

PANIMALAR ENGINEERING COLLEGE

(An Autonomous Institution, Affiliated to Anna University, Chennai)

SYLLABUS OF MANDATORY COURSES

21MC1001	ENVIRONMENTAL SCIENCE	L	T	P	C
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OBJECTIVES:

- To introduce the basic concepts of environment, ecosystems and biodiversity and emphasize on the biodiversity of India and its conservation.
- To impart knowledge on the causes, effects and control or prevention measures of environmental pollution and natural disasters.
- To facilitate the understanding of global and Indian scenario of renewable and non-renewable resources, causes of their degradation and measures to preserve them.
- To familiarize the influence of societal use of resources on the environment and introduce the legal provisions, National and International laws and conventions for environmental protection.
- To inculcate the effect of population dynamics on human and environmental health and inform about human right, value education and role of technology in monitoring human and environmental issues.

UNIT I ENVIRONMENT, ECOSYSTEMS AND BIODIVERSITY 6

Definition, scope and importance of environment – need for public awareness - concept of an ecosystem – structure and function of an ecosystem – producers, consumers and decomposers – energy flow in the ecosystem – ecological succession – food chains, food webs and ecological pyramids Introduction to biodiversity definition: genetic, species and ecosystem diversity – bio geographical classification of India – value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values – Biodiversity at global, national and local levels – India as a mega-diversity nation – hot-spots of biodiversity – threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts – endangered and endemic species of India – conservation of biodiversity: In-situ and ex-situ conservation of biodiversity.

UNIT II ENVIRONMENTAL POLLUTION 6

Definition – causes, effects and control measures of: (a) Air pollution (b) Water pollution (c) Soil pollution (d) Marine pollution (e) Noise pollution (f) Thermal pollution (g) Nuclear hazards – solid waste management: causes, effects and control measures of municipal solid wastes, biomedical wastes and e-wastes – role of an individual in prevention of pollution – pollution case studies

UNIT III NATURAL RESOURCES 6

Forest resources: Use and over-exploitation, deforestation, case studies- timber extraction, mining, dams and their effects on forests and tribal people – Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems – Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies – Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies – Land resources:

UNIT IV SOCIAL ISSUES AND THE ENVIRONMENT

6

From unsustainable to sustainable development – urban problems related to energy – water conservation, rain water harvesting, watershed management – resettlement and rehabilitation of people; its problems and concerns, case studies – role of non-governmental organization- environmental ethics: Issues and possible solutions – climate change, global warming, acid rain, ozone layer depletion. environment protection act – Air (Prevention and Control of Pollution) act – Water (Prevention and control of Pollution) act – Wildlife protection act – Forest conservation act – enforcement machinery involved in environmental legislation- central and state pollution control boards- Public awareness.

UNIT V HUMAN POPULATION AND THE ENVIRONMENT

6

Population growth, variation among nations – population explosion – family welfare programme – environment and human health – human rights – value education – HIV / AIDS – women and child welfare – role of information technology in environment and human health – Case studies.

TOTAL : 36 PERIODS

COURSE OUTCOME(S):

Upon completion of the course, students will be able to

- CO1: To recognize and understand the functions of environment, ecosystems and biodiversity and their conservation.
- CO2: To identify the causes, effects and environmental pollution and natural disasters and contribute to the preventive measures in the immediate society.
- CO3: To identify and apply the understanding of renewable and non-renewable resources and contribute to the sustainable measures to preserve them for future generations
- CO4: To recognize different forms of energy and apply them for suitable applications in for technological advancement and societal development.
- CO5: To demonstrate the knowledge of societal activities on the long and short term environmental issues and abide by the legal provisions, National and International laws and conventions in professional and personal activities and to identify and analyses effect of population dynamics on human value education, consumerism and role of technology in environmental issues.

TEXT BOOKS

1. Anubha Kaushik and C. P. Kaushik's "Perspectives in Environmental Studies", 6th Edition, New Age International Publishers (2018).
2. Benny Joseph, 'Environmental Science and Engineering', Tata McGraw-Hill, New Delhi, (2016).
3. Gilbert M.Masters, 'Introduction to Environmental Engineering and Science', 2nd edition, Pearson Education (2004).

