

## 1.3.1 LIST OF COURSES RELATED TO GENDER, HUMAN VALUES, ENVIRONMENT AND SUSTAINABILITY AND PROFESSIONAL ETHICS



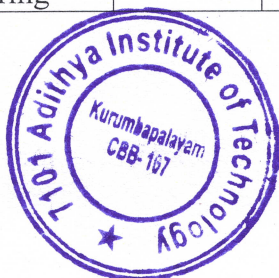
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### 1.3.1 List of courses with topics of Gender, Human Values, Environment and sustainability and Professional Ethics

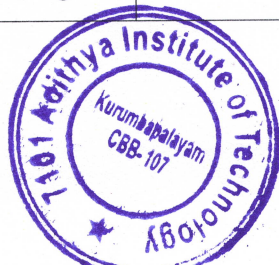
Sl.No	Program Code	Program Name	Course Code	Name of the Course	Name of the Topic	Regulations of Anna University
1.	103	Civil Engineering	GE8291	Environmental Science and Engineering	Environment and sustainability	2017
2.	103	Civil Engineering	GE8071	Disaster Management	Human Values	2017
3.	103	Civil Engineering	GE8076	Professional Ethics in Engineering	Professional Ethics	2017
4.	103	Civil Engineering	OME754	Industrial safety	Human Values	2017
5.	103	Civil Engineering	OAI551	Environment and agriculture	Environment and sustainability	2017
6.	103	Civil Engineering	GE8074	Human Rights	Human Values	2017
7.	103	Civil Engineering	EN8592	Wastewater Engineering	Environment and sustainability	2017
8.	103	Civil Engineering	EN8491	Water Supply Engineering	Environment and sustainability	2017
9.	103	Civil Engineering	GE8077	Total Quality Management	Human Values	2017
10.	104	Computer Science and Engineering	ME8074	Renewable energy sources	Environment and sustainability	2017
11.	104	Computer Science and Engineering	GE8291	Environmental Science and Engineering	Environment and sustainability	2017
12.	104	Computer Science and Engineering	OCY751	Waste Water Treatment	Environment and sustainability	2017
13.	104	Computer Science and Engineering	GE8076	Professional Ethics in Engineering	Professional Ethics	2017



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14.	105	Electronics & Electronics Engineering	MG8591	Principles of Managements	Human Values	2017
15.	105	Electronics & Electronics Engineering	EE8703	Renewable Energy Systems	Environment and sustainability	2017
16.	105	Electronics & Electronics Engineering	GE8291	Environmental Science and Engineering	Environment and sustainability	2017
17.	105	Electronics & Electronics Engineering	GE8071	Disaster Management	Human Values	2017
18.	106	Electronics & Communication Engineering	ORO551	Renewable Energy Sources	Environment and sustainability	2017
19.	106	Electronics & Communication Engineering	GE8071	Disaster Management	Human Values	2017
20.	106	Electronics & Communication Engineering	MG8591	Principles of Managements	Human Values	2017
21.	106	Electronics & Communication Engineering	GE8291	Environmental Science and Engineering	Environment and sustainability	2017
22.	114	Mechanical Engineering	MG8591	Principles of Management		2017
23.	114	Mechanical Engineering	GE8291	Environmental Science and Engineering	Environment and sustainability	2017
24.	114	Mechanical Engineering	GE8077	Total Quality Management	Human Values	2017
25.	114	Mechanical Engineering	ME8792	Power Plant Engineering	Environment and sustainability	2017
26.	205	Information Technology	GE8291	Environmental Science and Engineering	Environment and sustainability	2017
27.	205	Information Technology	MG8591	Principles of Management	Human Values	2017
28.	103	Civil Engineering	GE6351	Environmental Science and Engineering	Environment and sustainability	2013



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29.	103	Civil Engineering	CE6301	Engineering Geology	Environment and sustainability	2013
30.	103	Civil Engineering	CE6503	Environmental Engineering I	Environment and sustainability	2013
31.	103	Civil Engineering	CE6605	Environmental Engineering II	Environment and sustainability	2013
32.	103	Civil Engineering	CE6611	Environmental Engineering Laboratory	Environment and sustainability	2013
33.	103	Civil Engineering	CE6703	Water resource and Irrigation Engineering	Environment and sustainability	2013
34.	103	Civil Engineering	MG6851	Principles of Management	Human Values	2013
35.	103	Civil Engineering	EN6501	Municipal Solid waste Management	Environment and sustainability	2013
36.	103	Civil Engineering	GE6083	Disaster Management	Human Values	2013
37.	103	Civil Engineering	GE6757	Total Quality Management	Professional Ethics	2013
38.	104	Computer Science and Engineering	GE6351	Environmental Science and Engineering	Environment and sustainability	2013
39.	104	Computer Science and Engineering	GE6757	Total Quality Management	Professional Ethics	2013
40.	106	Electronics and Communication Engineering	GE6351	Environmental Science and Engineering	Environment and sustainability	2013
41.	106	Electronics and Communication Engineering	MG6851	Principles of Management	Human Values	2013
42.	106	Electronics and Communication Engineering	GE6757	Total Quality Management	Professional Ethics	2013
43.	105	Electrical and Electronics Engineering	GE6351	Environmental Science and Engineering	Environment and sustainability	2013



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44.	105	Electrical and Electronics Engineering	MG6851	Principles of Management	Human Values	2013
45.	105	Electrical and Electronics Engineering	GE6757	Total Quality Management	Professional Ethics	2013
46.	205	Information Technology	GE6351	Environmental Science and Engineering	Environment and sustainability	2013
47.	205	Information Technology	GE6757	Total Quality Management	Professional Ethics	2013
48.	205	Information Technology	GE6075	Professional Ethics in Engineering	Professional Ethics & Human Values	2013
49.	114	Mechanical Engineering	ME6504	Metrology and Measurements	Environment and sustainability	2013
50.	114	Mechanical Engineering	MG6851	Principles of Management	Environment and sustainability	2013
51.	114	Mechanical Engineering	ME6602	Automobile Engineering	Environment and sustainability	2013
52.	114	Mechanical Engineering	GE6757	Total Quality Management	Human Values	2013
53.	114	Mechanical Engineering	GE6075	Professional Ethics in Engineering	Professional Ethics & Human Values	2013
54.	114	Mechanical Engineering	ME6003	Renewable Sources of Energy	Environment and sustainability	2013



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## GE8291 ENVIRONMENTAL SCIENCE AND ENGINEERING

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### OBJECTIVES:

- To study the nature and facts about environment.
- To finding and implementing scientific, technological, economic and political solutions to environmental problems.
- To study the interrelationship between living organism and environment.
- To appreciate the importance of 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, birds; Field study of simple ecosystems – pond, river, hill slopes, etc.

### 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 – role of an individual in prevention of pollution – pollution case studies – disaster management: floods, earthquake, cyclone and landslides. Field study of local polluted site – Urban / Rural / Industrial / Agricultural.

