Bapatla Engineering College: Bapatla-522102 (Autonomous)

Approved by AICTE :: Affiliated to ACHARYA NAGARJUNA UNIVERSITY

Department of Civil Engineering

Courses offered relevant to Professional Ethics, Gender, Human Values, Environment and Sustainability.

Course Code	Course Name	Regulation	Crosscutting issue
20CE01/MC01	Environmental Studies	R20	Environment and Sustainability
20CE307/MC02	Professional Ethics	R20	Ethics
18HU001	Indian Constitution	R18	Gender Balance

HOD, CE Dept.

Dr. Ch. NAGA SATISH KUMAR
M.Tech.,Ph.D.,(NITW)
Professor & Head
Civil Engineering Department
Bapatla Engineering College
BAPATLA-522 102.

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**e**nvironment.

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 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

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															
20CE01/MC01	Environmental Studies	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3	PSO 4
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						2	2		1	1		2				
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						2	2		2	1		1				

	developmental																
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
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 Issued – 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																
20CE307/MC02	Professional ethics	KL	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	PSO 4
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	K3						3	2	3		1				3		

	will understand the basic perception 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		

BAPATLA ENGINEERING COLLEGE:: BAPATLA
(Autonomous)

INDIAN CONSTITUTION
II B.Tech – I Semester (Code : 18HU001)

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.

Learning out Comes: Upon the successful completion of the course the student will be able to

1. Able to understand the importance of the constitution in a Democratic Society.
2. Understand the Fundamental Rights and make the best use of them.
3. Understand the duties of a citizen and discharge his duties and became a good citizen.
4. Know about Judicial supremacy and Independence of judiciary and fight for his legitimate Rights through court of law.
5. As a citizen he can participate in the democratic process of governance.
6. Participate in nation building activities and be away from destructive outfits.

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

UNIT IV

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

14. Miscellaneous Provisions, The comptroller and Auditor general of India, The Public Service Commission, Special Provisions relating to certain classes, Elections – Political parties.

15. Amendment of the Constitution.

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 – RamnarainYadav, K KLegelest Publication

CO-PO-PSO Mapping- INDIAN CONSTITUTION -18HU001

Course Code	Course Name	POs and PSOs																
18HU001	Indian Constitution	KL	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CO1	Understand the importance of the constitution in a Democratic Society	K2						3	3	2	3			3				
CO2	Understand the Fundamental Rights, Duties of a citizen by discharging his duties to become a good citizen.	K2						3	1	2	1			3				
CO3	Remember about Judicial supremacy and Independence of judiciary and fight for his legitimate Rights through court of	K1						3	1	2	1			3				

	law.																	
CO4	Applying the principles to participate in the democratic process of governance and in nation building activities.	K3						3	3	2	3			3				

Courses offered relevant to Professional Ethics, Gender, Human Values, Environment and Sustainability.

Course Code	Course Name	Regulation	Crosscutting issue
20CS104	Environmental Studies	R20	Environment
20CS306	Professional Ethics & Human Values	R20	Professional Ethics & Human Values
18CS505	Essence Of Indian Traditional Knowledge	R18	Sustainability
18ME005	Industrial Management & Entrepreneurship Development	R18	Professional Ethics, Gender
18HU001	Constitution Of India	R18	Gender

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

	PO's												PSO's		
CLO	**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.

PROFESSIONAL ETHICS & HUMAN VALUES II B. Tech. – III Semester

(Code: 20CS306)

Course Objectives: Students will be able to

CO1 Comprehend a specific set of behaviour 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: Students will be able to

CLO-1 Identify and analyze an ethical issue in the subject matter under investigation or in a relevant field and the multiple ethical interests at stake in a real-world situation or practice

CLO-2 Articulate what makes a particular course of action ethically defensible, Assess their own ethical values and the social context of problems.Identify ethical concerns in research and intellectual contexts, including academic integrity, use and citation of sources, the objective presentation of data.

CLO-3 Demonstrate knowledge of ethical values in non-classroom activities, such as service learning, internships, and field work integrate, synthesize, and apply knowledge of ethical dilemmas and resolutions in academic settings, including focused and interdisciplinary research

CLO-4 Paticipate in the discussion of the case studies like bhopal gas tragedy,Chernobyl disasters.

