



# UNNAMALAI INSTITUTE OF TECHNOLOGY

Suba Nagar, Kovilpatti-628502

Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

An ISO 9001:2015 Certified Institution

## Table of Contents

S.No	Description		Page No.
1	Syllabus		2
2	Lesson plan		41
3.	Event Reports		64
	<b>List of Crosscutting Issues</b>	<b>Events Conducted</b>	
3.1	Human Values	National Unity Day	65
3.2	Human Values	National Voter Day	71
3.3	Environmental Sustainability	World Environment Day	76
3.4	Environmental Sustainability	Swachh Bharath Activity- Campus Cleaning Drive	81
3.5	Gender	Awareness Programme on Violence Against Children	86
3.6	Gender	Women's Day Celebration	90

**Dr. D. RAVINDRAN, M.E., Ph.D.,**  
Principal  
Unnamalai Institute of Technology  
Suba Nagar, KOVILPATTI - 628 502.  
Theothukudi District



# **UNNAMALAI INSTITUTE OF TECHNOLOGY**

**Suba Nagar, Kovilpatti-628502**

**Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai**

**An ISO 9001:2015 Certified Institution**

**Institution integrates crosscutting issues relevant to Professional Ethics, Gender, Human values, Environment and Sustainability into the Curriculum**

## **1. SYLLABUS**



# UNNAMALAI INSTITUTE OF TECHNOLOGY

Suba Nagar, Kovilpatti-628502

Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

An ISO 9001:2015 Certified Institution

## List of Courses Related to Gender, Human Values, Environment and Sustainability and Professional Ethics.

### 2021 Regulations

S. No	Program Code	Program Name	Course Code	Course Name	Name of the topic
1.	104	Computer Science and Engineering	GE3451	Environmental Science and Engineering	Environment and Sustainability
2.	106	Electronics and Communication Engineering	GE3451	Environmental Science and Engineering	Environment and Sustainability
3.	105	Electrical and Electronics Engineering	GE3451	Environmental Science and Engineering	Environment and Sustainability

### 2017 Regulations

S. No	Program Code	Program Name	Course Code	Course Name	Name of the topic
1.	104	Computer Science and Engineering	GE8291	Environmental Science and Engineering	Environment and Sustainability
2.	104	Computer Science and Engineering	GE8076	Professional Ethics in Engineering	Professional Ethics.
3.	104	Computer Science and Engineering	MG8591	Principle of Management	Human Value
5.	106	Electronics and Communication Engineering	MG8591	Principle of Management	Human Value
6.	106	Electronics and Communication Engineering	GE8291	Environmental Science and Engineering	Environment and Sustainability

**Dr. D. RAVINDRAN, M.E., Ph.D.,**  
Principal  
Unnamalai Institute of Technology  
Suba Nagar, KOVILPATTI - 628 502.  
Thoothukudi District



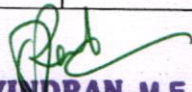
# UNNAMALAI INSTITUTE OF TECHNOLOGY

Suba Nagar, Kovilpatti-628502

Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

An ISO 9001:2015 Certified Institution

7.	106	Electronics and Communication Engineering	OCE5511	Air Pollution and Control Engineering	Environment and Sustainability
8.	106	Electronics and Communication Engineering	GE8076	Professional Ethics.	Professional Ethics.
9.	105	Electrical and Electronics Engineering	GE8291	Environmental Science and Engineering	Environment and Sustainability
10.	105	Electrical and Electronics Engineering	EE8703	Renewable Energy Systems	Environment and Sustainability
11.	105	Electrical and Electronics Engineering	GE8077	Total Quality Management	Professional Ethics.
12.	105	Electrical and Electronics Engineering	GE8071	Disaster Management	Human Values.
13.	103	Civil Engineering	GE8291	Environmental Science and Engineering	Environment and Sustainability
14.	103	Civil Engineering	GE8076	Professional Ethics.	Professional Ethics.
15.	103	Civil Engineering	CE8005	Air pollution and Control Engineering	Environment and Sustainability
16.	103	Civil Engineering	EN8591	Municipal Solid Waste Management.	Environment and Sustainability
17.	103	Civil Engineering	GE8074	Human Rights	Human Rights
18.	103	Civil Engineering	OR0551	Renewable Energy Resources.	Environment and Sustainability
19.	114	Mechanical Engineering	GE8291	Environmental Science and Engineering	Environment and Sustainability
20.	114	Mechanical Engincring	MG8591	Principle of Management	Human Value