### UNIT III NATURAL RESOURCES 10

Forest resources: Use and over-exploitation, deforestation, case studies- timber extraction,



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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 – role of an individual in conservation of natural resources – Equitable use of resources for sustainable lifestyles. Field study of 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, 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, 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 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: 45 PERIODS**

#### OUTCOMES:

- Environmental Pollution or problems cannot be solved by mere laws. Public participation is an important aspect which serves the environmental Protection. One will obtain knowledge on the following after completing the course.
- Public awareness of environmental is at infant stage.
- Ignorance and incomplete knowledge has lead to misconceptions
- Development and improvement in std. of living has lead to serious environmental disasters



  
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## TEXTBOOKS:

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

## REFERENCES :

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.

GE8071

DISASTER MANAGEMENT

L T P C

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## OBJECTIVES:

- To provide students an exposure to disasters, their significance and types.
- To ensure that students begin to understand the relationship between vulnerability, disasters, disaster prevention and risk reduction
- To gain a preliminary understanding of approaches of Disaster Risk Reduction (DRR)
- To enhance awareness of institutional processes in the country and
- To develop rudimentary ability to respond to their surroundings with potential disaster response in areas where they live, with due sensitivity

## UNIT I INTRODUCTION TO DISASTERS

9

Definition: Disaster, Hazard, Vulnerability, Resilience, Risks — Disasters: Types of disasters — Earthquake, Landslide, Flood, Drought, Fire etc - Classification, Causes, Impacts including social, economic, political, environmental, health, psychosocial, etc.- Differential impacts- in terms of caste, class, gender, age, location, disability - Global trends in disasters: urban disasters, pandemics, complex emergencies, Climate change- Dos and Don'ts during various types of Disasters.



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## UNIT II APPROACHES TO DISASTER RISK REDUCTION (DRR) 9

Disaster cycle - Phases, Culture of safety, prevention, mitigation and preparedness community based DRR, Structural- nonstructural measures, Roles and responsibilities of- community, Panchayati Raj Institutions/Urban Local Bodies (PRIs/ULBs), States, Centre, and other stake- holders- Institutional Processes and Framework at State and Central Level- State Disaster Management Authority(SDMA) – Early Warning System – Advisories from Appropriate Agencies.

## UNIT III INTER-RELATIONSHIP BETWEEN DISASTERS AND DEVELOPMENT

Factors affecting Vulnerabilities, differential impacts, impact of Development projects such as dams, embankments, changes in Land-use etc.- Climate Change Adaptation- IPCC Scenario and Scenarios in the context of India - Relevance of indigenous knowledge, appropriate technology and local resources.

## UNIT IV DISASTER RISK MANAGEMENT IN INDIA 9

Hazard and Vulnerability profile of India, Components of Disaster Relief: Water, Food, Sanitation, Shelter, Health, Waste Management, Institutional arrangements (Mitigation, Response and Preparedness, Disaster Management Act and Policy - Other related policies, plans, programmes and legislation — Role of GIS and Information Technology Components in Preparedness, Risk Assessment, Response and Recovery Phases of Disaster – Disaster Damage Assessment.

## UNIT V DISASTER MANAGEMENT: APPLICATIONS AND CASE STUDIES AND FIELD WORKS 9

Landslide Hazard Zonation: Case Studies, Earthquake Vulnerability Assessment of Buildings and Infrastructure: Case Studies, Drought Assessment: Case Studies, Coastal Flooding: Storm Surge Assessment, Floods: Fluvial and Pluvial Flooding: Case Studies; Forest Fire: Case Studies, Man Made disasters: Case Studies, Space Based Inputs for Disaster Mitigation and Management and field works related to disaster management.

**TOTAL: 45 PERIODS**

### OUTCOMES:

The students will be able to

- Differentiate the types of disasters, causes and their impact on environment and society
- Assess vulnerability and various methods of risk reduction measures as well as mitigation.
- Draw the hazard and vulnerability profile of India, Scenarios in the Indian context, Disaster damage assessment and management.



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## TEXTBOOKS:

1. Singhal J.P. "Disaster Management", Laxmi Publications, 2010. ISBN-10: 9380386427 ISBN-13: 978-9380386423
2. Tushar Bhattacharya, "Disaster Science and Management", McGraw Hill India Education Pvt. Ltd., 2012. ISBN-10: 1259007367, ISBN-13: 978-1259007361]
3. Gupta Anil K, Sreeja S. Nair. Environmental Knowledge for Disaster Risk Management, NIDM, New Delhi, 2011
4. Kapur Anu Vulnerable India: A Geographical Study of Disasters, IIAS and Sage Publishers, New Delhi, 2010.

## REFERENCES:

1. Govt. of India: Disaster Management Act, Government of India, New Delhi, 2005
2. Government of India, National Disaster Management Policy, 2009.

GE8076

PROFESSIONAL ETHICS IN ENGINEERING

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3 0 0 3

## OBJECTIVE:

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

### 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.



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## 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**

### OUTCOME:

- Upon completion of the course, the student should be able to apply ethics in society, discuss the ethical issues related to engineering and realize the responsibilities and rights in the society.

### 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.

### 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.
3. John R Boatright, “Ethics and the Conduct of Business”, Pearson Education, New Delhi, 2003
4. Edmund G Seebauer and Robert L Barry, “Fundamentals of Ethics for Scientists and Engineers”, Oxford University Press, Oxford, 2001.
5. Laura P. Hartman and Joe Desjardins, “Business Ethics: Decision Making for Personal Integrity and Social Responsibility” Mc Graw Hill education, India Pvt. Ltd., New Delhi, 2013.
6. World Community Service Centre, ‘ Value Education’, Vethathiri publications, Erode, 2011.

### Web sources:

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)





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**OME754**

**INDUSTRIAL SAFETY**

**L T P C**

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**OBJECTIVE :**

- To impart knowledge on safety engineering fundamentals and safety management practices.

**UNIT I INTRODUCTION**

**9**

Evolution of modern safety concepts – Fire prevention – Mechanical hazards – Boilers, Pressure vessels, Electrical Exposure.

**UNIT II CHEMICAL HAZARDS**

**9**

Chemical exposure – Toxic materials – Ionizing Radiation and Non-ionizing Radiation - Industrial Hygiene – Industrial Toxicology.

**UNIT III ENVIRONMENTAL CONTROL**

**9**

Industrial Health Hazards – Environmental Control – Industrial Noise - Noise measuring instruments, Control of Noise, Vibration, - Personal Protection.

**UNIT IV HAZARD ANALYSIS**

**9**

System Safety Analysis – Techniques – Fault Tree Analysis (FTA), Failure Modes and Effects Analysis (FMEA), HAZOP analysis and Risk Assessment.

**UNIT V SAFETY REGULATIONS**

**9**

Explosions – Disaster management – catastrophe control, hazard control, Safety education and training - Factories Act, Safety regulations Product safety – case studies.

**TOTAL : 45 PERIODS**

**OUTCOMES:**

- Students must be able to identify and prevent chemical, environmental mechanical, fire hazard through analysis and apply proper safety techniques on safety engineering and management.

