on his performance is given below.

Marks Range Theory / Project Work (Max – 100)	Marks Range Laboratory/ Comprehensive Viva-Voce (Max – 50)	Letter Grade	Level	Grade Point
≥ 90	≥ 45	O	Excellent	10
≥80 to <90	≥40 to <45	S	Very Good	9
≥70 to <80	≥35 to <40	A	Good	8
≥60 to <70	≥30 to <35	B	Fair	7
≥50 to <60	≥25 to <30	C	Satisfactory	6
<50	<25	F	Fail	0
		AB	Absent	0

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Thus, **SGPA =160/20 =8.0**

***Illustration* for CGPA:**

Semester 1	Semester 2	Semester 3	Semester 4
Credit : 20	Credit : 24	Credit : 20	Credit : 28
SGPA: 8.0	SGPA: 7.8	SGPA: 6.6	SGPA: 6.0

Thus, $CGPA = (20\times8.0+24\times7.8+20\times6.6+28\times6.0)/92 = 7.03$

10. Award of Class

After a student has satisfied the requirements prescribed for the completion of the program and is eligible for the award of MBA Degree he shall be placed in one of the following four classes:

Class Awarded	CGPA to be secured	Remarks
First Class with Distinction	≥ 7.75 (Without any supplementary appearance)	From the CGPA secured from 198 Credits
First Class	≥ 7.75 (With any supplementary appearance) ≥ 6.75 & < 7.75 (Without any supplementary appearance)	
Second Class	≥ 6.75 and < 7.75 (With any supplementary appearance) ≥ 6.0 to < 6.75 (Without any supplementary appearance)	
Pass Class	≥ 6.0 to < 6.75 (With any supplementary appearance)	

11. Withholding of Results

If the student is involved in indiscipline/malpractices/court cases, the result of the student will be withheld.

12. a) Supplementary Examinations

i) Supplementary examinations will be conducted twice in a year at the end of odd and even semesters as per the University norms & Regulations.

ii) Semester end supplementary examinations shall be conducted till next regulation comes into force for that semester after the conduct of the last set of regular examinations under the present regulation.

iii) Thereafter, supplementary examinations will be conducted in the equivalent courses as decided by the Board of Studies concerned.

b) Advanced Supplementary Examinations:

Candidates failed in theory/comprehensive Viva-Voce/project work courses in 4th semester can appear for advanced supplementary examinations conducted the University as per the norms & regulations.

13. Revaluation and Recounting

Recounting of Marks in the End Semester Examination: A student can request for recounting of his/her answer book on payment of a prescribed fee as per university norms.

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MALPRACTICES RULES

DISCIPLINARY ACTION FOR MALPRACTICES/IMPROPER CONDUCT IN EXAMINATIONS

	Nature of Malpractices/Improper conduct	Punishment
	If the candidate:	
1. (a)	Possesses or keeps accessible in examination hall, any paper, note book, programmable calculators, Cell phones, pager, palm computers or any other form of material concerned with or related to the subject of the examination (theory or practical) in which he is appearing but has not made use of (material shall include any marks on the body of the candidate which can be used as an aid in the subject of the examination)	Expulsion from the examination hall and cancellation of the performance in that subject only.
(b)	Gives assistance or guidance or receives it from any other candidate orally or by any other body language methods or communicates through cell phones with any candidate or persons in or outside the exam hall in respect of any matter.	Expulsion from the examination hall and cancellation of the performance in that subject only of all the candidates involved. In case of an outsider, he will be handed over to the police and a case is registered against him.
2.	Has copied in the examination hall from any paper, book, programmable calculators,	Expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the candidate

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4.	Smuggles in the Answer book or additional sheet or takes out or arranges to send out the question paper during the examination or answer book or additional sheet, during or after the examination.	Expulsion from the examination hall and cancellation of performance in that subject and all the other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that semester/year. The candidate is also debarred for two consecutive semesters from class work and all University examinations. The continuation of the course by the candidate is subject to the academic regulations in connection with forfeiture of seat.
5.	Uses objectionable, abusive or offensive language in the answer paper or in letters to the examiners or writes to the examiner requesting him to award pass marks.	Cancellation of the performance in that subject.
6.	Refuses to obey the orders of the Chief Superintendent/Assistant – Superintendent / any officer on duty or misbehaves or creates disturbance of any kind in and around the examination hall or organizes a walk out or instigates others to walk out, or threatens the officer-in charge or any	In case of students of the college, they shall be expelled from examination halls and cancellation of their performance in that subject and all other subjects the candidate(s) has (have) already appeared and shall not be permitted to appear for the remaining examinations of the subjects of that semester/year. The candidates also are debarred and forfeit their seats.

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		candidate is also debarred for two consecutive semesters from class work and all University examinations. The continuation of the course by the candidate is subject to the academic regulations in connection with forfeiture of seat.
8.	Possess any lethal weapon or firearm in the examination hall.	Expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that semester/year. The candidate is also debarred and forfeits the seat.
9.	If student of the college, who is not a candidate for the particular examination or any person not connected with the college indulges in any malpractice or improper conduct mentioned in clause 6 to 8.	Student of the colleges expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that semester/year. The candidate is also debarred and forfeits the seat. Person(s) who do not belong to the College will be handed over to police and, a police case will be registered against them.

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ACADEMIC REGULATIONS

MASTER OF BUSINESS ADMINISTRATION

(Applicable for the batch admitted from 2019-20)

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MASTER OF BUSINESS ADMINISTRATION
ACADEMIC REGULATIONS

(Applicable for the students of MBA from the Academic Year 2019-20)

1. **Duration of the Program**
   The duration of the program is two academic years consisting of four semesters. However, a student is permitted to complete the course work of MBA program in the stipulated time frame of **FOUR** years from the date of joining.
2. **Minimum Instruction Days**
   Each semester consists of a minimum of 90 (ninety) instruction days.
3. **Program Credits**
   MBA program is designed to have a total of 104 credits and the student shall have to complete the two year course work and earn all 104 credits for the award of MBA Degree.
4. **Attendance Regulations**
   a) A student shall be eligible to write University examinations if he acquires a minimum of 75% of attendance in aggregate of all the subjects/courses with minimum 50% in all the courses.
   b) Condonation of shortage of attendance in aggregate up to 10% (65% and above and below 75%) in each semester shall be granted by the College Academic Committee. However this condonation concession is applicable only to any one semester during entire programme.
   c) Shortage of Attendance **below** 65% in aggregate shall not be condoned and not eligible to write their end semester examination of that class.
   d) Students whose shortage of attendance is not condoned in any semester are not eligible to write their end semester examination of that class.
   e) A prescribed fee of Rs. 500/- shall be payable towards condonation of shortage of attendance.
   f) A student shall not be promoted to the next semester unless, he satisfies the attendance requirement of the present semester, as applicable. They may seek re-admission into that semester when offered next. If any candidate fulfills the attendance requirement in the present semester, he shall not be eligible for re-admission into the same class.
5. **Examinations and Scheme of Evaluation**
   The distribution of marks for internal and external examinations shall be evaluated subject--wise as follows:

