



Bapatla Engineering College: Bapatla -522102 (Autonomous)

Approved by AICTE :: Affiliated to ACHARYA NAGARJUNA UNIVERSITY

Department of Civil Engineering

Courses offered relevant to the local, national, regional, and global developmental needs.

Course Code	Course Name	Regulation	Relevance to the local, national, regional, and global developmental needs
18CED61	Earthquake Resistant Design of Structures	R18	National Disaster Management System
18CEI01	Air pollution & control	R18	United nations environment program (UNEP)
18CEI03	Disaster Management	R18	National Disaster Management System
20CE01/ MC01	Environmental Studies	R20	National River Conservation Plan Environmental Sustainability
20CE307/ MC02	Professional Ethics	R20	National Anti-Corruption Strategy / VIGIL

HOD, CE Dept.

Dr. CH. NAGA SATISH KUMAR
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Professor & Head
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Bapatla Engineering College
BAPATLA-522 102.

**BAPATLA ENGINEERING COLLEGE :: BAPATLA
(Autonomous)**

Elective - VI

**EARTHQUAKE RESISTANT DESIGN OF STRUCTURES
IV B.Tech – II Semester (Code : 18CED61)**

Lectures	4	Tutorial	0	Practical	0	Credits	3
Continuous Internal Assessment	:	50	Semester End Examination (3 Hours)		50		

Course Objectives

1. Understand the basic concepts of structural dynamics under free vibration and forced vibration.
2. Know the geo technical factors which are affecting the earthquake engineering.
3. Analysis of buildings subjected to earthquake forces by using equivalent static method as per the IS:1893 – 2016
4. Design and Detailing of buildings as per IS: 13920 – 1993 and few concepts of masonry structures to make earthquake resistant.

Course Outcomes

1. Comprehensive analysis of structures subjected to free and forced vibration of single degree of freedom systems.
2. Learning earthquake engineering fundamentals and elements of Geo-technical engineering such as liquefaction and slope stability analysis.
3. Analysis of single storey and single bay RCC plane frames subjected to lateral forces.
4. Design of single storey and single bay RCC plane frames and its sub parts like beam, column, footing and Detailing as per IS: 13920 – 1993.

UNIT-I

1) Elements of structural dynamics: Sources of vibrations; Types of vibrations; Degrees of freedom; Spring action and damping; Free vibration of undamped system having single degree of freedom; Free vibration of viscous damped system having single degree of freedom; Forced vibration of a viscous damped single degree freedom system subjected to harmonic excitation; Earthquake excitation (Base excitation) of a single degree freedom system.

UNIT-II

2) Elements of Earth Quake Ground motion

Earthquake size- Intensity and magnitude; Seismic Zoning-Introduction; Strong Motion Earthquakes - Introduction; Response spectrum (elastic); Local site effect (Effect of type of soil).

3) Elements of Geotechnical Earthquake Engineering

Liquefaction – Definition and types, Effect of liquefaction on built environment, Evaluation of liquefaction susceptibility, Liquefaction hazard mitigation Seismic slope stability – Introduction, Pseudo-static analysis, Sliding block methods

UNIT III

4) Analysis of single storey and single bay RCC Plane Frame (Columns vertical) : (As per IS:1893(part-I)-2016) Calculation of lateral force due to earthquake using equivalent static method ; Analysis for different load combinations; Design forces and moments in beam and columns.

UNIT-IV

5) Design of single storey and single bay RCC plane frames (Columns vertical)(As per IS:456-2000 and IS13920-2016) Design of column; Design of beam; Design of footing ; Detailing of entire frame

6) Masonry Structures

House types and damages, cause and location of damage, Understanding the knowledge hidden in your existing houses, Making houses earthquake resistant, Earthquake resistant features, Retrofitting-some examples, Technology choice, summary of earthquake resistant features, improving housing designs.

CODE BOOKS

IS:1893 (part-I)-2016, IS13920-2016, IS:456-2000, SP16

TEXT BOOKS

1. Elements of Earthquake Engineering by Jai Krishna, A.R.Chandrasekaran and Brijesh Chandra, Second Edition (1994), South Asian Publishers, New Delhi.
2. Geotechnical Engineering - S.K.Gulati&Manoj Datta, Tata McGraw-Hill Publishing Company Ltd.
3. Earthquake Resistant Design of Structures by Pankaj Agarwal, Manish Shrikhande , First edition (2006), Prentice Hall of India Private Ltd., New Delhi .
4. Earthquakes and Buildings – A.S.Arya, A.Revi, Pawan Jain

REFERENCE BOOK

- 1) Dynamics of Structures by A.K.Chopra, Second edition (2001), Prentice Hall India Private Ltd

CO-PO-PSO Mapping- EARTHQUAKE RESISTANT DESIGN OF STRUCTURES -18CED61

Course Code	Course Name	POs and PSOs																	
		KL	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4	
18CED61	Earthquake Resistant Design of Structures																		
CO1	Comprehensive analysis of structures subjected to free and forced vibration of single degree of freedom systems.	K2	3	2	3	1		1						2	3	3	1	2	
CO2	Learning earthquake engineering fundamentals and elements of Geo-technical engineering such as liquefaction and slope stability analysis.	K2	3	2	3	1		1					2		2	3	3	1	2
CO3	Analysis of single storey and single bay RCC plane frames subjected to lateral forces.	K4	3	2	3	1		1				1		2	3	3	1	2	
CO4	Design of single storey and single bay RCC plane frames and its sub parts like beam, column, footing and Detailing as per IS: 13920 – 1993.	K5	3	2	3	1		1				1		2	3	3	1	2	

BAPATLA ENGINEERING COLLEGE : : BAPATLA
(Autonomous)

Institution Elective - I

AIR POLLUTION & CONTROL
IV B.Tech – I Semester (Code : 18CEI01)

Lectures	4	Tutorial	0	Practical	0	Credits	3
Continuous Internal Assessment	:	50	Semester End Examination (3 Hours)		50		

Course Objectives:

1. To take up the basic concepts of sources and effects of Air Pollution
2. The contents involved the knowledge of the effect of metrological parameters on air pollution
3. The contents involved the knowledge of the control of air pollution from particulates
4. To develop skills relevant to control of gaseous pollution and also introduce about Air Quality Management

Course Outcomes: On the completion of the course, one should be able to understand:

1. The concepts of sources of air pollution and effects of air pollutants on man, materials and plants
2. Be able to understand the effect of air pollution with meteorological parameters
3. The knowledge about particulate control by different devices
4. Be able to develop gaseous pollution control technologies and estimate the quality monitoring of air pollutants

UNIT –I

Air Pollution –Definitions, Air Pollutants–Classifications –Natural and Artificial– Primary and Secondary, point and Non-Point, Line and Areal Sources of air pollution-stationary and mobile sources.

Effects of Air pollutants on man, material land vegetation: Global effects of air pollution – Green House effect, Heat Islands, Acid Rains, Ozone Holes etc.

UNIT –II

Meteorology and plume Dispersion; properties of atmosphere; Heat, Pressure, Wind forces, Moisture and relative Humidity, Influence of Meteorological phenomenon Air Quality-wind rose diagrams.

UNIT – III

Lapse Rates, Pressure Systems, Winds and moisture plume behavior and plume Rise Models; Theory and problem related to Gaussian dispersion model.

Control of particulates –Control at Sources, Process Changes, Equipment modifications, Design and operation of control. Equipment's–Settling Chambers, Centrifugal separators, filters Dry and Wet scrubbers, Electrostatic precipitators.

UNIT – IV

General Methods of Control of NOx and Sox emissions–In-plant Control Measures, process changes, dry and wet methods of removal and recycling.

Air Quality Management–Monitoring of SPM, SO₂, NO and CO Emission Standards.

TEXTBOOKS:

1. Air pollution By M.N.Rao and H.V.N.Rao – Tata Mc.GrawHill Company.

2. Air pollution by Wark and Warner. - Harper & Row, New York.

REFERENCE BOOK:

1. An introduction to Air pollution by R.K.Trivedy and P.K.Goel, B.S.Publications

CO-PO-PSO Mapping- AIR POLLUTION & CONTROL -18CEI01

Course Code	Course Name	POs and PSOs																
		KL	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
18CEI01	Air Pollution & Control																	
CO1	The concepts of sources of air pollution and effects of air pollutants on man, materials and plants	K2	2	3	0	1	0	3	3	1	0	0	0	0	3	3	1	2
CO2	Be able to understand the effect of air pollution with meteorological parameters	K3	3	2	3	1	2	1	2	0	0	0	0	0	2	2	1	1
CO3	The knowledge about particulate control by different devices	K2	3	3	3	2	2	1	3	0	0	0	0	1	2	3	2	2
CO4	Be able to develop gaseous pollution control technologies and estimate the quality monitoring of air pollutants	K4	2	3	3	3	2	1	3	1	0	0	0	1	2	3	2	1

**BAPATLA ENGINEERING COLLEGE :: BAPATLA
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Institution Elective - II

**DISASTER MANAGEMENT
IV B.Tech – II Semester (Code : 18CEI03)**

Lectures	4	Tutorial	0	Practical	0	Credits	3
Continuous Internal Assessment		:	50	Semester End Examination (3 Hours)			50

Course Objectives:

The subject provides

1. Clear knowledge of Disaster, Hazards and Vulnerabilities.
2. Knowledge of Mechanism of Disaster Management.
3. Clear idea of Capacity Building.
4. Explains how to do the planning for disaster management.

Course Outcomes:

At the end of the course student will be able to

1. Understands Disaster, Man-made Hazards and Vulnerabilities.
2. Understands Disaster Management Mechanism
3. Understands Capacity Building Concepts
4. Understands Planning of Disaster Managements

UNIT-I

Understanding Disaster: Concept of Disaster - Different approaches- Concept of Risk - Levels of Disasters - Disaster Phenomena and Events (Global, national and regional)

Hazards and Vulnerabilities: Natural and man-made hazards; response time, frequency and forewarning levels of different hazards - Characteristics and damage potential of natural hazards; hazard assessment - Dimensions of vulnerability factors; vulnerability assessment - Vulnerability and disaster risk - Vulnerabilities to flood and earthquake hazards.

UNIT-II

Disaster Management Mechanism: Concepts of risk management and crisis management -Disaster Management Cycle - Response and Recovery - Development, Prevention, Mitigation and Preparedness - Planning for Relief.

UNIT-III

Capacity Building: Capacity Building: Concept - Structural and Non-structural Measures Capacity Assessment; Strengthening Capacity for Reducing Risk - Counter-Disaster Resources and their utility in Disaster Management - Legislative Support at the state and national levels

UNIT-IV

Coping with Disaster: Coping Strategies; alternative adjustment processes –Changing Concepts of disaster management - Industrial Safety Plan; Safety norms and survival kits -Mass media and disaster management.

Planning for disaster management: Strategies for disaster management planning - Steps for formulating a disaster risk reduction plan - Disaster management Act and Policy in India -Organizational structure for disaster management in India - Preparation of state and district disaster management plans.

TEXT BOOKS:

1. Manual on Disaster Management, National Disaster Management, Agency Govt of India.
2. Disaster Management by Mrinalini Pandey Wiley 2014.
3. Disaster Science and Management by T. Bhattacharya, McGraw Hill Education(India) Pvt Ltd Wiley 2015.

REFERENCES:

1. Earth and Atmospheric Disasters Management, N. Pandharinath, CK Rajan, BS Publications 2009.
2. National Disaster Management Plan, Ministry of Home affairs, Government of India (<http://www.ndma.gov.in/images/policyplan/dmplan/draftndmp.pdf>)

CO-PO-PSO Mapping- DISASTER MANAGEMENT -18CEI03

Course Code	Course Name	POs and PSOs																
		KL	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
18CEI03	Disaster Management						1	2	2		3	1	1	1	1	0	2	0
CO1	Learning the importance of Disaster Management.	K2	1															
CO2	Exposure on Basic mitigation techniques of various disasters.	K2	2	2		2	2	1			3	3	0	1	1	1	2	0
CO3	Knowing about various responding agencies for different kinds of Disasters.	K3	3		1	2			2		3	3	0	2	0	0	1	0
CO4	Enhancing the knowledge of recovery methodologies after Disaster.	K4	2		2	3	2	2	2	1	3	3	2	2	2	1	1	2

ENVIRONMENTAL STUDIES
I B.Tech – II Semester (Code: 20CE01/MC01)

Lectures	3	Tutorial	0	Practical	0	Credits	0
Continuous Internal Assessment	:	30	Semester End Examination (3 Hours)	:	0		

Prerequisites: None

Course Objectives: To learn

CO1: To develop an awareness,knowledge, and appreciation for the natural environment.

CO2: To understand different types of ecosystems exist in nature.

CO3: To know our biodiversity.

CO4: To understand different types of pollutants present in Environment.To know the global environmental problems.

Course Outcomes: Students will be able to

CLO 1: Develop an appreciation for the local and natural history of the area.

CLO 2: Hope for the better future of environment in India which is based on many positive factors like Biodiversity, successive use of renewable energy resources and other resources, increasing number of people's movements focusing on environment.

CLO 3: Know how to manage the harmful pollutants.

CLO 4: Gain the knowledge of Environment.Create awareness among the youth on environmental concerns important in the long-term interest of the society

UNIT – I

Introduction: Definition, Scope and Importance, Need for public awareness. Ecosystems: Definition, Structure and Functions of Ecosystems, types - Forest, Grassland, Desert, Aquatic (Marine, pond and estuaries). *6 periods*

Biodiversity: Definition and levels of Biodiversity; Values of Biodiversity - Consumptive, Productive, Social, Aesthetic, Ethical and Optional; Threats and Conservation of Biodiversity; Hot Spots of Biodiversity, Bio-geographical Classification of India, India as a mega diversity nation. *Chipko movement case study*

6 periods

UNIT – II

Natural resources: Land: Land as a resource, Causes and effects of land degradation - Soil erosion, Desertification. **Forest:** Use of forests, Causes and effects of deforestation, Afforestation, Mining - benefits and problems. **Water:** Uses, floods and drought, Dams - benefits and problems.

Energy: Importance of energy, Environmental Impacts of Renewable and Non-renewable energy resources. *Silent Valley Project and Narmada Bachao Andolan case studies* *8 periods*

Sustainability: Definition, Concept and Equitable use of resources for sustainable development; Rain water harvesting and Watershed management. Fieldwork on Rain water harvesting and Watershed management.

6 periods + 6 hours field work/Demonstration

UNIT – III

Pollution: Definition; Causes, effects and control of air, water and nuclear pollution; *Chernobyl Nuclear Disaster* case study; Solid Waste: urban, Industrial and hazardous wastes; Integrated waste management - 3R approach, composting and vermicomposting. *12 periods*

Environmental acts: Water and air (Prevention and Control of pollution) acts, Environmental protection act, Forest Conservation act. *6 periods*

UNIT – IV

Environmental issues: Green house effect & Global warming, Ozone layer depletion, Acid rains, Green Revolution, Population Growth and environmental quality, Environmental Impact Assessment. Environmental Standards (ISO 14000, etc.) *12 periods*

Case Studies: Bhopal Tragedy, Mathura Refinery and TajMahal, and Ralegan Siddhi (Anna Hazare).

6 periods

Field work: Visit to a local area to document environmental assets – Pond/Forest/Grassland. Visit to a local polluted site- Urban and industry/ Rural and Agriculture. *6 hrs.*

TEXT BOOKS:

1. “Environmental Studies” by Benny Joseph, Tata McGraw-Hill Publishing Company Limited, New Delhi.
2. “Comprehensive environmental studies”- JP Sharma, Laxmi Publications.
3. Text Book of environmental Studies – ErachBharucha

REFERENCE BOOKS:

1. “Environmental studies”, R.Rajagopalan, Oxford University Press.
2. “Introduction to Environmental Science”, Anjaneyulu Y, B S Publications
3. “Environmental Science”, 11th Edition – Thomson Series – By Jr. G. Tyler Miller.

CO-PO-PSO Mapping- ENVIRONMENTAL STUDIES-20CE01/MC01

Course Code	Course Name	POs and PSOs															
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
20CE01/MC01	Environmental Studies						2	2		1	1		2				
CO1	Compare various ecosystems such as forest, grassland, desert, and aquatic case studies, relate to the environmental concepts & the levels of energy flow in an ecosystem, Discuss the preventive as well as remedial measures for conservation of biodiversity																
CO2	Integrate and analyse the various natural and manmade factors that affect forests, environment & propose alternative sources of energy to meet the growing energy needs of our population. Identify the importance of sustainable growth and developmental						2	2		2	1		1				

	Evaluate the pollution case studies and propose control measures of Urban and industrial wastes. Appreciate the ethical, cross-cultural, and historical context of environmental issues and the links between human and natural systems.						3	3	1	2	3	2	1				
CO4	Understand key concepts from economic, political, and social analysis as they pertain to the design and evaluation of environmental policies, Reflect critically about their roles and identities as citizens, consumers and environmental actors in a complex, interconnected world.						1	2	1	2	1		3				

PROFESSIONAL ETHICS
II B.Tech – I Semester (Code : 20CE307/MC02)

Lectures	2	Tutorial	0	Practical	0	Credits	0
Continuous Internal Assessment	:	30	Semester End Examination (3 Hours)				0

Course Objectives

- To create awareness on professional ethics and Human Values
- To create awareness on Engineering Ethics providing basic knowledge about engineering Ethics, Variety of moral issues and Moral dilemmas, Professional Ideals and Virtues.
- To provide basic familiarity about Engineers as responsible Experimenters, Research Ethics, Codes of Ethics, Industrial Standards
- To inculcate knowledge and exposure on Safety and Risk, Risk Benefit Analysis and have an idea about the Collective Bargaining, Confidentiality, Professional, Employee, Intellectual Property Rights

Learning Outcomes

- ⊕ Students understand the core values that shape the ethical behaviour of an engineer and Exposed awareness on professional ethics and human values.
- ⊕ The students will understand the basic perception of profession, professional ethics, various moral issues & uses of ethical theories
- ⊕ The students will understand various social issues, industrial standards, code of ethics and role of professional ethics in engineering field.
- ⊕ The students will acquire knowledge about various roles of engineers in variety of global issues and able to apply ethical principles to resolve situations that arise in their professional lives

UNIT – I

1. Human Values

What is engineering – who is an engineer- Morals, Values and Ethics – Integrity – Work Ethics – Civic Virtue - Respect for Others – Living Peacefully – Caring – Sharing – Honesty – Courage – Valuing Time – Co-Operation –Commitment – Empathy – Self-Confidence – Character - Spirituality.

UNIT – II

2. Engineering Ethics

Senses of Engineering Ethics – Variety of Moral Issues – Types of Inquiry – Moral Dilemmas –Moral Autonomy – Kohlberg’s Theory – Gilligan’s Theory – Consensus and Controversy –Professions and Professionalism- Theories About Right Action –Self-Interest.

UNIT – III

3. Engineering as Social Experimentation

Engineering as Experimentation – Engineers as Responsible Experimenters – Codes of Ethics – Balanced Outlook on Law.

4. Responsibilities and Rights

Collegiality and Loyalty – Respect for Authority – Collective Bargaining – Confidentiality –Conflicts of Interest – Occupational Crime – Professional Rights – Employee Rights – Intellectual Property Rights (IPR) – Discrimination.