REFERENCE BOOKS

1. R.K. Trivedi, 'Handbook of Environmental Laws, Rules, Guidelines, Compliances and Standards', Vol. I and II, Enviro Media.
2. Cunningham, W.P. Cooper, T.H. Gorhani, 'Environmental Encyclopedia', Jaico Publ., House, Mumbai, 2001.
3. Dharmendra S. Sengar, 'Environmental law', Prentice hall of India PVT. LTD, New

Delhi, 2007.

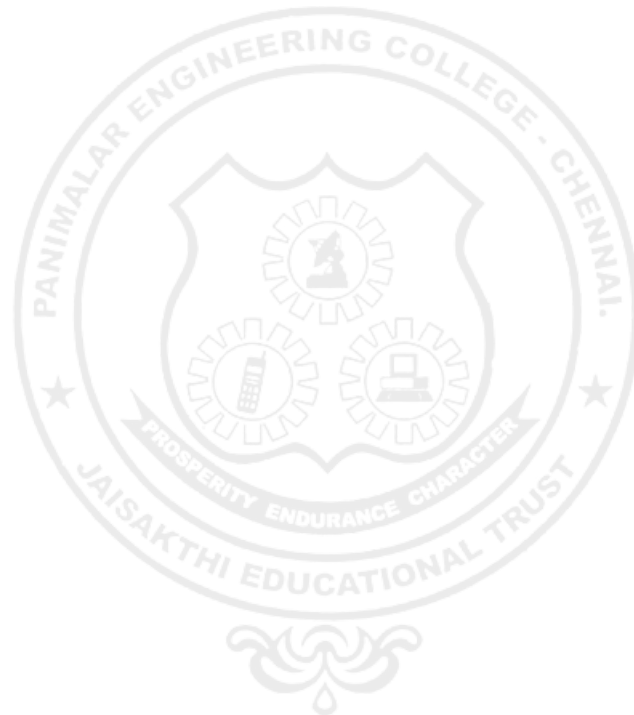
4. Rajagopalan, R, 'Environmental Studies-From Crisis to Cure', Oxford University Press (2005).
5. Erach Bharucha "Textbook of Environmental Studies for Undergraduate Courses" Orient Blackswan Pvt. Ltd. (2013).

WEB REFERENCES

1. <https://ocw.mit.edu/courses/civil-and-environmental-engineering/1-85-water-and-wastewater-treatment-engineering-spring-2006/lecture-notes/>
2. <https://www.slideshare.net/reavan/ce6605-environmental-engineering-ii-course-presentation>.

ONLINE COURSES / RESOURCES:

1. <https://nptel.ac.in/courses/103/107/103107084/>
2. <https://nptel.ac.in/courses/127/105/127105018/>



21MC1002	CONSTITUTION OF INDIA	L	T	P	C
		2	0	0	0

OBJECTIVES:

- To realize the significance of constitution of India to students from all walks of life and help them to understand the basic concepts of Indian constitution.
- To identify the importance of fundamental rights as well as fundamental duties.
- To understand the functioning of Union, State and Local Governments in Indian federal system.
- To channelize students' thinking towards basic understanding the activities of election commission and public service commission.

UNIT I INTRODUCTION TO CONSTITUTION 6

Introduction to constitution of India-Salient features of the Constitution-the Preamble of the Constitution -- Amendment of the constitution -Fundamental Rights-Fundamental duties.

UNIT II UNION GOVERNMENT 6

Structure of Parliament- Lokhasabha and Rajyasabha -President, Vice-president, Prime Minister, Council of Ministers-Structure of the judiciary- Jurisdiction and functions of Supreme Court and high court.

UNIT III STATE GOVERNMENT 6

Structure of state legislation –State Legislative Assembly and State Legislative Council-State Executive- Governor, Chief Minister, Speaker, Deputy Speaker, Council of Ministers.