**TEXT BOOK:**

1. John V. Grimaldi, "Safety Management", AITB S Publishers, 2003.

**REFERENCES:**

1. Safety Manual, "EDEL Engineering Consultancy", 2000.
2. David L. Goetsch, "Occupational Safety and Health for Technologists", 5th Edition, Engineers and Managers, Pearson Education Ltd., 2005.





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OAI551

ENVIRONMENT AND AGRICULTURE

L T P C

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**OBJECTIVE:**

- To emphasize on the importance of environment and agriculture on changing global scenario and the emerging issues connected to it.

**UNIT I ENVIRONMENTAL CONCERNS**

8

Environmental basis for agriculture and food – Land use and landscape changes – Water quality issues – Changing social structure and economic focus – Globalization and its impacts – Agro ecosystems.

**UNIT II ENVIRONMENTAL IMPACTS**

9

Irrigation development and watersheds – mechanized agriculture and soil cover impacts – Erosion and problems of deposition in irrigation systems – Agricultural drainage and downstream impacts – Agriculture versus urban impacts.

**UNIT III LIMATE CHANGE**

8

Global warming and changing environment – Ecosystem changes – Changing blue-green-grey water cycles – Water scarcity and water shortages – Desertification.

**UNIT IV ECOLOGICAL DIVERSITY AND AGRICULTURE**

10

Ecological diversity, wild life and agriculture – GM crops and their impacts on the environment – Insets and agriculture – Pollination crisis – Ecological farming principles – Forest fragmentation and agriculture – Agricultural biotechnology concerns.

**UNIT V EMERGING ISSUES**

10

Global environmental governance – alternate culture systems – Mega farms and vertical farms – Virtual water trade and its impacts on local environment – Agricultural environment policies and its impacts – Sustainable agriculture.

**TOTAL: 45 PERIODS**

**OUTCOMES:**

- Students will appreciate the role of environment in the current practice of agriculture and concerns of sustainability, especially in the context of climate change and emerging global issues.
- Ecological context of agriculture and its concerns will be understood

**TEXTBOOKS:**

1. M.Lakshmi Narasaiah, Environment and Agriculture, Discovery Pub. House, 2006.
2. Arvind Kumar, Environment and Agriculture, ABH Publications, New Delhi, 2005.



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## REFERENCES:

1. T.C. Byerly, Environment and Agriculture, United States. Dept. of Agriculture. Economic Research Service, 2006.
2. Robert D. Havener, Steven A. Breth, Environment and agriculture: rethinking development issues for the 21st century : proceedings of a symposium, Winrock International Institute for Agricultural Development, 1994
3. Environment and agriculture: environmental problems affecting agriculture in the Asia and Pacific region; World Food Day Symposium, Bangkok, Thailand. 1989

**GE8074**

**HUMAN RIGHTS**

**L T P C**

**3 0 0 3**

## OBJECTIVE:

- To sensitize the Engineering students to various aspects of Human Rights.

### UNIT I

**9**

Human Rights – Meaning, origin and Development. Notion and classification of Rights – Natural, Moral and Legal Rights. Civil and Political Rights, Economic, Social and Cultural Rights; collective/ Solidarity Rights.

### UNIT II

**9**

Evolution of the concept of Human Rights Magna carta – Geneva convention of 1864. Universal Declaration of Human Rights, 1948. Theories of Human Rights.

### UNIT III

**9**

Theories and perspectives of UN Laws – UN Agencies to monitor and compliance.

### UNIT IV

**9**

Human Rights in India – Constitutional Provisions / Guarantees.

### UNIT V

**9**

Human Rights of Disadvantaged People – Women, Children, Displaced persons and Disabled persons, including Aged and HIV Infected People. Implementation of Human Rights – National and State Human Rights Commission – Judiciary – Role of NGO's, Media, Educational Institutions, Social Movements.

**TOTAL : 45 PERIODS**



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## OUTCOME :

- Engineering students will acquire the basic knowledge of human rights.

## REFERENCES:

1. Kapoor S.K., "Human Rights under International law and Indian Laws", Central Law Agency, Allahabad, 2014.
2. Chandra U., "Human Rights", Allahabad Law Agency, Allahabad, 2014.
3. Upendra Baxi, The Future of Human Rights, Oxford University Press, New Delhi

EN8592

WASTEWATER ENGINEERING

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## OBJECTIVE:

- The objectives of this course is to help students develop the ability to apply basic understanding of physical, chemical, and biological phenomena for successful design, operation and maintenance of sewage treatment plants.

### UNIT I PLANNING AND DESIGN OF SEWERAGE SYSTEM 9

Characteristics and composition of sewage - population equivalent -Sanitary sewage flow estimation – Sewer materials – Hydraulics of flow in sanitary sewers – Sewer design – Storm drainage-Storm runoff estimation – sewer appurtenances – corrosion in sewers – prevention and control – sewage pumping-drainage in buildings-plumbing systems for drainage - Rain Water ting.

### UNIT II PRIMARY TREATMENT OF SEWAGE 9

Objectives – Unit Operations and Processes – Selection of treatment processes – Onsite sanitation - Septic tank- Grey water harvesting – Primary treatment – Principles, functions and design of sewage treatment units - screens - grit chamber-primary sedimentation tanks – Construction, Operation and Maintenance aspects.

### UNIT III SECONDARY TREATMENT OF SEWAGE 9

Objectives – Selection of Treatment Methods – Principles, Functions, - Activated Sludge Process and Extended aeration systems -Trickling filters– Sequencing Batch Reactor(SBR) – Membrane Bioreactor - UASB – Waste Stabilization Ponds – - Other treatment methods -Reclamation and Reuse of sewage - Recent Advances in Sewage Treatment – Construction, Operation and Maintenance aspects.

### UNIT IV DISPOSAL OF SEWAGE 9

Standards for– Disposal - Methods – dilution – Mass balance principle - Self purification of river-Oxygen sag curve – deoxygenation and reaeration - Streeter-Phelps model - Land disposal –Sewage farming – sodium hazards - Soil dispersion system.



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## UNIT V SLUDGE TREATMENT AND DISPOSAL

9

Objectives - Sludge characterization – Thickening - Design of gravity thickener- Sludge digestion– Standard rate and High rate digester design- Biogas recovery – Sludge Conditioning and Dewatering – Sludge drying beds- ultimate residue disposal – recent advances.

**TOTAL: 45 PERIODS**

### OUTCOMES:

The students completing the course will have

- An ability to estimate sewage generation and design sewer system including sewage pumping stations
- The required understanding on the characteristics and composition of sewage, selfpurification of streams
- An ability to perform basic design of the unit operations and processes that are used in sewage treatment
- Understand the standard methods for disposal of sewage.
- Gain knowledge on sludge treatment and disposal.

### TEXTBOOKS:

1. Garg, S.K., Environmental Engineering Vol. II, Khanna Publishers, New Delhi, 2015.
2. Duggal K.N., "Elements of Environmental Engineering" S.Chand and Co. Ltd., New Delhi, 2014.
3. Punmia, B.C., Jain, A.K., and Jain.A.K., Environmental Engineering, Vol.II, Laxmi Publications, 2010.