UNIT – IV

5. Global Issues

Multinational Corporations – Environmental Ethics – Computer Ethics – Engineers as Managers – Consulting Engineers – Engineers as Expert Witnesses and Advisors –Moral Leadership. Sample Code of Ethics like ASCE, IEEE, Institution of Engineers (India), Institution of Electronics and Telecommunication Engineers (IETE), India Etc.,

TEXT BOOKS

1. Professional Ethics and Values by R.S.Naagarazan.
2. Govindarajan M, Natarajan S, Senthil Kumar V.S., “Engineering Ethics”, PHI, New Delhi, 2004

REFERENCE BOOKS

1. Charles D.Fleddermann, “Engineering Ethics”, Pearson / PHI, New Jersey 2004 (Indian Reprint)
2. Charles E Harris, Michael S.Protchard and Michael J Rabins, “Engineering Ethics – Concepts and Cases” Wadsworth Thompson Learning, United States, 2000 (Indian Reprint now available)
3. John R Boatright, “Ethics and the conduct of business” Pearson, New Delhi, 2003.
4. Edmund G.Seebauer and Robert L Barry, “Fundamentals of Ethics for Scientists and Engineers” Oxford University Press, Oxford, 2001.

CO-PO-PSO Mapping- Professional Ethics -20CE307/MC02

Course Code	Course Name	POs and PSOs															
		KL	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
20CE307/MC02	Professional ethics	KL															
CO1	Students understand the core values that shape the ethical behaviour of an engineer and Exposed awareness on professional ethics and human values.	K4						1	1	3	1	2				3	
CO2	The students will understand the basic perception	K3						3	2	3		1				3	

	of profession, professional ethics, various moral issues & uses of ethical theories																	
CO3	The students will understand various social issues, industrial standards, code of ethics and role of professional ethics in engineering field.	K3						3	2	1								3
CO4	The students will acquire knowledge about various roles of engineers in variety of global issues and able to apply ethical principles to resolve situations that arise in their professional lives	K4						3	2	2	1	3						3



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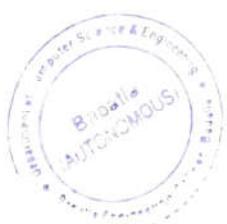
Department of Computer Science and Engineering

Courses offered relevant to the local, national, regional, and global developmental needs.

Course Code	Course Name	Regulation	Relevance to the local, national, regional, and global developmental needs
20CS104	Environmental Studies	R20	Create awareness among the youth on environmental concerns important in the long-term interest of the society
18CS603	Cryptography & Network Security	R18	Participation in the Networked World can provide new ways for developing countries to improve their economic, social and political well-being.
18CS601	Machine Learning	R18	It gives enterprises a view of trends in customer behaviour and business operational patterns, as well as supports the development of new products.
18CSD21	Mobile Application Development	R18	Mobile apps can offer them an advantage, as they can increase their repeat business opportunities and improve referral rates. They can also boost new product and service adoption rates.
18CS604	Middleware Technologies	R18	Middleware is software that bridges gaps between other applications, tools, and databases in order to provide unified services to users

HOD CSE Dept.

Professor & Head
Department of Computer Science & Engineering
Bapatla Engineering College
(Autonomous)



ENVIRONMENTAL STUDIES I B. Tech. – I Semester (Code: 20CS104)

Course Objectives: Students will be able to

CO-1 to develop an awareness, knowledge, and appreciation for the natural environment.

CO-2 To understand different types of ecosystems exist in nature.

CO-3 To know our biodiversity.

CO-4 To understand different types of pollutants present in Environment.

CO-5 Create awareness among the youth on environmental concerns important in the long-term interest of the society.

Course Learning Outcomes: Students will be able to

CLO-1 Develop an appreciation for the local and natural history of the area.

CLO-2 Hope for the better future of environment in India which is based on many positive factors like Biodiversity, successive use of renewable energy resources and other resources, increasing number of people's movements focusing on environment.

CLO-3 Know how to manage the harmful pollutants.

CLO-4 Gain the knowledge of Environment.

Mapping of Course Learning Outcomes with Program Outcomes & Program Specific Outcomes															
CLO	PO's												PSO's		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CLO-1	-	-	-	1	-	2	3	-	-	1	-	2	-	-	-
CLO-2	-	-	-	-	2	2	3	-	-	1	-	2	-	-	1
CLO-3	-	-	-	-	-	-	3	-	-	1	1	2	1	-	-
CLO-4	-	-	-	1	-	2	3	-	-	1	-	2	1	-	-

UNIT-1

(8 Hours)

Introduction: Definition, Scope and Importance, Need for public awareness. Ecosystems: Definition, Structure and Functions of Ecosystems, types - Forest, Grassland, Desert, Aquatic (Marine, pond and estuaries). Biodiversity: Definition and levels of Biodiversity; Values of Biodiversity - Consumptive, Productive, Social, Aesthetic, Ethical and Optional; Threats and Conservation of Biodiversity; Hot Spots of Biodiversity, Bio-geographical Classification of India, India as a mega diversity nation. Chipko movement case study

UNIT-2 **(8 Hours)**

Natural resources: Land: Land as a resource, Causes and effects of land degradation - Soil erosion, Desertification. Forest: Use of forests, Causes and effects of deforestation, Afforestation, Mining - benefits and problems. Water: Uses, floods and drought, Dams - benefits and problems. Energy: Importance of energy, Environmental Impacts of Renewable and Non-renewable energy resources. Silent Valley Project and Narmada BachaoAndolan case studies Sustainability: Definition, Concept and Equitable use of resources for sustainable development; Rain water harvesting and Watershed management. Fieldwork on Rain water harvesting and Watershed management.

UNIT-3 **(8 Hours)**

Pollution: Definition; Causes, effects and control of air, water and nuclear pollution; Chernobyl Nuclear Disaster case study; Solid Waste: urban, Industrial and hazardous wastes; Integrated waste management - 3R approach, composting and vermicomposting. Environmental acts: Water and air (Prevention and Control of pollution) acts, Environmental protection act, Forest Conservation act.

UNIT-4 **(8 Hours)**

Environmental issues: Green House effect & Global warming, Ozone layer depletion, Acid rains, Green Revolution, Population Growth and environmental quality, Environmental Impact Assessment. Environmental Standards (ISO 14000, etc.) Case Studies: Bhopal Tragedy, Mathura Refinery and TajMahal, and Ralegan Siddhi (Anna Hazare). Field work: Visit to a local area to document environmental assets – Pond/Forest/Grassland. Visit to a local polluted site- Urban and industry/ Rural and Agriculture.

Text Books:

1. "Environmental Studies" by Benny Joseph, Tata McGraw-Hill Publishing Company Limited, New Delhi.
2. "Comprehensive environmental studies"- JP Sharma, Laxmi Publications.
3. Text Book of environmental Studies – ErachBharucha

References:

1. "Environmental studies", R.Rajagopalan, Oxford University Press.
2. "Introduction to Environmental Science", Anjaneyulu Y, B S Publications
3. "Environmental Science", 11th Edition – Thomson Series – By Jr. G. Tyler Miller.

CRYPTOGRAPHY & NETWORK SECURITY

III B.Tech – VI Semester (Code: 18CS603)

UNIT-I

16 Periods

Introduction: The OSI Security Architecture, Security Attacks, Security Services, Security Mechanisms, A Model for Network Security. Classical Encryption Techniques: Symmetric Cipher Model, Substitution Techniques, Transposition Techniques, Rotor Machines, Steganography. Block cipher and the Data Encryption Standard: Block Cipher Principles, The Data Encryption Standard, Strength of DES, Differential and Linear Cryptanalysis, Block Cipher Design Principles, Multiple Encryption and Triple DES, Block Cipher modes of Operation. Advanced Encryption Standard: Evaluation criteria for AES, The AES cipher

UNIT-II

14 Periods

Introduction to Number Theory: Prime Numbers, Fermat's and Euler's Theorems, Testing for Primality, The Chinese Remainder Theorem, Discrete Logarithm. Public key and RSA: Principles of Public –Key Cryptosystems, The RSA algorithm. Key Management: Key Management, Diffie-Hellman Key Exchange, Elliptic Curve Arithmetic, Elliptic Curve Cryptography. Message Authentication and Hash function: Authentication Requirements, Authentication Functions, Message Authentication Codes, Hash Functions, Security Hash Functions, and MACs.

UNIT-III

16 Periods

Hash Algorithms: Secure Hash Algorithm, HMAC. Digital Signatures and authentication protocols: Digital Signatures, Authentication Protocols, Digital Signature Standard. Authentication Application: Kerberos,X-509 Authentication Service. Electronic Mail Security: Pretty Good Privacy (PGP).

UNIT-IV

14 Periods

IP Security: IP Security Overview, IP Security Architecture, Authentication Header, Encapsulating Security Pay Load. WEB Security: Web Security Considerations, Secure Sockets Layer and Transport Layer Security, Secure Electronic Transaction. Intruders: Intruders, Intrusion Detection, Password Management. Firewalls: Firewall Design Principles.

Course Outcome	18CS603(Cryptography and Network Security)	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Classify the symmetric encryption techniques.	1		1		1							3	1	1	1
CO2	Illustrate various Public key cryptographic techniques.	1		1		1							3	1	1	1
CO3	Evaluate the authentication and hash algorithms.	1		1		1							3	1	1	1
CO4	Understand authentication applications.	1		1		1							3	1	1	1
CO5	Illustrate the various transport layer security mechanisms.	1		1		1							3	1	1	1
CO6	Illustrate the various Network layer security mechanisms.	1		1		1							3	1	1	1

Text Book(s) :

1. Cryptography and network security -Behrouz A. Forouzan .
2. William Stallings —Cryptography and Network Security|| 4th Edition, (Pearson Education/PHI).

References :

1. Kaufman, Perlman, Speciner, —NETWORK SECURITY||, 2nd Edition, (PHI / Eastern Economy Edition)
2. Trappe & Washington, —Introduction to Cryptography with Coding Theory||, 2/e, Pearson.

MACHINE LEARNING

III B.Tech – VI Semester (Code:18CS601)

UNIT-I 13 Periods

Machine learning: Introduction. Linear Regression: Simple linear regression. Multiple linear regression, Batch Gradient descent algorithm, Stochastic gradient descent algorithm, Locally weighted linear regression. Decision Tree Learning: Decision Tree representation, appropriate problems for Decision Tree learning, hypothesis space search in Decision Tree learning, inductive bias in Decision Tree learning and issues in Decision Tree learning.

UNIT-II 13 Periods

Artificial Neural Networks: Neural Network representations, appropriate problems for Neural Network learning, Perceptron, Multilayer Networks and the Backpropagation Algorithm and remarks on the Back propagation algorithm. Evaluating Hypotheses: Estimating hypothesis accuracy, basics of sampling theory, general approach for deriving confidence intervals, difference in error of two hypotheses and comparing learning algorithms.

UNIT-III 12 Periods

Generative Classifiers::Learning Classifiers based on Bayes Rule, Naïve Bayes Algorithm, Conditional Independence, Derivation of Naïve Bayes Algorithm, Naïve Bayes For discrete-valued Inputs, Naïve Bayes For continuous inputs. Discriminative Classifiers:: Logistic Regression, Estimating Parameters For Logistic Regression, Regularization in Logistic Regression, Logistic Regression for functions with many discrete values, Relationship between Naïve Bayes classifiers and Logistic Regression.

UNIT-IV 12 Periods

Computational learning theory: Introduction, probably learning an approximately correct hypothesis, sample complexity for finite hypothesis spaces, and sample complexity for infinite hypothesis spaces. Instance Based Learning: Introduction, k-Nearest Neighbor learning. Unsupervised Learning: K-means clustering algorithm.

Course Outcome	18CS601(Machine Learning)	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Choose the learning techniques with basic knowledge and decision tree	2	1	2	1			2	2	3			2	1	1	2
CO2	Apply effectively neural networks for appropriate applications			2					2					1		
CO3	Apply Bayesian techniques and derive effectively learning rules	2	1					2					2			2
CO4	Choose and differentiate reinforcement and analytical learning techniques using instance based learning and genetic algorithm	2			1					3						

Text Book(s) :

1. Tom M. Mitchell, —Machine Learning, Mc. Graw Hill Publishing.

References :

1. Lecture Notes by Mr. Andrew Ng, Stanford University (cs229.stanford.edu/notes/)

Natural Language Processing

Department Elective – V

IV B.Tech – VIII Semester (Code:18CSD53)

UNIT-I 13 Periods

Introduction: - Understanding natural language processing, Understanding basic applications, Advantages of togetherness-NLP and Python, Environment setup for NLTK. Practical Understanding of a Corpus and Database: - What is a corpus? Why do we need a corpus? Understanding corpus analysis, Understanding types of data attributes, Exploring different file formats for corpora, Resources for accessing free corpora, Preparing a dataset for NLP applications, Web scraping.

UNIT-II 13 Periods

Understanding the Structure of a Sentence: - Understanding components of NLP, Natural language understanding, Defining context-free grammar, Morphological analysis, Syntactic analysis, Discourse integration, Pragmatic analysis.

UNIT-III 12 Periods

Preprocessing: - Handling corpus-raw, Handling corpus-raw sentences, Basic preprocessing, Practical and customized preprocessing.

UNIT-IV 12 Periods

Feature Engineering and NLP Algorithms:- Understanding feature engineering, Basic feature of NLP, Basic statistical feature of NLP, Advantages of features engineering, Challenges of features engineering.

Course Outcome	18CSD53(Natural Language Processing)	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Understand the overview of NLP Techniques and Modeling the languages based on their grammars		2	1		2				3		2	3	2	3	3
CO2	Get deep understanding of NLP at word level and structural level			1												
CO3	Understand intricate details of language at		2			2				2		2		3	3	

	semantic level and discourse level												
CO4	Gain Knowledge on Natural Language generators and Machine Translation Techniques		1						3			3	

Text Book(s) :

1. Python Natural Language Processing (Packt Publishers) Author: Jalaj Thanaki

References :

1. Natural Language Processing (Oxford Publishers) Author: Tanvir Siddiqui.

MOBILE APPLICATION DEVELOPMENT Department Elective-II III B.Tech – VI Semester (Code:18CSD21)

UNIT-I [12] Periods

Hello, Android, Getting Started

UNIT-II [13] Periods

Creating Applications and Activities, Building User Interfaces

UNIT-III [15] Periods

Intents and Broadcast Receivers, Using Internet Resources, Files, Saving State, and Preferences

UNIT-IV [20] Periods

Databases and Content Providers, Working in the Background, Expanding the User Experience

Course Outcome	18CSD21(Mobile Application Development)	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Able to understand and develop basic android applications.	1	2		1									2		
CO2	Able to understand the internal working of the Android Applications	1	2	3	1	1						1		1	2	1
CO3	Able to understand different types of layouts, animations, activities, Intents in Android apps.			3		2		1				1		1	2	1
CO4	Able to understand and develop the applications with SQLite database to read, write, update and delete data.	1	1	2		2		1				1		1	2	1

Text Book(s) :

1. Professional Android 4 Application Development, Reto Meier, John Wiley & Sons, Inc.

References :

1. Android Programming The Big Nerd Ranch Guide, Brian Hardy & Bill Phillips, Big Nerd Ranch, Inc.
2. Head First: Android Development, Dawn Griffiths & David Griffiths, O'Reilly Publications

MIDDLEWARE TECHNOLOGIES III B.Tech – VI Semester (Code: 18CS604)

UNIT-I 18 Periods

The .NET Framework: C#, VB, and the .NET Languages, Intermediate languages, Common language runtime, the .NET class library. Web Form Fundamentals: Understanding the anatomy of an ASP.NET application, Introducing server controls, improving the currency converter, taking a deeper Look at HTML control classes, using the page class, using Application events. Web Controls: Stepping up to web controls, web control classes, List controls, Table controls, Web control events and AutoPostBack, An interactive web page. Tracing: Enabling Tracing, Writing Trace Information, Performing Application-Level Tracing.

UNIT-II 15 Periods

State Management: Understanding the problem of the state, using View State, Transferring information between pages, using cookies, managing session state Configuring session state, using application state Validation: understanding the validation, using the validation controls. Rich Controls: The calendar, The Ad Rotator, pages with multiple views: Multiview, Wizard Control. Styles, Themes, and Master Pages: Styles, Themes, master page basics, advanced master pages.

UNIT-III 15 Periods

ADO.NET Fundamentals: Understanding databases, configuring your database, Understanding SQL basics, Understanding the data provider model, using direct data Access, using disconnected data access. Data Binding: Introducing data binding, using single valued data binding, using repeated value data binding, working with data source controls. The Data Controls: The grid view, formatting the gridview, selecting a grid view row, Editing with a grid view row, sorting and paging in gridview, using grid view templates The details view and form view.

UNIT-IV 15 Periods

LINQ and the Entity Framework: understanding LINQ, LINQ basics, using entity framework, Getting more advanced with entity framework, using the entity data source. Working with Services: What is WCF Web Service, Application for Creating and Consuming a WCF Web Service? Putting ASP.NET MVC in Context: Understanding the history of ASP.NET, Key Benefits of ASP.NET MVC. Your First MVC Application: Preparing Visual Studio, Creating a new ASP.NET MVC Project, Rendering Web Page, Creating a simple Data Entry Application.

Course Outcome	18CS604(Middleware Technologies)	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Develop applications to demonstrate the usage of Control Statements, Arrays, Strings, Classes and Objects.		2	1		2				3		2	3	2	3	3
CO2	Experiment and understand Inheritance, Interface, Exception Handling and Events.		1			2				3		2	2	2	3	3
CO3	Understand and develop applications to demonstrate HTML Server Controls, Web Controls, State Management and Validation.			1										3		
CO4	Demonstrate Database connectivity, Databinding, and Data Controls.		2			2				3		2	3		3	1

Text Book(s) :

1. Beginning ASP.NET 4.5 in C#||, Matthew MacDonald, Apress Publishing Company.
2. Professional ASP.NET 4.5 in C# and VB||, Jason N. Gaylord, Christian Wenz , Pranav Rastogi, Todd Miranda, Scott Hanselman, John Wiley & Sons, Inc., Indianapolis, Indiana
3. Pro ASP.NET MVC 5||, Adam Freeman, Apress Publishing Company.

References:

1. Microsoft Windows Communication Foundation Step by Step||, john sharp, Microsoft Press.

Program Outcomes (PO'S)

Program Outcomes		Engineering Graduates will be able to
PO1	Engineering knowledge	Apply the knowledge of mathematics, science, Engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO2	Problem analysis	Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO3	Design/development of solutions	Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO4	Conduct investigations of complex Problems	Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO5	Modern tool usage	Create, select, and apply appropriate techniques, Resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
PO6	The engineer and society	Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO7	Environment and sustainability	Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO8	Ethics	Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO9	Individual and teamwork	Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO10	Communication	Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO11	Project management and finance	Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO12	Life-long learning	Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change

Program Specific Outcomes (PSO'S)

PSO1	Domain knowledge: Acquire knowledge of hardware functionality, design and development of software components required to process the information.
PSO2	Problem solving skills: Analyze data, Identify required data structures, design suitable algorithms, develop, operate and maintain software for real world problems.
PSO3	Paradigm shifts: Understand the progressive changes in computing; possess knowledge of context aware applicability of paradigms.