UNIT IV LOCAL ADMINISTRATION 6

District's Administration Head – Role and Importance-Municipalities – the role of Mayor and Elected Representative-Village panchayath-Taluk panchayath- Zilla panchayath.

UNIT V ELECTION PROVISIONS AND PUBLIC SERVICE COMMISSION 6

Election Commission of India-powers and functions and electoral process-Role of Chief Election Commissioner -UPSC – SSC - RRB -TNPSC

TOTAL : 30 PERIODS

COURSE OUTCOME:

- CO.1** Identify and explore the basic features and modalities about Indian constitution.
- CO.2** Understand the value of the fundamental rights and duties for becoming good citizen of India.
- CO.3** Differentiate and relate the functioning of Indian parliamentary system at the center and state level.
- CO.4** Analyze the Indian political system, the powers and functions of the Union, State and Local Governments in detail.
- CO.5** Compare the decentralization of power between central, state and local self-government.
- CO.6** Apply the knowledge in strengthening of the constitutional institutions like Election Commission and UPSC for sustaining democracy.

TEXT BOOKS

1. Durga Das Basu, “Introduction to the Constitution of India “, Prentice Hall of India, New Delhi.
2. R.C.Agarwal, (1997) “Indian Political System”, S.Chand and Company, New Delhi.
3. Maciver and Page, “ Society: An Introduction Analysis “, Mac Milan India Ltd., New Delhi.
4. K.L.Sharma, (1997) “Social Stratification in India: Issues and Themes”, Jawaharlal Nehru University, New Delhi.

REFERENCE BOOKS

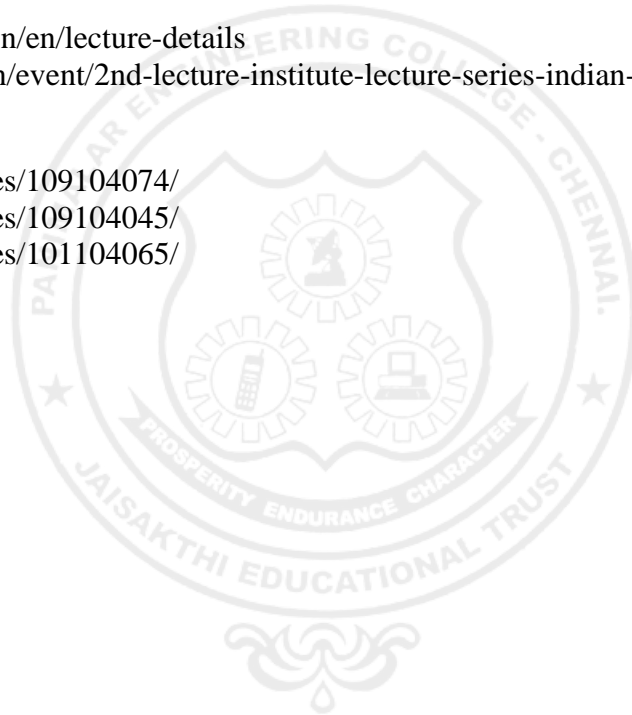
1. Sharma, Brij Kishore, “ Introduction to the Constitution of India:, Prentice Hall of India, New Delhi.
2. U.R.Gahai, “Indian Political System “, New Academic Publishing House, Jalaendhar.
3. R.N. Sharma, “Indian Social Problems “, Media Promoters and Publishers Pvt. Ltd

WEB REFERENCES

1. www.hss.iitb.ac.in/en/lecture-details
2. www.iitb.ac.in/en/event/2nd-lecture-institute-lecture-series-indian-constitution

Online references

1. nptel.ac.in/courses/109104074/
2. nptel.ac.in/courses/109104045/
3. nptel.ac.in/courses/101104065/



21MC1003	HUMAN VALUES	L	T	P	C
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OBJECTIVES:

- To enable the students to create an awareness on Human Values, to instil Moral and Social Values and Loyalty and to appreciate the rights of others.