Mapping of Course Learning Outcomes with Program Outcomes & Program Specific Outcomes

	PO's												PSO's		
CLO	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**	**3**
CLO-1	-	-	-	-	-	3	1	3	-	-	-	-	-	-	-
CLO-2	-	-	-	-	-	3	1	3	-	-	-	-	-	-	-
CLO-3	-	-	-	-	-	3	1	3	-	-	-	-	-	-	-
CLO-4	-	-	-	-	-	3	1	3	-	-	-	-	-	-	-

UNIT-1 (8 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-2 (8 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-3 (8 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-4 (8 hours)

Case Studies: Bhopal Gas Tragedy, The Chernobyl Disaster. Appendix 1: Institution of Engineers (India): Sample Codes of Ethics. Appendix 2: ACM Code of Ethics and Professional Conduct.

Text Books :

"Professional Ethics & Human Values", M.GovindaRajan, S.Natarajan, V.S.SenthilKumar, PHI Publications 2013.

References :

"Ethics in Engineering", Mike W Martin, Ronald Schinzinger, TMH Publications.

ESSENCE OF INDIAN TRADITIONAL KNOWLEDGE III B. Tech. – V Semester (Code: 18CS505)

Course Objectives: Students will be able to

CO-1 Generalize the effect of precolonial and colonial period on Indian Traditional Knowledge System, traditional Medicine.

CO-2 Discover the knowledge of ITK in Production, Construction, Physics, Chemistry, Architecture and Vastu.

CO-3 Discriminate the contribution of India in Mathematics, Astronomy & Astrology .

CO-4 Propose the importance of Yoga in holistic living

Course Learning Outcomes: Students will be able to

CLO-1 Understand the concept of Indian Traditional knowledge and its importance.

CLO-2 Compare the Indian traditional knowledge Systems with Other Global systems.

CLO-3 Understand the concept of yoga and its correlations to science.

CLO-4 Study various case studies related to traditional knowledge.

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

Historical Background: TKS during the Pre-colonial and Colonial Period Indian Traditional Knowledge System Traditional Medicine: Ayurveda, Simple Definition, Origin, The Great Three Classics of Ayurveda, The Branches of Ayurveda, Basic Concepts of Ayurveda, Purusha/Prakruti, Manifestation of Creation, Mental Constitution, Vata, Pitta and Kapha: The Three Doshas

UNIT-2 (10 Periods)

Traditional Production and Construction Technology: Social Conditions and Technological Progress, The Impetus for Metallurgy, Social Needs and Technological Applications, State Support of Technology, India and the Industrial Revolution. History of Physics and Chemistry: Philosophy and Physical Science, Optics and Sound, The Laws of Motion, The Five Basic Physical Elements, Indian Ideas about Atomic Physics. Traditional Art and Architecture and Vastu Shashtra: The Principles of Vastu are simple

UNIT-3 (10 Periods)

Origin of Mathematics: The Decimal System in Harappa, Panini and Formal Scientific Notation, The Indian Numeral System, Emergence of Calculus, The Spread of Indian Mathematics, The Concept of Zero.

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 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-4 (10 Periods)

Common Yoga Protocol: Introduction, What is Yoga? Brief History and Development of Yoga, The fundamentals of Yoga, General Guidelines for Yoga Practice: Before the practice, During the Practice, After the Practice, Food for Thought, How Yoga can Help. Invocation, 2. Sadilaja/Cālana Kriyās /Loosening Practices, Yogasanas: Standing Postures: Taḍasana (Palm Tree Posture), Vṛkṣasana (The Tree Posture), PadaHastasana (The Hands to Feet Posture), Ardha Cakrasana (The Half Wheel Posture), Trikonasana (The Triangle Posture) Sitting Postures: Bhadrasana (The Firm/Auspicious Posture), Vajrasana (Thunderbolt Posture), Usṭrasana (Camel Posture), Śaśakasana (The Hare Posture), Vakrasana (The Spinal Twist Posture), Kapalabhati 5. Pranayama: naḍiśodhana or anuloma viloma pranayama (Alternate Nostril Breathing), Śītalī Praṇayama, Bhramari Praṇayama (Bhramari Recaka) 6. Dhyana 7. Sankalpa 8. Śantih patha

Text Books :

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

References :

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

INDUSTRIAL MANAGEMENT & ENTREPRENEURSHIP DEVELOPMENT

IV B.Tech – VIII Semester (Code:18ME005)

UNIT-I 13 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 13 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: chart, R chart, P chart, C chart, Acceptance sampling.

UNIT-III 12 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 12 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.

Course Outcome	**18ME005(Industrial Management and EnterprinuerShip Development)**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**	**PSO3**
CO1	To provide students an insight into the concepts of								3	3	2	2				3

	industrial engineering and organization															
CO2	To familiarize the students with principles of work study, Method study and motion study			2	2							2				3
CO3	To introduce students to various aspects of plant design and materials planning									3	3	3	3			3

Text Book(s) : 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.