Bapatla Engineering College: Bapatla -522102 (Autonomous)

Approved by AICTE :: Affiliated to ACHARYA NAGARJUNA UNIVERSITY

Department of Electronics and Communication Engineering

Courses offered relevant to the local, national, regional, and global developmental needs.

Course Code	Course Name	Regulation	Relevance to the local, national, regional, and global developmental needs
18CE001	Environmental Studies	R18	Global need - To know the importance of environment and its impact on the human world
18EC406	Professional Ethics and Human Values	R18	Global need - To enable the students to create an awareness on Engineering Ethics.
18EC601	Constitution of India	R18	National need - To create a sense of responsible and active citizenship.
20ECMC51	Essence of Indian Traditional Knowledge	R20	National need - To gain knowledge in yoga science and wisdom in modern society with rapid technology.
20EC203 / HS01	Communicative English	R20	Global need - To help the students to develop their speaking skills and speak fluently in real contexts.

HOD, ECE Dept.

Environmental Studies
I B.Tech – I Semester (Code: 18CE001)

Lectures	3	Tutorial	0	Practical	0	Credits	2
Continuous Internal Assessment	:	50	Semester End Examination (3 Hours)	:	50		

Prerequisites: None

Course Objectives: To learn

CO1: To develop an awareness, knowledge, and appreciation for the natural environment.

CO2: To understand different types of ecosystems exist in nature.

CO3: To know our biodiversity.

CO4: To understand different types of pollutants present in Environment.

CO5: To know the global environmental problems.

Course Outcomes: Students will be able to

CLO 1: Develop an appreciation for the local and natural history of the area.

CLO 2: Hope for the better future of environment in India which is based on many positive factors like Biodiversity, successive use of renewable energy resources and other resources, increasing number of people's movements focusing on environment.

CLO 3: Know how to manage the harmful pollutants.

CLO 4: Gain the knowledge of Environment.

CLO 5: Create awareness among the youth on environmental concerns important in the long-term interest of the society

SYLLABUS

UNIT – I

Introduction: Definition, Scope and Importance, Need for public awareness. Ecosystems: Definition, Structure and Functions of Ecosystems, types - Forest, Grassland, Desert, Aquatic(Marine, pond and estuaries).

Biodiversity: Definition and levels of Biodiversity; Values of Biodiversity - Consumptive, Productive, Social, Aesthetic, Ethical and Optional; Threats and Conservation of Biodiversity; Hot Spots of Biodiversity, Bio-geographical Classification of India, India as a mega diversity nation. Chipko movement case study

UNIT – II

Natural resources: **Land:** Land as a resource, Causes and effects of land degradation - Soil erosion, Desertification. **Forest:** Use of forests, Causes and effects of deforestation, Afforestation, Mining - benefits and problems. **Water:** Uses, floods and drought, Dams - benefits and problems.

Energy: Importance of energy, Environmental Impacts of Renewable and Non-renewable energy resources. Silent Valley Project and Narmada Bachao Andolan case studies 8 periods
Sustainability: Definition, Concept and Equitable use of resources for sustainable development; Rain water harvesting and Watershed management. Fieldwork on Rain water harvesting and Watershed management.6 periods + 6 hours fieldwork/Demonstration

UNIT – III

Pollution: Definition; Causes, effects and control of air, water and nuclear pollution; Chernobyl Nuclear Disaster case study; Solid Waste: urban, Industrial and hazardous wastes; Integrated waste management - 3R approach, composting and vermicomposting. 12 periods
Environmental acts: Water and air (Prevention and Control of pollution) acts, Environmental protection act, Forest Conservation act. 6 periods

UNIT – IV

Environmental issues: Green house effect & Global warming, Ozone layer depletion, Acid rains, Green Revolution, Population Growth and environmental quality, Environmental Impact Assessment. Environmental Standards (ISO 14000, etc.)12 periods
Case Studies: Bhopal Tragedy, Mathura Refinery and TajMahal, and Ralegan Siddhi (Anna Hazare).6 periods

Field work: Visit to a local area to document environmental assets – Pond/Forest/Grassland. Visit to a local polluted site- Urban and industry/ Rural and Agriculture.6 hrs.

TEXT BOOKS:

1. Environmental Studies by Benny Joseph, Tata McGraw-Hill Publishing Company Limited, New Delhi.
2. Comprehensive environmental studies- JP Sharma, Laxmi Publications.
3. Text Book of environmental Studies – ErachBharucha

REFERENCE BOOKS:

1. Environmental studies, R.Rajagopalan, Oxford University Press.
2. Introduction to Environmental Science, Anjaneyulu Y, B S Publications
3. Environmental Science, 11th Edition – Thomson Series – By Jr. G. Tyler Miller.

CO-PO-PSO Mapping- Environmental Studies-18CE001

Course Code	Course Name	POs and PSOs													
		PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2
18CE001	Environmental Studies					2	2		1	1		2			
CO1	Compare various ecosystems such as forest, grassland, desert, and aquatic case studies, relate to the environmental concepts & the levels of energy flow in an ecosystem, Discuss the preventive as well as remedial measures for conservation of biodiversity														
CO2	Integrate and analyse the various natural and manmade factors that affect forests, environment & propose alternative sources of energy to meet the growing energy needs of our population. Identify the importance of sustainable growth and developmental					2	2		2	1		1			
CO3	Evaluate the pollution case studies and propose control measures of Urban and industrial wastes. Appreciate the ethical, cross-cultural, and historical context of environmental issues and the links between human and natural systems.					3	3	1	2	3	2	1			
CO4	Understand key concepts from economic, political, and social analysis as they pertain to the design and evaluation of environmental policies, Reflect critically about their roles and identities as citizens, consumers and environmental actors in a complex, interconnected world.					1	2	1	2	1		3			

Professional Ethics and Human Values

II B.Tech – II Semester (Code: 18EC406)

Lectures	4	Tutorial	0	Practical	0	Credits	3
Continuous Internal Assessment	:	50	Semester End Examination (3 Hours)	:	50		

Prerequisites: None

Course Objectives:

1. To create awareness on professional ethics and Human Values.
2. To create awareness on Engineering Ethics providing basic knowledge about engineering Ethics, Variety of moral issues and Moral dilemmas, Professional Ideals and Virtues.
3. To provide basic familiarity about Engineers as responsible Experimenters, Research Ethics, Codes of Ethics, Industrial Standards
4. To inculcate knowledge and exposure on Safety and Risk, Risk Benefit
5. Analysis and have an idea about the Collective Bargaining, Confidentiality, Professional, Employee, Intellectual Property Rights
6. To have an adequate knowledge about MNCS, Business, Environmental, Computer Ethics, Honesty, Moral Leadership, sample Code of Conduct.

Course Outcomes:

1. Understand the core values that shape the ethical behavior of an engineer and Exposed awareness on professional ethics and human values.
2. Understand the basic perception of profession, professional ethics, various moral issues & uses of ethical theories
3. Understand various social issues, industrial standards, code of ethics and role of professional ethics in engineering field
4. Aware of responsibilities of an engineer for safety and risk benefit analysis, professional rights and responsibilities of an engineer.
5. Acquire knowledge about various roles of engineers in variety of global issues and able to apply ethical principles to resolve situations that arise in their professional lives

SYLLABUS

UNIT – I

HUMAN VALUES: Morals, Values and Ethics, Integrity, Work Ethic, Service Learning, Civic Virtue, Respect for Others, Living Peacefully, caring, Sharing, honesty, Courage, Valuing Time, Co-operation, Commitment, Empathy, Self Confidence, Character, Spirituality.

UNIT – II

ENGINEERING ETHICS: Senses of ‘Engineering Ethics’, Variety of model issues, Types of inquiry, Moral dilemmas, Moral Autonomy, Kohlberg’s theory, Gilligan’s theory, Consensus and Controversy, Professions and Professionalism, Professional Ideals and Virtues, Theories about right action, Self-interest, customs and Religion, Uses of Ethical Theories.

UNIT – III

ENGINEERING AS SOCIAL EXPERIMENTATION: Engineering as Experimentation, Engineers as responsible Experimenters, Codes of Ethics, A Balanced Outlook on Law, Safety, Responsibility and Rights: Safety and Risk-Assessment of Safety and Risk, risk Benefit analysis

and reducing risk. Collegiality and Loyalty , Respect for Authority , Collective Bargaining, Confidentiality , Conflicts of Interest , Occupational Crime , Professional Rights ,employee Rights , Intellectual Property Rights (IIPR) , Discrimination.

UNIT – IV

GLOBAL ISSUES: Multinational Corporations , Environmental Ethics, Computer Ethics, Weapons Development , Engineers as Managers , consulting Engineering, Engineers as Expert Witnesses and Advisors, Moral Leadership, Sample Code of Ethics like ASME, ASCE, IEEE, Institution of engineers (India), Indian Institute of Materials Management, Institution of electronics and telecommunication engineers(IETE), India, etc.

TEXT BOOKS:

1. R. Subramanian, Professional ethics, Oxford higher Education, 2013.
2. Mike Martin and Roland Schinzinger, Ethics in Engineering, McGraw Hill, NewYork 1996.

REFERENCE BOOK:

1. Govindarajan. M, Natarajan. S, Senthilkumar. V.S, Engineering Ethics, PHI, 2004.

CO-PO-PSO Mapping- Professional Ethics and Human Values -18EC406

Course Code	Course Name	POs and PSOs													
		PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2
18EC406	Professional Ethics and Human Values														
CO 1	Understand the core values that shape the ethical behavior of an engineer and Exposed awareness on professional ethics and human values. understand the basic perception of profession, professional ethics, various moral issues & uses of ethical theories	-	-	-	-	-	1	1	3	1	2	-	-		
CO 2	understand various social issues, industrial standards, code of ethics and role of professional ethics in engineering field	-	-	-	-	-	1	1	3	1	2	-	-		
CO 3	Aware of responsibilities of an engineer for safety and risk benefit analysis, professional rights and responsibilities of an engineer.	-	-	-	-	-	3	2	3	-	1	-	-		
CO 4	acquire knowledge about various roles of engineers in variety of global issues and able to apply ethical principles to resolve situations that arise in their professional lives	-	-	-	-	-	3	2	1	-	-	-	-		

CONSTITUTION OF INDIA

III B.Tech – II Semester (Code: 18EC601)

Lectures	4	Tutorial	0	Practical	0	Credits	0
Continuous Internal Assessment	:	50	Semester End Examination (3 Hours)	:	50		

Prerequisites: None.

Course Educational Objective:

CO1: The objective of the course is how to deal and adjust in the society under government regulations. Constitution is the highest law of the land and every department owes its origin to its laws.

CO2: To make governance better an engineer must conduce to E-governance through computers and knowledge of cyber laws.

CO3: An engineer must know the limits of state action and regulations by acquainting himself with the laws that applied by the bureaucrats.

CO4: An engineer works at different places and sights, he must have the basic knowledge of centre – state relations with reference to policy of financing the key projects.

Course Outcomes (COs): At the end of the course, students will be able to

CLO1: Understand Constitution of India.

CLO2: Understand the union government and its administration and rules to follow.

CLO3: To understand state government and its administration policies to follow.

CLO4: Analyze various local administration and election commission rules to follow.

SYLLABUS

UNIT – I

INTRODUCTION: Constitution' meaning of the term, Indian Constitution: Sources and constitutional history, Features: Citizenship, Preamble, Fundamental Rights and Duties, DirectivePrinciples of State Policy.

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, Rajya Sabha.

UNIT – III

STATE GOVERNMENT AND ITS ADMINISTRATION: Governor: Role and Position, CM and Council of ministers, State Secretariat: Organization, Structure and Functions

UNIT – IV

LOCAL ADMINISTRATION: District's Administration head: Role and Importance, Municipalities: Introduction, Mayor and role of Elected Representative, CEO of Municipal Corporation, Pachayatiraj: Introduction, PRI: Zila Pachayat, Elected officials and their roles, CEO ZilaPachayat: Position and role, Blocklevel: Organizational Hierarchy (Different departments),Village level: Role of Elected and Appointed officials, Importance of grass root democracy.

ELECTION COMMISSION: Election Commission: Role and Functioning, Chief Election commissioner and Election Commissioners, State Election Commission: Role and Functioning, Institute and Bodies for the welfare of SC/ST/OBC and women.

TEXT BOOKS:

1. 'Indian Polity' by Laxmikanth-6th edition-Mcgraw-hillindia
2. 'constitution of india'-Dr. P.K. AgrawalDr. K.N. Chaturvedi -Kindle Edition
3. 'Indian Constitution' by D.D. Basu-24th edition-lexis nxis publishers
4. 'Indian Administration' by Avasti and Avasti-Lakshmi Narain Agarwal Educational Publishers

REFERENCE BOOKS:

1. G. Austin (2004) Working of a Democratic Constitution of India, New Delhi: Oxford University Press.
2. Basu, D.D (2005), An Introduction to the Constitution of India, New Delhi, Prentice Hall.
3. N. Chandhoke & Priyadarshini (eds) (2009) Contemporary India: Economy, Society, Politics, New Delhi: Oxford University Press.

CO-PO-PSO Mapping- Constitution of India-18EC601

Course Code	Course Name	POs and PSOs													
		PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2
18EC601	Constitution of India	-	-	-	-	-	3	-	3	-	-	-	-	-	-
CO 1	Comprehend the Fundamental Rights and Fundamental Duties of the Indian Citizen to implant morality, social values, and their social responsibilities.	-	-	-	-	-	3	-	3	-	-	-	-	-	-
CO 2	Analyze the distribution of powers between Center and State and differentiate the roles of President and Cabinet.	-	-	-	-	-	3	-	2	2	-	-	3	-	-
CO 3	Differentiate the functioning of Indian Parliamentary System at State level.	-	-	-	-	-	3	-	2	2	-	-	3	-	-
CO 4	Get acquainted with Local Administration and Election Commission.	-	-	-	-	-	3	-	2	2	-	-	3	-	-

MC 20ECM51 ESSENCE OF INDIAN TRADITIONAL KNOWLEDGE

III B.Tech – V Semester (Code: 20ECM51)

Lectures	3	Tutorial	0	Practical	0	Credits	0
Continuous Internal Assessment	:	30		No SEE			

Prerequisites: None

Course Objective:

The prime objective of this course is to facilitate the students with the concepts of Indian traditional knowledge and to make them understand the importance of roots of knowledge system and apply it to their day-to-day life.

CO1: Know the concept of Indian Traditional Knowledge in Medicine.

CO2: Know the concept of Indian Traditional Knowledge in Engineering.

CO3: Know the contribution of India in Mathematics, Astronomy.

CO4: Know the importance of Yoga in holistic living.

Course outcomes: At the end of the course, students will be able to

CLO1: Generalize the effect of pre-colonial and colonial period on Indian Traditional Knowledge System, traditional Medicine.

CLO2: Discover the knowledge of ITK in Production, Construction, Physics, Chemistry, Architecture and Vastu.

CLO3: Discriminate the contribution of India in Mathematics, Astronomy.

CLO4: Propose the importance of Yoga in holistic living.

SYLLABUS

UNIT - I

Traditional Knowledge: Introduction, Indian Traditional Knowledge System; **Traditional Medicine:** Ayurveda, Simple Definition, Origin, Texts, The Great Three Classics of Ayurveda, The Lesser Three Classics of Ayurveda, The Branches of Ayurveda, Basic Concepts of Ayurveda, Purusha/Prakruti, Manifestation of Creation, Space, Air, Fire, Water, Earth, Mental Constitution, Satvic Mental Constitutions, Rajasic Mental Constitutions, Tamasic Mental Constitutions, Vata, Pitta and Kapha: The Three Doshas; Qualities of Vata, Pitta and Kapha.

UNIT - II

Traditional Production and Construction Technology: Social Conditions and Technological Progress, the Impetus for Metallurgy, Social Needs and Technological Applications, Scientific Rationalism and Technological Efficacy, Limitations of Pre-Industrial Manufacturing, India and the Industrial Revolution. **History of Physics and Chemistry:** Particle Physics, Experimentation versus Intuition, the Five Basic Physical Elements, Indian Ideas about Atomic Physics. **Traditional Art and Architecture and Vastu Shashtra:** Vastu, the Principles of Vastu are Simple.

UNIT - III

Origin of Mathematics; Astronomy and Astrology; TKS and the Indian Union: Protection and the Legislative Frameworks in India, Trade Secrets and Know-how, Geographical Indications Bill, Protection of Plan varieties and Farmers Rights Bill, Rights of Communities,

Monitoring Information on Patent Applications World-wide, Frameworks for Supporting R&D Activities in the Area of TKS.

UNIT – IV

Common Yoga Protocol: Introduction, What is Yoga? Brief History and Development of Yoga, The fundamentals of Yoga, Traditional Schools of Yoga, Yogic practices for health and wellness

General Guidelines for Yoga Practice: Before the practice, During the Practice, After the Practice, Food for Thought, How Yoga can help. Invocation; Sadilaja/CalanaKriyas /Loosening Practices; **Yogasanas:** Standing Postures: *Tadasana* (Palm Tree Posture), *Vrksasana* (The Tree Posture), *Pada-Hastasana* (The Hands to Feet Posture), *ArdhaCakrasana* (The Half Wheel Posture) and *Trikonasana* (The Triangle Posture); Sitting Postures: *Bhadrasana* (The Firm/Auspicious Posture), *Vajrasana* (Thunderbolt Posture), *Ustrasana* (Camel Posture), *Śasakasana* (The Hare Posture), *Vakrasana* (The Spinal Twist Posture); Prone Postures: *Makarasana* (The Crocodile Posture), *Bhujangasana* (The Cobra Posture), *Salabhasana* (The Locust Posture); Supine Postures: *Setubandhasana* (The Bridge Posture), *UttanaPadasana* (Raised feet posture), *Pavamuktasana* (The Wind Releasing Posture), *Savasana* (The Corpse/ Dead Body Posture); Kapalabhati; *Pranayama*: nadi sodhana or anulomaviloma pranayama (Alternate Nostril Breathing), SitaliPraṇayama, BhramariPraṇayama (BhrāmariRecaka); Dhyana; Sankalpa; Santihpatha.

TEXT BOOKS:

1. Traditional Knowledge System in India, Amit Jha, 2009.
2. Common YOGA Protocol, Ministry of Ayush.

REFERENCE BOOKS:

1. Traditional Knowledge System & Technology in India, Basanta Kumar Mohanta, Vipin Kumar Singh, 2012.

CO-PO-PSO Mapping- Essence of Indian Traditional Knowledge-20ECM51

Course Code	Course Name	POs and PSOs													
		PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2
20ECM51	Essence Of Indian Traditional Knowledge														
CO 1	Know the concept of Indian Traditional Knowledge in Medicine.	2	3	3	2	2	2	2	2	3	3	3	2	1	2
CO 2	Know the concept of Indian Traditional Knowledge in Engineering.	2	3	3	2	3	2	3	3	2	2	2	2	1	2
CO 3	Know the contribution of India in Mathematics, Astronomy.	3	2	1	2	2	1	2	3	1	3	3	2	1	
CO 4	Know the importance of Yoga in holistic living.	3	2	3	1	3	1	3	2	3	2	2	2	1	1

COMMUNICATIVE ENGLISH

I B. Tech – II Semester (Sub. Code: 20EC203 / EL01)

Lectures	3	Tutorial	1	Practical	0	Credits	3
Continuous Internal Assessment	:	30	Semester End Examination (3 Hours)	:	70		

Prerequisites: None

Course Objectives:

CO1 To comprehend the importance, barriers and strategies of listening skills in English.