  
**Dr. D. RAVINDRAN, M.E., Ph.D.,**  
Principal  
Unnamalai Institute of Technology  
Suba Nagar, KOVILPATTI - 628 502.  
Thoothukudi District



# UNNAMALAI INSTITUTE OF TECHNOLOGY

Suba Nagar, Kovilpatti-628502

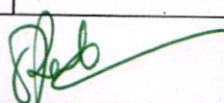
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

An ISO 9001:2015 Certified Institution

21.	114	Mechanical Engineering	OR0551	Renewable Energy Resources.	Environmental Science and Engineering
22.	114	Mechanical Engineering	ME8091	Automobile Engineering	Environmental Science and Engineering

## 2013 Regulations

S. No	Program Code	Program Name	Course Code	Course Name	Name of the topic
1.	103	Civil Engineering	GE6351	Environmental Science and Engineering	Environment and Sustainability
2.	103	Civil Engineering	CE6503	Environmental Engineering-I	Environment and Sustainability
3.	103	Civil Engineering	CE6605	Environmental Engineering-II	Environment and Sustainability
4.	103	Civil Engineering	EN6501	Municipal Solid Waste Management	Environment and Sustainability
5.	104	Computer Science and Engineering	GE6351	Environmental Science and Engineering	Environment and Sustainability
6..	106	Electronics and Communication Engineering	GE6351	Environmental Science and Engineering	Environment and Sustainability
7.	106	Electronics and Communication Engineering	MG6851	Principle of Management	Human Value
8.	106	Electronics and Communication Engineering	GE6757	Total Quality Management	Professional Ethics

  
**Dr. D. RAVINDRAN, M.E., Ph.D.,**  
 Principal  
 Unnamalai Institute of Technology  
 Suba Nagar, KOVILPATTI - 628502.  
 Thoothukudi District



# UNNAMALAI INSTITUTE OF TECHNOLOGY

Suba Nagar, Kovilpatti-628502

Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

An ISO 9001:2015 Certified Institution

9..	106	Electronics and Communication Engineering	GE6075	Professional Ethics Engineering	Professional Ethics
10.	114	Mechanical Engineering	GE6351	Environmental Science and Engineering	Environment and Sustainability
11.	114	Mechanical Engineering	MG6851	Principle of Management	Human Value
12.	114	Mechanical Engineering	GE6757	Total Quality Management	Professional Ethics
13.	114	Mechanical Engineering	ME6602	Automobile Engineering	Environment and Sustainability
14.	105	Electrical and Electronics Engineering	GE6351	Environmental Science and Engineering	Environment and Sustainability
15.	105	Electrical and Electronics Engineering	MG6851	Principle of Management	Human Value
16.	105	Electrical and Electronics Engineering	GE6075	Professional Ethics in Engineering	Professional Ethics.