UNIT I HUMAN VALUES 6

Social Values - Pity and probity, self-control, universal brotherhood. Professional Values - Knowledge thirst, sincerity in profession, regularity, punctuality and faith. Religious Values - Tolerance, wisdom, character. Aesthetic values - Love and appreciation of literature and fine arts and respect for the same. National Integration and international understanding.

UNIT II HARMONY IN THE HUMAN BEING 6

Human Being is more than just the Body. Harmony of the Self ('I') with the Body. Understanding Myself as Co-existence of the Self and the Body. Understanding Needs of the Self and the needs of the Body. Understanding the activities in the Self and the activities in the Body

UNIT III HARMONY AS A VALUE 6

Family as a basic unit of Human Interaction and Values in Relationships. The Basics for Respect and today's Crisis: Affection, e, Guidance, Reverence, Glory, Gratitude and Love.

UNIT IV COMPREHENSIVE HUMAN GOAL 6

The Five Dimensions of Human Endeavour. Harmony in Nature: The Four Orders in Nature. The Holistic Perception of Harmony in Existence.

UNIT V SOCIAL ETHICS 6

The Basics for Ethical Human Conduct. Defects in Ethical Human Conduct. Holistic Alternative and Universal Order. Universal Human Order and Ethical Conduct. Human Rights violation and Social Disparities.

TOTAL : 30 PERIODS

COURSE OUTCOME:

- CO.1** The students will be able to inculcate human values
- CO.2** The students will be able to instil Morality
- CO.3** The students will be able to learn Loyalty
- CO.4** The learner will be able to Understand the significance of value inputs in a classroom and start applying them in their life and profession
- CO.5** The learner will be able to introspect the role of a human being in ensuring harmony in society and nature.

TEXT BOOKS

1. A.N Tripathy, New Age International Publishers, 2003.
2. Bajpai. B. L , , New Royal Book Co, Lucknow, Reprinted, 2004
3. Bertrand Russell Human Society in Ethics & Politics.

REFERENCE BOOKS

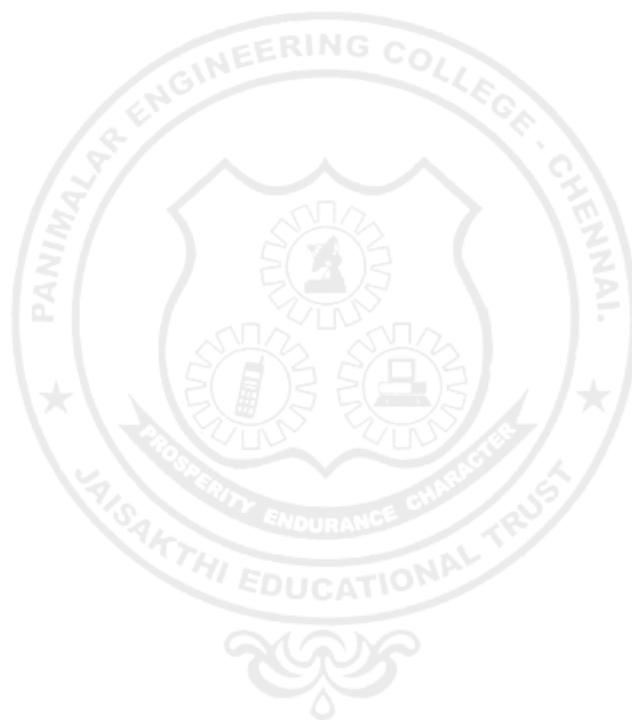
1. Corliss Lamont, Philosophy of Humanism
2. Gaur. R.R. , Sangal. R, Bagaria. G.P, A Foundation Course in Value Education, Excel Books, 2009.
3. Gaur. R.R. , Sangal. R , Bagaria. G.P, Teachers Manual Excel Books, 2009.