CO2 To illustrate and impart practice Phonemic symbols, stress and intonation.

CO3 To practice oral skills and receive feedback on learners' performance.

CO4 To practice language in various contexts through pair work, role plays, group work and dialogue conversations

Course Outcomes: Students will be able to:

CLO-1 Understand basic grammatical units and their usage;

CLO-2 Learn to think, Write critically and coherently;

CLO-3 Recognize writings as a process rather than a product;

CLO-4 Upgrading comprehension skills of English Material of various types and Enhancing range of vocabulary to communicate in varied contexts.

SYLLABUS

UNIT – I

Vocabulary Development: Word formation-Formation of Nouns, Verbs & Adjectives from Root words-Suffixes and Prefixes

Essential Grammar: Prepositions, Conjunctions, Articles

Basic Writing Skills: Punctuation in writing

Writing Practices: Mind Mapping, Paragraph writing (structure-Descriptive, Narrative, Expository & Persuasive)

UNIT – II

Vocabulary Development: Synonyms and Antonyms

Essential Grammar: Concord, Modal Verbs, Common Errors

Basic Writing Skills: Using Phrases and clauses

Writing Practices: Hint Development, Essay Writing

UNIT – III

Vocabulary Development: One word Substitutes

Essential Grammar: Tenses, Voices

Basic Writing Skills: Sentence structures (Simple, Complex, Compound)

Writing Practices: Note Making

UNIT – IV

Vocabulary Development: Words often confused

Essential Grammar: Reported speech, Common Errors

Basic Writing Skills: Coherence in Writing: Jumbled Sentences

Writing Practices: Paraphrasing & Summarising

TEXT BOOK:

1. Communication Skills, Sanjay Kumar & PushpaLatha. Oxford University Press:2011.

2. Practical English Usage, Michael Swan. Oxford University Press:1995.

REFERENCE BOOKS:

1. Remedial English Grammar, F. T. Wood. Macmillan:2007.
2. Study Writing, Liz Hamplyons & Ben Heasley. Cambridge University Press:2006

CO-PO-PSO Mapping- Communicative English-20EC203 / EL01

Course Code	Course Name	POs and PSOs													
		PO-1	PO-2	PO-3	PO-4	PO-5	PO-6	PO-7	PO-8	PO-9	PO-10	PO-11	PO-12	PSO-1	PSO-2
20EC203 / EL01	Communicative English								2		3	2	2	2	1
CO1	Understand how to build academic vocabulary to enrich their writing skills								2		3	2	2	2	1
CO2	Produce accurate grammatical sentences								2		3	2	2	2	1
CO3	Analyze the content of the text in writing								2		3	2	2	2	1
CO4	Produce coherent and unified paragraphs with adequate support and detail								2		3	2	2	2	1



Bapatla Engineering College: Bapatla -522102 (Autonomous)

Approved by AICTE :: Affiliated to ACHARYA NAGARJUNA UNIVERSITY

Department of Electrical and Electronics Engineering

Courses offered relevant to the local, national, regional, and global developmental needs.

Course Code	Course Name	Regulation	Relevance to the local, national, regional, and global developmental needs
18CE001	Environmental Studies	R18	Global need-To know the importance of environment and its impact on the human World
18CE002	Biology for engineers	R18	To explore biological trends in India
18HS002	Indian traditional knowledge	R18	National need-To gain knowledge in yoga science and wisdom in modern society with rapid technology.
18EE604	Application Of IoT In Electrical Engineering	R18	Smart India

HOD, EEE Dept.

Head of the Department
Electrical & Electronics Engg
Bapatla Engineering College
BAPATLA - 522101.

ENVIRONMENTAL STUDIES
I B.Tech – I/II Semester (Code: 14CE001)

Lectures	4	Tutorial	0	Practical	0	Credits	2
Continuous Internal Assessment	:	50	Semester End Examination (3 Hours)	:	50		

Prerequisites: None

Course Objectives: To learn

CO1: To develop an awareness,knowledge, and appreciation for the natural environment.

CO2: To understand different types of ecosystems exist in nature.

CO3: To know our biodiversity.

CO4: To understand different types of pollutants present in Environment.

CO5: To know the global environmental problems.

Course Outcomes: Students will be able to

CLO 1: Develop an appreciation for the local and natural history of the area.

CLO 2: Hope for the better future of environment in India which is based on many positive factors

like Biodiversity, successive use of renewable energy resources and other resources, increasing number of people's movements focusing on environment.

CLO 3: Know how to manage the harmful pollutants.

CLO 4: Gain the knowledge of Environment.

CLO 5: Create awareness among the youth on environmental concerns important in the longterm interest of the society

UNIT – I

Introduction: Definition, Scope and Importance, Need for public awareness. Ecosystems: Definition, Structure and Functions of Ecosystems, types - Forest, Grassland, Desert, Aquatic (Marine, pond and estuaries). *6 periods*

Biodiversity: Definition and levels of Biodiversity; Values of Biodiversity - Consumptive, Productive, Social, Aesthetic, Ethical and Optional; Threats and Conservation of Biodiversity; Hot Spots of Biodiversity, Bio-geographical Classification of India, India as a mega diversity nation. *Chipko movement case study 6 periods*

UNIT – II

Natural resources: Land: Land as a resource, Causes and effects of land degradation - Soil erosion, Desertification. **Forest:** Use of forests, Causes and effects of deforestation, Afforestation, Mining - benefits and problems. **Water:** Uses, floods and drought, Dams - benefits and problems.

Energy: Importance of energy, **Environmental Impacts of Renewable and Nonrenewable energy resources.** *Silent Valley Project and Narmada Bachao Andolan case studies 8 periods*

Sustainability: Definition, Concept and Equitable use of resources for sustainable development; Rain water harvesting and Watershed management. **Fieldwork on Rain water harvesting and Watershed management.** *6 periods + 6 hours field work/Demonstration*

UNIT – III

Pollution: Definition; Causes, effects and control of air, water and nuclear pollution; *Chernobyl Nuclear Disaster* case study; Solid Waste: urban, Industrial and hazardous wastes; Integrated waste management - 3R approach, composting and vermicomposting. **12 periods**

Environmental acts: Water and air (Prevention and Control of pollution) acts, Environmental protection act, Forest Conservation act.

6 periods

UNIT – IV

Environmental issues: Green house effect & Global warming, Ozone layer depletion, Acid rains, Green Revolution, Population Growth and environmental quality, Environmental Impact Assessment. **Environmental Standards (ISO 14000, etc.)** *12 periods*

Case Studies: Bhopal Tragedy, Mathura Refinery and TajMahal, and Ralegan Siddhi (AnnaHazare). *6 periods*

Field work: Visit to a local area to document environmental assets – Pond/Forest/Grassland. Visit to a local polluted site- Urban and industry/ Rural and Agriculture. *6 hrs.*

TEXT BOOKS:

1. “Environmental Studies” by Benny Joseph, Tata McGraw-Hill Publishing Company Limited, New Delhi.
2. “Comprehensive environmental studies”- JP Sharma, Laxmi Publications.
3. Text Book of environmental Studies – ErachBharucha

REFERENCE BOOKS:

1. “Environmental studies”, R.Rajagopalan, Oxford University Press.
2. “Introduction to Environmental Science”, Anjaneyulu Y, B S Publications
3. “Environmental Science”, 11th Edition – Thomson Series – By Jr. G. TylerMiller.

ENVIRONMENTAL STUDIES (14CE01)	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	PSO 3
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CO1	Develop an appreciation for the local and natural history of the area.	-	-	-	1	-	2	3	-	-	1	-	2	-	-	-
CO2	Hope for the better future of environment in India which is based on many positive factors like Biodiversity, successive use of renewable energy resources and other resources, increasing number of people's movements focusing on environment.	-	-	-	-	2	2	3	-	-	1	-	2	-	-	1
CO3	Know how to manage the harmful pollutants.	-	-	-	-	-	-	3	-	-	1	1	2	1	-	-
CO4	Gain the knowledge of Environment.	-	-	-	1	-	2	3	-	-	1	-	2	1	-	-
CO5	Create awareness among the youth on environmental concerns important in the long-term interest of the society	-	-	-	-	-	2	3	2	-	1	-	2	-	-	1

BIOLOGY FOR ENGINEERS

III B.Tech-V Semester (18CE002)

Lectures	4	Tutorial	0	Practical	0	Credits	3
Continuous Internal Assessment	:	50	Semester End Examination (3 Hours)	:	50		

UNIT-I

Introduction to biology; Classification of microorganisms- Two kingdom, Three kingdom & Five kingdom; Prokaryotic cell structure (Bacteria); Eukaryotic cell structure (Plant & Animal cells); Differences between Prokaryotes and Eukaryotes.

UNIT-II

Bacterial Growth Phases; Nutrition in Bacteria; Types of media; Bacteria - Binary Fission, Endospore Formation; Plant & Animal cell Division - Mitosis & Meiosis.

UNIT-III

Structure of DNA (Watson & Crick model); Types of DNA & Function of DNA; Structure of
6

RNA & types of RNA; Differences between DNA & RNA. Types of proteins & structure of proteins.

BIOLOGY FOR ENGINEERS (18EE404)		PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO8	PO 9	PO10	PO1 1	PO12	PSO 1	PSO 2	PSO 3
CLO1	Explain the Morphology and chemical composition of the cell and function of each organelle present in the cell with the help of microscope.	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-
CLO2	Explain the process of human physiological system and its cell functioning.	-	1	2	-	-	-	-	-	-	-	-	-	-	-	-
CLO3	Explain the importance of microbiology and immunologicalscience to know the reactions of our body.	-	1	2	2	1	-	-	-	-	-	-	-	-	-	-
CLO4	Discuss the biological science related to the different disciplinary areas.	-	1	2	-	2	-	-	-	-	-	-	-	-	-	-
CLO5	Explain the importance of genetics and how bioscience is related to other technical areas.	-	1	2	-	-	-	-	-	-	-	-	-	-	-	-

UNIT-IV

Sterilization methods - Physical methods : Heat, Filtration, radiation; Chemical methods: Phenolics, alcohols, aldehydes, halogens, heavy metals, sterilizing gases, dyes. Economic importance of bacteria (Harmful & Beneficial aspects); Plants in Primary Health care - Tulasi, piper longum, Myrobalan, Aloe vera, Turmeric.

REFERENCES:

1. Prof. K.yadagiri., Dr. M. Manikya Lakshmi, “Botany” paper-I,II,III,IV
(TeluguAkademi Coordinating Committee)
2. Presscott, “Microbiology”
3. Pelczar, “Microbiology”
4. Ananthanarayana, “Microbiology”

INDIAN TRADITIONAL KNOWLEDGE

B.Tech – V Semester (Code: 18HU002)

Lectures	3	Tutorial	0	Practical	0	Credits	0
Continuous Internal Assessment		50	Semester End Examination (3 Hours)		50		

Pre Requisites: NIL

Course Outline: This Course is to facilitate the students with the concepts of Indian traditional knowledge and to make them understand the importance of roots of knowledge system.

Course Objectives:

CO1. The course aims at imparting basic principles of thought process, reasoning and inferencing. Sustainability is at the core of Indian traditional knowledge systems connecting society and nature.

CO2. Holistic life style of Yogic-science and wisdom capsules in Sanskrit literature are also important in modern society with rapid technological advancements and societal disruptions.

CO3. The course focuses on introduction to Indian knowledge system, Indian perspective of modern scientific world-view and basic principles of yoga and holistic healthcare system.

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

CLO1. Understand the concept of Indian Traditional knowledge and its importance CLO2. Compare the Indian traditional knowledge Systems with Other Global systems..

CLO3. Understand the concept of yoga and its correlations to science.CLO4. Study various case studies related to traditional knowledge.

UNIT I

Basic Structure of Indian Knowledge System (i) वेद, (ii) उपवेद (आयुर्वेद, धनुर्वेद, गन्धर्वेद, स्थापत्य आदि) (iii) वेदांग (शिक्षा, कल्प, निरूत, व्याकरण, ज्योतिष छंद), (iv) उपाइग (धर्म शास्त्र, मीमांसा, पुराण, तर्कशास्त्र)

UNIT II

Modern Science and Indian Knowledge System

8 Periods

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 Vs indigenous knowledge, traditional knowledge Vs western knowledge, traditional knowledge Vs formal knowledge

UNIT III

Yoga and Holistic Health care 8 Periods

Science of Yoga , Yoga as a tool for healthy Life style , 8 limbs of Yoga (Yama , Niyama ,Aasana , Pranayama , Pratyahara , Dharana , Dhyana , Samadhi).

UNIT IV

Case Studies 8 periods

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.

TEXT BOOKS:

1. V. Sivaramakrishna (Ed.), Cultural Heritage of India-Course material, Bharatiya VidyaBhavan, Mumbai, 5th Edition, 2014.
2. Swami jitatmanand, Modern Physics and Vedant, Bharatiya Vidya Bhavan
3. Fritzof Capra, Tao of Physics.
4. Fritzof Capra, The wave of life.
5. V N Jha(Eng. Trans.), Tarkasangraha of Annam Bhatta, International ChinmayFoundation, Velliarnad, Amaku, am.
6. Yoga Sutra of Patanjali, Ramakrishna Mission, Kolkatta.
7. G N Jha, (ENG. Trans.), Ed. R N Jha, Yoga-darshanam with Vyasa Bhashya, VidyanidhiPrakasam, Delhi, 2016.
8. R N Jha, Science of consciousness Psychotherapy and yoga practices, Vidyanidhiprakasham, Delhi, 2016.
9. P R Sharma (English translation), Shodashang Hridayam.

REFERENCE BOOKS :

Indian traditional knowledge (20EE306/20MC02)		PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PO11	PO12	PSO 1	PSO 2	PSO 3
CLO1 Understand the concept of Indian Traditional knowledge and its importance		-	-	-	-	-	2	2	1	-	-	-	1	-	-	-
CLO2 Compare the Indian traditional knowledge Systems with Other Global systems		-	-	-	-	-	2	2	-	-	-	-	1	-	-	-
CLO3 Understand the concept of yoga and its correlations to science.		-	-	-	-	-	1	1	-	-	-	-	1	-	-	-
CLO4 Study various case studies related to traditional knowledge		-	-	-	-	-	2	-	-	-	-	-	2	-	-	-

1. Traditional Knowledge System and Technology in India by Basanta Kumar Mohanta and Vipin Kumar Singh, Pratibha Prakashan 2012.
2. Traditional Knowledge System in India by Amit Jha Atlantic publishers, 2002.

APPLICATION OF IOT IN ELECTRICAL ENGINEERING

III B.Tech-VI Semester (Code: 18EE604)

Lectures	3	Tutorial	0	Practical	3	Credits	3
Continuous Internal Assessment		50		Semester End Examination (3 Hours)		50	

Course Objective: The objective of this course is to impart necessary and practical knowledge of components of Internet of Things and develop skills required to build real-life IOT based projects.

CO1.Understand the concepts of Internet of Things

CO2.Analyze basic protocols in wireless sensor network

CO3.Design IOT applications in different domain and be able to analyze their performance

CO4.Implement basic IOT applications.

Learning Outcomes

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

CLO1.Understand internet of Things and its hardware and software components
CLO2.Acquire Knowledge on Interface I/O devices, sensors & communication modules
CLO3.Able to design remotely monitor data and control devices

CLO4.Able to develop real life IOT based projects.

UNIT – I

Introduction to IOT: Architectural Overview, Design principles and needed capabilities, IOT Applications, Sensing, Actuation, Basics of Networking, M2M and IOT Technology Fundamentals- Devices and gateways, Data management, Business processes in IOT, Everything as a Service(XaaS), Role of Cloud in IOT, Security aspects in IOT.

UNIT – II

Elements of IoT: Hardware Components- Computing (Arduino, Raspberry Pi),Communication, Sensing, Actuation, I/O interfaces. Software Components- Programming API's (using Python/Node.js/Arduino) for Communication Protocols-MQTT, ZigBee, Bluetooth, CoAP, UDP, TCP.

UNIT-III

IoT Application Development: Solution framework for IoT applications- Implementation of Device integration, Data acquisition and integration, Device data storage- Unstructured data storage on cloud/local server, Authentication, authorization of devices.

UNIT – IV

IoT Case Studies: IOT case studies and mini projects based on Industrial automation, Transportation, Agriculture, Healthcare, Home Automation

TEXT BOOK:

1. Jan Holler, Vlasios Tsiatsis, Catherine Mulligan, Stefan Avesand, Stamatis Karnouskos, David Boyle, “ Internet of Things: Technologies and Applications for a New Age of Intelligence ”, 2nd Edition, Academic Press, 2018.
2. Pethuru Raj and Anupama C. Raman, “ The Internet of Things: Enabling Technologies,

Platforms, and Use Cases ”, Auerbach Publications, 1st edition , 2017.

3. Raj Kamal, “ Internet of Things: Architecture and Design ”, McGraw Hill Education; 1st edition, 2017.

REFERENCE BOOKS:

1. Jeeva Jose, “ Internet of Things ” , Khanna Publishing, 1st edition ,2018.
2. Vijay Madisetti and Arshdeep Bahga , “ Internet of Things (A Hands-on-Approach)”, Orient Blackswan Private Limited , 1st edition , 2015.
3. Olivier Hersistent, David Boswarthick, Omar Elloumi, “ The Internet of Things: key applications and Protocols ” , Wiley, 1st edition , 2015.
4. Michael Miller , “ The Internet of Things: How Smart TVs, Smart Cars, Smart Homes, and Smart Cities are Changing the World ” , Que Publishing, 1st edition , 2015.

List of Experiments

Basic Level (any 7)

1. Familiarization with Arduino/Raspberry Pi and perform necessary software installation.
2. To interface LED/Buzzer with Arduino/Raspberry Pi and write a program to turn ON LEDfor 1 sec after every 2 seconds.
3. To interface Push button/Digital sensor (IR/LDR) with Arduino/Raspberry Pi and write a program to turn ON LED when push button is pressed or at sensor detection.
4. To interface DHT11 sensor with Arduino/Raspberry Pi and write a program to print temperature and humidity readings.
5. To interface motor using relay with Arduino/Raspberry Pi and write a program to turn ON motor when push button is pressed.
6. To interface OLED with Arduino/Raspberry Pi and write a program to print temperature and humidity readings on it.
7. To interface Bluetooth with Arduino/Raspberry Pi and write a program to send sensor datato smartphone using Bluetooth.
8. To interface Bluetooth with Arduino/Raspberry Pi and write a program to turn LEDON/OFF when ‘1’/‘0’ is received from smartphone using Bluetooth.
9. Write a program on Arduino/Raspberry Pi to upload/retrieve temperature and humidity datato thingspeak cloud.
10. To install MySQL database on Raspberry Pi and perform basic SQL queries.
11. Write a program on Arduino/Raspberry Pi to publish temperature data to MQTT broker.
12. Write a program on Arduino/Raspberry Pi to subscribe to MQTT broker for temperature

data and print it.