CONSTITUTION OF INDIA
IV B.Tech – I Semester (Code :18HU001)

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 off unctioning
4. To motivate students to leave narrow selfish outlook and inculcate broad national, human outlook.

Learning Outcomes: Upon the successful completion of the course the student will be able to

1. Able to understand the importance of the constitution in a Democratic Society.
2. Understand the Fundamental Rights and make the best use of them.
3. Understand the duties of a citizen and discharge his duties and became a good citizen.
4. Know about Judicial supremacy and Independence of judiciary and fight for his legitimate Rights through court of law.
5. As a citizen he can participate in the democratic process of governance.
6. Participate in nation building activities and be away from destructive outfits.

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 Emerging
13. Local self Government, Panchayat Raj, Municipalities and municipal Corporation.

UNIT IV

13. Local self Government, Panchayat Raj, Municipalities and municipal Corporation
14. Miscellaneous Provisions, The comptroller and Auditor general of India, The Public Service Commission, Special Provisions relating to certain classes, Elections – Political parties.
15. Amendment of the Constitution.

Course Outcome	18CS705(Constitution of India)	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	Able to understand the importance of the constitution in a Democratic Society.										2					
CO2	Understand the Fundamental Rights and make the best use of them and the duties of a citizen and discharge his duties and became a good citizen.															
CO3	Know about Judicial supremacy and Independence of judiciary and fight for his legitimate Rights through court of law.							1								
CO4	Participate in nation building activities and							2					3			

	be away from destructive outfits and in the democratic process of governance.															

REFERENCE BOOKS:

1. Constitutional Government in India - M V Pylee – Asia PublishingHouse
2. Indian Government and Politics – D C Dasgupta. Vikas Publishinghouse
3. The Oxford Hand Book of the Indian Constitution, SujitChowdary, MadhavKhoslaPratapabhemMehla.
4. Constitutional question in India ; The President , Parliament and the States – Noorani A G – Oxford.
5. Indian Constitution and its features – Astoush Kumar, AnmolPublishers
6. The Constitution of India – Bakshi P M – Universal LawPublishers
7. Legelect‘s the constitution of India – RamnarainYadav, K KLegelestPublication

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 Professional Ethics, Gender, Human Values, Environment and Sustainability.

Course Code	Course Name	Regulation	Crosscutting issue
18CE001	Environmental Studies	R18	Environment and Sustainability
18EC406	Professional Ethics and Human Values	R18	Human Values and Ethics
18EC601	Constitution of India	R18	Gender Balance
20ECMC51	Essence of Indian Traditional Knowledge	R20	Human Values and Ethics
18ME002	Industrial Management and Entrepreneurship Development	R18	Human Values and Ethics

N. V.

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													
18CE001	**Environmental Studies**	**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**
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						2	2		1	1		2		
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													
18EC406	Professional Ethics and Human Values	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
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 nexis 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													
18EC601	**Constitution of India**	**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**
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), *Uṣtrasana* (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), P*avanaMuktasana* (The Wind Releasing Posture), *Savasana* (The Corpse/ Dead Body Posture); Kapalabhati; *Pranayama:* nadisodhana or anulomaviloma pranayama (Alternate Nostril Breathing), SitaliPraṇayama, BhramariPraṇayama (BhrāmarīRecaka); . 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													
20ECM51	**Essence Of Indian Traditional Knowledge**	**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**
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

INDUSTRIAL MANAGEMENT & ENTREPRENEURSHIP DEVELOPMENT

IV B.Tech- I SEMESTER (CODE: 18ME002)

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

Prerequisites: None

Course Objectives:

1. To provide students an insight into the concepts of General & Scientific management and various forms of business organizations
2. To Provide an understanding of human resource management, and to impart the knowledge of marketing management to the students
3. To enable the students to understand the inventory control concept, Total quality management and supply chain management
4. To make the students to learn various financial aspects of the business, and to know the importance of Entrepreneurship

Course Outcomes: After completion of the course the student must be able to

1. Describe the roles & responsibilities and various functions of the management and learn various forms of business organizations and its dynamics
2. Understand how resources to be planned and also understand various motivation theories, leadership styles and develop ability to understand various marketing strategies to enhance sales promotion
3. Develop knowledge about inventory control, Total quality management and Supply Chain Management
4. Gain complete knowledge of capital and importance of entrepreneurship and its prerequisites

SYLLABUS

UNIT – I

General Management: Management definition, Functions of Management and Principles of Management.