WEB REFERENCES

1. https://www.researchgate.net/publication/32961939_Values_for_Human-to-Human_Reference
2. <https://www.grainesdepaix.org/en/resources/peace-dictionary/human-values>

Online references

1. <https://www.udemy.com/course/human-values-and-professional-ethics/>
2. <https://nptel.ac.in/courses/109104068>



21MC1004	ENERGY STUDIES	L	T	P	C
		2	0	0	0

COURSE OBJECTIVE

- To impart knowledge on renewable energy sources such as hydel, wind, solar, Geothermal and bio fuel energy production.
- To enable the students to understand the various Energy conversions from source to utility, Solar, Nuclear, Geothermal, Tide.
- To enable the students to understand the role of energy in economic developments & global energy policies.
- To interpret the concepts of energy policies of state, national and global level.

UNIT I ENERGY SOURCES 6

Fossil fuels, Nuclear fuels, hydel, solar, wind and bio fuels in India, Energy conservation, Nuclear energy through fission and fusion processes.

UNIT II ENERGY CONVERSION 6

Energy conversion from source to utility, Solar, Nuclear, Geothermal, Tide and Wind Energies.

UNIT III GLOBAL ENERGY SCENARIO 6

Role of energy in economic development and social transformation, Overall energy demand, availability and consumption, Depletion of energy resources and its impact on economy, Non-proliferation of nuclear energy. International energy policies of G-8, G-20, OPEC and European union countries.

UNIT IV INDIAN ENERGY SCENARIO 6

Commercial and non commercial forms of energy, Utilization pattern in the past, present and also future prediction, and Sector wise energy consumption.

UNIT V ENERGY POLICY 6

Energy policy issues at global level, national level and state level, Energy conservation act 2001, Electricity act 2003, Energy pricing and its impact on global variations.

TOTAL : 30 PERIODS

COURSE OUTCOME:

- CO1: Understand the basic concepts and definition of various energy sources such as nuclear, hydel, wind and bio fuels.
- CO2: Understand the concept of energy conversion from Solar, Nuclear, Geothermal, Tide and Wind Energies into heat and electricity.
- CO3: Understand the role of energy in economic developments & global energy policies.
- CO4: Understand the utilization of energy in various sectors
- CO6: Understand the energy policies of state, national and global level.

TEXT BOOKS

1. Jose Goldenberg, Thomas Johanson, and Reddy, A.K.N., Energy for Sustainable World, WileyEastern, 2005.
2. Charles E. Brown, World Energy Resources, Springer Publication, New York, 2002.
3. Culp, A.W., Principles of Energy Conversion, McGraw Hill New York, 2004.

REFERENCE BOOKS

1. Bukhootsow, B., Energy Policy and Planning, Prentice Hall of India, New Delhi, 2003.
2. TEDDY Year Book, The Energy Research Institute (TERI), 2011.
3. International Energy Outlook, EIA Annual Publication, 2011.



21MC1005	ESSENCE OF INDIAN TRADITIONAL KNOWLEDGE	L	T	P	C
		2	0	0	0

OBJECTIVES:

- To get a knowledge about Indian Culture
- To know Indian Languages and Literature religion and philosophy and the fine arts in India
- To explore the Science and Scientists of Ancient, Medieval and Modern India
- To understand education systems in India

UNIT I INTRODUCTION TO CULTURE 6

Culture, civilization, culture and heritage, general characteristics of culture, importance of culture in human literature, Indian Culture, Ancient India.

UNIT II INDIAN LANGUAGES AND LITERATURE 6

Indian Languages and Literature - South Indian Languages and Literature, Northern Indian Languages & Literature

UNIT III RELIGION AND PHILOSOPHY 6

Major religions practiced in India and Understanding their Philosophy – religious movements in Modern India (Selected movements only)

UNIT IV FINE ARTS IN INDIA 6

Indian Painting, Indian handicrafts, Music, divisions of Indian classic music, modern Indian music, Dance and Drama, Indian Architecture (ancient, medieval and modern)

UNIT V EDUCATION SYSTEM IN INDIA 6

Education in ancient, medieval and modern India, aims of education, subjects, languages, Science and Scientists of Ancient India, Science and Scientists of Medieval India, Scientists of Modern India