13. Write a program to create TCP server on Arduino/Raspberry Pi and respond with humidity data to TCP client when requested.
14. Write a program to create UDP server on Arduino/Raspberry Pi and respond with humidity data to UDP client when requested.

Advanced Level (any 3)

1. Design of smart socket and operating through phone application using Arduino
2. Design of smart water tank and reading continuous water level using Arduino
3. Making of DIY weather station and handling temperature and humidity values on cloud platform
4. Building of smart parking meter and design of its mobile application
5. DIY heart beat monitoring system by interfacing pulse sensor to Arduino
6. Design of soil moisture monitoring system using Arduino

Note: Minimum 10 experiments should be conducted

IOT Applications in Electrical Engineering- 18EE604		P O1	P O2	P O3	P O4	P O5	P O6	P O7	P O8	P O9	P O10	P O11	P O12	PS O1	PS O2	PS O3
C O 1	Understand internet of Things and its hardware and software components	-	-	-	-	3	-	-	-	-	-	-	2	2	1	-
C O 2	Acquire Knowledge on Interface I/O devices, sensors & communication modules	2	1		-	3	-	-	-	-	2	-	2	-	2	1
C O 3	Able to design remotely monitor data and control devices	2	-	1	2	2	-	-	-	-	3	-	1	-	2	-
C O 4	Able to develop real life IOT based projects.	3		2	2	3	-	1	-	-	2	3	3	-	2	-



Bapatla Engineering College: Bapatla -522102 (Autonomous)
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Department of Electronics & Instrumentation Engineering

Courses offered relevant to the local, national, regional, and global developmental needs.

Course Code	Course Name	Regulation	Relevance to the local, national, regional, and global developmental needs
18EL001	Communicative English	R20, R18	Global need-To build up the students confidence in oral and interpersonal communication
18CE001	Environmental studies	R20, R18	Global need-To learn the skills and analytical tools needed to tackle the environmental challenges
18EI306	Professional Ethics and human values	R20, R18	Global need-To perform the job functions according to sound and consistent ethical principles.
18CE002	Biology for Engineers	R20, R18	Global need-To integrate biological processes with engineering principles to develop solutions for a variety of problems
18EI606	Constitution of India	R20, R18	National need-To know fundamental rights and duties of citizens



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HOD, EIE Dept.

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DEPARTMENT OF ELECTRONICS & INSTRUMENTATION ENGINEERING
COMMUNICATIVE ENGLISH (Code: 18EL001)
I B.Tech – I Semester

Lectures	4	Tutorial	0	Practical	0	Credits	3
Continuous Internal Assessment : 30				Semester End Examination (3 Hours) : 70			

Course Objectives:

- 1 : enhancing the vocabulary competency of the students
- 2 : to enable the students to demonstrate proficiency in the use of written English, including proper spelling, grammar, and punctuation
- 3 : to enhance theoretical and conceptual understanding of the elements of grammar
- 4 : understand and apply the conventions of academic writing in English
- 5 : to enhance the learners' ability of communicating accurately and fluently

COURSE OUTCOMES : Students will be able to

- CO1 : able to build academic vocabulary to enrich their writing skills
- CO2 : produce accurate grammatical sentences
- CO3 : make inferences and predictions based on comprehension of a text
- CO4 : discuss and respond to content of the text in writing

CO-PO AND PSO MAPPING

COS	POS												PSOS		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1						3			2	3		1	3		
CO2									2	3					
CO3									2	2					
CO4											3				

SYLLABUS :
UNIT - I

- Vocabulary Development: Word formation-Formation of Nouns, Verbs & Adjectives from Root words-Suffixes and Prefixes
- Essential Grammar: Prepositions, Conjunctions, Articles
- Basic Writing Skills: Punctuation in writing
- Writing Practices: Mind Mapping, Paragraph writing (structure-Descriptive,

UNIT - II

- Vocabulary Development: Synonyms and Antonyms Essential Grammar: Concord, Modal Verbs, Common Errors Basic Writing Skills: Using Phrases and clauses
- Writing Practices: Hint Development, Essay Writing

UNIT – III

- Vocabulary Development: One word Substitutes
- Essential Grammar: Tenses, Voices
- Basic Writing Skills: Sentence structures (Simple, Complex, Compound)
- Writing Practices: Note Making

UNIT – IV

- Vocabulary Development: Words often confused
- Essential Grammar: Reported speech, Common Errors
- Basic Writing Skills: Coherence in Writing: Jumbled Sentences
- Writing Practices: Paraphrasing & Summarising

TEXT BOOKS:

1. Communication Skills, Sanjay Kumar &PushpaLatha. Oxford University Press: 2011.
Practical English Usage, Michael Swan. Oxford University Press: 1995.
2. Remedial English Grammar, F.T.Wood. Macmillan: 2007.
3. Study Writing, Liz Hamplyons& Ben Heasley. Cambridge University Press:2006

DEPARTMENT OF ELECTRONICS & INSTRUMENTATION ENGINEERING
ENVIRONMENTAL STUDIES
(Code: 18CE001)

Lectures	3	Tutorial	0	Practical	0	Credits	2
Continuous Internal Assessment :			50	Semester End Examination (3 Hours) :			50

Prerequisites: NONE

Course Objectives:

- 1 : To develop an awareness, knowledge, and appreciation for the natural environment.
- 2 : To understand different types of ecosystems exist in nature.
- 3 : To know our biodiversity.
- 4 : To understand different types of pollutants present in Environment.
- 5 : To know the global environmental problems

COURSE OUTCOMES

- CO-1 Develop an appreciation for the local and natural history of the area.
- CO-2 Hope for the better future of environment in India which is based on many positive factors like Biodiversity, successive use of renewable energy resources and other resources, increasing number of people's movements focusing on environment
- CO-3 Know how to manage the harmful pollutants. Gain the knowledge of Environment.
- CO-4 Create awareness among the youth on environmental concerns important in the long-term interest of the society

CO – PO AND PSO MAPPING

CO	POS												PSOS		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
1						3	3								2
2							2								
3							2								
4												2			

SYLLABUS

UNIT - I

Introduction: Definition, Scope and Importance, Need for public awareness. Ecosystems: Definition, Structure and Functions of Ecosystems, types - Forest, Grassland, Desert, Aquatic (Marine, pond and estuaries). 6 periods Biodiversity: Definition and levels of Biodiversity; Values of Biodiversity - Consumptive, Productive, Social, Aesthetic, Ethical and Optional; Threats and Conservation of Biodiversity; Hot Spots of Biodiversity, Bio-geographical Classification of India, India as a megadiversity nation. Chipko movement case study 6 periods

UNIT - II

Natural resources: Land: Land as a resource, Causes and effects of land degradation - Soil erosion, Desertification. Forest: Use of forests, Causes and effects of deforestation, Afforestation, Mining - benefits and problems. Water: Uses, floods and drought, Dams - benefits and problems.

Energy: Importance of energy, Environmental Impacts of Renewable and Non-renewable energy resources. Silent Valley Project and Narmada Bachao Andolan case studies 8 periods Sustainability: Definition, Concept and Equitable use of resources for sustainable development; Rain water harvesting and Watershed management. Fieldwork on Rain water harvesting and Watershed management. 6 periods + 6 hours field work/Demonstration.

UNIT – III

Pollution: Definition; Causes, effects and control of air, water and nuclear pollution; Chernobyl Nuclear Disaster case study; Solid Waste: urban, Industrial and hazardous wastes; Integrated

waste management - 3R approach, composting and vermicomposting.

12 periods Environmental acts: Water and air (Prevention and Control of pollution) acts, Environmental protection act, Forest Conservation act. 6 periods

UNIT – IV

Environmental issues: Green house effect & Global warming, Ozone layer depletion, Acid rains, Green Revolution, Population Growth and environmental quality, Environmental Impact Assessment. Environmental Standards (ISO 14000, etc.) 12 periods Case Studies: Bhopal Tragedy, Mathura Refinery and TajMahal, and Ralegan Siddhi (Anna Hazare). 6 periods Field work: Visit to a local area to document environmental assets – Pond/Forest/Grassland. Visit to a local polluted site- Urban and industry/ Rural and Agriculture. 6 hrs.

TEXT BOOKS

1. “Environmental Studies” by Benny Joseph, Tata McGraw-Hill Publishing Company Limited, New Delhi.
2. “Comprehensive environmental studies”- JP Sharma, Laxmi Publications.
3. Text Book of environmental Studies – ErachBharucha

REFERENCE BOOKS

1. “Environmental studies”, R.Rajagopalan, Oxford University Press.
2. “Introduction to Environmental Science”, Anjaneyulu Y, B S Publications
3. “Environmental Science”, 11th Edition – Thomson Series – By Jr. G. Tyler Miller.

DEPARTMENT OF ELECTRONICS & INSTRUMENTATION ENGINEERING

PROFESSIONAL ETHICS AND HUMAN VALUES(18EI306)

Course Category :	Course Type : Theory		
Lecture Hours: 3Hr.	Tutorial : 0.	CIE: 50M	SEE : 50M

Course Objectives :

- C1** : Understand the basic concepts of Professional ethics and human values & Students also gain the connotations of ethical theories.
- C2** : Explain the duties and rights towards the society in an engineering profession
- C3** : Realize the importance and necessity of intellectual property rights.
- C4** : Necessary precautions while conducting the experiments, which may reduce the risk. Understands the importance of risk evacuation system in reality and takes the utmost responsibility while handling the risky situations.

COURSE OUTCOMES

- CO1** Acquires the basic concepts of Professional ethics and human values & Students also gain the connotations of ethical theories.
- CO2** Knows the duties and rights towards the society in an engineering profession
- CO3** Would realize the importance and necessity of intellectual property rights.
- CO4** Understands the importance of risk evacuation system in reality and takes the utmost responsibility while handling the risky situations.

CO – PO AND PSO MAPPING

COS	POS												PSOS		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1						2		3							2
CO2						3							2		
CO3				2				2							2
CO4		2													

UNIT – I

Human Values: Morals, Values and Ethics, Integrity, Work Ethic, Service Learning, Civic Virtue, Respect for Others, Living Peacefully, caring, Sharing, honesty, Courage, Valuing Time, Co-operation, Commitment, Empathy, Self Confidence, Character, Spirituality.

UNIT – II

Engineering Ethics: Senses of ‘Engineering Ethics’, Variety of model issues, Types of inquiry, Moral dilemmas, Moral Autonomy, Kohlberg’s theory, Gilligan’s theory, Consensus and Controversy, Professions and Professionalism, Professional Ideals and Virtues, Theories about right action, Self-interest, customs and Religion, Uses of Ethical Theories.

UNIT – III

Engineering as Social Experimentation: Engineering as Experimentation, Engineers as responsible Experimenters, Codes of Ethics, A Balanced Outlook on Law.

Safety, Responsibility and Rights: Safety and Risk-Assessment of Safety and Risk , risk Benefit analysis and reducing risk.

Collegiality and Loyalty , Respect for Authority , Collective Bargaining - Confidentiality ,

aterials Management, Institution of electronics and telecommunication engineers (IETE), India, etc.

UNIT – IV

Global Issues: Multinational Corporations , Environmental Ethics , Computer Ethics , Weapons Development , Engineers as Managers , consulting Engineering , Engineers as Expert Witnesses and Advisors, Moral Leadership, Sample Code of Ethics like ASME, ASCE, IEEE, Institution of engineers (India), Indian Institute of Engineers, Oxford University Press, 2001.

Text Books:

1. Mike Martin and Roland Schinzinger, Ethics in Engineering, McGraw Hill, New York 1996.
2. Govindarajan. M, Natarajan. S, Senthilkumar. V.S, Engineering Ethics, PHI, 2004.

Reference Books:

1. 3. Charles D Fleddermann, Engineering Ethics, Prentice Hall, New Jersey, 2004
2. 4. Charles E Harris, Michael S Pritchard and Michael J Rabins, Engineering Ethics Concepts
3. and Cases, Thomson Learning, United States, 2000.
4. John R Boatright, Ethics and the Conduct of Business, PHI, New Delhi, 2003.
5. Edmund G Seebauer and Robert L Barry, Fundamentals of ethics for Scientists and Conflicts of Interest , Occupational Crime , Professional Rights , employee Rights , Intellectual Property Rights (IIPR) , Discrimination.

DEPARTMENT OF ELECTRONICS & INSTRUMENTATION ENGINEERING
BIOLOGY FOR ENGINEERS (18CE002)

Course Category:	Humanities	Credits:	2
Course Type:	Theory	Lecture - Tutorial -Practice:	3- 0- 0
Prerequisites:	--	Continuous Evaluation: Semester end Evaluation: Total Marks:	50 M 50 M 100 M

COURSE OBJECTIVES:

1. Introduction to Basics of Biology which includes cell, the unit of life, Different types of cells and classification of living organisms.
2. Understanding what are biomolecules present in a cell, their structure function and their role in a living organism. Application of certain bio molecules in Industry.
3. Brief introduction to human physiology, which is essential for bioengineering field.
4. Understanding the hereditary units, that is genes and genetic materials (DNA and RNA) present in living organisms and how they replicate and pass and preserve vital information in living organisms.
5. How biology can be applied in our daily life using different technology, for production of medicines to transgenic plants and animals to designing new biotechnological produce.

COURSE OUTCOMES:

- CO-1** Define the cells, its structure and function, and Different types of cells and basis for Classification of living organisms.
- CO-2** Explain about biomolecules its structure and function and their role in a living organism How biomolecules are useful in Industry & explain about human physiology organisms.
- CO-3** Demonstrate the concept of biology and its uses in combination with different technologies for production of medicines and production of transgenic plants and animals.
- CO-4** Illustrate about genes and genetic materials (DNA & RNA) present in living organisms and how they replicate, transfer & preserve vital information in living organisms.

COS	POS												PSOS		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
1	2														
2						2									
3			3											3	
4						1									

UNIT-I

Introduction to biology; Classification of microorganisms- Two kingdom, Three kingdom & Five kingdom; Prokaryotic cell structure (Bacteria); Eukaryotic cell structure (Plant & Animal cells); Differences between Prokaryotes and Eukaryotes.

UNIT-II

Bacterial Growth Phases; Nutrition in Bacteria; Types of media; Bacteria - Binary Fission, Endospore Formation; Plant & Animal cell Division - Mitosis & Meiosis.

UNIT-III

Structure of DNA (Watson & Crick model); Types of DNA & Function of DNA; Structure of RNA & types of RNA; Differences between DNA & RNA. Types of proteins & structure of proteins.

UNIT-IV

Sterilization methods - Physical methods: Heat, Filtration, radiation; Chemical methods: Phenolics, alcohols, aldehydes, halogens, heavy metals, sterilizing gases, dyes. Economic importance of bacteria (Harmful & Beneficial aspects); Plants in Primary Health care - Tulasi, piper longum, Myrobalan, Aloe vera, Turmeric.

TEXT BOOKS:

1. Prof. K.yadagiri., Dr. M. Manikya Lakshmi, "Botany" paper-I,II,III,IV (Telugu Akademi Coordinating Committee)
2. Presscott, "Microbiology"
3. Pelczar, "Microbiology"
4. Ananthanarayana, "Microbiology"

<https://www2.palomar.edu/users/warmstrong/trfeb98.htm>

DEPARTMENT OF ELECTRONICS & INSTRUMENTATION ENGINEERING
CONSTITUTION OF INDIA (18EI606)

Lectures: 3	Tutorial: 1	Practical: 0	Self Study:0	Credits :3
Continuous Internal Assessment: 50		Semester End Examination (3 Hours): 50		

Course Objectives:

- ❖ To Enable the student to understand the importance of constitution
- ❖ To know the structure of executive, legislature and judiciary
- ❖ To understand philosophy of fundamental rights and duties
- ❖ To understand the functionalities of municipalities and Election Commission

Course Outcomes :

- CO1:** Able to understand the importance of the constitution in a Democratic Society.
- CO2:** To Learn the structure of executive, legislature and judiciary
- CO3:** To Learn about Government structures, methods of functioning
- CO4:** To understand the about the role and functioning of the Municipalities, Election Commission

CO – PO AND PSO MAPPING

CO	POS												PSOS		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
1						3		2					2		
2								2					2		
3						3									
4						2									

Syllabus :

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.

