



**NADIMPALLI SATYANARAYANA RAJU  
INSTITUTE OF TECHNOLOGY  
(AUTONOMOUS)**



Approved by AICTE, New Delhi & Affiliated to JNTU, Kharaka & An ISO 9001, ISO 14001 & ISO 45001 Certified Institution!  
Recognized under 2(f) of the UGC Act 1956 & Accredited by NAAC with 'A' Grade (3.10/4.00)  
SONTYAM, Pondurthi - Anandapuram Highway, Vijakhapatnam - 531173, Ph : 888624167, 8288484646, www.nsr.it.edu.in

**1.3.1 List of courses relevant to cross-cutting issues (ethics, gender sensitivity, human values & Environment & Sustainability)**

Department	Course	Regulation	Year	Semester	Course Name
Common for all the Programs	B.Tech	AR20	I	II	Environmental Studies
	B.Tech	AR20	III	I	Intellectual Property Rights and Patents
	B.Tech	AR20	III	I	Women & Society
	B.Tech	AR20	IV	I	Professional Ethics
	B.Tech	AR20	III	II	Indian Traditional Knowledge

  
Director  
N.S. Raju Institute of Technology (A)  
Sontyam, Vijakhapatnam-531173

**20MCX04 Indian Traditional Knowledge**

2 0 0 2

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

Code	Course Outcomes	Mapping with POs				DoK
		PO1	PO6	PO7	PO12	
20MCX04.1	Identify the concept of Traditional knowledge and its importance	1	3	3	2	L1, L2
20MCX04.2	Explain the need and importance of protecting traditional knowledge	1	2	3	2	L1, L2
20MCX04.3	Illustrate the various enactments related to the protection of traditional knowledge	1	3	3	2	L1, L2
20MCX04.4	Interpret the concepts of Intellectual property to protect the traditional knowledge	1	2	3	2	L1, L2
20MCX04.5	Explain the importance of Traditional knowledge in Agriculture and Medicine	1	3	3	2	L1, L2, L3

1. Weakly Contributing | 2. Moderately Contributing | 3. Strongly Contributing, for the attainment of respective POs  
L1: Remember | L2: Understand | L3: Apply | L4: Analyze | L5: Evaluate | L6: Create

**UNIT I: Introduction to traditional knowledge**

6 hours

Define traditional knowledge, nature and characteristics, scope and importance, kinds of traditional knowledge, Indigenous Knowledge (IK), characteristics, traditional knowledge vis-a-vis indigenous knowledge, traditional knowledge Vs western knowledge traditional knowledge

**UNIT 2: Protection of traditional knowledge**

6 hours

The need for protecting traditional knowledge Significance of TK Protection, value of TK in global economy, Role of Government to harness TK.

**UNIT 3: Legal framework and TK**

6 hours

The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006, Plant Varieties Protection and Farmer's Rights Act, 2001 (PPVFR Act); The Biological Diversity Act 2002 and Rules 2004, the protection of traditional knowledge bill, 2016.

**UNIT 4: Traditional knowledge and intellectual property**

6 hours

Systems of traditional knowledge protection, Legal concepts for the protection of traditional knowledge, Patents and traditional knowledge, Strategies to increase protection of traditional knowledge

**UNIT 5: Traditional Knowledge in Different Sectors**

6 hours

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

**Text Books:**

1. Amit Jha, "Traditional Knowledge System in India", 2009.

**Reference Books:**

1. Amit Jha, "Traditional Knowledge System in India", 2002
2. Kapil Kapoor, Michel Danino, "Knowledge Traditions and Practices of India", CBSE, 2012

**Web Links:**

1. <https://www.youtube.com/watch?v=LZP1StpYLFM>
2. <http://nptel.ac.in/courses/121106003/>



*[Signature]*  
CONTROL COPY ATTESTED  
Chairman  
Board of Studies CSE(AI&ML)

**HS 20HSX04 Professional Ethics****3 0 0 3**

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

Code	Course Outcomes	Mapping with POs		DoK
		PO8	PO12	
20HSX04.1	Understand the ethics and apply ethics in society	3	1	L1, L2, L3
20HSX04.2	Discuss the ethical issues related to engineering and realize the responsibilities and rights in the society	3	1	L1, L2, L3
20HSX04.3	Know the code of ethics and industrial standards	3	1	L1, L2, L3
20HSX04.4	Understand the rights and responsibilities of an employee at workplace	3	1	L1, L2, L3
20HSX04.5	Understand environmental ethics and CSR of companies	3	1	L1, L2, L3

1. Weakly Contributing | 2. Moderately Contributing | 3. Strongly Contributing for the attainment of respective Pos  
L1: Remember | L2: Understand | L3: Apply | L4: Analyze | L5: Evaluate | L6: Create. DoK: Depth of Knowledge

**Unit I: Introduction to Ethics****10 Hours**

Need and importance of ethics, objectives, morals, values and ethics – integrity – work ethic – service learning – civic virtue – respect for others – living peacefully – honesty – courage – valuing time – cooperation – commitment – empathy – self-confidence.