TOTAL : 30 PERIODS

COURSE OUTCOME:

- CO.1** Understand philosophy of Indian culture.
CO.2 Distinguish the Indian languages and literature.
CO.3 Learn the philosophy of ancient, medieval and modern India.
CO.4 Acquire the information about the fine arts in India.
CO.5 Know the contribution of scientists of different eras.
CO.6 Understand education systems in India

TEXT BOOKS

1. Traditional Knowledge System in India, by Amit Jha, 2009.
2. Satya Prakash, "Founders of Sciences in Ancient India", Vijay Kumar Publisher, 1989
3. Traditional Knowledge System and Technology in India by Basanta Kumar Mohanta and Vipin KumarSingh, Pratibha Prakashan 2012..

REFERENCE BOOKS

1. ScienceinSanskrit”, SamskritaBhartiPublisher,ISBN13:978-8187276333, 2007
2. NCERT, “Position paper on Arts, Music, Dance and Theatre”, ISBN 81-7450494-X,200
3. Narain,“ExaminationsinancientIndia”,AryaBookDepot,1993
4. M. Hirianna, “Essentials of Indian Philosophy”, Motilal Banarsidass Publishers, ISBN 13:978-8120810990,2014

WEB REFERENCES

1. <https://www.aec.edu.in/knowledge/>
2. https://www.wipo.int/wipo_magazine/en/2011/03/article_0002.html

ONLINE REFERENCES

1. NPTEL courses
2. UDMEY courses



21MC1006	SOFT SKILLS AND PERSONALITY DEVELOPMENT	L	T	P	C
		2	0	0	0

OBJECTIVES:

- To inform the students about the importance of projecting a positive social image
- To insist on the aspects of effective planning and goal-setting.
- To provide an in-depth view to the students about building self esteem and confidence.
- To motivate the students to become winning personalities.
- To enable the students understand the importance of employing perfect body language in communication.
- To inculcate leadership qualities in the young minds.

UNIT I INTRODUCTION TO SOFT SKILLS 6

Importance of Soft skills - Attributes regarded as soft skills - Identifying major soft skills - Introduction to personality - Dimensions of personality - Determinants of personality

UNIT II SELF DISCOVERY/KNOW THYSELF 6

SWOT Analysis - Developing positive attitude - Career Planning – Goal Setting and prioritization- Importance of self-motivation- Building self-esteem and confidence

UNIT III ART OF SPEAKING / INTERPERSONAL COMMUNICATION 6

Tips for powerful presentation - Public speaking - Developing confidence- Interpersonal Relationships - Planning and Preparation - Successful and effective delivery of speech

UNIT IV PROJECTING A POSITIVE SOCIAL IMAGE 6

Grooming - Body language - Eye contact - Social etiquette - Manners in conversations - Team Building.

UNIT V EMPLOYABILITY SKILLS 6

Leadership - Emotional Intelligence - Interpersonal Skills - Negotiation skills - Stress Management - Time Management

TOTAL : 30 PERIODS

COURSE OUTCOME:

- CO.1** The students will be able to speak confidently with any speakers of English, including native speakers in day today activity at working culture.
- CO.2** The students will be able to speak effortlessly in different contexts – informal and formal
- CO.3** The students will be able to learn employability skills
- CO.4** The learner will be able to introspect the role of an employable engineer in LSRW skills
- CO.5** The learner will be able to groom his or herself as a successful human being