S.No	Component	Internal	External	Total
1	Theory	25	75	100
2	Project	--	100	100
3	Laboratory	20	30	50
4	Comprehensive Viva- voce	--	50	50

   a) ***Internal Assessment*** 2

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i) 25 marks for internal assessment, 10 marks are for seminar/presentation and 15 marks are based on **average** of two mid- term examinations.
ii) 10 marks for presentation (5 marks are for report content and 5 marks are for presentation).
iii) Each mid-term examination is conducted for 15 marks with one and half hours (90 mins) duration. Each mid-term examination consists of three questions, each for 5 marks. All questions need to be answered.
iv) The final marks are the sum of average of two mid-term examinations for 15 marks and 10 marks for presentation.

b) External Assessment

The semester end examination shall be conducted for a duration of three hours with 5 questions and one case study which is compulsory. All questions are to be answered and for each question has **"either or"** option except case study. All 5 questions carry 12 marks each and case study carries 15 marks, total becomes 75 marks.

c) Laboratory Course

i) For practical subjects distribution shall be 20 marks for internal evaluation and 30 marks for the end semester examinations. There shall be continuous evaluation by the internal subject teacher during the semester for 20 internal marks. Out of 20 marks for internal, 10 marks shall be for day-to-day performance (5 marks for day-to-day evaluation and 5 marks for Record) and 10 marks shall be evaluated by conducting an internal test conducted at the end of semester.
ii) End semester laboratory examination shall be conducted for 30 marks with two examiners, one of them being the Laboratory Class Teacher and second examiner shall be appointed by the University. The total 30 marks are break-up as 5 marks for procedure, 15 marks for experimentation and 5 marks each for results and Viva-Voce.

d) Comprehensive Viva-Voce

Comprehensive Viva-Voce examination is conducted in all the subjects of four semester course for 50 marks at the end of fourth semester by a committee consisting of an external examiner appointed by university, senior faculty member of the department and HOD. There are no internal marks for this course. A student shall secure minimum 50% of marks for successful completion. In case, if a student fails, he/she shall reappear as and when semester supplementary examinations are conducted by the University.

e) Project Work (Industrial Project based on Summer Internship)

i) Project Work (Industrial Project based on Summer Internship) shall be completed in collaboration with an industry. Student shall pursue project work in the industry during summer vacation after completion of first year. The student shall register for the course as per course structure after

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commencement of academic year. The students shall take up this course under the guidance of a supervisor from concerned department. The supervisor shall maintain attendance of course for the students allotted. Attendance requirements are as per the norms of University. After completion, students shall be submit a technical report and presented before committee at the end of III semester. A certificate from industry shall be included in the report. Student needs to submit plagiarism report (not exceeding 30% similarity) along with the guide certificate in the final project report.

ii) Each student shall give one internal seminar (pre-talk) on the topic of his/her project as a prerequisite for submission of the final project report.

iii) It shall be evaluated for 100 external marks at the end of semester. Out of 100 marks, 50 marks shall be awarded for dissertation and 50 marks for project Viva-Voce. Project is evaluated by Board of Evaluators (BOE). Consisting of external examiner appointed/nominated by the University, Internal project guide and Head of the Department.

iv) A student shall secure minimum 50% of marks for successful completion. In case, if a student fails, he/she shall reappear as and when semester supplementary examinations are conducted by the University.

f) The MOOCs course in I semester shall be registered and pass through SWAYAM/NPTEL only. The grade obtained in the MOOCs course will printed on the grade sheet/transcript. In case the student fails in the MOOCs course, he/she shall register the same or another course through MOOCs in the same domain and pass.

6. Eligibility to award MBA degree

A student will be declared eligible for the award of the MBA Degree if he fulfills the following academic regulations.

a) Pursued a course of study for not less than two academic years and not more than four academic years.

b) Registered for **104** credits and secured **104** credits.

c) Students, who fail to complete their two years course of study within four years or fail to acquire the **104** credits for the award of the degree within four academic years from year of admission, shall **forfeit** their seat in MBA course and their admission shall stands cancelled.

7. Course Pattern

a) The entire course of study is for two academic years (four semesters); all the years are in semester pattern.

b) A student eligible to appear for the end semester examination in a subject, but absent from it or has failed in the end semester examination, may write the exam in that subject as and when university conducted next.

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c) When a student has shortage of attendance, he/she may be re-admitted into the same semester/year in which he has been detained. However, the academic regulations under which he was **first admitted** shall continue to be applicable to him.

8. **Criteria for passing a course and award ofgrades**

a) Criteria for passing a course

i) A candidate shall be declared to have passed in individual theory/ laboratory / project course if he secures a minimum of 50% aggregate marks (internal & semester end examination marks put together), subject to a minimum of 40% marks in the semester end examination.

ii) A candidate shall be declared to have passed in comprehensive viva- voce, if he secures a minimum of 50% marks.

iii) In case the candidate does not secure the minimum academic requirement in any subject (as specified in (i) & (ii) above) he/she has to re-appear for the end semester examination in that subject. A candidate shall be given **one** chance to re-register for each subject provided the internal marks secured by a candidate **are less than 50% and has failed in the end examination.** In such a case, the candidate must re-register for the subject(s) and secure the required minimum attendance. The attendance in the re-registered subject(s) shall be calculated separately to decide upon his eligibility for writing the end examination in those subject(s). In the event of the student taking another chance, his internal marks and end examination marks obtained in the previous attempt shall **stands cancelled**. For re-registration the candidates have to apply to the University through college by paying the requisite fees and get approval from University before start of semester in which re-registration is sought.

b) Award of grades: Method of awarding grade point and grade in each course based on his performance is given below.

Marks Range Theory / Project Work (Max – 100)	Marks Range Laboratory/ Comprehensive Viva-Voce (Max – 50)	Letter Grade	Level	Grade Point
≥ 90	≥ 45	O	Excellent	10
≥80 to <90	≥40 to <45	S	Very Good	9
≥70 to <80	≥35 to <40	A	Good	8
≥60 to <70	≥30 to <35	B	Fair	7
≥50 to <60	≥25 to <30	C	Satisfactory	6
<50	<25	F	Fail	0
		AB	Absent	0

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GUNTUR - 522017

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9. Computation of Cumulative and Semester Grade Point Averages

The UGC recommends the following procedure to compute the Semester Grade Point Average (SGPA) and Cumulative Grade Point Average (CGPA).

a) Semester Grade Point Average: ***SGPA***(S_k) of k^{th} semester (1 to 4) is ratio of sum of the product of the number of credits with the grade points scored by a student in all the courses taken by a student and the sum of the total number of credits of all the courses undergone/registered by a student, i.e

$$SGPA(S_k) = \frac{\sum_{i=1}^{n}(C_i \times G_i)}{\sum_{i=1}^{n} C_i}$$

Where C_i is the number of credits of the i^{th} course/subject in a semester and G_i is the grade point scored by the student in the i^{th} course/subject and n is the number of courses/subjects registered in that semester.