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;

UNIT-III

State Government and its Administration Governor - Role and Position - CM and Council of ministers, State Secretariat: Organisation, Structure and Functions. Local Administration - District's Administration Head - Role and Importance

UNIT-IV

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.Election Commission: Election Commission- Role of Chief Election Commissioner and Election Commissionerate. State Election Commission

Text Books&

Reference Books:

1. Durga Das Basu, Introduction to the Constitution of India, Prentice – Hall of India Pvt. ND
2. SubashKashyap, Indian Constitution, National Book Trust
3. J.A. Siwach, Dynamics of Indian Government & Politics
4. H.M.Sreevai, Constitutional Law of India, 4th edition in 3 volumes (Universal Law Publication)
5. J.C. Johari, Indian Government and Politics Hans
6. M.V. Pylee, Indian Constitution Durga Das Basu, Human Rights in Constitutional Law, Prentice –Hall of India Pvt. Ltd.. New Delhi
7. Noorani, A.G., (South Asia Human Rights Documentation Centre), Challenges to Civil Right), Challenges to Civil Rights Guarantees in India, Oxford University Press 2012
8. Indian Government and Politics – D C Das gupta. Vikas Publishing house
9. The Oxford Hand Book of the Indian Constitution, SujitChowdary, MadhavKhosla .
10. Indian Constitution and its features – Astoush Kumar, Anmol Publishers
11. The Constitution of India – Bakshi P M – Universal Law Publishers

E-RESOURCES:

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

DEPARTMENT OF ELECTRONICS & INSTRUMENTATION ENGINEERING
COMMUNICATIVE ENGLISH (Code: 20EI104/ EL001)
I B.Tech – I Semester

Lectures	4	Tutorial	0	Practical	0	Credits	3
Continuous Internal Assessment : 30				Semester End Examination (3 Hours) : 70			

Course Objectives:

- 1 : enhancing the vocabulary competency of the students
- 2 : to enable the students to demonstrate proficiency in the use of written English, including proper spelling, grammar, and punctuation
- 3 : to enhance theoretical and conceptual understanding of the elements of grammar
- 4 : understand and apply the conventions of academic writing in English
- 5 : to enhance the learners' ability of communicating accurately and fluently

COURSE OUTCOMES : Students will be able to

- CO1 : able to build academic vocabulary to enrich their writing skills
- CO2 : produce accurate grammatical sentences
- CO3 : make inferences and predictions based on comprehension of a text
- CO4 : discuss and respond to content of the text in writing

CO-PO AND PSO MAPPING

COS	POS												PSOS		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1						3			2	3		1	3		
CO2									2	3					
CO3									2	2					
CO4											3				

SYLLABUS :
UNIT - I

- Vocabulary Development: Word formation-Formation of Nouns, Verbs & Adjectives from Root words-Suffixes and Prefixes
- Essential Grammar: Prepositions, Conjunctions, Articles
- Basic Writing Skills: Punctuation in writing
- Writing Practices: Mind Mapping, Paragraph writing (structure-Descriptive,

UNIT - II

- Vocabulary Development: Synonyms and Antonyms Essential Grammar: Concord, Modal Verbs, Common Errors Basic Writing Skills: Using Phrases and clauses
- Writing Practices: Hint Development, Essay Writing

UNIT – III

- Vocabulary Development: One word Substitutes
- Essential Grammar: Tenses, Voices
- Basic Writing Skills: Sentence structures (Simple, Complex, Compound)
- Writing Practices: Note Making

UNIT – IV

- Vocabulary Development: Words often confused
- Essential Grammar: Reported speech, Common Errors
- Basic Writing Skills: Coherence in Writing: Jumbled Sentences
- Writing Practices: Paraphrasing & Summarising

TEXT BOOKS:

4. Communication Skills, Sanjay Kumar &PushpaLatha. Oxford University Press: 2011.
- Practical English Usage, Michael Swan. Oxford University Press: 1995.
5. Remedial English Grammar, F.T.Wood. Macmillan: 2007.
6. Study Writing, Liz Hamplyons& Ben Heasley. Cambridge University Press:2006

DEPARTMENT OF ELECTRONICS & INSTRUMENTATION ENGINEERING
ENVIRONMENTAL STUDIES
(Code: 20EI206/ MC001)

Lectures	3	Tutorial	0	Practical	0	Credits	0
Continuous Internal Assessment :			30	Semester End Examination (3 Hours) :			70

Prerequisites: NONE

Course Objectives:

- 1 : To develop an awareness,knowledge, and appreciation for the natural environment.
- 2 : To understand different types of ecosystems exist in nature.
- 3 : To know our biodiversity.
- 4 : To understand different types of pollutants present in Environment.
- 5 : To know the global environmental problems

COURSE OUTCOMES

- CO-1 Develop an appreciation for the local and natural history of the area.
- CO-2 Hope for the better future of environment in India which is based on many positive factors like Biodiversity, successive use of renewable energy resources and other resources, increasing number of people's movements focusing on environment
- CO-3 Know how to manage the harmful pollutants. Gain the knowledge of Environment.
- CO-4 Create awareness among the youth on environmental concerns important in the long-term interest of the society

CO – PO AND PSO MAPPING

CO	POS												PSOS		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
1						3	3								2
2							2								
3							2								
4												2			

SYLLABUS

UNIT - I

Introduction: Definition, Scope and Importance, Need for public awareness. Ecosystems: Definition, Structure and Functions of Ecosystems, types - Forest, Grassland, Desert, Aquatic (Marine, pond and estuaries). 6 periods Biodiversity: Definition and levels of Biodiversity; Values of Biodiversity - Consumptive, Productive, Social, Aesthetic, Ethical and Optional; Threats and Conservation of Biodiversity; Hot Spots of Biodiversity, Bio-geographical Classification of India, India as a megadiversity nation. Chipko movement case study 6 periods

UNIT - II

Natural resources: Land: Land as a resource, Causes and effects of land degradation - Soil erosion, Desertification. Forest: Use of forests, Causes and effects of deforestation, Afforestation, Mining - benefits and problems. Water: Uses, floods and drought, Dams - benefits and problems.

Energy: Importance of energy, Environmental Impacts of Renewable and Non-renewable energy resources. Silent Valley Project and Narmada Bachao Andolan case studies 8 periods Sustainability: Definition, Concept and Equitable use of resources for sustainable development; Rain water harvesting and Watershed management. Fieldwork on Rain water harvesting and Watershed management. 6 periods + 6 hours field work/Demonstration.

UNIT – III

Pollution: Definition; Causes, effects and control of air, water and nuclear pollution; Chernobyl Nuclear Disaster case study; Solid Waste: urban, Industrial and hazardous wastes; Integrated

waste management - 3R approach, composting and vermicomposting.

12 periods Environmental acts: Water and air (Prevention and Control of pollution) acts, Environmental protection act, Forest Conservation act. 6 periods

UNIT – IV

Environmental issues: Green house effect & Global warming, Ozone layer depletion, Acid rains, Green Revolution, Population Growth and environmental quality, Environmental Impact Assessment. Environmental Standards (ISO 14000, etc.) 12 periods Case Studies: Bhopal Tragedy, Mathura Refinery and TajMahal, and Ralegan Siddhi (Anna Hazare). 6 periods Field work: Visit to a local area to document environmental assets – Pond/Forest/Grassland. Visit to a local polluted site- Urban and industry/ Rural and Agriculture. 6 hrs.

TEXT BOOKS

4. “Environmental Studies” by Benny Joseph, Tata McGraw-Hill Publishing Company Limited, New Delhi.
5. “Comprehensive environmental studies”- JP Sharma, Laxmi Publications.
6. Text Book of environmental Studies – ErachBharucha

REFERENCE BOOKS

4. “Environmental studies”, R.Rajagopalan, Oxford University Press.
5. “Introduction to Environmental Science”, Anjaneyulu Y, B S Publications
6. “Environmental Science”, 11th Edition – Thomson Series – By Jr. G. Tyler Miller.

DEPARTMENT OF ELECTRONICS & INSTRUMENTATION ENGINEERING
CONSTITUTION OF INDIA (20EI306)

Lectures: 3	Tutorial: 1	Practical: 0	Self Study:0	Credits :3
Continuous Internal Assessment: 50		Semester End Examination (3 Hours): 50		

Course Objectives:

- ❖ To Enable the student to understand the importance of constitution
- ❖ To know the structure of executive, legislature and judiciary
- ❖ To understand philosophy of fundamental rights and duties
- ❖ To understand the functionalities of municipalities and Election Commission

Course Outcomes :

- CO1:** Able to understand the importance of the constitution in a Democratic Society.
- CO2:** To Learn the structure of executive, legislature and judiciary
- CO3:** To Learn about Government structures, methods of functioning
- CO4:** To understand the about the role and functioning of the Municipalities, Election Commission

CO – PO AND PSO MAPPING

CO	POS												PSOS		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
1						3		2					2		
2								2					2		
3						3									
4						2									

UNIT – I

Introduction to Constitution: Meaning and importance of the Constitution, salient features of Indian Constitution. Preamble of the Constitution. Fundamental rights- meaning and limitations. Directive principles of state policy and Fundamental duties -their enforcement and their relevance.

UNIT – II

Union Government: Union Executive- President, Vice-president, Prime Minister, Council of Ministers. Union Legislature- Parliament and Parliamentary proceedings. Union Judiciary-Supreme Court of India – composition and powers and functions.

UNIT – III

State and Local Governments: State Executive- Governor, Chief Minister, Council of Ministers. State Legislature-State Legislative Assembly and State Legislative Council. State Judiciary-High court. Local Government-Panchayat raj system with special reference to 73rd and Urban Local Self Govt. with special reference to 74th Amendment.

UNIT – IV

Elections: Election provisions, Emergency provisions, Amendment of the constitution L-6Hrs. Election Commission of India-composition, powers and functions and electoral process. Types of emergency-grounds, procedure,

duration and effects. Amendment of the constitution- meaning, procedure and limitations.

Text Books:

1. M.V.Pylee, "Introduction to the Constitution of India", 4th Edition, Vikas publication, 2005.
2. Durga Das Basu(DD Basu) , "Introduction to the constitution of India", (Student Edition), 19th edition, Prentice-Hall EEE, 2008.

Reference Book:

Merunandan, "Multiple Choice Questions on Constitution of India", 2nd Edition, Meraga publication, 2007.

DEPARTMENT OF ELECTRONICS & INSTRUMENTATION ENGINEERING

PROFESSIONAL ETHICS AND HUMAN VALUES

(20EI506/MC02)

Course category : MANDATORY COURSE		Course type : Theory
LectureHours: 2Hr./Week	Tutorial : 0	C I E: 30M SEE :00M Credits : 0

Course Objectives :

- C1** : Understand the basic concepts of Professional ethics and human values & Students also gain the connotations of ethical theories.
- C2** : Explain the duties and rights towards the society in an engineering profession
- C3** : Realize the importance and necessity of intellectual property rights.
- C4** : Necessary precautions while conducting the experiments, which may reduce the risk. Understands the importance of risk evacuation system in reality and takes the utmost responsibility while handling the risky situations.

COURSE OUTCOMES

- CO1** Acquires the basic concepts of Professional ethics and human values & Students also gain the connotations of ethical theories.
- CO2** Knows the duties and rights towards the society in an engineering profession
- CO3** Would realize the importance and necessity of intellectual property rights.
- CO4** Understands the importance of risk evacuation system in reality and takes the utmost responsibility while handling the risky situations.

COS	POS												PSOS		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
1						2		3							2
2						3								2	
3				2				2							2
4		2													

UNIT - I

Human Values: Morals, Values and Ethics, Integrity, Work Ethic, Service Learning, Civic Virtue, Respect for Others, Living Peacefully, caring, Sharing, honesty, Courage, Valuing Time, Co-operation, Commitment, Empathy, Self Confidence, Character, Spirituality.

UNIT - II

Engineering Ethics: Senses of 'Engineering Ethics', Variety of model issues, Types of inquiry, Moral dilemmas, Moral Autonomy, Kohlberg's theory, Gilligan's theory, Consensus and Controversy, Professions and Professionalism, Professional Ideals and Virtues, Theories about right action, Self-interest, customs and Religion, Uses of Ethical Theories.

UNIT III

Engineering as Social Experimentation: Engineering as Experimentation, Engineers as responsible Experimenters, Codes of Ethics, A Balanced Outlook on Law.

Safety, Responsibility and Rights: Safety and Risk-Assessment of Safety and Risk , risk Benefit analysis and reducing risk.

Collegiality and Loyalty , Respect for Authority , Collective Bargaining - Confidentiality ,

aterials Management, Institution of electronics and telecommunication engineers (IETE), India, etc.

UNIT - IV

Global Issues: Multinational Corporations , Environmental Ethics , Computer Ethics , Weapons Development , Engineers as Managers , consulting Engineering , Engineers as Expert Witnesses and Advisors, Moral Leadership, Sample Code of Ethics like ASME, ASCE, IEEE, Institution of engineers (India), Indian Institute of Engineers, Oxford University Press, 2001.

TEXT BOOKS:

1. Mike Martin and Roland Schinzinger, Ethics in Engineering, McGraw Hill, New York 1996.
2. Govindarajan. M, Natarajan. S, Senthilkumar. V.S, Engineering Ethics, PHI, 2004

REFERENCE BOOKS:

1. Charles D Fleddermann, Engineering Ethics, Prentice Hall, New Jersey, 2004
2. Charles E Harris, Michael S Pritchard and Michael J Rabins, Engineering Ethics Concepts and Cases, Thomson Learning, United States, 2000.
3. John R Boatright, Ethics and the Conduct of Business, PHI, New Delhi, 2003.



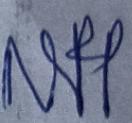
Bapatla Engineering College: Bapatla -522102 (Autonomous)

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Departments of Information Technology

Courses offered relevant to the local, national, regional, and global developmental needs.

Course Code	Course Name	Regulation	Relevance to the local, National, Regional, and Global developmental needs
18CE001	Environmental Studies	R18	Global need-To know the importance of environment and its impact on the human world
18HU001	Constitution of India	R18	National Need- To create a sense of responsible and active citizenship.
18EL001	Communicative English.	R18	Global need-To help the students to develop their speaking skills and speak fluently in real contexts.
MC02	Professional Ethics and Human Values	R20	Global need-To enable the students to create an awareness on Engineering Ethics.
20IT506 /MC03	Essence of Indian Traditional Knowledge	R20	National need-To gain knowledge in yoga science and wisdom in modern society with rapid technology


HOD, I T Dept.

ENVIRONMENTAL STUDIES

I B.Tech – I Semester (18CE001)

Lectures	:	3 Periods / Week	Tutorial	:	0	Practical	:	0
CIA Marks	:	50	SEE Marks	:	50	Credits	:	2

Prerequisites:

Course Objectives:

COB 1: To develop an awareness,knowledge, and appreciation for the natural environment.

COB 2: To understand different types of ecosystems exist in nature.

COB 3: To know our biodiversity.

COB 4: To understand different types of pollutants present in Environment.

COB 5: To know the global environmental problems.

Course Outcomes:

After the course the students are expected to be able to

CO 1: Develop an appreciation for the local and natural history of the area.

CO 2: Hope for the better future of environment in India which is based on many positive factors like Biodiversity, successive use of renewable energy resources and other resources, increasing number of people's movements focusing on environment.

CO 3: Know how to manage the harmful pollutants.

CO 4: Gain the knowledge of Environment.

CO 5: Create awareness among the youth on environmental concerns important in the longterm interest of the society.

Mapping of Course Outcomes with Program Outcomes:

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO11	PO12
CO 1	-	-	-	-	-	-	-	-	-	-	-	-
CO 2	-	-	-	-	-	-	-	-	-	-	-	-
CO 3	-	-	-	-	-	-	-	-	-	-	-	-
CO 4	-	-	-	-	-	-	-	-	-	-	-	-

Mapping of Course Outcomes with Program Specific Outcomes:

CO/PSO	PSO 1	PSO 2	PSO 3
CO 1	-	-	-
CO 2	-	-	-
CO 3	-	-	-
CO 4	-	-	-

UNIT - I

(12 Periods)

Introduction: Definition, Scope and Importance, Need for public awareness. Ecosystems: Definition, Structure and Functions of Ecosystems, types - Forest, Grassland, Desert, Aquatic (Marine, pond and estuaries). 6 periods

Biodiversity: Definition and levels of Biodiversity; Values of Biodiversity - Consumptive, Productive, Social, Aesthetic, Ethical and Optional; Threats and Conservation of Biodiversity; Hot Spots of Biodiversity, Bio-geographical Classification of India, India as a mega diversity nation. Chipko movement case study

UNIT - II

(12 Periods)

Natural resources: **Land:** Land as a resource, Causes and effects of land degradation - Soil erosion, Desertification. **Forest:** Use of forests, Causes and effects of deforestation, Afforestation, Mining - benefits and problems. **Water:** Uses, floods and drought, Dams - benefits and problems.

Energy: Importance of energy, Environmental Impacts of Renewable and Non-renewable energy resources. Silent Valley Project and Narmada BachaoAndolan case studies8 periods

Sustainability: Definition, Concept and Equitable use of resources for sustainable development; Rain water harvesting and Watershed management. Fieldwork on Rain water harvesting and Watershed management. 6 periods + 6 hours field work/Demonstration

UNIT - III

(18 Periods)

Pollution: Definition; Causes, effects and control of air, water and nuclear pollution; Chernobyl Nuclear Disaster case study; Solid Waste: urban, Industrial and hazardous wastes; Integrated waste management - 3R approach, composting and vermicomposting. 12 periods

Environmental acts: Water and air (Prevention and Control of pollution) acts, Environmental protection act, Forest Conservation act. 6 periods

UNIT - IV

(24 Periods)

Environmental issues: Green house effect & Global warming, Ozone layer depletion, Acid rains, Green Revolution, Population Growth and environmental quality, Environmental Impact Assessment.Environmental Standards (ISO 14000, etc.) 12 periods

Case Studies: Bhopal Tragedy, Mathura Refinery and TajMahal, and Ralegan Siddhi (Anna Hazare). 6 periods

Field work: Visit to a local area to document environmental assets – Pond/Forest/Grassland. Visit to a local polluted site- Urban and industry/ Rural and Agriculture. 6 hrs.

TEXT BOOKS:

1. "Environmental Studies" by Benny Joseph, Tata McGraw-Hill Publishing Company Limited, New Delhi.
2. "Comprehensive environmental studies"- JP Sharma, Laxmi Publications.
3. Text Book of environmental Studies – ErachBharucha

REFERENCES:

1. "Environmental studies", R.Rajagopalan, Oxford University Press.
2. "Introduction to Environmental Science", Anjaneyulu Y, B S Publications
3. "Environmental Science", 11th Edition – Thomson Series – By Jr. G. Tyler

Constitution of India

III B.Tech – VI Semester (18HU001)

Lectures : 3 Periods / Week	Tutorial :	Practical : 0
CIA Marks : 50	SEE Marks : 50	Credits : 3

UNIT - I

(14 Periods)

1. Meaning of the constitutional law and constitutionalism.
2. Historical perceptive of the constitution of India
3. Salient features and characteristics of the constitution of India.
4. Preamble, union and its territory and citizenship.

UNIT - II

(14 Periods)

1. Fundamental rights principles.
2. Directive principles of state policy.
3. Fundamental Duties.
4. The government of the union, the President, the Prime Minister, the council of ministers, the parliament of India, the supreme court and the union judiciary.

UNIT - III

(14 Periods)

1. The Machinery of Government in the states, The Governor, The Chief Minister and council of Ministers, The State legislature, High court and Judiciary in the states.
2. Union territories.
3. The Federal System, Division of powers between centre and states, Legislative Administration and Financial relation.
4. Emergency Provisions, President Rule, National Emergency, Financial Emerging.
5. Local self Government, Panchayat Raj, Municipalities and municipal Corporation.

UNIT - IV

(14 Periods)

1. Local self Government, Panchayat Raj, Municipalities and Municipal Corporation.
2. Miscellaneous Provisions, The Comptroller and Auditor general of India, The Public Service Commission, Special Provisions relating to certain classes, Elections – Political parties.
3. Amendment of the Constitution.

REFERENCES:

1. Constitutional Government in India - M V Pylee – Asia Publishing House
2. Indian Government and Politics – D C Dasgupta. Vikas Publishing house
3. The Oxford Hand Book of the Indian Constitution, Sujit Chowdary, Madhav Khosla Pratapabhem Mehla.
4. Constitutional question in India ; The President , Parliament and the States – Noorani A G, Oxford Publishers.
5. Indian Constitution and its features, Astoush Kumar, Anmol Publishers
6. The Constitution of India, Bakshi P M, Universal Law Publishers
7. Legelect's the constitution of India, Ramnarain Yadav, K K Legelect Publishers

Industrial Management & Entrepreneurship Development

IV B.Tech – VIII Semester (18ME002)

Lectures : 4 Periods / Week	Tutorial : 0	Practical : 0
CIA Marks : 50	SEE Marks : 50	Credits : 3

UNIT - I (14 Periods)

General management: Management definition, Functions of Management and Principles of Management. **Forms of Business Organization:** Salient features of Sole Proprietorship, Partnership. **Joint Stock Company:** Private Limited and Public Limited companies; Merits and Demerits of above types. **Marketing Management:** Functions of Marketing, Concepts of Selling and Marketing, Marketing mix (4 Ps); Advertising and sales promotion; Product life cycle.

UNIT - II (14 Periods)

Production Management: Types of production systems, Productivity Vs Production, Production planning and control.

Materials Management: Inventory Control, Basic EOQ model, ABC analysis.

Quality Control: Control Charts: \bar{X} chart, R chart, P chart, C chart, Acceptance sampling.

UNIT - III (14 Periods)

Financial Management: Functions of finance, Types of Capital-Fixed and Working Capital, Break Even Analysis. Depreciation- Straight line method of depreciation, declining balance method and the Sum of Years digits method of Depreciation.