### REFERENCES:

1. Manual on Sewerage and Sewage Treatment Systems Part A,B and C, CPHEEO, Ministry of Urban Development, Government of India, New Delhi, 2013.
2. Metcalf and Eddy- Wastewater Engineering–Treatment and Reuse, Tata Mc.Graw-Hill Company, New Delhi, 2010.
3. Syed R. Qasim "Wastewater Treatment Plants", CRC Press, Washington D.C.,2010
4. Gray N.F, "Water Technology", Elsevier India Pvt. Ltd., New Delhi, 2006.



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EN8491

**WATER SUPPLY ENGINEERING**

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**OBJECTIVE:**

- To equip the students with the principles and design of water treatment units and distribution system.

**UNIT I SOURCES OF WATER**

9

Public water supply system – Planning, Objectives, Design period, Population forecasting; Water demand – Sources of water and their characteristics, Surface and Groundwater – Impounding Reservoir – Development and selection of source – Source Water quality – Characterization – Significance – Drinking Water quality standards.

**UNIT II CONVEYANCE FROM THE SOURCE**

9

Water supply – intake structures – Functions; Pipes and conduits for water – Pipe materials – Hydraulics of flow in pipes – Transmission main design – Laying, jointing and testing of pipes – appurtenances – Types and capacity of pumps – Selection of pumps and pipe materials.

**UNIT III WATER TREATMENT**

9

Objectives – Unit operations and processes – Principles, functions, and design of water treatment plant units, aerators of flash mixers, Coagulation and flocculation – Clarifloccuator-Plate and tube settlers - Pulsator clarifier - sand filters - Disinfection - Residue Management – Construction, Operation and Maintenance aspects.

**UNIT IV ADVANCED WATER TREATMENT**

9

Water softening – Desalination- R.O. Plant – demineralization – Adsorption - Ion exchange– Membrane Systems – RO Reject Management - Iron and Manganese removal - Defluoridation - Construction and Operation & Maintenance aspects – Recent advances - MBR process

**UNIT V WATER DISTRIBUTION AND SUPPLY**

9

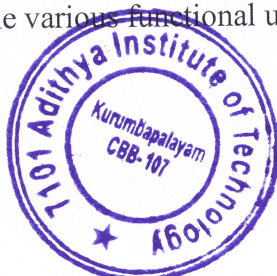
Requirements of water distribution – Components – Selection of pipe material – Service reservoirs– Functions – Network design – Economics – Analysis of distribution networks – Computer applications – Appurtenances – Leak detection. Principles of design of water supply in buildings – House service connection – Fixtures and fittings, systems of plumbing and types of plumbing.

**TOTAL: 45 PERIODS**

**OUTCOMES:**

The students completing the course will have

- an insight into the structure of drinking water supply systems, including water transport, treatment and distribution
- the knowledge in various unit operations and processes in water treatment
- an ability to design the various functional units in water treatment



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- an understanding of water quality criteria and standards, and their relation to public health
- the ability to design and evaluate water supply project alternatives on basis of chosen criteria.

### TEXTBOOKS:

1. Garg, S.K. Environmental Engineering, Vol.I Khanna Publishers, New Delhi, 2010.
2. Modi, P.N., Water Supply Engineering, Vol.I Standard Book House, New Delhi, 2010.
3. Punmia, B.C., Ashok Jain and Arun Jain, Water Supply Engineering, Laxmi Publications (P) Ltd., New Delhi, 2014.

### REFERENCES:

1. Manual on Water Supply and Treatment, CPHEEO, Ministry of Urban Development, Government of India, New Delhi, 1999.
2. Syed R. Qasim and Edward M. Motley Guang Zhu, Water Works Engineering Planning, Design and Operation, Prentice Hall of India Learning Private Limited, New Delhi, 2009

## GE8077 TOTAL QUALITY MANAGEMENT

L T P C  
3 0 0 3

### OBJECTIVE:

- To facilitate the understanding of Quality Management principles and process.

### UNIT I INTRODUCTION

9

Introduction - Need for quality - Evolution of quality - Definitions of quality - Dimensions of product and service quality - Basic concepts of TQM - TQM Framework - Contributions of Deming, Juran and Crosby - Barriers to TQM - Customer focus - Customer orientation, Customer satisfaction, Customer complaints, Customer retention.

### UNIT II TQM PRINCIPLES

9

Leadership - Quality Statements, Strategic quality planning, Quality Councils - Employee involvement - Motivation, Empowerment, Team and Teamwork, Recognition and Reward, Performance appraisal - Continuous process improvement - PDCA cycle, 5S, Kaizen - Supplier partnership - Partnering, Supplier selection, Supplier Rating.

### UNIT III TQM TOOLS AND TECHNIQUES I

9

The seven traditional tools of quality - New management tools - Six sigma: Concepts,



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Methodology, applications to manufacturing, service sector including IT - Bench marking – Reason to bench mark, Bench marking process - FMEA - Stages, Types.

## UNIT IV TQM TOOLS AND TECHNIQUES II

9

Quality Circles - Cost of Quality - Quality Function Deployment (QFD) - Taguchi quality loss function - TPM - Concepts, improvement needs - Performance measures.

## UNIT V QUALITY MANAGEMENT SYSTEM

9

Introduction—Benefits of ISO Registration—ISO 9000 Series of Standards—Sector-Specific Standards—AS 9100, TS16949 and TL 9000-- ISO 9001 Requirements—Implementation—Documentation—Internal Audits—Registration--ENVIRONMENTAL MANAGEMENT SYSTEM:Introduction—ISO 14000 Series Standards—Concepts of ISO 14001—Requirements of ISO14001—Benefits of EMS.

**TOTAL: 45 PERIODS**

### OUTCOME:

- The student would be able to apply the tools and techniques of quality management to manufacturing and services processes.

### TEXTBOOK:

1. Dale H.Besterfield, Carol B.Michna,Glen H. Besterfield, Mary B.Sacre,Hemant Urdhwareshe and Rashmi Urdhwareshe, “Total Quality Management”, Pearson Education Asia, Revised Third Edition, Indian Reprint, Sixth Impression, 2013.

### REFERENCES:

1. James R. Evans and William M. Lindsay, "The Management and Control of Quality", 8th Edition, First Indian Edition, Cengage Learning, 2012.
2. Janakiraman. B and Gopal .R.K., "Total Quality Management - Text and Cases", Prentice Hall (India) Pvt. Ltd., 2006.
3. Suganthi.L and Anand Samuel, "Total Quality Management", Prentice Hall (India) Pvt. Ltd., 2006.
4. ISO9001-2015 standards



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**OCY751**

**WASTE WATER TREATMENT**

**L T P C**

**3 0 0 3**

**OBJECTIVES**

- To make the student conversant with the water treatment methods including adsorption and oxidation process.
- To provide basic understandings about the requirements of water, its preliminary treatment.