b) Cumulative Grade Point Average: The CGPA is calculated in the same manner taking into account all the 'm' courses/subjects registered by student over all the semesters of a Programme i.e., in all 4 semesters

$$CGPA = \frac{\sum_{i=1}^{m}(C_i \times S_i)}{\sum_{i=1}^{m} C_i}$$

Where S_i is SGPA of i^{th} sem and C_i is total number of credits in that semester.

c) SGPA and CGPA shall be rounded off to 2 decimal points and reported in transcripts.

d) As per AICTE regulations, conversion of CGPA into equivalent percentage as follows: *Equivalent Percentage* = (CGPA – 0.75) x 10

e) Illustration of Computation of SGPA and CGPA

Illustration for SGPA: Let us assume there are 6 subjects in a semester. The grades obtained as follows:

Course	Credit	Grade Obtained	Grade point	S_i= Credit Point (Credit x Grade)
Subject 1	4	A	8	4 X 8 = 32
Subject 2	4	B	7	4 X 7 = 28
Subject 3	4	C	6	4 X 6 = 24
Subject 4	4	O	10	4 X 10 = 40
Subject 5	4	S	9	4 X 9 = 36
	20			160

6

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Thus, **SGPA =160/20 =8.0**

Illustration **for CGPA:**

Semester 1	Semester 2	Semester 3	Semester 4
Credit : 20 SGPA: 8.0	Credit : 24 SGPA: 7.8	Credit : 20 SGPA: 6.6	Credit : 28 SGPA: 6.0

Thus, $CGPA = (20\times8.0+24\times7.8+20\times6.6+28\times6.0)/92 = 7.03$

10. Award of Class

After a student has satisfied the requirements prescribed for the completion of the program and is eligible for the award of MBA Degree he shall be placed in one of the following four classes:

Class Awarded	CGPA to be secured	Remarks
First Class with Distinction	≥ 7.75 (Without any supplementary appearance)	From the CGPA secured from 198 Credits
First Class	≥ 7.75 (With any supplementary appearance) ≥ 6.75 & < 7.75 (Without any supplementary appearance)	
Second Class	≥ 6.75 and < 7.75 (With any supplementary appearance) ≥ 6.0 to < 6.75 (Without any supplementary appearance)	
Pass Class	≥ 6.0 to < 6.75 (With any supplementary appearance)	

11. Withholding of Results

If the student is involved in indiscipline/malpractices/court cases, the result of the student will be withheld.

12. a) Supplementary Examinations

i) Supplementary examinations will be conducted twice in a year at the end of odd and even semesters as per the University norms & Regulations.

ii) Semester end supplementary examinations shall be conducted till next regulation comes into force for that semester after the conduct of the last set of regular examinations under the present regulation.

iii) Thereafter, supplementary examinations will be conducted in the equivalent courses as decided by the Board of Studies concerned.

b) Advanced Supplementary Examinations:

Candidates failed in theory/comprehensive Viva-Voce/project work courses in 4th semester can appear for advanced supplementary examinations conducted the University as per the norms & regulations.

13. Revaluation and Recounting

Recounting of Marks in the End Semester Examination: A student can request for recounting of his/her answer book on payment of a prescribed fee as per university norms.

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Revaluation or Revaluation by Challenge of the End Semester Examination: A student can request for Revaluation or Revaluation by Challenge of his/her answer book on payment of a prescribed fee as per university norms.

14. *Malpractices in Examinations*: Disciplinary action shall be taken in case of malpractices during mid/end examinations as per rules framed by University.

15. Transitory Regulations (for R19)

a) Discontinued or detained candidates are eligible for re-admission as and when next offered as per university norms.

b) The re-admitted candidate will be governed by the rules & regulations under which the candidate has been admitted.

c) In case of transferred students from other Universities, credits shall be transferred to JNTUK as per academic regulations and course structure of JNTUK.

d) The students seeking transfer to colleges affiliated to JNTUK from other universities/institutions have to obtain the credits of any equivalent subjects as prescribed by JNTUK. In addition, the transferred candidates have to pass the failed subjects at the earlier university/institute, with already obtained internal/sessional marks, to be conducted by JNTUK.

16. GENERAL

a) Wherever the words "he", "him", "his", occur in the regulations, they include "she", "her", "hers".

b) The academic regulation should be read as a whole for the purpose of any interpretation.

c) In the case of any doubt or ambiguity in the interpretation of the above rules, the decision of the Vice-Chancellor is final.

d) The University may change or amend the academic regulations or syllabi at any time and the changes or amendments made shall be applicable to all the students with effect from the dates notified by the University.

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GUNTUR - 522017

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Budampadu, Guntur-522017

MALPRACTICES RULES

DISCIPLINARY ACTION FOR MALPRACTICES/IMPROPER CONDUCT IN EXAMINATIONS

	Nature of Malpractices/Improper conduct	Punishment
	If the candidate:	
1. (a)	Possesses or keeps accessible in examination hall, any paper, note book, programmable calculators, Cell phones, pager, palm computers or any other form of material concerned with or related to the subject of the examination (theory or practical) in which he is appearing but has not made use of (material shall include any marks on the body of the candidate which can be used as an aid in the subject of the examination)	Expulsion from the examination hall and cancellation of the performance in that subject only.
(b)	Gives assistance or guidance or receives it from any other candidate orally or by any other body language methods or communicates through cell phones with any candidate or persons in or outside the exam hall in respect of any matter.	Expulsion from the examination hall and cancellation of the performance in that subject only of all the candidates involved. In case of an outsider, he will be handed over to the police and a case is registered against him.
2.	Has copied in the examination hall from any paper, book, programmable calculators,	Expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the candidate

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GUNTUR - 522017

Exam Cell I/C
G.V.R & S. College of Engg. & Tech.
Budampadu, GUNTUR-013.

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	palm computers or any other form of material relevant to the subject of the examination (theory or practical) in which the candidate is appearing.	has already appeared including practical examinations and project work and shall not be permitted to appear for the remaining examinations of the subjects of that Semester/year. The Hall Ticket of the candidate is to be cancelled and sent to the University.
3.	Impersonates any other candidate in connection with the examination.	The candidate who has impersonated shall be expelled from examination hall. The candidate is also debarred and forfeits the seat. The performance of the original candidate who has been impersonated, shall be cancelled in all the subjects of the examination (including practicals and project work) already appeared and shall not be allowed to appear for examinations of the remaining subjects of that semester/year. The candidate is also debarred for two consecutive semesters from class work and all University examinations. The continuation of the course by the candidate is subject to the academic regulations in connection with forfeiture of seat. If the imposter is an outsider, he will be handed over to the police and a case is registered against him.

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GUNTUR - 522017

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Budampadu, GUNTUR-013.