Scientific Management: Definition, Principles of Scientific Management.

Forms of Business Organization: Choice of form of organization, Salient features of Sole Proprietorship, Partnership, Joint Stock Company: Private Limited and Public Limited companies; Cooperative societies, Public sector organizations, State ownership, Public corporation, Merits and demerits of above types.

Introduction to Strategic Management

UNIT – II

Human Resource Management: Functions of HR management, human resource planning, recruitment, selection, placement, training & development and performance appraisal, Motivation theories, leadership styles.

Marketing Management: Concepts of Selling and Marketing, Functions of Marketing, Marketing mix (4 Ps); Advertising and sales promotion; Product life cycle; distribution channels

UNIT – III

Materials Management: Inventory Control, Inventory costs, Basic EOQ model, Model with Price breaks, ABC analysis, FSN Analysis, VED Analysis.

Total Quality Management: Importance of quality, Difference between Inspection and Quality control, Components of total quality, Quality Function Deployment

Introduction to Supply Chain Management

UNIT – IV

Financial Management: Functions of finance, Types of Capital-Fixed and Working Capital, Break Even Analysis.

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.

TEXT BOOKS:

1. Essentials of Management /Koontz and Heinz Weihrich/ Tata-McGraw-Hill 10th Ed.
2. Manufacturing Organization and Management / Amrine / Pearson Education
3. Management Science, A. R. Aryasri.

REFERENCE BOOKS:

1. Operations Management, Joseph G Monks.
2. Marketing Management, Philip Kotler.
3. Entrepreneurship, Robert D Hisrich, Michael P Peters, Mathew Manimala and Dean A.
4. Shepherd-McGraw Hill, India-2014 (9th Edition)–ISBN: 9789339205386

CO-PO-PSO Mapping- Industrial Management & Entrepreneurship Development -18ME002

Course Code	Course Name	POs and PSOs													
18ME002	Industrial Management & Entrepreneurship Development	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
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

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

Courses offered relevant to Professional Ethics, Gender, Human Values, Environment and Sustainability.

Course Code	Course Name	Regulation	Crosscutting issue
14EE601	Professional ethics and human values	R14	Human values and Ethics
18EE506	Professional ethics and human values	R18	Human values and Ethics
18ME002	Industrial management and entrepreneurship development	R18	Gender
18EE706	Constitution of India	R18	Human values and Ethics

HOD, EEE Dept.

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

Lectures: 4 Periods/Week	Tutorial: 0	Self Study: 0	Practical's: 0
Continuous Internal Evaluation:40M		Semester End Examination(3 Hours) : 60M	

Course Syllabus:

Unit – 1

Human Values: Integrity, Work Ethic, Service Learning, Civic Virtue, Caring, Honesty, Courage, Co-Operation, Commitment, Empathy, Self Confidence

Unit -11

Engineering Ethics: Senses Of 'Engineering Ethics, Variety of Moral Issues, Types of Inquiry, Moral Dilemmas, Moral Autonomy, Kohlberg's Theory, Gilligan's Theory, Professions and Professionalism, Professional Ideals and Virtues, Theories about Right Action, Uses Of Ethical Theories.

Unit – 111

Engineering as Social Experimentation: Engineering as Experimentation, Engineers as Responsible Experimenters, Codes of Ethics, 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,

Unit – IV

Global Issues: Multinational Corporations, Environmental Ethics, Computer Ethics, Weapon Development, Engineers as Managers, Consulting Engineering,
Engineering as Expert Witnesses and Advisors,

Text Books:

1. Mike Martin and Roland Schinzinger, Ethics In Engineering, Mc Graw Hill, New York 1996.
2. Govindarajan. M, Natarajan. S, Senthilkimar.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 Robins, Engineering Ethics Concepts and Cases, Thomson Learning, United States, 2000.
3. John R Boatright, Ethics and The Conduct Of Business, Phi, New Delhi, 2003.
4. Edmund G Seebauer And Robert L Barry, Fundamentals Of Ethics For Scientists.