**Unit II: Engineering Ethics****10 Hours**

Senses of 'engineering ethics' – variety of moral issues – types of inquiry – moral dilemmas – moral autonomy – consensus and controversy – models of professional roles – self-interest – self respect - customs and religion.

**Unit III: Engineering as Social Experimentation****10 Hours**

Engineering as experimentation – engineers as responsible experimenters – codes of ethics – industrial standards - a balanced outlook on law.

**Unit IV: Safety, Responsibilities and Rights****10 Hours**

Safety and Risk – Assessment of Safety and Risk – Risk Benefit Analysis - Safety lessons from Challenge - Collective Bargaining – Confidentiality – Conflicts of Interest – Occupational Crime – Professional Rights – Employee Rights.

**UnitV: Global Issues****10 Hours**

Multinational Corporations – Environmental Ethics – Computer Ethics – Weapons Development – Engineers as Managers – Consulting Engineers–Moral Leadership – Code of Conduct– Corporate Social Responsibility.

**Text Books**

1. Mike W. Martin and Roland Schinzinger, "Ethics in Engineering", Tata McGraw Hill, New Delhi, 2003
2. Govindarajan M., Natarajan S., Senthil Kumar V. S., "Engineering Ethics", Prentice Hall of India, New Delhi, 2004

**Reference Books**

1. Laura P. Hartman and Joe Desjardins, "Business Ethics: Decision Making for Personal Integrity and Social Responsibility" McGraw Hill Education, India Pvt. Ltd., New Delhi, 2013, Web References
2. World Community Service Centre, 'Value Education', Vethathiri Publications, Erode, 2011
3. Charles E. Harris, Michael S. Pritchard and Michael J. Rabins, "Engineering Ethics – Concepts and Cases", Cengage Learning, 2009

**Web References**

1. [www.onlineethics.org](http://www.onlineethics.org)
2. [www.nspe.org](http://www.nspe.org)
3. [www.globalethics.org](http://www.globalethics.org)
4. [www.ethics.org](http://www.ethics.org)

**Internal Assessment Pattern**

Cognitive Level	Internal Assessment #1 (%)	Internal Assessment #2 (%)
L1	20	20
L2	40	30
L3	40	50
Total (%)	100	100

**Sample Short and Long Answer Questions of Various Cognitive Levels**


**L1: Remember**

1. List the human values and explain
2. Give an overview of Engineering Ethics
3. What is meant by Professional Responsibility?
4. What are the safety lessons one can learn in the Challenger case?
5. What are employee rights?
6. What is the engineer's role in weapon development?

**L2: Understand**

1. Illustrate the ethical aspect principle of caring or sharing, with an example
2. Explain various actions of an engineer leading to dishonesty
3. Justify the safety and other obligations of professional engineers
4. Discuss the problems with law in engineering practice
5. Explain in detail about the effect of information on risk assessments
6. Explain the role of engineers as 'expert witness' and 'advisors'

CONTROL COPY ATTESTED

  
Chairman  
Board of Studies

**DR. V. BALA, M.B.A, Ph.D**  
Professor & HOD of M.B.A  
N.S.Raju Institute of Technology  
SRRVani Visakhapatnam-531 171

20SHO01 Women and Society

0 0 3 0

**Course Objectives, Mapping and Depth of Knowledge (DoK – RBT)**

**Objectives:**

Total Hour: 40

This course aims to generate awareness on various factors that constructs and shapes gender identity and perpetuates gender discrimination.

The course will examine how feminist analysis & methodology redefines traditional categories and disciplinary concepts through its attention to gender as a social category.

The course further aims to sensitize students on emerging areas of gender discrimination and its possible resolution.

**UNIT -1 WOMEN AND SOCIETY**

**8 Hours**

Understanding Sex- Gender, Gender shaping Institutions, Theories of Gender construction Understanding Sexism and Androcentrism, Understanding Patriarchy and Theories of Patriarchy, Private and Public dichotomy, Sexual Division of Work, Patriarchy practices in different institutions and Text Books.

**UNIT -2 FEMINIST THEORY**

**8 Hours**

Rise of Feminism, Introduction to various stands of Feminism- Liberal Feminism, Radical Feminism, Marxist Feminism, Socialist Feminism, Cultural Feminism, Eco-Feminism, Post-Colonial Feminism, Post Modern Feminism. Waves of Feminism.