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Budampadu, Guntur-522017

4.	Smuggles in the Answer book or additional sheet or takes out or arranges to send out the question paper during the examination or answer book or additional sheet, during or after the examination.	Expulsion from the examination hall and cancellation of performance in that subject and all the other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that semester/year. The candidate is also debarred for two consecutive semesters from class work and all University examinations. The continuation of the course by the candidate is subject to the academic regulations in connection with forfeiture of seat.
5.	Uses objectionable, abusive or offensive language in the answer paper or in letters to the examiners or writes to the examiner requesting him to award pass marks.	Cancellation of the performance in that subject.
6.	Refuses to obey the orders of the Chief Superintendent/Assistant – Superintendent / any officer on duty or misbehaves or creates disturbance of any kind in and around the examination hall or organizes a walk out or instigates others to walk out, or threatens the officer-in charge or any	In case of students of the college, they shall be expelled from examination halls and cancellation of their performance in that subject and all other subjects the candidate(s) has (have) already appeared and shall not be permitted to appear for the remaining examinations of the subjects of that semester/year. The candidates also are debarred and forfeit their seats.

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	person on duty in or outside the examination hall of any injury to his person or to any of his relations whether by words, either spoken or written or by signs or by visible representation, assaults the officer-in-charge, or any person on duty in or outside the examination hall or any of his relations, or indulges in any other act of misconduct or mischief which result in damage to or destruction of property in the examination hall or any part of the College campus or engages in any other act which in the opinion of the officer on duty amounts to use of unfair means or misconduct or has the tendency to disrupt the orderly conduct of the examination.	In case of outsiders, they will be handed over to the police and a police case is registered against them.
7.	Leaves the exam hall taking away answer script or intentionally tears of the script or any part thereof inside or outside the examination hall.	Expulsion from the examination hall and cancellation of performance in that subject and all the other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that semester/year. The

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		candidate is also debarred for two consecutive semesters from class work and all University examinations. The continuation of the course by the candidate is subject to the academic regulations in connection with forfeiture of seat.
8.	Possess any lethal weapon or firearm in the examination hall.	Expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that semester/year. The candidate is also debarred and forfeits the seat.
9.	If student of the college, who is not a candidate for the particular examination or any person not connected with the college indulges in any malpractice or improper conduct mentioned in clause 6 to 8.	Student of the colleges expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that semester/year. The candidate is also debarred and forfeits the seat. Person(s) who do not belong to the College will be handed over to police and, a police case will be registered against them.

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GUNTUR - 522017

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10.	Comes in a drunken condition to the examination hall.	Expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that semester/year.
11.	Copying detected on the basis of internal evidence, such as, during valuation or during special scrutiny.	Cancellation of the performance in that subject and all other subjects the candidate has appeared including practical examinations and project work of that semester/year examinations.
12.	If any malpractice is detected which is not covered in the above clauses 1 to 11 shall be reported to the University for further action to award suitable punishment.	

Malpractices identified by squad or special invigilators

1. Punishments to the candidates as per the above guidelines.
2. Punishment for institutions : (if the squad reports that the college is also involved in encouraging malpractices)
   (i) A show cause notice shall be issued to the college.
   (ii) Impose a suitable fine on the college.
   (iii) Shifting the examination centre from the college to another college for a specific period of not less than one year

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GUNTUR - 522017

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Budampadu, Guntur-522017

ACADEMIC REGULATIONS

COURSE STRUCTURE & DETAILED SYLLABUS

For

MASTER OF BUSINESS ADMINISTRATION

(Applicable for the batches admitted from 2019-20)

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA
KAKINADA – 533003, ANDHRA PRADESH, INDIA

I YEAR I SEMESTER							
S.No	**Course Code**	**Courses**	**Marks**	**L**	**T**	**P**	**C**
1	C-101	Management and Organizational Behavior	100	4	0	0	4
2	C-102	Managerial Economics	100	4	0	0	4
3	C-103	Accounting for Managers	100	4	0	0	4
4	C-104	Quantitative Analysis for Business Decisions	100	4	0	0	4
5	C-105	Legal and Business Environment	100	4	0	0	4
6	C-106	Business Communication and Soft skills	100	2	0	2	4
7	C-107 Open Elective	Cross Cultural Management Rural Innovation projects MOOCs : SWAYAM/NPTEL- Related to Management Courses other than listed courses in the syllabus	100	4	0	0	4
8	C-108	Information Technology – Lab1(Spreadsheet and Tally)	50	0	0	2	2
		Totai	**750**	**28**	**0**	**2**	**30**

I YEAR II SEMESTER							
S.No	**Course Code**	**Courses**	**Marks**	**L**	**T**	**P**	**C**
1	C-201	Financial Management	100	4	0	0	4
2	C-202	Human Resource Management	100	4	0	0	4
3	C-203	Marketing Management	100	4	0	0	4
4	C-204	Operations Management	100	4	0	0	4
5	C-205	Business Research Methods	100	4	0	0	4
6	C-206 open elective	Project Management Technology Management Lean Management Database Management System	100	4	0	0	4
7	C-207	IT-lab 2(Programming R)	50	0	0	2	2
		Total	**650**	**24**	**0**	**2**	**26**

II YEAR III SEMESTER							
S.No	**Course Code**	**Courses**	**Marks**	**L**	**T**	**P**	**C**
1	C-301	Strategic Management	100	4	0	0	4
2	C -302	Operations Research	100	4	0	0	4
3	E -301	Elective – 1	100	4	0	0	3
4	E-302	Elective – 2	100	4	0	0	3
5	E-303	Elective – 3	100	4	0	0	3
6	E-304	Elective – 4	100	4	0	0	3
7	C-304	Industrial Project based on Summer Internship	150	4	0	0	4
		Total	**750**	**28**	**0**	**0**	**24**

II YEAR IV SEMESTER							
S.No	**Course Code**	**Courses**	**Marks**	**L**	**T**	**P**	**C**
1	C -401	Supply Chain Management and Analytics	100	4	0	0	4
2	C-402	Innovation and Entrepreneurship	100	4	0	0	4
3	E-401	Elective – 5	100	4	0	0	3
4	E-402	Elective – 6	100	4	0	0	3
5	E-403	Elective – 7	100	4	0	0	3
6	E-404	Elective – 8	100	4	0	0	3
7	C-403	Comprehensive Viva- voce	50	0	0	0	2
		Total Marks / Credits	**650**	**28**	**0**	**0**	**22**
			2800				**102**

*The project work documentation shall be checked with anti plagiarism software (Turnitin). The permissible similarity shall be less than 30%.

*Comprehensive Viva is to verify the student knowledge as a whole from which he was studied during the two year course work.