Professional Ethics and Human Values (14EE601)		**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**	**PSO3**
CLO1	Understand objectives of ethics and human values that ought to guide the engineering profession.	-	1		1	-	-	-	-	-	-	-	3	-	-	-
CLO2	Apply work ethics in the profession and in society and Resolves the moral issues in the profession and moral development	-	1	2	3	2	1	2	-	-	-	-	3	-	-	2
CLO3	Understand the Engineers as Responsible experimenters, assessment of safety and risk, employee rights and professional rights.	-	1	-	3	-	-	3	-	-	-	-	2	-	-	3
CLO4	Shape themselves into valuable professionals, follow ethics and are able to solve their ethical dilemmas.	-	2	2	3	2	2	3	-	-	-	-	3	-	-	-

PROFFSSIONAL ETHICS AND HUMAN VALUES

III B.Tech – V Semester (Code: 18EE506)

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

Course Objectives (COs): To make the student

CO1: Understand the importance of ethics and human values in life and society, moral awareness.

CO2: Apply ethics to engineering profession, understood moral development, and importance of ethical theories.

CO3: Understand the Engineers as responsible experimenters, assessment of safety and risk, employee rights and professional rights.

CO4: Shape themselves into valuable professionals, follow ethics and are able to solve theirethical dilemmas.

Course Learning Outcomes (CLOs):

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

CLO1: Understand objectives of ethics and human values that ought to guide the engineering profession.

CLO2: Apply work ethics in the profession and in society and Resolves the moral issues in the profession and moral development.

CLO3: Understand the Engineers as responsible experimenters, assessment of safety and risk, employee rights and professional rights.

CLO4: Shape themselves into valuable professionals, follow ethics and are able to solve their ethical dilemmas

UNIT – 1

Morals, values and Ethics: Integrity – Work ethic – Service learning – Civic virtue – Respectfor others – Living peacefully – Caring – Sharing – Honesty – Courage – Valuing time – Cooperation – Commitment – Empathy – Self-confidence – Character – Spirituality – Introduction to Yoga and meditation for professional excellence and stress management.

UNIT -II

Senses of Engineering Ethics: Variety of moral issues – Types of inquiry – Moral dilemmas – Moral Autonomy – Kohlberg's theory – Gilligan‟s theory – Consensus and Controversy – Models of professional roles – Theories about right action – Self-interest – Customs and Religion – Uses of Ethical Theories.

UNIT – III

Engineering as Social Experimentation: Engineering as Experimentation, Engineers as Responsible Experimenters, Codes of Ethics, 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,

UNIT – IV

Global Issues: Multinational Corporations, Environmental Ethics, Computer Ethics, Engineers as Managers, Consulting Engineering, Engineering as Expert Witnesses and Advisors. Intellectual Property Rights (IPR) – Discrimination.

TEXT BOOKS:

1. Mike Martin and Roland Schinzinger, Introduction to Engineering Ethics, Mc GrawHill, 2nd Edition, 2010.
2. M. Govindarajan, S. Natarajan, V. S. Senthil kumar, "Professional Ethics and Human Values", PHI Learning Pvt Ltd., 2013.
3. Charles E Harris, Michael S Pritchard and Michael J Robins, "Engineering Ethics", 6th edition, 2017.

REFERENCE BOOKS:

1. Charles D Fleddermann, "Engineering Ethics", Pearson Prentice Hall, 2008.
2. John R Boatright, "Ethics and The Conduct of Business", Pearson, 8th Edition, 2016.
3. Edmund G Seebauer And Robert L Barry, "Fundamentals of Ethics for Scientists and Engineers", Oxford University Press, 2000

NPTEL VIDEO LINKS:

1.https://nptel.ac.in/courses/109/106/109106117/
2.https://nptel.ac.in/courses/110/105/110105097/

Professional Ethics and Human Values (18EE506)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CLO1	Understand objectives of ethics and human values that ought to guide the engineering profession.	-	1		1	-	-	-	-	-	-	-	3	-	-	-
CLO2	Apply work ethics in the profession and in society and Resolves the moral issues in the profession and moral development	-	1	2	3	2	1	2	-	-	-	-	3	-	-	2
CLO3	Understand the Engineers as Responsible experimenters, assessment of safety and risk, employee rights and professional rights.	-	1	-	3	-	-	3	-	-	-	-	2	-	-	3
CLO4	Shape themselves into valuable professionals, follow ethics and are able to solve their ethical dilemmas.	-	2	2	3	2	2	3	-	-	-	-	3	-	-	-

IV B.Tech-VIII Semester (Code: 18ME002)

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

Course Objectives:

CO1: To provide students an insight into the concepts of industrial management and variousforms of business organizations
CO 2: It aims to provide the students with an understanding of basics of production systems, productivity and quality.
CO 3: To enable the students to understand the inventory control concept. **CO 4:** To make the students to learn various financial aspects of the business**CO 5:** To know the depreciation and its methods of measuring depreciation. **CO 6:** To Provide an understanding of personnel management.
CO 7: Students are exposed to know the importance of Entrepreneurship
CO 8: To impart the knowledge of marketing to the students

Learning Outcomes:

After completion of the course the student must be able to
CLO-1: Describe the roles & the responsibilities and various functions of the management. Learnvarious forms of business organizations and its dynamics
CLO-2: Understand concepts of productivity and know the ways of enhancing productivity.Develop knowledge about inventory control.
CLO-3: Learn how depreciation occurs and various methods of calculating depreciation.Understand various motivation theories and leadership styles.
CLO-4: Grasp complete knowledge of importance of entrepreneurship and its prerequisites.