**UNIT I WATER QUALITY AND PRELIMINARY TREATMENT 9**

Water Quality-physical- chemical and biological parameters of water- water quality requirement - potable water standards -wastewater effluent standards -water quality indices. Water purification systems in natural systems- physical processes-chemical processes and biological processes- primary, secondary and tertiary treatment-Unit operations-unit processes. Mixing, clarification - sedimentation; Types; aeration and gas transfer – coagulation and flocculation, coagulation processes - stability of colloids - destabilization of colloids- transport of colloidal particles, clariflocculation.

**UNIT II INDUSTRIAL WATER TREATMENT 9**

Filtration – size and shape characteristics of filtering media – sand filters hydraulics of filtration – design considerations – radial, upflow, highrate and multimedia filters, pressure filter. Water softening – lime soda, zeolite and demineralization processes – industrial water treatment for boilers.

**UNIT III CONVENTIONAL TREATMENT METHODS 9**

Taste and odour control – adsorption – activated carbon treatment – removal of color – iron and manganese removal – aeration, oxidation, ion exchange and other methods – effects of fluorides – fluoridation and defluoridation –desalination - corrosion prevention and control – factors influencing corrosion – Langelier index – corrosion control measures.

**UNIT IV WASTEWATER TREATMENT 9**

Wastewater treatment – pre and primary treatment – equalization neutralization – screening and grid removal – sedimentation – oil separation gas stripping of volatile organics – biological oxidation – lagoons and stabilization basins – aerated lagoons – activated sludge process – trickling filtration – anaerobic decomposition.



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## UNIT V      ADSORPTION AND OXIDATION PROCESSES

9

Chemical process – adsorption – theory of adsorption – ion exchange process – chemical oxidation – advanced oxidation process – sludge handling and disposal – miscellaneous treatment processes.

**TOTAL: 45 PERIODS**

### OUTCOMES

- Will have knowledge about adsorption and oxidation process.
- Will gain idea about various methods available for water treatment.
- Will appreciate the necessity of water and acquire knowledge of preliminary treatment.

### TEXTBOOKS:

1. Metcalf and Eddy, “Wastewater Engineering”, 4th ed., McGraw Hill Higher Edu., 2002.
2. W. Wesley Eckenfelder, Jr., “Industrial Water Pollution Control”, 2nd Edn., McGraw Hill Inc., 1989.

### REFERENCES:

1. S.P. Mahajan, “Pollution control in process industries”, 27th Ed. Tata McGraw Hill Publishing Company Ltd., 2012.
2. M. Lancaster, “Green Chemistry: An Introductory Text”, 2nd edition, RSC publishing, 2010.
3. C.S. Rao, “Environmental Pollution Control Engineering”, New Age International, 2007

**MG8591**

**PRINCIPLES OF MANAGEMENT**

**LT P C  
3 0 0 3**

### OBJECTIVES:

- To enable the students to study the evolution of Management, to study the functions and principles of management and to learn the application of the principles in an organization.

## UNIT I      INTRODUCTION TO MANAGEMENT AND ORGANIZATIONS      9

Definition of Management – Science or Art – Manager Vs Entrepreneur - types of managers - managerial roles and skills – Evolution of Management – Scientific, human relations , system and contingency approaches – Types of Business organization - Sole proprietorship, partnership, company-public and private sector enterprises - Organization culture and Environment – Current trends and issues in Management.



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## UNIT II PLANNING

9

Nature and purpose of planning – planning process – types of planning – objectives – setting objectives – policies – Planning premises – Strategic Management – Planning Tools and Techniques – Decision making steps and process.

## UNIT III ORGANISING

9

Nature and purpose – Formal and informal organization – organization chart – organization structure – types – Line and staff authority – departmentalization – delegation of authority – centralization and decentralization – Job Design - Human Resource Management – HR Planning, Recruitment, selection, Training and Development, Performance Management, Career planning and management.

## UNIT IV DIRECTING

9

Foundations of individual and group behaviour – motivation – motivation theories – motivational techniques – job satisfaction – job enrichment – leadership – types and theories of leadership – communication – process of communication – barrier in communication – effective communication – communication and IT.

## UNIT V CONTROLLING

9

System and process of controlling – budgetary and non-budgetary control techniques – use of computers and IT in Management control – Productivity problems and management – control and performance – direct and preventive control – reporting.

**TOTAL: 45 PERIODS**


### OUTCOMES:

- Upon completion of the course, students will be able to have clear understanding of managerial functions like planning, organizing, staffing, leading & controlling and have same basic knowledge on international aspect of management

### TEXT BOOKS:

1. JAF Stoner, Freeman R.E and Daniel R Gilbert “Management”, 6th Edition, Pearson Education, 2004.
2. Stephen P. Robbins & Mary Coulter, “Management”, Prentice Hall (India) Pvt. Ltd., 10th Edition, 2009.



  
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## REFERENCES:

1. Harold Koontz & Heinz Weihrich, "Essentials of Management", Tata McGraw Hill, 1998.
2. Robert Kreitner & Mamata Mohapatra, "Management", Biztantra, 2008.
3. Stephen A. Robbins & David A. Decenzo & Mary Coulter, "Fundamentals of Management", 7th Edition, Pearson Education, 2011.
4. Tripathy PC & Reddy PN, "Principles of Management", Tata McGraw Hill, 1999

EE8703

RENEWABLE ENERGY SYSTEMS

L T P C  
3 0 0 3

## OBJECTIVES:

To impart knowledge on the following Topics

- Awareness about renewable Energy Sources and technologies.
- Adequate inputs on a variety of issues in harnessing renewable Energy.
- Recognize current and possible future role of renewable energy sources.

## UNIT I RENEWABLE ENERGY (RE) SOURCES 9

Environmental consequences of fossil fuel use, Importance of renewable sources of energy, Sustainable Design and development, Types of RE sources, Limitations of RE sources, Present Indian and international energy scenario of conventional and RE sources.

## UNIT II WIND ENERGY 9

Power in the Wind – Types of Wind Power Plants(WPPs)–Components of WPPs-Working of WPPs- Siting of WPPs-Grid integration issues of WPPs.

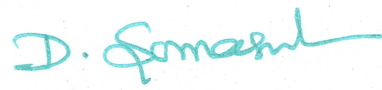
## UNIT III SOLAR PV AND THERMAL SYSTEMS 9

Solar Radiation, Radiation Measurement, Solar Thermal Power Plant, Central Receiver Power Plants, Solar Ponds.- Thermal Energy storage system with PCM- Solar Photovoltaic systems : Basic Principle of SPV conversion – Types of PV Systems- Types of Solar Cells, Photovoltaic cell concepts: Cell, module, array ,PV Module I-V Characteristics, Efficiency & Quality of the Cell, series and parallel connections, maximum power point tracking, Applications.