Personnel Management: Functions of personnel management, human resource planning, recruitment, selection, placement, training and development and performance appraisal. Motivation theories, leadership styles.

UNIT - IV (14 Periods)

Entrepreneurship Development: Introduction, Entrepreneurial characteristics, Functions of an Entrepreneur; Factors affecting entrepreneurship; Role of communication in entrepreneurship; Entrepreneurial development-Objectives, Need of Training for enterprises; Finance for the enterprises; Product, Process and Plant Design- Product analysis and Product Design process. Steps in process design and Plant Design.

TEXT BOOKS:

1. Industrial Engineering and Operations Management, S.K.Sharma, Savita Sharma and Tushar Sharma.
2. Industrial Engineering and Production Management, Mahajan.
3. Management Science, A.R.Aryasri

REFERENCES:

1. Operations Management, Joseph G Monks.
2. Marketing Management, Philip Kotler.

3. The Essence of Small Business, Barrow colin.
4. Small Industry Ram K Vepa

Professional Ethics & Human Values

(Common to CSE & IT)
B.Tech – IV Semester (MC02)

Lectures	:	2 Hours / Week	Tutorial	:	0	Practical	:	0
CIE Marks	:	30	SEE Marks	:	0	Credits	:	0

Prerequisites:

None

Course Objectives:

Student will be able to

- CO1: Comprehend a specific set of behaviours and values any professional must know and must abide by, including confidentiality, honesty and integrity. Understand engineering as social experimentation.
- CO2: Know, what are safety and Risk and understand the responsibilities and rights of an engineer such as collegiality, loyalty, bribes/gifts.
- CO3: Recognize global issues visualizing globalization, cross-cultural issues, computer ethics and also know about ethical audit
- CO4: Discuss case studies on Bhopal gas tragedy, Chernobyl and about codes of Institute of Engineers, ACM

Course Learning Outcomes:

Student will be able to

- CLO 1: Comprehend a specific set of behaviours and values the professional interpreter must know and must abide by, including confidentiality, honesty and integrity
- CLO 2: Understand professional responsibilities and rights, prejudice in not asking for clarification, fear of law and plain neglect will lead to the occurrence of many repetitions of past mistakes
- CLO 3: Understand the responsibility of engineer to ensure safety of public by making risk-benefit analysis.
- CLO 4: Address the global issues that curbs ethics in environment and computer discipline. The students can speak out against issues in these areas affecting the public interest
- CLO 5: Understand the supplemented guidelines that are intended for decision making in the conduct of professional work

UNIT - I (12 Hours)

Human Values: Morals, Values and Ethics, Integrity, Work Ethics, Service and Learning, Civic Virtue, Respect for Others, Living Peacefully, Caring and Sharing, Honesty, Courage, Value Time, Cooperation, Commitment and Empathy, Spirituality, Character.

Engineering Ethics: History of Ethics, Engineering Ethics, Consensus and Controversy, Profession and Professionalism, Professional Roles of Engineers, Self Interest, Customs and Religion, Uses of Ethical Theories, Professional Ethics, Types of Inquiry, Kohlberg's Theory, Gilligan's Argument, Heinz's Dilemma.

Engineering as Social Experimentation: Comparison with Standard Experiments, Knowledge Gained, Conscientiousness, Relevant Information, Learning from the Past, Engineers as Managers, Consultants, and Leaders, Accountability, Roles of Codes, Codes and Experimental Nature of Engineering.

UNIT - II (12 Hours)

Engineers' Responsibility for Safety and Risk: Safety and Risk, Types of Risks, Safety and the Engineer, Designing for Safety, Risk-Benefit Analysis, Accidents.

Responsibilities and Rights: Collegiality, Two Senses of Loyalty, Obligations of Loyalty, Misguided Loyalty, Professionalism and Loyalty, Professional Rights, Professional Responsibilities, Conflict of Interest, Self-interest, Customs and Religion, Collective Bargaining, Confidentiality, Acceptance of Bribes/Gifts, Occupational Crimes, Whistle Blowing.

UNIT - III (12 Hours)

Global Issues: Globalization, Cross-cultural Issues, Environmental Ethics, Computer Ethics, Weapons Development, Ethics and Research, Analyzing Ethical Problems in Research, Intellectual Property Rights (IPRs).

Ethical Audit: Aspects of Project Realization, Ethical Audit Procedure, The Decision Makers, Variety of Interests, Formulation of the Brief, The Audit Statement, The Audit Reviews.

UNIT - IV (12 Hours)

Case Studies: Bhopal Gas Tragedy, The Chernobyl Disaster.

Appendix1: Institution of Engineers (India): Sample Codes of Ethics.

Appendix2: ACM Code of Ethics and Professional Conduct.

TEXT BOOKS:

- 1.

REFERENCES:

- 1.

Essence of Indian Traditional Knowledge

(Common to all branches)

B.Tech – V Semester (MC03)

Lectures	:	2 Hours / Week	Tutorial	:	0	Practical	:	0
CIA Marks	:	30	SEE Marks	:	00	Credits	:	0

Prerequisites:

None

Mapping of Course Learning Outcomes with POs and Program Specific Outcomes(PSOs):

CLO/OCs	Program Outcomes(POs)												PSOs		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
CLO 1	1	2	3	-	3	-	-	-	-	-	-	1	3	3	3
CLO 2	1	2	3	-	3	-	-	-	-	-	-	1	3	3	3
CLO 3	1	2	3	-	3	-	-	-	-	-	-	1	3	3	3
CLO 4	1	2	3	-	3	-	-	-	-	-	-	1	3	3	3

UNIT - I

(10 Hours)

Historical Background: TKS during the Pre-colonial and Colonial Period

Indian Traditional Knowledge System

Traditional Medicine: Ayurveda, Simple Definition, Origin, Texts, The Great Three Classics of Ayurveda, The Lesser Three Classics of Ayurveda, The Branches of Ayurveda, Basic Concepts of Ayurveda, Purusha/Prakruti, Manifestation of Creation, Space, Air, Fire, Water, Earth, Mental Constitution, Satvic Mental Constitutions, Rajasic Mental Constitutions, Tamasic Mental Constitutions, Vata, Pitta and Kapha: The Three Doshas

UNIT - II

(12 Hours)

Traditional Production and Construction Technology: Social Conditions and Technological Progress, The Impetus for Metallurgy, Social Needs and Technological Applications, Scientific Rationalism and Technological Efficacy, Cultural Mores and Technological Innovation, State Support of Technology, Limitations of Pre-Industrial Manufacturing, India and the Industrial Revolution.

History of Physics and Chemistry: Philosophy and Physical Science, Particle Physics, Optics and Sound, Astronomy and Physics, The Laws of Motion, Experimentation versus Intuition, The Social Milieu, The Five Basic Physical Elements, Indian Ideas about Atomic Physics.

Traditional Art and Architecture and Vastu Shashtra: Vastu, The Principles of Vastu are Simple.

UNIT - III

(12 Hours)

Origin of Mathematics

Astronomy and Astrology

TKS and the Indian Union: Protection and the Legislative Frameworks in India, Comment, Sui Generis System, Trade Secrets and Know-how, Geographical Indications Bill, Protection of Plant varieties and Farmers Rights Bill, Rights of Communities, Monitoring Information on Patent Applications World-wide, Frameworks for Supporting R&D Activities in the Area of TKS.

UNIT - IV

(12 Hours)

Common Yoga Protocol: Introduction, What is Yoga? Brief History and Development of Yoga, The fundamentals of Yoga, Traditional Schools of Yoga, Yogic practices for health and wellness General Guidelines for Yoga Practice: Before the practice, During the Practice, After the Practice, Food for Thought, How Yoga can Help.

1. Invocation
2. Sadilaja/Cālana Kriyās /Loosening Practices,
3. Yogāsanas:
 - Standing Postures: Tāḍāsana (Palm Tree Posture), Vṛkṣāsana (The Tree Posture), Pāda-Hastāsana (The Hands to Feet Posture), Ardha Cakrāsana (The Half Wheel Posture), Trikonāsana (The Triangle Posture)
 - Sitting Postures: Bhadrāsana (The Firm/Auspicious Posture), Vajrāsana (Thunderbolt Posture), Ustrāsana (Camel Posture), Śāśakāsana (The Hare Posture), Vakrāsana (The Spinal Twist Posture),
 - Prone Postures: Makarāsana (The Crocodile Posture), Bhujāṅgāsana (The Cobra Posture), Śalabhbhāsana (The Locust Posture),
 - Supine Postures: Setubandhbhāsana (The Bridge Posture), Uttāna Pādāsana (Raised feet posture), Pavana Muktāsana (The Wind Releasing Posture), Śavāsana (The Corpse/ Dead Body Posture)
4. Kapālabhāti
5. Prāṇāyāma: naḍīśodhana or anuloma viloma prāṇāyāma (Alternate Nostril Breathing), Śītalī Prāṇāyāma, Bhrāmarī Prāṇāyāma (Bhrāmarī Recaka)
6. Dhyāna
7. Sankalpa
8. Śantih pāṭha

TEXT BOOKS:

1. Amit Jha. *Traditional Knowledge System in India*. Pearson, 1 edition, 2009. ISBN 9780321564085
2. Ministry of Ayush. *Common YOGA Protocol*. Ministry of Ayush, 1 edition, 2020. ISBN 9780321564085

REFERENCES:

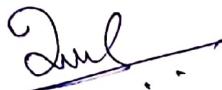
1. Basanta Kumar Mohanta and Vipin Kumar Singh. *Traditional Knowledge System and Technology in India*. Pearson, 1 edition, 2012. ISBN 9780321564085



Bapatla Engineering College: Bapatla -522102 (Autonomous)
Approved by AICTE :: Affiliated to ACHARYA NAGARJUNA UNIVERSITY
Department of Mechanical Engineering

Courses offered relevant to the local, national, regional, and global developmental needs.

Course Code	Course Name	Regulation	Relevance to the local, national, regional, and global developmental needs
18ME306	Constitution of India	R18	National Need- To create a sense of responsible and active citizenship.
18ME405	Essence of Indian Traditional Knowledge	R18	National need-To gain knowledge in yoga science and wisdom in modern society with rapid technology.
20MC01/ CE01	Environmental Studies	R20	Global need-To know the importance of environment and its impact on the human world
20ME308/MC	Professional Ethics and Human Values	R20	Global need students to create an -To enable the awareness on Engineering Ethics.
20ME405/HS	Industrial Management and Entrepreneurship Development	R20	Global need-To enable the students to create an awareness on Entrepreneurship Development


HOD, ME Dept.
PROFESSOR & HEAD
Department of Mechanical Engineering
Bapatla Engineering College
Bapatla

CONSTITUTION OF INDIA
18ME306
II Year B.Tech. (Mech) Third Semester

Lectures	2	Tutorial	0	Practical	0	Credits	0
Continuous Internal Assessment		50	Semester End Examination (3 Hours)		50		

Course Objectives:

1. To provide basic information about fundamental law of the country.
2. To educate the student about fundamental Rights and fundamental duties of citizens.
3. To educate the students about Government organs, methods of functioning
4. To motivate students to leave narrow selfish outlook and inculcate broad national, human outlook.

Course Outcomes:

1. Understand the importance of the constitution in a Democratic Society
2. Understand the Fundamental Rights, Duties of a citizen by discharging his duties to become a good citizen.
3. Remember about Judicial supremacy and Independence of judiciary and fight for his legitimate Rights through court of law.
4. Applying the principles to participate in the democratic process of governance and in nation building activities.

UNIT-I

1. Meaning of the constitutional law and constitutionalism.
2. Historical perceptive of the constitution of India
3. Salient features and characteristics of the constitution of India.
4. Preamble, union and its territory and citizenship.

UNIT-II

5. Fundamental rights principles.
6. Directive principles of state policy.
7. Fundamental Duties.
8. The government of the union, the president, The Prime Minister, and the council of ministers, The parliament of India, The supreme court, the union judiciary

UNIT-III

9. The Machinery of Government in the states, The Governor, The Chief Minister and council of Ministers, The State legislature, High court, Judiciary in the states
10. Union territories.
11. The Federal System, Division of powers between centre and states, Legislative Administration and financial relation.
12. Emergency Provisions, President Rule, National Emergency, Financial Emergency
13. Local self-Government, Panchayat Raj, Municipalities and municipal Corporation.

UNIT-IV

14. Local self-Government, Panchayat Raj, Municipalities and municipal Corporation

15. Miscellaneous Provisions, the comptroller and Auditor general of India, The Public Service Commission, Special Provisions relating to certain classes, Elections – Political parties.
16. Amendment of the Constitution.

TEXT BOOKS

1. Introduction to constitution of India, D.D.Basu, Lexis Nexus
2. The constitution of India, P.M.Bhakshi, Universal law publishing

REFERENCE BOOKS

1. Constitutional Government in India - M V Pylee – Asia Publishing House
2. Indian Government and Politics – D C Dasgupta. Vikas Publishing house
3. The Oxford Hand Book of the Indian Constitution, Sujit Chowdary, Madhav Khosla Pratapabhem Mehla.
4. Constitutional question in India ; The President , Parliament and the States – Noorani A G – Oxford.
5. Indian Constitution and its features – Astoush Kumar, Anmol Publishers
6. The Constitution of India – Bakshi P M – Universal Law Publishers
7. Legelect's the constitution of India – Ramnarain Yadav, K K Legelest Publication

CO-PO MAPPING

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1						3	3	2	3			3			
CO2						3	1	2	1			3			
CO3						3	1	2	1			3			
CO4						3	3	2	3			3			

ESSENCE OF INDIAN TRADITIONAL KNOWLEDGE
18ME405
II Year B.Tech. (Mech) Fourth Semester

Lectures	2	Tutorial	0	Practical	0	Credits	0
Continuous Internal Assessment		50	Semester End Examination (3 Hours)		50		

Course Outline:

This Course is to facilitate the students with the concepts of Indian traditional knowledge and to make them understand the Importance of roots of knowledge system.

Course Objectives:

1. This course gives a broad range description of Indian Knowledge system and associated perspective of modern scientific world-view
2. The course aims at imparting basic principles of thought process, reasoning and inferencing as well as sustainability of Indian traditional knowledge systems connecting society and nature.
3. Holistic life style of Yogic-science and wisdom capsules in Sanskrit literature are also important in modern society with rapid technological advancements and societal disruptions.
4. The course focuses on the study of various case studies in Indian Traditional knowledge system.

Course Outcomes:

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

1. Understand the structure of Indian knowledge and its importance
2. Compare the Indian traditional knowledge Systems with Other Global systems. .
3. Know the concept of yoga and its correlations to science.
4. Recognise various case studies related to Indian Traditional knowledge.

Course Contents:

UNIT I

Basic Structure of Indian Knowledge System (i) वेद, (ii) उपवेद (आयुर्वेद, धनुर्वेद, गन्धर्वेद, स्थापत्य आदि) (iii) वेदांग (शिक्षा, कल्प, निरूत, व्याकरण, ज्योतिष छंद), (iv) उपाइग (धर्म शास्त्र, मीमांसा, पुराण, तर्कशास्त्र)

(8)

UNIT II

Modern Science and Indian Knowledge System

Introduction to traditional knowledge: Define traditional knowledge, nature and characteristics, scope and importance, kinds of traditional knowledge, The historical impact of social change on

traditional knowledge systems. Indigenous Knowledge (IK), characteristics, traditional knowledge Vs indigenous knowledge, traditional knowledge Vs western knowledge. (8)

UNIT III

Yoga and Holistic Health care

Science of Yoga, Yoga as a tool for healthy Life style,8 limbs of Yoga (Yama,Niyama ,Aasana , Pranayama , Pratyahara , Dharana , Dhyana , Samadhi). (8)

UNIT IV

Case Studies

Traditional knowledge in different sectors: Traditional knowledge in Engineering and Architecture, Traditional Medicinal systems, TK in Agriculture, Traditional Harvesting methods, Traditional food and healthcare needs (8)

TEXT BOOKS:

1. V. Sivaramakrishna (Ed.), Cultural Heritage of India-Course material, BharatiyaVidyaBhavan, Mumbai, 5th Edition, 2014.
2. Swami Jitatmanand, Modern Physics and Vedant, BharatiyaVidyaBhavan
3. Yoga Sutra of Patanjali, Ramakrishna Mission, Kolkatta.
4. Traditional Knowledge System and Technology in India by Basanta Kumar Mohanta and Vipin Kumar Singh, PratibhaPrakashan 2012.
5. Traditional Knowledge System in India by Amit Jha Atlantic publishers, 2002.

REFERENCE BOOKS :

1. G N Jha, (ENG. Trans.), Ed. R N Jha, Yoga-darshanam with Vyasa Bhashya, VidyanidhiPrakasam, Delhi, 2016.
2. R N Jha, Science of consciousness Psychotherapy and yoga practices, Vidyanidhiprakasham, Delhi, 2016.

CO-PO MAPPING

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2					2	2		2	3			2	1	
CO2	2					1		3	2	3			2	1	
CO3						1			2	2					
CO4	2	3	2		2	2		2	2	3			2	1	2

ENVIRONMENTAL STUDIES

20MC01/CE01

I Year B. Tech. Second Semester

Lectures	2	Tutorial	0	Practical	0	Credits	0
Continuous Internal Assessment		30		Semester End Examination (3 Hours)		NILL	

Course Objectives:

1. To develop an awareness, knowledge, and appreciation for the natural environment.
2. To understand different types of ecosystems exist in nature.
3. To know our biodiversity.
4. To understand different types of pollutants present in Environment.
5. To know the global environmental problems.

Course Outcomes: Students will be able to

1. Develop an appreciation for the local and natural history of the area.
2. Hope for the better future of environment in India which is based on many positive factors like Biodiversity, successive use of renewable energy resources and other resources, increasing number of people's movements focusing on environment.
3. Know how to manage the harmful pollutants.
4. Gain the knowledge of Environment.

UNIT-I

Introduction: Definition, Scope and Importance, Need for public awareness. Ecosystems: Definition, Structure and Functions of Ecosystems, types - Forest, Grassland, Desert, Aquatic (Marine, pond and estuaries). *6 periods*

Biodiversity: Definition and levels of Biodiversity; Values of Biodiversity - Consumptive, Productive, Social, Aesthetic, Ethical and Optional; Threats and Conservation of Biodiversity; Hot Spots of Biodiversity, Bio-geographical Classification of India, India as a mega diversity nation. *Chipko movement case study 6 periods*

UNIT-II

Natural resources: **Land:** Land as a resource, Causes and effects of land degradation - Soil erosion, Desertification. **Forest:** Use of forests, Causes and effects of deforestation, Afforestation, Mining - benefits and problems. **Water:** Uses, floods and drought, Dams - benefits and problems.