UNIT – I

General Management: Management definition, Functions of Management and Principles of Management.
Scientific Management: Definition, Principles of Scientific Management.

Forms of Business Organization: Choice of form of organization, Salient features of Sole Proprietorship, Partnership, Joint Stock Company: Private Limited and Public Limited companies;Cooperative societies, Public sector organizations, State ownership, Public corporation, Merits anddemerits of above types.
Introduction to Strategic Management: Definition and scope

UNIT – II

Human Resource Management: Functions of HR management, human resource planning, recruitment, selection, placement, training & development and performance appraisal, Motivationtheories, leadership styles.
Marketing Management: Concepts of Selling and Marketing, Functions of Marketing, Marketing mix (4 Ps); Advertising and sales promotion; Product life cycle; distribution channels

UNIT – III

Materials Management: Inventory Control, Inventory costs, Basic EOQ model, Model withPrice breaks,

ABC analysis, FSN Analysis, VED Analysis.
Total Quality Management: Importance of quality, Difference between Inspection and Qualitycontrol, Components of total quality, Quality Function Deployment

Introduction to Supply Chain Management: Definition, scope of SCM, Drivers of SCM,Advantages, limitations

UNIT – IV

Financial Management: Functions of finance, Types of Capital-Fixed and Working Capital,Break Even Analysis.
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.

TEXT BOOKS:

1. Essentials of Management /Koontz and Heinz Weihrich/ Tata-McGraw-Hill 10th Ed.
2. Manufacturing Organization and Management / Amrine / Pearson Education
3. Management Science, A. R. Aryasri.
4. Industrial Engineering and production management by M Mahajan, Dhanapat rai Publications
5. Marketing Management, Philip Kotler.

REFERENCE BOOKS:

1. Entrepreneurship, Robert D Hisrich, Michael P Peters, Mathew Manimala and Dean A. Shepherd-McGraw Hill, India-2014 (9th Edition)–ISBN: 9789339205386

Industrial Management &Entrepreneur Ship (18ME002)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CLO1	Describe the roles & the responsibilities and various functions of the management. Learn various forms of business organizations and its dynamics	3	2	-	-	-	1	-	-	-	-	1		1	1	2
CLO2	Understand concepts of productivity and know the ways Of enhancing productivity. Develop knowledge about inventory control.	-	-	-		2	-	3	-	-	-	-	-	-	-	-
CLO3	Learn how depreciation occurs and various methods of calculating depreciation. Understand various motivation theories and leadership styles.	1	1	-	-	-	-	-	2	-	1	2	-	3	-	2
CLO4	Grasp complete knowledge of importance of entrepreneurship and its prerequisites	-		-	3	-	-	-	-	1	-		-	1	-	-

CONSTITUTION OF INDIA

IV B.Tech-VIII Semester (Code: 18HU001)

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

Course Objectives: To make the students

CO1: To understand the importance of constitution
CO2: To understand philosophy of fundamental rights and duties
CO3: To understand the central and state relation, financial and administrative.
CO4: To understand the autonomous nature of constitutional bodies like Supreme Court and highcourt, controller and auditor general of India and election commission of India.

Course Outcomes: Students will be able to

CLO1: Understand and explain the Fundamental rights. CLO2: Explain the Fundamental duties and its importance.
CLO3: Explain about the uses of Panchayath Raj system in India and its duties.CLO4: Understand the System of Election Commission and its functions.

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 Administrationand Financial relation.
12. Emergency Provisions, President Rule, National Emergency, Financial Emerging

13. Local self Government, Panchayat Raj, Municipalities and municipal Corporation.

UNIT IV

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

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

Courses offered relevant to Professional Ethics, Gender, Human Values, Environment and Sustainability.