TEXT BOOKS

1. Soft Skills by Dr. K. Alex- S. Chand

2. Soft skills by MJP Publishers

REFERENCE BOOKS

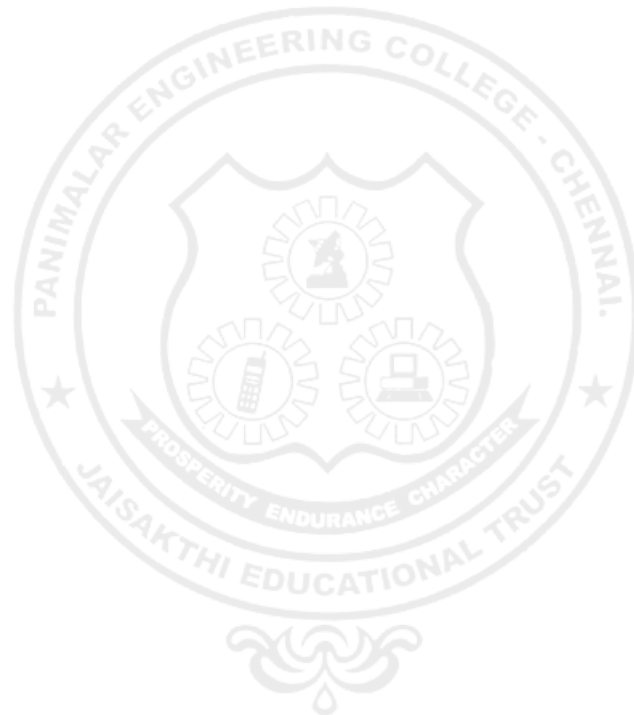
1. Basic Managerial Skills for All by E.H. McGrath S.J

WEB REFERENCES

1. <https://www.shrm.org/hr-today/news/all-things-work/pages/hiring-for-soft-skills.aspx>
2. <https://www.investopedia.com/terms/s/soft-skills.asp>

ONLINE REFERENCES

1. <https://business.udemy.com>
2. <https://www.coursera.org/courses?query=soft%20skills>



21MC1007	VALUE EDUCATION, HUMAN RIGHTS & LEGISLATURE PROCEDURE	L	T	P	C
		2	0	0	0

OBJECTIVES:

- To enable the students to inculcate values, morals and virtues to become erudite human being

UNIT I INTRODUCTION TO HUMAN VALUES 6

Value Education, Definition, Concept and Need for Value Education. The Content and Process of Value Education. Basic Guidelines for Value Education. Self-exploration as a means of Value Education. Happiness and Prosperity as parts of Value Education.

UNIT II FOSTERING VALUES 6

Meaning and Significance Values in the Classroom Value from the Pupil's Perspective Approaches to Values Education Fostering Value among Students

UNIT III HUMAN RIGHTS 6

Concept of Human Rights -Evolution of Human Rights Right to Life, Liberty and Dignity Right to Equality - Right against Exploitation Cultural and Educational Rights -Economic Rights Political Rights - Social Rights

UNIT IV HUMAN RIGHTS OF WOMEN AND CHILDREN 6

Social Practice and Constitutional Safeguards (i) Female Feticide and Infanticide (ii) Physical assault and harassment (iii) Domestic violence (iv) Conditions of Working Women

UNIT V JUDICIARY: STRUCTURE, ORGANIZATION AND FUNCTIONING 6

Judiciary –Judiciary Structure-fundamental laws-Civil courts

TOTAL : 30 PERIODS

COURSE OUTCOME:

- CO.1 The students will be able to inculcate values in education
- CO.2 The students will be able to inculcate the education system on values.
- CO.3 The students will be able to impart human rights
- CO.4 The students will be able to learn the basic knowledge on law on human rights
- CO.5 The students will be able to learn and practice value based education incorporating law in the human life

TEXT BOOKS

- The Constitution of India by Dr.B.R.Ambedkar
- World Community Service Centre, 'Value Education', Vethathiri publications, Erode, 2011.

REFERENCE BOOKS

- Human Values by Dr. Kshitiz Jain
- Human Values in Indian Literature and Culture by Santigopal Das.

WEB REFERENCES

1. <https://www.grainesdepaix.org/en/resources/peace-dictionary/human-values>
2. www.ijedr.org/papers/IJEDR1804078.pdf

ONLINE REFERENCES

1. <https://www.udemy.com/course/human-values-and-professional-ethics/>
2. <https://www.aicte-india.org/press-realeases/universal-human-values-unique-course-aicte>