**Dr. D. RAVINDRAN, M.E., Ph.D.,**  
Principal  
Unnamalai Institute of Technology  
Suba Nagar, KOVILPATTI - 628 502.  
Thoothukudi District



# UNNAMALAI INSTITUTE OF TECHNOLOGY

Suba Nagar, Kovilpatti-628502

Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

An ISO 9001:2015 Certified Institution

## 2021 REGULATION

### GE3451- ENVIRONMENTAL SCIENCES AND SUSTAINABILITY

LTPC

2002

#### COURSE OBJECTIVES:

- To introduce the basic concepts of environment, ecosystems, and biodiversity and emphasize 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 nonrenewable resources, causes of their degradation and scenarios measures to preserve them.
- To familiarize the concept of sustainable development goals and appreciate the interdependence of economic and social aspects of sustainability, recognize and analyze climate changes, the concept of carbon credit, and the challenges of environmental management.
- To inculcate and embrace sustainability practices and develop a broader understanding on green materials, energy cycles and analyze the role of sustainable urbanization

#### UNIT I -ENVIRONMENT AND BIODIVERSITY

6

Definition, scope, and importance of environment – need for public awareness. Eco-system and Energy flow – ecological succession. Types of biodiversity: genetic, species and ecosystem diversity– values of biodiversity, India as a mega-diversity nation – hot-spots of biodiversity – threats to biodiversity: habitat loss, poaching of wildlife, man-wild life conflicts–endangered and endemic species of India – conservation of biodiversity: In-situ and ex-situ.

#### UNIT II – ENVIRONMENTAL POLLUTION

6

Causes, Effects and Preventive measures of Water, Soil, Air and Noise Pollutions. Solid, Hazardous and E-Waste management. Case studies on Occupational Health and Safety Management system (OHASMS). Environmental protection, Environmental protection acts.

  
Dr. D. RAVINDRAN, M.E., Ph.D.,  
Principal  
Unnamalai Institute of Technology  
Suba Nagar, KOVILPATTI - 628 502.  
Thoothukudi District



# UNNAMALAI INSTITUTE OF TECHNOLOGY

Suba Nagar, Kovilpatti-628502

Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

An ISO 9001:2015 Certified Institution

## UNIT III – RENEWABLE SOURCES OF ENERGY

6

Energy management and conservation, New Energy Sources: Need of new sources. Different types new energy sources. Applications of- Hydrogen energy, Ocean energy resources, Tidal energy conversion. Concept, origin, and power plants of geothermal energy.

## UNIT IV – SUSTAINABILITY AND MANAGEMENT

6

Development, GDP, Sustainability- concept, needs and challenges-economic, social and aspects of sustainability-from unsustainability to sustainability-millennium development goals, and protocols-Sustainable Development Goals-targets, indicators, and intervention areas Climate change- Global, Regional, and local environmental issues and possible solutions-case studies. Concept of Carbon Credit, Carbon Footprint. Environmental management in the industry-A case study.

## UNIT V – SUSTAINABILITY PRACTICES

6

Zero waste and R concept, Circular economy, ISO 14000 Series, Material Life cycle assessment, Environmental Impact Assessment. Sustainable habitat: green buildings, green materials, Energy efficiency, Sustainable transports. Sustainable energy: Non-conventional Sources, Energy Cycles- carbon cycle, emission and sequestration, Green Engineering: Sustainable urbanization- Socio- economic and technological change.

**TOTAL:30 PERIODS**

## 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.
4. Allen, D. T. and Shonnard, D. R., Sustainability Engineering: Concepts, Design and Case Studies, Prentice Hall.
5. Bradley. A.S; Adebayo, A.O., Maria, P. Engineering applications in sustainable design and development, Cengage learning.

  
**Dr. D. RAVINDRAN, M.E., Ph.D.,**  
Principal  
Unnamalai Institute of Technology  
Suba Nagar, KOVILPATTI - 628 502.  
Thoothukudi District





# UNNAMALAI INSTITUTE OF TECHNOLOGY

Suba Nagar, Kovilpatti-628502

Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

An ISO 9001:2015 Certified Institution

6. Environment Impact Assessment Guidelines, Notification of Government of India, 2006.
7. Mackenthun, K.M., Basic Concepts in Environmental Management, Lewis Publication, London, 1998