Course Code	Course Name	Regulation	Crosscutting issue
18CE002	Biology for Engineers	R18	Environment and sustainability
18EI701	Industrial Management and Entrepreneurship Development	R18	Human Values and Ethics
20EI206	Environmental studies	R20	Environment and sustainability
20EI306	Constitution of India	R20	Gender balance
20EI506	Professional Ethics and Human Values	R20	Human Values and Ethics

HOD, EIE Dept.

Ch. Ramesh
Prof. & H.O.D,
Dept. of Electronics & Instrumentation Engineering
BAPATLA ENGINEERING COLLEGE
BAPATLA - 522 102.

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 naturalenvironment.
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 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

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.	C I E: 50M	SEE : 50M	Credits :2

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 andConflicts 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.

	POS												**PSOS**		
COS	**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

INDUSTRIAL MANAGEMENT & ENTREPRENEURSHIP DEVELOPMENT(18EI701/ME002)

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

Course Objectives:

- To provide students an insight into the concepts of industrial management and various forms of business organizations
- It aims to provide the students with an understanding of basics of production systems, productivity and quality. To enable the students to understand the inventory control concept.
- To make the students to learn various financial aspects of the business. To know the depreciation and its methods of measuring depreciation.
- To Provide an understanding of personnel management. Students are exposed to know the importance of Entrepreneurship. To impart the knowledge of marketing to the students

Course Outcomes :

CO1: Describe the roles & responsibilities and various functions of the management. Learn various forms of business organizations and its dynamics

CO2: Understand concepts of productivity and know the ways of enhancing productivity.

CO3: Develop knowledge about inventory control. Learn how depreciation occurs and various methods of calculating depreciation

CO4: Understand how resources to be planned and also understand various motivation theories and leadership styles. Grasp complete knowledge of importance of entrepreneurship and its prerequisites. Develop ability to understand various marketing strategies to enhance sales promotion

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													
3											2				
4			2										3		

UNIT – I

General Management: Management definition, Functions of Management and Principles of Management. 4

Scientific Management: Definition, Principles of Scientific Management. 2

Forms of Business Organization: Choice of form of organization, Salient features of Sole Proprietorship, Partnership, Joint Stock Company: Private Limited and Public Limited companies; Cooperative societies, Public sector

organizations, State ownership, Public corporation, Merits and demerits of above types.

6

Introduction to Strategic Management

2

UNIT – II

Human Resource Management: Functions of HR management, human resource planning, recruitment, selection, placement, training & development and performance appraisal, Motivation theories, leadership styles.

8

Marketing Management: Concepts of Selling and Marketing, Functions of Marketing, Marketing mix (4 Ps); Advertising and sales promotion; Product life cycle; distribution channels

6

UNIT – III

Materials Management: Inventory Control, Inventory costs, Basic EOQ model, Model with Price breaks, ABC analysis, FSN Analysis, VED Analysis.

6

Total Quality Management: Importance of quality, Difference between Inspection and Quality control, Components of total quality, Quality Function Deployment

6

Introduction to Supply Chain Management

4

UNIT – IV

Financial Management: Functions of finance, Types of Capital-Fixed and Working Capital, Break Even Analysis.

6

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. 8

Text Books:

1. Essentials of Management /Koontz and Heinz Weihrich/ Tata-McGraw-Hill 10th Ed.
2. Manufacturing Organization and Management / Amrine / Pearson Education
3. Management Science, A. R. Aryasri.

Reference Books:

1. Operations Management, Joseph G Monks.
2. Marketing Management, Philip Kotler.
3. Entrepreneurship, Robert D Hisrich, Michael P Peters, Mathew Manimala and Dean A. Shepherd-McGraw Hill, India-2014 (9th Edition)–ISBN: 9789339205386

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 naturalenvironment.
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 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

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

	POS												PSOS		
CO	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 to74th 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”, 2 ndEdition,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)

Approved by AICTE :: Affiliated to ACHARYA NAGARJUNA UNIVERSITY

Departments of Information Technology

Courses offered relevant to Professional Ethics, Gender, Human Values, Environment and Sustainability.