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III SEMESTER
Human Resource Management

S. no	Course Code	SUBJECT TITLE
1	EH-301	Leadership and Change Management
2	EH-302	Performance Evaluation and Compensation Management
3	EH-303	Human Resource Metrics and Analytics
4	EH-304	Human Capital Management
5	EH-305	Manpower Planning, Recruitment, and Selection

IV SEMESTER
Human Resource Management

S. no	Course Code	SUBJECT TITLE
6	EH-401	Labor Welfare and employment laws
7	EH-402	International HRM
8	EH-403	Employee Relations and Engagement
9	EH-404	Human Resources Development
10	EH-405	Strategic HRM

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III SEMESTER FINANCE

S. no	Course Code	SUBJECT TITLE
1	EF-301	Investment Analysis and Portfolio Management
2	EF-302	Managing Banks and Financial Institutions
3	EF-303	Financial Markets and Services
4	EF-304	Mergers, Acquisitions and Corporate Restructuring
5	EF-305	Taxation

IV SEMESTER FINANCE

S. no	Course Code	SUBJECT TITLE
6	EF-401	Financial Derivatives
7	EF-402	Global Financial Management
8	EF-403	Financial Risk Management
9	EF-404	Strategic Financial Management
10	EF-405	Behavioral Finance

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III SEMESTER - ELECTIVES
MARKETING

S. no	Course Code	SUBJECT TITLE
1	EM-301	Consumer Behavior
2	EM-302	Retail Management
3	EM-303	Customer Relationship Management
4	EM-304	Strategic Marketing Management
5	EM-305	Digital and Social Media Marketing

IV SEMESTER MARKETING

S. no	Course Code	SUBJECT TITLE
6	EM-401	Services Marketing
7	EM-402	Promotional and Distribution Management
8	EM-403	Green Marketing
9	EM-404	Advertising and Brand Management
10	EM-405	Global Marketing Management

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III SEMESTER ELECTIVES
SYSTEMS

S. no	Course Code	SUBJECT TITLE
1	ES-301	Data Mining for Business Decisions
2	ES-302	Managing Software Projects
3	ES-303	Web Designing
4	ES-304	Business Analytics
5	ES-305	Managing Digital Innovation and Transformation

IV SEMESTER SYSTEMS

S. no	Course Code	SUBJECT TITLE
6	ES-401	Big Data Analytics
7	ES-402	Enterprise Resource Planning
8	ES-403	Cyber Laws & Security
9	ES-404	Information Systems Audit
10	ES-405	Artificial Intelligence and Machine Learning

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OPERATIONS MANAGEMENT
III SEMESTER

S. no	Course Code	SUBJECT TITLE
1	EO-301	Service Operations Management
2	EO-302	Quality Toolkit for Managers
3	EO-303	Pricing and Revenue Management
4	EO-304	Operations Strategy
5	EO-305	Sales and Operations Planning

IV SEMESTER

S. no	Course Code	SUBJECT TITLE
6	EO-401	Behavioral Operations Management
7	EO-402	Theory of Constraints
8	EO-403	Management of Manufacturing Systems
9	EO-404	Sourcing Management
10	EO-405	Supply Chain Analytics

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KKR & S College of Engg. & Tech.
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HEALTH CARE AND HOSPITAL MANAGEMENT
III SEMESTER

S. no	Course Code	SUBJECT TITLE
1	EHC-301	Hospital organization and Management
2	EHC-302	Health Care Policies and Delivery Systems
3	EHC-303	Health Economics
4	EHC-304	Hospital Functions and Support Services
5	EHC-305	Revenue Cycle Management

IV SEMESTER

S. no	Course Code	SUBJECT TITLE
6	EHC-401	Patient Care & Services Management
7	EHC-402	Managed Health Care and Insurance
8	EHC-403	Health Laws, Ethics and Regulations
9	EHC-404	Hospital Management Information System
10	EHC-405	Health Analytics

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AGRO-BUSINESS MANAGEMENT

III SEMESTER

S. no	Course Code	SUBJECT TITLE
	EA-301	Agro-Marketing Management
2	EA-302	Agro-Business and Rural Green Market
3	EA-303	Agro-Business Environment
4	EA-304	Agro-Supply Chain Management
5	EA-305	Entrepreneurship for Agriculture

IV SEMESTER

S. no	Course Code	SUBJECT TITLE
6	EA-401	Food Processing Management
7	EA-402	Disaster Management
8	EA-403	Food Retail Management
9	EA-404	Agro- Technology Management
10	EA-405	Organic Food Technology

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY: KAKINADA
KAKINADA – 533 003, Andhra Pradesh, India
DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

COURSE STRUCTURE-R19

COURSE STRUCTURE AND SYLLABUS

For

B. TECH ELECTRICAL AND ELECTRONICS ENGINEERING

(Applicable for batches admitted from 2019-2020)

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY: KAKINADA

KAKINADA - 533 003, Andhra Pradesh, India

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

COURSE STRUCTURE-R19

I Year – I SEMESTER

Sl. No	Course Code	Subjects	L	T	P	Credits
1	HS1101	English	3	0	0	3
2	BS1101	Mathematics - I	3	0	0	3
3	BS1106	Applied Chemistry	3	0	0	3
4	ES1101	Programming for Problem Solving Using C	3	0	0	3
5	ES1103	Engineering Drawing	1	0	3	2.5
6	HS1102	English Lab	0	0	3	1.5
7	BS1107	Applied Chemistry Lab	0	0	3	1.5
8	ES1102	Programming for Problem Solving Using C Lab	0	0	3	1.5
9	MC1101	Environmental Science	3	0	0	0
Total Credits			**16**	**0**	**12**	**19**

I Year – II SEMESTER

Sl. No	Course Code	Subjects	L	T	P	Credits
1	BS1202	Mathematics – II	3	0	0	3
2	BS1203	Mathematics – III	3	0	0	3
3	BS1204	Applied Physics	3	0	0	3
4	ES1212	Fundamentals of Computers	3	0	0	3
5	ES1217	Electrical Circuit Analysis - I	3	0	0	3
6	ES1218	Electrical Engineering Workshop	0	0	3	1.5
7	BS1205	Applied Physics Lab	0	0	3	1.5
8	HS1203	Communication Skills Lab	0	1	2	2
9	PR1201	Engineering Exploration Project	0	0	2	1
Total Credits			**15**	**1**	**10**	**21**

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GUNTUR - 522017

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KAKINADA – 533 003, Andhra Pradesh, India
DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

COURSE STRUCTURE-R19

II Year – I SEMESTER

S. No	Course Code	Subjects	Category	L	T	P	Credits
1		Electrical Circuit Analysis - II	EE	3	--	--	3
2		Electrical Machines-I	EE	3	--	--	3
3		Electronic Devices and Circuits	ES	3	--	--	3
4		Electro Magnetic Fields	EE	3	--	--	3
5		Thermal and Hydro Prime movers	ES	3	--	--	3
6		Managerial Economics & Financial Analysis	BS	3	--	--	3
7		Thermal and Hydro Laboratory	ES	--	--	3	1.5
8		Electrical Circuits Laboratory	EE	--	--	3	1.5
9		Essence of Indian Traditional Knowledge	MC	3	--	--	0
Total Credits				**24**	**0**	**6**	**21**

II Year – II SEMESTER

S. No	Course Code	Subjects	Category	L	T	P	Credits
1		Electrical Measurements & Instrumentation	EE	3	--	--	3
2		Electrical Machines-II	EE	3	--	--	3
3		Digital Electronics	ES	3	--	--	3
4		Control Systems	EE	3	--	--	3
5		Power Systems-I	EE	3	--	--	3
6		Signals and Systems	EE	3	--	--	3
7		Electrical Machines -I Laboratory	EE	--	--	3	1.5
8		Electronic Devices & Circuits Laboratory	EE	--	--	3	1.5
9		Professional Ethics and Human Values	MC	3	0	0	0
Total Credits				**21**	**0**	**6**	**21**