## UNIT IV BIOMASS ENERGY 9

Introduction-Bio mass resources –Energy from Bio mass: conversion processes-Biomass Cogeneration-Environmental Benefits. Geothermal Energy: Basics, Direct Use, Geothermal Electricity. Mini/micro hydro power: Classification of hydropower schemes, Classification of



  
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water turbine, Turbine theory, Essential components of hydroelectric system.

## UNIT V OTHER ENERGY SOURCES

9

Tidal Energy: Energy from the tides, Barrage and Non Barrage Tidal power systems. Wave Energy: Energy from waves, wave power devices. Ocean Thermal Energy Conversion (OTEC)- Hydrogen Production and Storage- Fuel cell : Principle of working- various types - construction and applications. Energy Storage System- Hybrid Energy Systems.

**TOTAL : 45 PERIODS**

### OUTCOMES:

- Ability to create awareness about renewable Energy Sources and technologies.
- Ability to get adequate inputs on a variety of issues in harnessing renewable Energy.
- Ability to recognize current and possible future role of renewable energy sources.
- Ability to explain the various renewable energy resources and technologies and their applications.
- Ability to understand basics about biomass energy.
- Ability to acquire knowledge about solar energy.

### TEXT BOOKS:

1. Joshua Earnest, Tore Wizeliu, 'Wind Power Plants and Project Development', PHI Learning Pvt.Ltd, New Delhi, 2011.
2. D.P.Kothari, K.C Singal, Rakesh Ranjan "Renewable Energy Sources and Emerging Technologies", PHI Learning Pvt.Ltd, New Delhi, 2013.
3. Scott Grinnell, "Renewable Energy & Sustainable Design", CENGAGE Learning, USA, 2016.

### REFERENCES

1. A.K.Mukerjee and Nivedita Thakur," Photovoltaic Systems: Analysis and Design", PHI Learning Private Limited, New Delhi, 2011
2. Richard A. Dunlap," Sustainable Energy" Cengage Learning India Private Limited, Delhi, 2015.
3. Chetan Singh Solanki, " Solar Photovoltaics : Fundamentals, Technologies and Applications", PHI Learning Private Limited, New Delhi, 2011
4. Bradley A. Striebig,Adebayo A.Ogundipe and Maria Papadakis," Engineering Applications in Sustainable Design and Development", Cengage Learning India Private Limited, Delhi, 2016.



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5. Godfrey Boyle, "Renewable energy", Open University, Oxford University Press in association with the Open University, 2004.
6. Shobh Nath Singh, 'Non-conventional Energy resources' Pearson Education, 2015.

GE8071

DISASTER MANAGEMENT

LT P C  
3 0 0 3

### OBJECTIVES:

- To provide students an exposure to disasters, their significance and types.
- To ensure that students begin to understand the relationship between vulnerability, disasters, disaster prevention and risk reduction
- To gain a preliminary understanding of approaches of Disaster Risk Reduction (DRR)
- To enhance awareness of institutional processes in the country and
- To develop rudimentary ability to respond to their surroundings with potential disaster response in areas where they live, with due sensitivity

### UNIT I INTRODUCTION TO DISASTERS

9

Definition: Disaster, Hazard, Vulnerability, Resilience, Risks – Disasters: Types of disasters – Earthquake, Landslide, Flood, Drought, Fire etc - Classification, Causes, Impacts including social, economic, political, environmental, health, psychosocial, etc.- Differential impacts- in terms of caste, class, gender, age, location, disability - Global trends in disasters: urban disasters, pandemics, complex emergencies, Climate change- Dos and Don'ts during various types of Disasters.

### UNIT II APPROACHES TO DISASTER RISK REDUCTION (DRR)

9


Disaster cycle - Phases, Culture of safety, prevention, mitigation and preparedness community based DRR, Structural- nonstructural measures, Roles and responsibilities of- community, Panchayati Raj Institutions/Urban Local Bodies (PRIs/ULBs), States, Centre, and other stakeholders- Institutional Processes and Framework at State and Central Level- State Disaster Management Authority(SDMA) – Early Warning System – Advisories from Appropriate Agencies.

### UNIT III INTER-RELATIONSHIP BETWEEN DISASTERS AND DEVELOPMENT

9

Factors affecting Vulnerabilities, differential impacts, impact of Development projects such as dams, embankments, changes in Land-use etc.- Climate Change Adaptation- IPCC Scenario and



  
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Scenarios in the context of India - Relevance of indigenous knowledge, appropriate technology and local resources.

## UNIT IV DISASTER RISK MANAGEMENT IN INDIA

9

Hazard and Vulnerability profile of India, Components of Disaster Relief: Water, Food, Sanitation, Shelter, Health, Waste Management, Institutional arrangements (Mitigation, Response and Preparedness, Disaster Management Act and Policy - Other related policies, plans, programmes and legislation – Role of GIS and Information Technology Components in Preparedness, Risk Assessment, Response and Recovery Phases of Disaster – Disaster Damage Assessment.

## UNIT V DISASTER MANAGEMENT: APPLICATIONS AND CASE STUDIES AND FIELD WORKS

9

Landslide Hazard Zonation: Case Studies, Earthquake Vulnerability Assessment of Buildings and Infrastructure: Case Studies, Drought Assessment: Case Studies, Coastal Flooding: Storm Surge Assessment, Floods: Fluvial and Pluvial Flooding: Case Studies; Forest Fire: Case Studies, Man Made disasters: Case Studies, Space Based Inputs for Disaster Mitigation and Management and field works related to disaster management.

**TOTAL: 45 PERIODS**

### OUTCOMES:

The students will be able to

- Differentiate the types of disasters, causes and their impact on environment and society
- Assess vulnerability and various methods of risk reduction measures as well as mitigation.
- Draw the hazard and vulnerability profile of India, Scenarios in the Indian context, Disaster damage assessment and management.

### TEXTBOOKS:

1. Singhal J.P. "Disaster Management", Laxmi Publications, 2010. ISBN-10: 9380386427 ISBN-13: 978-9380386423
2. Tushar Bhattacharya, "Disaster Science and Management", McGraw Hill India Education Pvt. Ltd., 2012. ISBN-10: 1259007367, ISBN-13: 978-1259007361]
3. Gupta Anil K, Sreeja S. Nair. Environmental Knowledge for Disaster Risk Management, NIDM, New Delhi, 2011
4. Kapur Anu Vulnerability India: A Geographical Study of Disasters, IAS and Sage Publishers, New Delhi, 2010.



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## REFERENCES

1. Govt. of India: Disaster Management Act , Government of India, New Delhi, 2005
2. Government of India, National Disaster Management Policy, 2009.

ORO551

RENEWABLE ENERGY SOURCES

L T P C

3 0 0 3

## OBJECTIVES:

- To get exposure on solar radiation and its environmental impact to power.
- To know about the various collectors used for storing solar energy.
- To know about the various applications in solar energy.
- To learn about the wind energy and biomass and its economic aspects.
- To know about geothermal energy with other energy sources.

## UNIT I PRINCIPLES OF SOLAR RADIATION

10

Role and potential of new and renewable source, the solar energy option, Environmental impact of solar power, physics of the sun, the solar constant, extraterrestrial and terrestrial solar radiation, solar radiation on tilted surface, instruments for measuring solar radiation and sun shine, solar radiation data.