**UNIT -3 WOMEN'S MOVEMENT**

**8 Hours**

The socio-economic conditions of women during the age of Industrial revolution the Call for Women's Rights 1848, Women's rights movement 1848-1920, Historical Developments of Social Reform Movements in India, Women's groups and organizations, Women's Movement Movements for Uniform Civil code and ShahBano case, Dalit women and the question of double marginality.

**UNIT -4 GENDER ROLES AND PSYCHOLOGY OF SEX**

**8 Hours**

Difference Conceptualization of gender roles and gender role attitudes, Gender: Aggression, Achievement, Communication, Friendship and Romantic, Relationships Sex Differences in Mental Health Trauma relating to Rape, Taboo, Childhood Sexual Abuse, Domestic Violence, Sexual Harassment at Work Place, Educational Institutions, Eve Teasing etc.

**UNIT – 5 GENDER AND REPRESENTATION**

**8 Hours**

Gender and Mass Media- Print Media, Gender and Mass Media-Electronic Media, Gender and Films, Advertisements, Mega Serials, Stereotyping and breaking the norms of women's roles Women's Representation in Literary Texts.

**Suggested reading:**

1. Basab iChakrabarti, Women's Studies: Various Aspects. UrbiPrakashani 2014
2. Arvind Narrain. Queer: Despised Sexuality Law and Social Change. Book for Change. 2005

3. Chandra Talpade Mohanty, *Feminism without Borders: Decolonizing Theory, Practicing Solidarity*. Duke University Press.
4. Flavia Agnes. *Law and Gender Inequality: The Politics of Women's Rights in India*. Oxford University Press, 2001
5. Sonia Bathla, *Women, Democracy and the Media: Cultural and Political Representations in the Indian Press*, Sage, New Delhi, 1998.

*Dr. M. Masaru*

**MC** 20MCX03 Intellectual Property Rights and Patents

2 0 0 0

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

Code	Course Outcomes	Mapping with POs		DoK
		PO11	PO12	
20MCX03.1	Acquire knowledge on intellectual property rights	-	-	L1, L2
20MCX03.2	Know about the acquisition of trademarks.	-	-	L1, L2
20MCX03.3	Identify the importance of copyrights, patents and transfer of Ownership.	-	-	L1, L2
20MCX03.4	Reciprocate on new developments of intellectual property rights	-	-	L1, L2
20MCX03.5	International overview of IPR	-	-	L1, L2

1. Weakly Contributing | 2. Moderately Contributing | 3. Strongly Contributing, for the attainment of respective Pos  
L1: Remember | L2: Understand | L3: Apply | L4: Analyze | L5: Evaluate | L6: Create. DoK: Depth of Knowledge

**Unit I: Introduction to Intellectual property**

4 Hours

Concepts, types of intellectual property, international organizations, agencies and importance of intellectual property rights. Industrial Property, technological Research, Inventions and Innovations – Important examples of IPR, IPR in India and Abroad

**Unit II: Introduction to Trade Marks**

4 Hours

Purpose and function of trademarks, acquisition of trade mark rights, selecting and evaluating trademark, trademark registration processes. Trade Secrets and Industrial Design registration in India and Abroad

**Unit III: Registration of Copy Rights**

4 Hours

Fundamentals of copy right law, rights of reproduction, rights to perform the work publicly, copy right ownership issues, copyright registration, international copyright laws.  
Law of patents: Foundation of patent law, patent searching process, ownership rights and transfer.

**Unit IV: Latest development of intellectual property Rights**

4 Hours

New developments in trademark law; copy right law, patent law, intellectual property audits. Infringement of IPRs, Enforcement Measures, Emerging issues –

**Unit V: Enforcement Of IPRs**

4 Hours

International overview on intellectual property, international – trade mark law, copy right law, international patent law, and international development in trade secrets law.

**Text Books**

1. Intellectual property right, Deborah, E. Bouchoux, Cengage learning.
2. Intellectual property right - Unleashing the knowledge economy, Prabuddha Ganguli, Tata McGraw Hill Publishing Company Ltd.
3. Cornish, William Rodolph & Llewelyn, David. Intellectual property: patents, copyright, trademarks and allied rights. Sweet & Maxwell, 8/e, 2013.

**Reference Books**

1. Cornish, William Rodolph. Cases and materials on intellectual property. Sweet & Maxwell, 5/e, 2006.
2. Lo, Jack and Pressman, David. How to make patent drawings: a patentity yourself companion. Nolo, 5/e 2007.

Web References

1. <https://www.investopedia.com/terms/i/intellectualproperty.asp>
2. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3217699/>
3. [https://www.wto.org/english/tratop\\_e/trips\\_e/intel1\\_e.htm](https://www.wto.org/english/tratop_e/trips_e/intel1_e.htm)

Internal Assessment Pattern

Cognitive Level	Internal Assessment	Internal Assessment #2 (%)
	#1 (%)	
L1	40	40
L2	60	60
Total (%)	100	100

Sample Short and Long Answer Questions of Various Cognitive Levels

L1: Remember


1. What is Industrial property?
2. What are the fundamentals of copy rights
3. Define patents and its approval process
4. Define copy right law.
5. Define transfer of trade marks.