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

COURSE STRUCTURE-R19

III Year – I SEMESTER

S. No	Course Code	Subjects	Category	L	T	P	Credits
1		Power Systems-II	EE	3	--	--	3
2		Power Electronics	EE	3	--	--	3
3		Linear IC Applications	ES	3	--	--	3
4		Digital Signal Processing	EE	3	--	--	3
5		Microprocessors and Microcontrollers	EE	3	--	--	3
6		Electrical Machines-II Laboratory	EE	--	--	3	1.5
7		Control Systems Laboratory	EE	--	--	2	1
8		Electrical Measurements & Instrumentation Laboratory	EE	--	--	3	1.5
9		Socially Relevant Projects	MC	--	--	1	1
Total Credits				**15**	**0**	**9**	**20**

III Year – II SEMESTER

S. No	Course Code	Subjects	Category	L	T	P	Credits
1		Electric Drives	EE	3	--	--	3
2		Power System Analysis	EE	3	--	--	3
3		Data Structures	ES	3	--	--	3
4		Digital Control Systems	EE	3	--	--	3
5		**Elective - I**	EL	3	--	--	3
6		**Open Elective - I**	OE	3	--	--	3
7		Power Electronics Laboratory	EE	--	--	3	1.5
8		Microprocessors & Microcontrollers Laboratory	EE	--	--	3	1.5
9		Employability Skills	MC	3	--	--	0
Total Credits				**18**		**6**	**21**

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY: KAKINADA
KAKINADA – 533 003, Andhra Pradesh, India
DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

COURSE STRUCTURE-R19

IV Year – I SEMESTER

S. No	Course Code	Subjects	Category	L	T	P	Credits
1		Switchgear & Protection	EE	3	--	--	3
2		OOPs through JAVA	ES	3	--	--	3
3		Renewable Energy Systems	EE	3	--	--	3
4		**Elective – II**	EL	3	--	--	3
5		**Elective - III**	EL	3	--	--	3
6		Linear & Digital IC Applications Laboratory	ES	--	--	2	1
7		Power Systems& Simulation Laboratory	EE	--	--	2	1
		Industrial Training /Skill Development Programmes / Research Project	Project	--	--	2	1
8		Project-I	Project			4	2
Total Credits				**15**	**0**	**10**	**20**

IV Year – II SEMESTER

S. No	Course Code	Subjects	Category	L	T	P	Credits
1		Power System Operation & Control	EE	3	--	--	3
2		**Open Elective - II**	OE	3	--	--	3
3		**Elective - IV**	EL	3	--	--	3
4		Project-II	Project	--	--	16	8
Total Credits				**09**		**16**	**17**

BS – Basic Sciences
HS – Humanity Sciences
ES – Engineering Sciences
EE – Electrical Engineering
OE – Open Elective
EL – Elective
Proj- Project
MC–Mandatory Course

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

COURSE STRUCTURE-R19

Elective – I:

1. Digital IC Applications
2. Communication Systems
3. Computer Networks
4. Internet of Things applications to Electrical Engineering
5. VLSI Design
6. Cloud Computing

Elective – II:

1. Utilization of Electrical Energy
2. Data Base Management System
3. Advanced Control Systems
4. Electrical Machine Design
5. Hybrid Electric Vehicles
6. Swayam Course

Elective – III:

1. Operating Systems
2. Neural Networks &Fuzzy Logic
3. High Voltage Engineering
4. Energy Auditing and Demand Side Management
5. Data Analytics with Python
6. Swayam Course

Elective – IV:

1. Electrical Distribution Systems
2. HVAC & DC Transmission
3. Flexible Alternating Current Transmission Systems
4. Power Quality
5. Smart Grid
6. Special Electrical Machines

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

COURSE STRUCTURE-R19

Open Electives offered by EEE Department for Other Branches(Except for EEE Branch)

Open Elective-I:

1. Renewable Energy Sources
2. Essentials of Analog and Digital Electronics
3. Electrical Estimation and Costing
4. Power Electronic Devices & Circuits
5. Fundamentals of Electrical Machines

Open Elective-II:

1. Measurements & Instrumentation
2. Fundamentals of Utilization of Electrical Energy
3. Concepts of Power System Engineering
4. Basics of Control Systems
5. Energy Audit

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

COURSE STRUCTURE-R19

I Year - I Semester		L	T	P	C
		3	0	0	0
ENVIRONMENTAL SCIENCE (MC1101)					

Learning Objectives:
The objectives of the course are to impart:

- Overall understanding of the natural resources.
- Basic understanding of the ecosystem and its diversity.
- Acquaintance on various environmental challenges induced duc to unplanned anthropogenic activities.
- An understanding of the environmental impact of developmental activities.
- Awareness on the social issues, environmental legislation and global treaties.

UNIT-I:
Multidisciplinary nature of Environmental Studies: Definition, Scope and Importance – Sustainability: Stockholm and Rio Summit–Global Environmental Challenges: Global warming and climate change, acid rains, ozone layer depletion, population growth and explosion, effects;. Role of information technology in environment and human health.
Ecosystems: Concept of an ecosystem. - Structure and function of an ecosystem; Producers, consumers and decomposers. - Energy flow in the ecosystem - Ecological succession. - Food chains, food webs and ecological pyramids; Introduction, types, characteristic features, structure and function of Forest ecosystem, Grassland ecosystem, Desert ecosystem, Aquatic ecosystems.

UNIT-II:
Natural Resources: Natural resources and associated problems.
Forest resources: Use and over – exploitation, deforestation – Timber extraction – Mining, dams and other effects on forest and tribal people.
Water resources: Use and over utilization of surface and ground water – Floods, drought, conflicts over water, dams – benefits and problems.
Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources.
Food resources: World food problems, changes caused by non-agriculture activities-effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity.
Energy resources: Growing energy needs, renewable and non-renewable energy sources use of alternate energy sources.
Land resources: Land as a resource, land degradation, Wasteland reclamation, man induced landslides, soil erosion and desertification; Role of an individual in conservation of natural resources; Equitable use of resources for sustainable lifestyles.

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY: KAKINADA
KAKINADA – 533 003, Andhra Pradesh, India
DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

COURSE STRUCTURE-R19

UNIT-III:

Biodiversity and its conservation: Definition: genetic, species and ecosystem diversity-classification - Value of biodiversity: consumptive use, productive use, social-Biodiversity at national and local levels. India as a mega-diversity nation - Hot-sports of biodiversity - Threats to biodiversity: habitat loss, man-wildlife conflicts. - Endangered and endemic species of India – Conservation of biodiversity: conservation of biodiversity.

UNIT – IV Environmental Pollution: Definition, Cause, effects and control measures of Air pollution, Water pollution, Soil pollution, Noise pollution, Nuclear hazards. Role of an individual in prevention of pollution. - Pollution case studies, Sustainable Life Studies. Impact of Fire Crackers on Men and his well being.

Solid Waste Management: Sources, Classification, effects and control measures of urban and industrial solid wastes. Consumerism and waste products, Biomedical, Hazardous and e – waste management.