Energy: Importance of energy, Environmental Impacts of Renewable and Non-renewable energy resources. *Silent Valley Project and Narmada Bachao Andolan case studies 8 periods*

Sustainability: Definition, Concept and Equitable use of resources for sustainable development; Rain water harvesting and Watershed management. Fieldwork on Rain water harvesting and Watershed management. *6 periods + 6 hours field work/Demonstration*

UNIT-III

Pollution: Definition; Causes, effects and control of air, water and nuclear pollution; *Chernobyl Nuclear Disaster case study;* Solid Waste: urban, Industrial and hazardous wastes; Integrated

waste management - 3R approach, composting and vermin-composting. *12 periods*

Environmental acts: Water and air (Prevention and Control of pollution) acts, Environmental protection act, Forest Conservation act. *6 periods*

UNIT-IV

Environmental issues: Green house effect & Global warming, Ozone layer depletion, Acid rains, Green Revolution, Population Growth and environmental quality, Environmental Impact Assessment. Environmental Standards (ISO 14000, etc.) *12 periods*

Case Studies: Bhopal Tragedy, Mathura Refinery and TajMahal, and Ralegan Siddhi (Anna Hazare). *6 periods*

Field work: Visit to a local area to document environmental assets – Pond/Forest/Grassland. Visit to a local polluted site- Urban and industry/ Rural and Agriculture. *6 periods*

TEXT BOOKS

1. "Environmental Studies" by Benny Joseph, Tata McGraw-Hill Publishing Company Limited, New Delhi.
2. "Comprehensive environmental studies"- JP Sharma, Laxmi Publications.
3. Text Book of environmental Studies – ErachBharucha

REFERENCE BOOKS

1. "Environmental studies", R.Rajagopalan, Oxford University Press.
2. "Introduction to Environmental Science", Anjaneyulu Y, B S Publications
3. "Environmental Science", 11th Edition – Thomson Series – By Jr. G. Tyler Miller.

CO - PO MAPPING

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1						2	2		1	1		2			
CO2															
CO3						2	2		2	1		1			
CO4						3	3	1	2	3	2	1			

Professional Ethics and Human Values
20ME308/MC
II Year B. Tech. (Mech) Third Semester

Lectures	2	Tutorial	0	Practical	0	Credits	0
Continuous Internal Assessment		30		Semester End Examination (3 Hours)		0	

Course Objectives :

1. To Understand the human values of professionals
2. To study the Engineering Ethics and uses of ethical theories
3. To know the safety and risk
4. To deal with Global issues and to familiarize with Code of Ethics of several professional bodies

Course Outcomes:

Upon successful completion of the course, the student will be able

1. To apply ethics and Human Values in their professional career
2. To deal with various Variety of moral issues and Moral dilemmas
3. To know the problems encountered with Engineering Experimentation.
4. To realize various global issues and also to familiarize with the responsibilities of professional societies.

Unit I

7 Periods

Human Values: Morals, Values and Ethics, Integrity, Work Ethic, Civic Virtue, Respect for others, Caring, Sharing, Honesty, Valuing time, Empathy, Self Confidence, Character, Professionalism

UNIT-II

7 Periods

Engineering Ethics: Senses of Engineering Ethics, Variety of Moral Issues, Types of Inquiry, Moral Dilemmas, Moral Autonomy, Kohlberg ‘s Theory, Gilligan ‘s Theory

UNIT-III

7 Periods

Engineering as Social Experimentation: Engineering as Experimentation, Engineers as Responsible Experimenters, Safety, Responsibility and Rights: Safety and Risk – Assessment of Safety and Risk, Risk Benefit Analysis and Reducing Risk.

UNIT-IV

7 Periods

Global Issues: Multinational Corporations, Environmental Ethics, Computer Ethics, Weapon Development,

Sample codes of Ethics like ASME, IEEE, and Institution of Engineers(India)

TEXT BOOKS

1. Govindarajan. M, Natarajan. S, Senthilkumar.V.S, Engineering Ethics, PHI, 2004.
2. M.P.Raghavan, ProfessionalEthics and Human Values, Scitech Publications(India)Pvt.ltd., 2009.

REFERENCE BOOKS

1. Mike Martin and Roland Schinzinger, Ethics In Engineering, McGraw Hill, New York 1996.
2. Charles D Fleddermann, Engineering Ethics, Prentice Hall, New Jersey, 2004

CO - PO MAPPING

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1						1		1	2	1					
CO2						1	1	3	2	2	1				
CO3						3	1	1		1	2				
CO4						2	3	1	2	1	2				

INDUSTRIAL ENGINEERING AND MANAGEMENT
20ME405
II Year B.Tech. (Mech) Fourth Semester

Lectures	3	Tutorial	0	Practical	0	Credits	3
Continuous Internal Assessment	30	Semester End Examination (3 Hours)	70				

Course Objectives:

1. To develop the skills of the student in Industrial Engineering such as productivity, Work Study.
2. To provide the working knowledge of management, organization, and Human Resource Management.
3. To imbibe the knowledge of Marketing Management and Financial Management.
4. To make the student develop the skills of decision making with regard to Materials Management and Quality Management.

Course Outcomes:

Upon successful completion of the course, the student will be able to

- CO1: Solve the problems of productivity and Work Study.
- CO2: Understand concepts of management, organisation structures and Human Resource Management.
- CO3: Illustrate the concepts of Marketing Management and Financial Management.
- CO4: Compute the problems of Materials Management and Quality Management for its implementation in the industry.

UNIT-I

Industrial Engineering: Objective, Need and Scope of Industrial Engineering. (2)

Productivity: Introduction, methods to measure productivity, measures to improve productivity.

(3)

Work Study – Definition, objectives and uses; Method study – Definition, objectives, procedure and uses; Time study – Definition, need, functions, and basic concepts of break down.

(5)

UNIT-II

Management: Introduction, Levels of management, Evolution of management thought: Taylor's Scientific Management, Functions of management.

(3)

Organisation: Introduction to organization, principles and types of organization structures.

(3)

Human Resource Management: Functions of HR management, human resource planning, leadership styles, performance appraisal, Motivation Theories.

(4)

UNIT-III

Marketing Management: Introduction, Marketing Vs Selling, marketing mix, distribution channels, and product life cycle based marketing strategies.

(5)

Financial Management: Scope, objectives and functions of Financial Management; Reading Profit & Loss account and Balance sheet; Working Capital Management: Concepts and Objectives.

(6)

UNIT-IV

Materials Management: Inventory Control, Inventory costs, Basic EOQ model, Model with Price breaks, P and Q systems, ABC analysis.

(5)

Quality Management: Importance of quality, Difference between Inspection and Quality control, Components of total quality, Acceptance sampling, Introduction to Taguchi methods

(6)

TEXT BOOKS

1. Management: A Global & Entrepreneurial Perspective, Heinz Weihrich, Mark Cannice, and Harold Koontz, McGraw hill Education, 2010.
2. Work study by ILO, IV Revised Edition.
3. Industrial Engineering and Management by A Ravi Shankar, second edition, Galgotia publications, 2001
4. Handbook of industrial Engineering: Technology and Operations Management, Gayriel Salvendy, 3rd Edition, Wiley publication, 2007
5. Industrial Engineering and Production Management by Martand T Telsang, S Chand publication, 2018
6. Industrial Engineering and production Management by M Mahajan, Dhanpat Rai and Co. Publishers, 2014.

REFERENCE BOOKS

1. Maynard's Industrial Engineering Handbook, Kjell B. Zandin, Fifth Edition, 2001, The McGraw-Hill Companies, Inc.

2. Principles of Marketing - Basic concepts of Marketing Philip T. Kotler, Gary Armstrong, et al., Pearson, 2018.

CO-PO MAPPING

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	3	2	2		1				1			3		2
CO2	3							1		2			3		
CO3	3	2		2		1				2	3		3		
CO4	3	3	2	2						2	2		3		3



Bapatla Engineering College: Bapatla-522102 (Autonomous)

Approved by AICTE :: Affiliated to ACHARYA NAGARJUNA UNIVERSITY

Department of MCA

Courses offered relevant to the local, national, regional, and global developmental needs.

Course Code	Course Name	Regulation	Relevance to the local, national, regional, and global developmental needs
MCA302	Cryptography & Network Security	R20	Participation in the Networked World can provide new ways for developing countries to improve their economic, social and political well-being.
MCA303	Cloud Computing	R20	Participation in the cloud computing world benefits for the individuals, small groups, and mid-market level and Enterprise level organizations to improve their business.
MCA304	Machine Learning	R20	It gives enterprises a view of trends in customer behaviour and business operational patterns, as well as supports the development of new products.
MCA305.1	Mobile Computing with Android	R20	Mobile apps can offer them an advantage, as they can increase their repeat business opportunities and improve referral rates. They can also boost new product and service adoption rates

knapus

HOD, MCA Dept.

MCA 302: CRYPTOGRAPHY AND NETWORK SECURITY

II MCA,III Semester

Course Objectives:

The course is designed to meet the objectives of:

1. Security breaches can be very expensive in terms of business disruption and the financial losses that may result,
2. Increasing volumes of sensitive information are transferred across the internet or intranets connected to it,
3. Networking that make use of internet links are becoming more popular because they are cheaper than dedicated leased lines. This, however, involves different users sharing internet links to transport their data,
4. Directors of business organizations are increasingly required to provide effective information security.

Course Outcomes:

Students successfully completing this module will be able to:

1. Identify some of the factors driving the need for network security,
2. Identify and classify particular examples of attacks,
3. Compare and contrast symmetric and asymmetric encryption systems and their vulnerability to attack, and explain the characteristics of hybrid systems,
4. Describe the use of hash functions and explain the characteristics of one-way and collision-free functions,
5. Describe and distinguish between different mechanisms to assure the freshness of a message,
6. Explain the role of third-party agents in the provision of authentication services,
7. Discuss the effectiveness of passwords in access control and the influence of human behaviour,
8. Identify types of firewall implementation suitable for differing security requirements,
9. Distinguish between firewalls based on packet-filtering routers, application level gateways and circuit level gateways.

Syllabus

Unit-I

Introduction: Security trends, the OSI security architecture, security attacks, security services, security mechanisms, a model for network security.

Classical encryption techniques: Symmetric cipher model, Substitution techniques, Transposition techniques, Rotor machines, Steganography.

Block cipher and the data encryption standard: Blockcipher principles, the strength of DES, Differential and linear cryptanalysis, Block cipher design principles.

Confidentiality using Symmetric Encryption: Placement of encryption function, Traffic confidentiality, key distribution, random number generator.

UNIT-II

Public key cryptography and RSA: Principles of public key crypto systems, The RSA algorithm

Key management:Other public-key crypto systems: Key management, Diffie-Hellman key exchange.

Message authentication and hash functions: Authentication requirements, Authentication functions, message authentication codes, Hash functions, security of hash functions and MACs.

Digital signatures and authentication protocols: Digital signatures, Authentication protocols, Digital Signature standard.

UNIT-III

Authentication Applications: Kerberos, X.509 authentication service

Email Security: Pretty good privacy, S/MIME

IP security: IP security overview, IP security architecture, Authentication header, Encapsulating security payload, combining security associations, key management.

Web security: Web security considerations, Secure Socket Layer and transport layer security, Secure electronic transaction.

UNIT-IV

Intruders: Intruders, Intrusion detection, password management

Malicious Software: Viruses and related threats, virus counter measures, distributed denial of service attacks.

Firewalls: Firewall Design principles, trusted systems, common criteria for information technology, security evaluation.

Prescribed Book:

William Stallings, “Cryptography and Network Security”, Fourth edition, PHI.

Reference Books:

1. William Stallings, “Network Security Essentials – Applications and Standards”, Third Edition, Pearson Education (2007).
2. Chris McNab, “Network Security Assessment”, 2nd Edition, OReilly (2007).
3. Jon Erickson, “Hacking – The Art of Exploitation”, SPD, NOSTARCH Press (2006).
4. Neal Krawety, “Introduction to Network Security”, Thomson (2007).

MCA 303: CLOUD COMPUTING

II MCA III semester

Objectives:

The course is designed to meet the objectives of:

1. The student will learn about the cloud environment, building software systems and components that scale to millions of users in modern internet
2. cloud concepts capabilities across the various cloud service models including IaaS, PaaS, SaaS,
3. developing cloud based software applications on top of cloud platforms.

Outcomes:

Students successfully completing this module will be able to:

1. Understanding the key dimensions of the challenge of Cloud Computing
2. Assessment of the economics, financial, and technological implications for selecting cloud computing for own organization

Syllabus

Unit – I

Cloud Computing Basics: Cloud Computing Overview, applications, Intranets and the Cloud, FirstMovers in the Cloud.

Your Organization and Cloud Computing : When you can use Cloud Computing , Benefits Limitations.

Cloud Computing with Titans : Google, EMC, NetApp, Microsoft, Amazon, Salesforce.com, IBM and partnerships.

Unit –II

The Business Case for Going to the Cloud - Cloud Computing Services, How those Applications Help your Business, Deleting your Datacenter, Thomson Reuters.

Hardware and Infrastructure: Clients, Security- Data Leakage, Offloading work, Logging, Forensics, Compliance VPNs, Key management; Network; Services - identify, integration, mapping, payment, search.

Accessing the Cloud: Platforms web applications, Web APIs, Web Browsers.

Unit- III

Cloud Storage: Overview, Cloud storage providers.

Software as a Service : Overview, Driving Forces, Company Offerings and Industries.

Software plus Services: Overview, Mobile Device Integration, Providers, Microsoft online.

Unit-IV

Local Clouds, Thin Clients, Thick clients: Types of Virtualizations, Virtualization in Your Organization, Server Solutions, Thin Clients.

Migrating to the Cloud: Cloud Services for Individuals, Cloud Services Aimed at the Mid-Market, Enterprise-Class Cloud Offerings, Migration

Best Practices and the Future of Cloud Computing - Analyze Your Service, Best Practices, How Cloud Computing Might Evolve.

Prescribed Book:

Anthony T. Velte, Toby J. Velte, Robert Elsenpeter, "Cloud Computing A Practical Approach", Mc Graw-Hill.

REFERENCES:

1. Michael Miller, "Cloud Computing", Pearson Education, New
2. Rajkumar Buyya, Christian Vecchiola, S.Thamarai Selvi, "Mastering Cloud Computing", Mc Graw Hill Education.
3. Haley Beard, Cloud Computing Best Practices for Managing and Measuring Processes for On-demand Computing, Applications and Data Centers in the Cloud with SLAs, Emereo Pty Limited, July 2008.
4. Cloud Application Architectures, George Reese, ISBN: 8184047142, Shroff/O'Reilly, 2009.

MCA 304 Machine Learning

IIMCA III Semester

Course Objectives:

The course is designed to meet the objectives of:

1. To introduce to the students the basic concepts and fundamentals of machine learning
2. To develop skills of implementing machine learning techniques
3. To familiarize the students with latest technologies
4. To implement machine learning solutions to classification, regression and clustering

Learning Outcomes

1. How to make a computer program to learn from experience
2. Importance of concept learning
3. Representation of decisions and decision making explicitly
4. To come to a conclusion from the observations about an item
5. Prediction of probabilities

UNIT - I

Introduction - Well-posed learning problems, designing a learning system, Perspectives and issues in machine learning

Concept learning and the General to Specific Ordering – Introduction, A concept learning task, Concept learning as search, Find-S: finding a maximally specific hypothesis, Version

spaces and the Candidate-Elimination algorithm, Remarks on version spaces and Candidate-Elimination, Inductive Bias

UNIT - II

Decision Tree learning – Introduction, Decision tree representation, Appropriate problems for decision tree learning, The basic decision tree learning algorithm, Hypothesis space search in decision tree learning, Inductive bias in decision tree learning, Issues in decision tree learning

Evaluation Hypotheses – Motivation, Estimation hypothesis accuracy, Basics of sampling theory, A general approach for deriving confidence intervals, Difference in error of two hypotheses, Comparing learning algorithms

Bayesian learning – Introduction, Bayes theorem, Bayes theorem and concept learning, Maximum likelihood and least squared error hypotheses, Maximum likelihood hypotheses for predicting probabilities, Minimum description length principle, Bayes optimal classifier, Gibbs algorithm, Naïve Bayes classifier, An example learning to classify text, Bayesian belief networks The EM algorithm

UNIT - III

Computational learning theory – Introduction, Probability Learning an Approximately Correct Hypothesis, Sample Complexity for Finite Hypothesis Space, Sample Complexity for infinite Hypothesis Spaces, The Mistake Bound Model of Learning

Instance-Based Learning- Introduction, k -Nearest Neighbor Learning, Locally Weighted Regression, Radial Basis Functions, Case-Based Reasoning, Remarks on Lazy and Eager Learning

Unit- IV

Genetic Algorithms – Motivation, Genetic Algorithms, An illustrative Example, Hypothesis Space Search, Genetic Programming, Models of Evolution and Learning, Parallelizing Genetic Algorithms

Combining Inductive and Analytical Learning – Motivation, Inductive-Analytical Approaches to Learning, Using Prior Knowledge to Initialize the Hypothesis, Using Prior Knowledge to Alter the Search Objective, Using Prior Knowledge to Augment Search Operators

Reinforcement Learning – Introduction, the Learning Task, Q Learning, Non-Deterministic, Rewards and Actions, Temporal Difference Learning, Generalizing from Examples, Relationship to Dynamic Programming

Prescribed Textbook:

Machine Learning – Tom M. Mitchell, - MGH

Reference Book:

1. Introduction to Machine Learning,- Ethem Alpaydin, - PHI

2. Machine Learning: An Algorithmic Perspective, Stephen Marsland, Taylor & Francis

Objectives:

The course is designed to meet the objectives of:

1. To introduce the concept of mobile android
2. To introduce the concept of different views of android.
3. To understand the designing aspects of android mobiles
4. To make them familiar with SMS, email, service, binding and deploying APks.

Outcomes:

Students successfully completing this module will be able to:

1. Familiarized with mobile android Terminology.
2. Understand and building interfaces
3. Understand and creating menus
4. Gain knowledge about the publishing, deploying APK files and Eclipse.

MCA 305.1 Mobile Computing with Android

IIMCA III Semester

Course Objectives:

The course is designed to meet the objectives of:

1. To introduce the concept of mobile android
2. To introduce the concept of different views of android.
3. To understand the designing aspects of android mobiles
4. To make them familiar with SMS, email, service, binding and deploying APks.

Outcomes:

Students successfully completing this module will be able to:

1. Familiarized with mobile android Terminology.
2. Understand and building interfaces
3. Understand and creating menus
4. Gain knowledge about the publishing, deploying APK files and Eclipse.

Syllabus

Unit – I

What is Android? Features of Android, Architecture of Android, Eclipse, Android SDK, ADT, Creating Android virtual devices, Creating Application and Anatomy application. Understanding Activities – Applying styles and themes to activity, hiding the activity title, displaying a dialog window, displaying a progress dialog. Linking Activities using intents. Calling built-in applications using intents.

Unit – II

Understand the components of a screen, Adapting to display orientation, managing changes to screen orientation, creating the user interface programmatically, listening for UI notifications. Basic views, pickers views, list views. Using images views to display pictures, using menus with views and some additional views.

Unit – III

User preferences, persisting data to files, creating and using databases, sharing data in android, using a content provider, creating your own content provider, SMS messaging, e-mails and networking.

Unit – IV

Creating own services, communicating between a service and an activity, binding activities to services, publishing, deploying APF files and eclipse.

Prescribe Book

Beginning Android 4 Application Development, Wei-MengLee, Wiley

Reference Books

Professional Android 4 Application Development, Reto Meier, Wiley India, (Wrox