L2: Understand

1. Explain the role trade secrets in company law.
2. Explain the concept ownership rights of patents with suitable examples
3. Explain the international patent law.
4. Distinguish between copy rights and patents.
5. Explain copy right registration.



CONTROL COPY ATTESTED

  
Chairman  
Board of Studies (MBA)



**MC** 20MCX01 Environmental Science

0 0 3 0

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

Code	Course Outcomes	Mapping with POs		DoK
		PO1	PO12	
20MCX01.1	Gain in-depth knowledge on importance of environment, natural resources utilization and exploitation	3	1	L1, L2
20MCX01.2	Understand the concept of an ecosystem and Identify their interconnections	3	1	L1, L2
20MCX01.3	Develop an understanding on values, threats and conservation of biodiversity	3	1	L1, L2
20MCX01.4	Illustrate the impacts of ever increasing environmental pollution and understand the issues on global environment	3	1	L1, L2
20MCX01.5	Understand various acts formulated by Govt. of India and apply the knowledge gained in conserving energy and environmental protection	3	1	L1, L2

1. Weakly Contributing | 2. Moderately Contributing | 3. Strongly Contributing, for the attainment of respective Pos  
L1: Remember | L2: Understand | L3: Apply | L4: Analyze | L5: Evaluate | L6: Create. DoK: Depth of Knowledge

**Unit I: Natural Resources****12 Hours**

Introduction: Definition, Scope and Importance-Need for Public Awareness

Natural Resources: Classification of resources–Forest resources: Use and Over-exploitation, Deforestation- Mining, 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–Energy resources: Renewable and Non- Renewable sources of energy- Solar energy, Wind energy.

**Unit II: Ecosystems****12 Hours**

Concept of an Ecosystem–Structural features of ecosystem- Producers, Consumers and Decomposers–Biogeochemical cycles- Carbon cycle and Nitrogen cycle-Ecological succession-Food chains, Food webs and Ecological pyramids-Energy flow in the ecosystem-Types of ecosystems (a) Forest ecosystem (b) Aquatic ecosystems.

**Unit III: Biodiversity and its Conservation****12 Hours**

Introduction, Definition, Genetic, Species and Ecosystem diversity, India as a mega-diversity nation, Hot spots of biodiversity, Values of biodiversity, Threats to biodiversity, Endemic, Endangered and Extinct species of India, In-Situ and Ex-situ conservation of biodiversity.

**Unit IV: Environmental Pollution and Global Environmental Issues****12 Hours**

Environmental Pollution: Air pollution, Water pollution, Noise pollution, Effects-Global warming, Acid Rain and Ozone layer depletion and controlling measures.

Global Environmental Issues: Population Growth, Urbanization, Climate change and impacts on human environment.

Solid Waste Management: Causes, Effects and Control measures of Municipal solid wastes – E - Waste Management, Role of an individual in prevention of pollution.

**Unit V: Environmental Legislation, Laws, Policies for Sustainable Development****12 Hours**

Environmental Legislation, Environmental Protection act – Air Prevention and Control of Pollution act–Water Prevention and control of Pollution act– Wildlife protection act – Forest conservation act.

From Unsustainable to sustainable development, Role of IT in Environment-Remote Sensing and GIS methods for Sustainable development

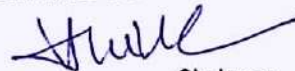
**Text Books**

1. Erach Bharucha, "Text Book of Environmental Studies", 1<sup>st</sup> Edition, University Grants Commission, University Press (India) Pvt. Ltd., 2010
2. Kaushik A. and Kaushik C. P., "Environmental Sciences", 5<sup>th</sup> Edition, New Age International Publishers, 2015
3. Anji Reddy M., "Text Book of Environmental Science and Technology", 3<sup>rd</sup> Edition, B. S. Publications, 2010

**Reference Books**

1. Anil Kumar and Anab Kumar De, "Environmental Studies", 3<sup>rd</sup> Edition, New Age International Publishers, 2015
2. Trivedi R. K., "Handbook of Environmental Laws, Rules, Guidelines, Compliances and Standards", 2<sup>nd</sup> Edition, Volume I and II, Enviro Media, 2012
3. Rajagopalan R., "Environmental Studies-From Crisis to Cure", 2<sup>nd</sup> Edition, Oxford University Press, 2005

CONTROL COPY ATTESTED



Chairman  
Board of Studies (Chemistry)

In-charge of the Department  
Dept. of Science & Humanities  
N.S. Raju Institute of Technology  
Chennai, Veerapattanam - 631173