## REFERENCE BOOKS

1. R. K. Trivedi, 'Handbook of Environmental Laws, Rules, Guidelines, Compliances and Standards', Vol. I and II, Enviro Media. 38.
2. Cunningham, W. P. Cooper, T. H. Gorhani, 'Environmental Encyclopedia', Jaico Publication; House, Mumbai, 2001.
3. Dharmendra S. Sengar, 'Environmental law', Prentice Hall of India PVT. LTD, New Delhi, 2007.
4. Rajagopalan, R, 'Environmental Studies-From Crisisto' Cure', Oxford University Press, 2005.
5. Erach Bharucha "Textbook of Environmental Studies for Undergraduate Courses" Orient Blackswan Pvt. Ltd. 2013.

**Dr. D. RAVINDRAN, M.E., Ph.D.,**  
Principal  
Unnamalai Institute of Technology  
Suba Nagar, KOVILPATTI - 628 502.  
Thoothukudi District



# UNNAMALAI INSTITUTE OF TECHNOLOGY

Suba Nagar, Kovilpatti-628502

Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

An ISO 9001:2015 Certified Institution

## 2017 REGULATION

GE8291

ENVIRONMENTAL SCIENCES AND ENGINEERING

LTPC  
3003

### COURSE OBJECTIVES:

- To study nature and facts about the environment.
- For finding and implementing scientific, technological, economic, and political solutions to environmental problems.
- To study the interrelationship between living organisms and the environment.
- To appreciate the importance of the environment by assessing its impact on the human world; envision the surrounding environment, its functions, and its value.
- To study the dynamic processes and understand the features of the earth's interior and surface.
- To study the integrated themes and biodiversity, natural resources, pollution control, and waste management.

### UNIT I - ENVIRONMENT, ECOSYSTEMS AND BIODIVERSITY

14

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, types, characteristic features, structure and function of the (a) forest ecosystem (b) grassland ecosystem (c) desert ecosystem (d) aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries) – Introduction to biodiversity definition: genetic, species and ecosystem diversity – biogeographical 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. Field study of common plants, insects, and birds; Field study of simple ecosystems – pond, river, hill slopes, etc.

Dr. D. RAVINDRAN, M.E., Ph.D.,  
Principal  
Unnamalai Institute of Technology  
Suba Nagar, KOVILPATTI - 628 502.  
Thoothukudi District



# UNNAMALAI INSTITUTE OF TECHNOLOGY

Suba Nagar, Kovilpatti-628502

Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

An ISO 9001:2015 Certified Institution

## UNIT II – ENVIRONMENTAL POLLUTION 8

Definition – causes, effects, and control measures of (a) Air pollution (b) Water pollution (c)

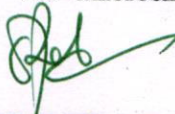
Soil pollution (d) Marine pollution (e) Noise pollution (f) Thermal pollution (g) Nuclear hazards – solid waste management: causes, effects, and control measures of municipal solid wastes – the role of an individual in prevention of pollution – pollution case studies – disaster management: floods, earthquake, cyclone, and landslides. Field study of the local polluted site – Urban / Rural / Industrial/ Agricultural.

## UNIT III - NATURAL RESOURCES 10

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 – Energy resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources. case studies – Land resources: Land as a resource, land degradation, man-induced landslides, soil erosion, and desertification – the role of an individual in conservation of natural resources – Equitable use of resources for sustainable lifestyles. Field study of the local area to document environmental assets – river/forest/grassland/hill/mountain.