## UNIT II SOLAR ENERGY COLLECTION

8

Flat plate and concentrating collectors, classification of concentrating collectors, orientation and thermal analysis, advanced collectors.

## UNIT III SOLAR ENERGY STORAGE AND APPLICATIONS

7

Different methods, Sensible, latent heat and stratified storage, solar ponds. Solar Applications- solar heating/cooling technique, solar distillation and drying, photovoltaic energy conversion.

## UNIT IV WIND ENERGY

10

Sources and potentials, horizontal and vertical axis windmills, performance characteristics, Betz criteria BIO-MASS: Principles of Bio-Conversion, Anaerobic/aerobic digestion, types of Bio-gas digesters, gas yield, combustion characteristics of bio-gas, utilization for cooking, I.C.Engine operation and economic aspects.



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## UNIT V GEOTHERMAL ENERGY:

9

Resources, types of wells, methods of harnessing the energy, potential in India. OCEAN ENERGY: OTEC, Principles utilization, setting of OTEC plants, thermodynamic cycles. Tidal and wave energy: Potential and conversion techniques, mini-hydel power plants, and their economics. DIRECT ENERGY CONVERSION: Need for DEC, Carnot cycle, limitations, principles of DEC.

**TOTAL : 45 PERIODS**

### OUTCOMES:

- Understanding the physics of solar radiation.
- Ability to classify the solar energy collectors and methodologies of storing solar energy.
- Knowledge in applying solar energy in a useful way.
- Knowledge in wind energy and biomass with its economic aspects.
- Knowledge in capturing and applying other forms of energy sources like wind, biogas and geothermal energies.

### TEXT BOOKS:

1. Rai G.D. , “Non-Conventional Energy Sources”, Khanna Publishers, 2011
2. Twidell & Wier, “Renewable Energy Resources”, CRC Press (Taylor & Francis), 2011

### REFERENCES:

1. Tiwari and Ghosal, “Renewable energy resources”, Narosa Publishing House, 2007
2. Ramesh R & Kumar K.U , “Renewable Energy Technologies”, Narosa Publishing House, 2004
3. Mittal K M , “Non-Conventional Energy Systems”, Wheeler Publishing Co. Ltd, New Delhi, 2003
4. Kothari D.P, Singhal ., K.C., “Renewable energy sources and emerging technologies”, P.H.I, New Delhi, 2010



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ME8792

POWER PLANT ENGINEERING

L T P C

3 0 0 3

## OBJECTIVE:

- Providing an overview of Power Plants and detailing the role of Mechanical Engineers in their operation and maintenance.

## UNIT I COAL BASED THERMAL POWER PLANTS

9

Rankine cycle - improvisations, Layout of modern coal power plant, Super Critical Boilers, FBC Boilers, Turbines, Condensers, Steam & Heat rate, Subsystems of thermal power plants – Fuel and ash handling, Draught system, Feed water treatment. Binary Cycles and Cogeneration systems.

## UNIT II DIESEL, GAS TURBINE AND COMBINED CYCLE POWER PLANTS

9

Otto, Diesel, Dual & Brayton Cycle - Analysis & Optimisation. Components of Diesel and Gas Turbine power plants. Combined Cycle Power Plants. Integrated Gasifier based Combined Cycle systems.

## UNIT III NUCLEAR POWER PLANTS

9

Basics of Nuclear Engineering, Layout and subsystems of Nuclear Power Plants, Working of Nuclear Reactors : Boiling Water Reactor (BWR), Pressurized Water Reactor (PWR), CANada Deuterium- Uranium reactor (CANDU), Breeder, Gas Cooled and Liquid Metal Cooled Reactors. Safety measures for Nuclear Power plants.

## UNIT IV POWER FROM RENEWABLE ENERGY

9

Hydro Electric Power Plants – Classification, Typical Layout and associated components including Turbines. Principle, Construction and working of Wind, Tidal, Solar Photo Voltaic (SPV), Solar Thermal, Geo Thermal, Biogas and Fuel Cell power systems.

## UNIT V ENERGY, ECONOMIC AND ENVIRONMENTAL ISSUES OF POWER PLANTS

9

Power tariff types, Load distribution parameters, load curve, Comparison of site selection criteria, relative merits & demerits, Capital & Operating Cost of different power plants. Pollution control technologies including Waste Disposal Options for Coal and Nuclear Power Plants.

TOTAL : 45 PERIODS



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## OUTCOMES:

**Upon the completion of this course the students will be able to**

CO1 Explain the layout, construction and working of the components inside a thermal power plant.

CO2 Explain the layout, construction and working of the components inside a Diesel, Gas and Combined cycle power plants.

CO3 Explain the layout, construction and working of the components inside nuclear power plants.

CO4 Explain the layout, construction and working of the components inside Renewable energy power plants.

CO5 Explain the applications of power plants while extend their knowledge to power plant economics and environmental hazards and estimate the costs of electrical energy production.

## TEXT BOOK:

1. Nag. P.K., "Power Plant Engineering", Third Edition, Tata McGraw – Hill Publishing Company Ltd., 2008.

## REFERENCES:

1. El-Wakil. M.M., "Power Plant Technology", Tata McGraw – Hill Publishing Company Ltd., 2010.
2. Godfrey Boyle, "Renewable energy", Open University, Oxford University Press in association with the Open University, 2004.
3. Thomas C. Elliott, Kao Chen and Robert C. Swanekamp, "Power Plant Engineering", Second Edition, Standard Handbook of McGraw – Hill, 1998.

**GE6351**

**ENVIRONMENTAL SCIENCE AND ENGINEERING**

**L T P C**

**3 0 0 3**

## OBJECTIVES:

- To the study of nature and the facts about environment.
- To find and implement scientific, technological, economic and political solutions to environmental problems.
- To study the interrelationship between living organism and environment.
- To appreciate the importance of 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.



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## OUTCOMES:

**Upon the completion of this course the students will be able to**

CO1 Explain the layout, construction and working of the components inside a thermal power plant.

CO2 Explain the layout, construction and working of the components inside a Diesel, Gas and Combined cycle power plants.

CO3 Explain the layout, construction and working of the components inside nuclear power plants.

CO4 Explain the layout, construction and working of the components inside Renewable energy power plants.

CO5 Explain the applications of power plants while extend their knowledge to power plant economics and environmental hazards and estimate the costs of electrical energy production.

## TEXT BOOK:

1. Nag. P.K., "Power Plant Engineering", Third Edition, Tata McGraw – Hill Publishing Company Ltd., 2008.

## REFERENCES:

1. El-Wakil. M.M., "Power Plant Technology", Tata McGraw – Hill Publishing Company Ltd., 2010.
2. Godfrey Boyle, "Renewable energy", Open University, Oxford University Press in association with the Open University, 2004.
3. Thomas C. Elliott, Kao Chen and Robert C. Swanekamp, "Power Plant Engineering", Second Edition, Standard Handbook of McGraw – Hill, 1998.