UNIT – V Social Issues and the Environment: Urban problems related to energy -Water conservation, rain water harvesting-Resettlement and rehabilitation of people; its problems and concerns. Environmental ethics: Issues and possible solutions. Environmental Protection Act - Air (Prevention and Control of Pollution) Act. –Water (Prevention and control of Pollution) Act -Wildlife Protection Act -Forest Conservation Act-Issues involved in enforcement of environmental legislation. -Public awareness.

Environmental Management: Impact Assessment and its significance various stages of EIA, preparation of EMP and EIS, Environmental audit. Ecotourism, Green Campus – Green business and Green politics.

The student should Visit an Industry / Ecosystem and submit a report individually on any issues related to Environmental Studies course and make a power point presentation.

Text Books:

1. Environmental Studies, K. V. S. G. Murali Krishna, VGS Publishers, Vijayawada
2. Environmental Studies, R. Rajagopalan, 2nd Edition, 2011, Oxford University Press.
3. Environmental Studies, P. N. Palanisamy, P. Manikandan, A. Geetha, and K. Manjula Rani; Pearson Education, Chennai

Reference:

1. Text Book of Environmental Studies, Deeshita Dave & P. Udaya Bhaskar, Cengage Learning.
2. A Textbook of Environmental Studies, Shaashi Chawla, TMH, New Delhi
3. Environmental Studies, Benny Joseph, Tata McGraw Hill Co, New Delhi
4. Perspectives in Environment Studies, Anubha Kaushik, C P Kaushik, New Age International Publishers, 2014

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

COURSE STRUCTURE-R19

II Year – I SEMESTER		L	T	P	C
		3	0	0	0

ESSENCE OF INDIAN TRADITIONAL KNOWLEDGE

Course Objectives:
To facilitate the students with the concepts of Indian traditional knowledge and to make them understand the Importance of roots of knowledge system

- The course aim of the importing basic principle of third process reasoning and inference sustainability is at the course of Indian traditional knowledge system
- To understand the legal framework and traditional knowledge and biological diversity act 2002 and geographical indication act 2003
- The courses focus on traditional knowledge and intellectual property mechanism of traditional knowledge and protection
- To know the student traditional knowledge in different sector

Course Outcomes:
After completion of the course, students will be able to:

- Understand the concept of Traditional knowledge and its importance
- Know the need and importance of protecting traditional knowledge
- Know the various enactments related to the protection of traditional knowledge
- Understand the concepts of Intellectual property to protect the traditional knowledge

UNIT I
Introduction to traditional knowledge: Define traditional knowledge, nature and characteristics, scope and importance, kinds of traditional knowledge, the physical and social contexts in which traditional knowledge develop, the historical impact of social change on traditional knowledge systems. Indigenous Knowledge (IK), characteristics, traditional knowledge vis-à-vis indigenous knowledge, traditional knowledge Vs western knowledge traditional knowledge vis-à-vis formal knowledge
Learning Outcomes:
At the end of the unit, the student will able to:

- Understand the traditional knowledge.
- Contrast and compare characteristics importance kinds of traditional knowledge.
- Analyze physical and social contexts of traditional knowledge.
- Evaluate social change on traditional knowledge.

UNIT II
Protection of traditional knowledge: the need for protecting traditional knowledge Significance of TK Protection, value of TK in global economy, Role of Government to harness TK.
Learning Outcomes:
At the end of the unit, the student will able to:

- Know the need of protecting traditional knowledge.
- Apply significance of tk protection.

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COURSE STRUCTURE-R19

- Analyze the value of tk in global economy.
- Evaluate role of government

UNIT III

Legal framework and TK: A: The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006, Plant Varieties Protection and Farmers Rights Act, 2001 (PPVFR Act);B:The Biological Diversity Act 2002 and Rules 2004, the protection of traditional knowledge bill, 2016. Geographical indications act 2003.

Learning Outcomes:

At the end of the unit the student will able to:

- Understand legal framework of TK.
- Contrast and compare the ST and other traditional forest dwellers
- Analyze plant variant protections
- Evaluate farmers right act

UNIT IV

Traditional knowledge and intellectual property: Systems of traditional knowledge protection, Legal concepts for the protection of traditional knowledge, Certain non IPR mechanisms of traditional knowledge protection, Patents and traditional knowledge, Strategies to increase protection of traditional knowledge, global legal FORA for increasing protection of Indian Traditional Knowledge.

Learning Outcomes:

At the end of the unit, the student will able to:

- Understand TK and IPR
- Apply systems of TK protection.
- Analyze legal concepts for the protection of TK.
- Evaluate strategies to increase the protection of TK.

UNIT V

Traditional knowledge in different sectors: Traditional knowledge and engineering, Traditional medicine system, TK and biotechnology, TK in agriculture, Traditional societies depend on it for their food and healthcare needs, Importance of conservation and sustainable development of environment, Management of biodiversity, Food security of the country and protection of TK.

Learning Outcomes:

At the end of the unit, the student will able to:

- Know TK in different sectors.
- Apply TK in engineering.
- Analyze TK in various sectors.
- Evaluate food security and protection of TK in the country.

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

COURSE STRUCTURE-R19

Reference Books:

1) Traditional Knowledge System in India, by Amit Jha, 2009.
2) Traditional Knowledge System and Technology in India by Basanta Kumar Mohanta and Vipin Kumar Singh, PratibhaPrakashan 2012.
3) Traditional Knowledge System in India by Amit Jha Atlantic publishers, 2002
4) "Knowledge Traditions and Practices of India" Kapil Kapoor, Michel Danino

e-Resources:

1) https://www.youtube.com/watch?v=LZP1StpYEPM
2) http://nptel.ac.in/courses/121106003/

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

COURSE STRUCTURE-R19

II Year – II SEMESTER		L	T	P	C
		3	0	0	0
PROFESSIONAL ETHICS AND HUMAN VALUES					

Course Objectives:

- To create an awareness on Engineering Ethics and Human Values.
- To instill Moral and Social Values and Loyalty
- To appreciate the rights of others
- To create awareness on assessment of safety and risk

Course outcomes:

Students will be able to:

- Identify and analyze an ethical issue in the subject matter under investigation or in a relevant field
- Identify the multiple ethical interests at stake in a real-world situation or practice
- Articulate what makes a particular course of action ethically defensible
- Assess their own ethical values and the social context of problems
- Identify ethical concerns in research and intellectual contexts, including academic integrity, use and citation of sources, the objective presentation of data, and the treatment of human subjects
- Demonstrate knowledge of ethical values in non-classroom activities, such as service learning, internships, and field work
- Integrate, synthesize, and apply knowledge of ethical dilemmas and resolutions in academic settings, including focused and interdisciplinary research.

UNIT I

Human Values: Morals, Values and Ethics-Integrity-Work Ethic-Service learning – Civic Virtue – Respect for others –Living Peacefully –Caring –Sharing –Honesty -Courage-Cooperation– Commitment – Empathy –Self Confidence Character –Spirituality.