## UNIT IV - SOCIAL ISSUES AND THE ENVIRONMENT 7

From unsustainable to sustainable development – urban problems related to energy – water conservation, rainwater harvesting, watershed management – resettlement and rehabilitation of people; its problems and concerns, case studies– the role of non-governmental organization- environmental ethics: Issues and possible solutions – climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust, case studies. – wasteland reclamation – consumerism and waste products – environment production 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

  
**Dr. D. RAVINDRAN, M.E., Ph.D.,**  
Principal  
Unnamalai Institute of Technology  
Suba Nagar, KOVILPATTI - 628 502.  
Thoothukudi District



# UNNAMALAI INSTITUTE OF TECHNOLOGY

Suba Nagar, Kovilpatti-628502

Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

An ISO 9001:2015 Certified Institution

environmental legislation- central and state pollution control boards- Public awareness.

## UNIT V – SUSTAINABILITY PRACTICE

6

Population growth, variation among nations – population explosion – family welfare program –

environment and human health – human rights – value education – HIV / AIDS – women and child welfare – the role of information technology in environment and human health – Case studies.

**TOTAL:45 PERIODS**

### TEXT BOOKS

1. Benny Joseph, 'Environmental Science and Engineering', Tata McGraw-Hill, New Delhi, 2006.
2. Gilbert M. Masters, 'Introduction to Environmental Engineering and Science' 2nd edition, Pearson Education, 2004.

### REFERENCE BOOKS

1. Dharmendra S. Sengar, 'Environmental law', Prentice Hall of India Pvt Ltd, New Delhi, 2007.
2. Erach Bharucha, "Textbook of Environmental Studies" Universities Press(I) Pvt, Ltd, Hyderabad, 2015.
3. G. Tyler Miller and Scott E. Spoolman, "Environmental Science" Cengage Learning India PVT, LTD, Delhi, 2014.
4. Rajagopalan, R, 'Environmental Studies-From Crisis to Cure' Oxford University Press, 2005.

**Dr. D. RAVINDRAN, M.E., Ph.D.,**  
Principal  
Unnamalai Institute of Technology  
Suba Nagar, KOVILPATTI - 628 502.  
Thoothukudi District



# UNNAMALAI INSTITUTE OF TECHNOLOGY

Suba Nagar, Kovilpatti-628502

Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

An ISO 9001:2015 Certified Institution

**GE8076      PROFESSIONAL ETHICS IN ENGINEERING      LTPC  
0034**

**UNIT I      HUMAN VALUES      10**

Morals, values and Ethics – Integrity – Work ethic – Service learning – Civic virtue – Respect for 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      ENGINEERING ETHICS      9**

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      9**

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

**UNIT IV      SAFETY, RESPONSIBILITIES AND RIGHTS      9**

Safety and Risk – Assessment of Safety and Risk – Risk Benefit Analysis and Reducing Risk - Respect for Authority – Collective Bargaining – Confidentiality – Conflicts of Interest – Occupational Crime – Professional Rights – Employee Rights – Intellectual Property Rights (IPR) – Discrimination.

**UNIT V      GLOBAL ISSUES      8**

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

**TOTAL: 45 PERIODS**

**OUTCOMES:**

- Upon completion of the course, the student should be able to apply ethics in society,

**Dr. D. RAVINDRAN, M.E., Ph.D.,**  
Principal  
Unnamalai Institute of Technology  
Suba Nagar, KOVILPATTI - 628 502.  
Thoothukudi District



# UNNAMALAI INSTITUTE OF TECHNOLOGY

Suba Nagar, Kovilpatti-628502

Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

An ISO 9001:2015 Certified Institution

discuss the .

- ethical issues related to engineering and realize the responsibilities and rights in the society

## TEXTBOOKS:

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

## REFERENCES:

1. Charles B. Fleddermann, "Engineering Ethics", Pearson Prentice Hall, New Jersey, 2004.
2. Charles E. Harris, Michael S. Pritchard and Michael J. Rabins, "Engineering Ethics – Concepts and Cases", Cengage Learning, 2009.

**Dr. D. RAVINDRAN, M.E., Ph.D.,**  
Principal  
Unnamalai Institute of Technology  
Suba Nagar, KOVILPATTI - 628 502.  
Thoothukudi District