Course Code	Course Name	Regulation	Crosscutting issue
18CE001	Environmental Studies	R18	Environment and Sustainability
18HU001	Constitution of India	R18	Gender Balance
18ME002	Industrial Management and Entrepreneurship Development	R18	Principles of Management And Introduction to General marketing.
MC02	Professional Ethics and Human Values	R20	Human Values and Ethics
20IT506 /MC03	Essence of Indian Traditional Knowledge	R20	Past Events and Traditional Knowledge

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 ofManagement. **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:$\overline{X}$ 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 anEntrepreneur; 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 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 **(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), Uṣṭrāsana (Camel Posture), Śaśakāsana (The Hare Posture), Vakrāsana (The Spinal Twist Posture),
    - Prone Postures: Makarāsana (The Crocodile Posture), Bhujaṅgāsana (The Cobra Posture), Śalabhāsana (The Locust Posture),
    - Supine Postures: Setubandhāsana (The Bridge Posture), Uttāna Pādāsana (Raised feet posture), Pavana Muktāsana (The Wind Releasing Posture), Śavāsana (The Corpse/ Dead Body Posture)
4. Kapālabhāti
5. Prānāyāma: naḍīśodhana or anuloma viloma prānāyāma (Alternate Nostril Breathing), Śītalī Prāṇāyāma, Bhrāmarī Prāṇāyāma (Bhrāmarī Recaka)
6. Dhyāna
7. Sankalpa
8. Śantih pātha

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 Professional Ethics, Gender, Human Values, Environment and Sustainability.

Course Code	Course Name	Regulation	Crosscutting issue
18ME306	Constitution of India	R18	Gender Balance
18ME405	Essence of Indian Traditional Knowledge	R18	Human Values and Ethics
20MC01/CE01	Environmental Studies	R20	Environment and Sustainability
20ME308/MC	Professional Ethics and Human Values	R20	Human Values and Ethics
20ME405/HS	Industrial Management and Entrepreneurship Development	R20	Human Values and Ethics

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 Emerging
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, निरुत, 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 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

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 Understandthe 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, Valuingtime, 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 asResponsible Experimenters, Safety, Responsibility and Rights: Safety and Risk – Assessmentof 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, Senthilkimar.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 IndustrialEngineering 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 ManagementandQuality 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 ofmanagement,organisation structures and Human Resource Management.
CO3: Illustrate the concepts of Marketing Management and Financial Management.
CO4: Compute the problems of Materials Management andQuality 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, GayrielSalvendy, 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 Physics

Courses offered relevant to Professional Ethics, Gender, Human Values, Environment and Sustainability.

Course Code	Course Name	Regulation	Crosscutting issue
PG-PH Non-Core Paper-7 (Optional)	Environmental Problems and Sustainable Development	R15	Environment and Sustainability
PG-PH Non-Core Paper-7 (Optional)	Environment and Social issues	R15	Environment and Sustainability

K. Ramakrishna
HOD, Physics Dept.

NON-CORE SYLLABUS
SEMESTER–II
PAPER-7: ENVIRONMENTAL PROBLEMS AND SUSTAINABLE DEVELOPMENT

Unit- I

1. Environment-Definition, scope and importance of environmental studies. Sustainable development-genesis, concept and relevance.
2. Major environmental problems: global warming, climate change, mining, industrial pollution, ecological degradation, degradation of forests and biodiversity, water resources depletion, air quality deterioration, urbanization, natural resources depletion.

Unit -II

3. Energy conservation, efficient energy use, renewable energies, conservation of non-conventional energy resources, transportation
4. Sustainable development: variables, sustainable agriculture, sustainable industry, food security, sustainable habitat, sustainable forestry, sustainable health, sustainable economic growth

Unit-III

5. Green technologies and eco-friendly technologies, GEMs and GMOs, international environmental organizations, international conventions.
6. Sociological hazards of environmental degradation: civil disorders, crime, terrorism, wars, fire, power outrage, hazardous chemicals

Unit-IV

7. Environmentalism and eco-consciousness, environmental education, role of public in environmental protection, role of NGOs.
8. Strategies and public participation in Sustainable development

Unit-V

9. Relationship between environmental quality and sustainable development.
10. Efforts in the developing and developed nations to achieve sustainable development.

HOD Physics

SEMESTER–III

PAPER-7: ENVIRONMENT AND SOCIAL ISSUES

it-I

1. Environmental Ethics : Issues and possible solutions
2. Resettlement and Rehabilitation of people, problems and concerns
3. Consumerism and waste products

it-II

4. Environmental Health and urbanization
5. Rainwater harvesting and watersheds management
6. Population growth and environmental quality

it-III

7. Human rights related to environmental quality
8. Women and natural resources conservation
9. Solid waste management in cities and impacts on environmental quality

it-IV

10. Wasteland reclamation
11. Environmental movements in India
12. Eco-tourism

it-V

13. Role of public in environmental protection
14. Governmental Agencies on Environmental Protection
15. Green Bench, Green Tribunals, Green Products, Green farming, Eco-labelling, ISO-9000, ISO-14000, OSHAs and Safety, Health and Environment (SHE), Green Jobs

HOD, Physics