Learning outcomes:

1. Learn about morals, values & work ethics.
2. Learn to respect others and develop civic virtue.
3. Develop commitment
4. Learn how to live peacefully

UNIT II

Engineering Ethics: Senses of 'Engineering Ethics-Variety of moral issued –Types of inquiry – Moral dilemmas –Moral autonomy –Kohlberg's theory-Gilligan's theory-Consensus and controversy –Models of professional roles-Theories about right action-Self-interest -Customs and religion –Uses of Ethical theories –Valuing time –Cooperation –Commitment.

Learning outcomes:

1. Learn about the ethical responsibilities of the engineers.
2. Create awareness about the customs and religions.

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

COURSE STRUCTURE-R19

3. Learn time management
4. Learn about the different professional roles.

UNIT III
Engineering as Social Experimentation: Engineering As Social Experimentation –Framing the problem –Determining the facts –Codes of Ethics –Clarifying Concepts –Application issues – Common Ground -General Principles –Utilitarian thinking respect for persons.
Learning outcomes:
1. Demonstrate knowledge to become a social experimenter.
2. Provide depth knowledge on framing of the problem and determining the facts.
3. Provide depth knowledge on codes of ethics.
4. Develop utilitarian thinking

UNIT IV
Engineers Responsibility for Safety and Risk: Safety and risk –Assessment of safety and risk – Risk benefit analysis and reducing risk-Safety and the Engineer-Designing for the safety-Intellectual Property rights (IPR).
Learning outcomes:
1. Create awareness about safety, risk & risk benefit analysis.
2. Engineer's design practices for providing safety.
3. Provide knowledge on intellectual property rights.

UINIT V
Global Issues: Globalization –Cross-culture issues-Environmental Ethics –Computer Ethics – Computers as the instrument of Unethical behavior –Computers as the object of Unethical acts – Autonomous Computers-Computer codes of Ethics –Weapons Development -Ethics and Research –Analyzing Ethical Problems in research.
Learning outcomes:
1. Develop knowledge about global issues.
2. Create awareness on computer and environmental ethics
3. Analyze ethical problems in research.
4. Give a picture on weapons development.

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DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

COURSE STRUCTURE-R19

III Year –II SEMESTER	L	T	P	C
	3	0	0	0

EMPLOYABILITY SKILLS

Preamble: This course is introduced to enhance the soft and hard skills of students based on industry needs and helping the student to get the employment in the competitive industrial environment.

Course Objective: In the this course the student should understand:
(i) Aptitude skill (ii) Soft skills (iii) Skills required for campus placement interview

Unit 1: Aptitude Skills
Quantitative Aptitude:
Numbers, HCF and LCM, Problems on ages, Averages, Ratio and Proportion, Percentages, Profit and Loss, Partnership, Interest calculations, Time and Work, Time and Distance, Pipes and Cisterns, Mensuration
Reasoning:
Number and Letter Analogy, Coding and decoding, Odd Man out, Symbols and Notations, Permutations and Combinations, Probability, Data Interpretation, Data Sufficiency, Clocks and Calendars, Deductions, Logical Connectives, Venn Diagrams, Cubes, Binary Logic, Ordering and Sequencing, Blood relations – Syllogisms - Seating arrangement, Analytical Reasoning

Unit 2: Skills - I
Soft Skills: An Introduction – Definition and Significance of Soft Skills; Process, Importance and Measurement of Soft Skill Development. **Self-Discovery:** Discovering the Self; Setting Goals; Beliefs, Values, Attitude, Virtue. Goal Setting-Vision Vs Mission Vs Goals, SMART Technique to Goal Setting, SWOT Analysis. **Self Esteem:** Types of Self Esteem, Causes of Low Self Esteem, Merits of Positive Self Esteem and Steps to build a positive Self Esteem; Art of Compromise, Learn to Say:'I Don't Know', Being organized, Showing Self-awareness, Self-Assessment for Attainable Career Objectives. **Attitude & Confidence:** Attitude Vs Skills Vs Knowledge, Attitude Vs Behaviour, Developing Positive Attitude and Confidence; Fear-Public Speaking, Steps to Overcome Fear, developing Positive Thinking and Attitude; Driving out Negativity; Meaning and Theories of Motivation; Enhancing Motivation Levels, Adjusting Your Attitude-Arrogance has no Place in the Workplace, Cultural Sensitivity in the Workplace, Corporate Culture: Learning How to Fit in. **Motivational Talk:** Team Work, Team Vs Group, Stages in Team Building, Mistakes to avoid and Lessons to Learn.

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COURSE STRUCTURE-R19

Unit 3: Skills – II:
Interpersonal Communication: Interpersonal relations; communication models, process and barriers; team communication; developing interpersonal relationships through effective communication; essential formal writing skills; corporate communication styles – assertion, persuasion, negotiation. **Listening:** Listening Vs Hearing, Possible reasons for why people do not Listen at times, Active Listening Vs Passive Listening, Listening effect on relationships. **Public Speaking:** Skills, Methods, Strategies and Essential tips for effective public speaking. **Group Discussion:** Importance, Planning, Elements, Skills assessed; Effectively disagreeing, Initiating, Summarizing and Attaining the Objective. **Non-Verbal Communication:** Importance and Elements; Body Language-Postures, gestures, eye contact. **Teamwork and Leadership Skills:** Concept of Teams; Building effective teams; Concept of Leadership and honing Leadership skills. **Presentation Skills:** Types, Content, Audience Analysis, Essential Tips – Before, During and After, Overcoming Nervousness. **Etiquette and Manners:** Social and Business. **Time Management** – Concept, Essentials, Tips.

Unit 4: Personality Development: Meaning, Nature, Features, Stages, Models; Learning Skills; Adaptability Skills. **Decision-Making and Problem-Solving Skills:** Meaning, Types and Models, Group and Ethical Decision-Making, Problems and Dilemmas in application of these skills. **Conflict Management:** Conflict - Definition, Nature, Types and Causes; Methods of Conflict Resolution. **Stress Management:** Stress - Definition, Nature, Types, Symptoms and Causes; Stress Analysis Models and Impact of Stress; Measurement and Management of Stress. **Leadership and Assertiveness Skills:** A Good Leader; Leaders and Managers; Leadership Theories; Types of Leaders; Leadership Behaviour; Assertiveness Skills. **Emotional Intelligence:** Meaning, History, Features, Components, Intrapersonal and Management Excellence; Strategies to enhance Emotional Intelligence.

Unit 5: Group Discussions (GD):
Stages of a GD, GD Vs Debate, Skills assessed in a GD, Blunders to be avoided, Dos & Don'ts, GD-Practice: Conducting practice sessions and Brain Storming Sessions, Evaluation, feedback on their performance
Resume Preparation: Resume Templates, Steps followed for resume preparation, Common mistakes in a resume; Covering letter
Campus Placements Skills: Stages of Campus Placement, Skills assessed in Campus Placements, Changing scenario and its Challenges & How to get ready, Motivational Talk on Positive Thinking: Beliefs, Thoughts, Actions, Habits & Results (Success);
Interview Skills: Types of Interview, Interviewer and Interviewee – in-depth perspectives; Before, During and After the Interview; Tips for Success, Dress code and Grooming, Dos & Don'ts, Skills assessed in an Interview, Mistakes to be avoided, How to equip oneself to excel;

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