GE6351

ENVIRONMENTAL SCIENCE AND ENGINEERING

L T P C

3 0 0 3

## OBJECTIVES:

- To the study of nature and the facts about environment.
- To find and implement scientific, technological, economic and political solutions to environmental problems.
- To study the interrelationship between living organism and environment.
- To appreciate the importance of 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.



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induced landslides, soil erosion and desertification – role of an individual in conservation of natural resources – Equitable use of resources for sustainable lifestyles. Introduction to Environmental Biochemistry: Proteins – Biochemical degradation of pollutants, Bioconversion of pollutants. Field study of local area to document environmental assets – river/forest/grassland/hill/mountain.

## UNIT IV SOCIAL ISSUES AND THE ENVIRONMENT

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 – 12 Principles of green chemistry- nuclear accidents and holocaust, case studies. – wasteland reclamation – consumerism and waste products – environment production act – Air act – Water act – Wildlife protection act – Forest conservation act – The Biomedical Waste (Management and Handling) Rules; 1998 and amendments- scheme of labeling of environmentally friendly products (Ecomark). enforcement machinery involved in environmental legislation- central and state pollution control boards- disaster management: floods, earthquake, cyclone and landslides. Public awareness.

## UNIT V HUMAN POPULATION AND THE ENVIRONMENT

Population growth, variation among nations – population explosion – family welfare programme – environment and human health – human rights – value education – HIV / AIDS – women and child welfare – Environmental impact analysis (EIA)- -GIS-remote sensing-role of information technology in environment and human health – Case studies

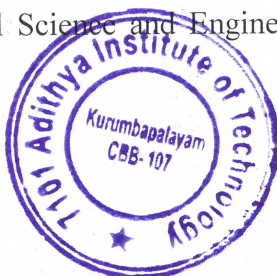
**TOTAL: 45 PERIODS**

### OUTCOMES:

Environmental Pollution or problems cannot be solved by mere laws. Public participation is an important aspect which serves the environmental Protection. One will obtain knowledge on the following after completing the course. Public awareness of environment at infant stage. Ignorance and incomplete knowledge has lead to misconceptions. Development and improvement in standard of living has lead to serious environmental disasters.

### TEXT BOOKS:

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



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## REFERENCES:

1. R.K. Trivedi, "Handbook of Environmental Laws, Rules, Guidelines, Compliances and Standard", 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.

## CE6301

## ENGINEERING GEOLOGY

### OBJECTIVES:

- At the end of this course the students will be able to understand the importance of geological knowledge such as earth, earthquake, volcanism and to apply this knowledge in projects such as dams, tunnels, bridges, roads, airport and harbor as well as to choose types of foundations.

### UNIT I PHYSICAL GEOLOGY

Geology in civil engineering – branches of geology – structure of earth and its composition – weathering of rocks – scale of weathering – soils - landforms and processes associated with river, wind, groundwater and sea – relevance to civil engineering. Plate tectonics – Earth quakes – Seismic zones in India.

### UNIT II MINEROLOGY

Physical properties of minerals – Quartz group, Feldspar group, Pyroxene - hypersthene and augite, Amphibole – hornblende, Mica – muscovite and biotite, Calcite, Gypsum and Clay minerals.

### UNIT III PETROLOGY

Classification of rocks, distinction between Igneous, Sedimentary and Metamorphic rocks. Engineering properties of rocks. Description, occurrence, engineering properties, distribution and uses of Granite, Dolerite, Basalt, Sandstone, Limestone, Laterite, Shale, Quartzite, Marble, Slate, Gneiss and Schist.

### UNIT IV STRUCTURAL GEOLOGY AND GEOPHYSICAL METHODS

Geological maps – attitude of beds, study of structures – folds, faults and joints – relevance to civil engineering. Geophysical methods – Seismic and electrical methods for subsurface investigations.



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## UNIT V APPLICATION OF GEOLOGICAL INVESTIGATIONS

Remote sensing for civil engineering applications; Geological conditions necessary for design and construction of Dams, Reservoirs, Tunnels, and Road cuttings - Hydrogeological investigations and mining - Coastal protection structures. Investigation of Landslides, causes and mitigation.

**TOTAL: 45 PERIODS**

### OUTCOMES:

The students completing this course

- Will be able to understand the importance of geological knowledge such as earth, earthquake, volcanism and the action of various geological agencies.
- Will realize the importance of this knowledge in projects such as dams, tunnels, bridges, roads, airport and harbor
- Can choose the types of foundations and other related aspects.

### TEXT BOOKS:

1. Varghese, P.C., Engineering Geology for Civil Engineering Prentice Hall of India Learning Private Limited, New Delhi, 2012.
2. Venkat Reddy. D. Engineering Geology, Vikas Publishing House Pvt. Lt, 2010.
3. Gokhale KVGK, "Principles of Engineering Geology", B.S. Publications, Hyderabad 2011.
4. Chenna Kesavulu N. "Textbook of Engineering Geology", Macmillan India Ltd., 2009.
5. Parbin Singh. A " Text book of Engineering and General Geology", Katson publishing house, Ludhiana 2009.

### REFERENCES:

1. Muthiayya, V.D. " A Text of Geology", Oxford IBH Publications, Calcutta, 1969
2. Blyth F.G.H. and de Freitas M.H., Geology for Engineers, Edward Arnold, London, 2010.
3. Bell .F.G.. "Fundamentals of Engineering Geology", B.S. Publications. Hyderabad 2011.
4. Dobrin, M.B "An introduction to geophysical prospecting", McGraw Hill, New Delhi, 1988.



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CE6503

## ENVIRONMENTAL ENGINEERING 1

### OBJECTIVES:

- To make the students conversant with principles of water supply, treatment and distribution

### UNIT I PLANNING FOR WATER SUPPLY SYSTEM

Public water supply system -Planning - Objectives -Design period - Population forecasting - Water demand -Sources of water and their characteristics -Surface and Groundwater- Impounding Reservoir Well hydraulics -Development and selection of source - Water quality - Characterization and standards- Impact of climate change.

### UNIT II CONVEYANCE SYSTEM

Water supply -intake structures -Functions and drawings -Pipes and conduits for water- Pipe materials - Hydraulics of flow in pipes -Transmission main design -Laying, jointing and testing of pipes - Drawings appurtenances - Types and capacity of pumps -Selection of pumps and pipe materials.

### UNIT III WATER TREATMENT

Objectives - Unit operations and processes - Principles, functions design and drawing of Chemical feeding, Flash mixers, flocculators, sedimentation tanks and sand filters - Disinfection- Residue Management - Construction and Operation & Maintenance aspects of Water Treatment Plants.

### UNIT IV ADVANCED WATER TREATMENT

Principles and functions of Aeration - Iron and manganese removal, Defluoridation and demineralization -Water softening - Desalination - Membrane Systems - Recent advances.

### UNIT V WATER DISTRIBUTION AND SUPPLY TO BUILDINGS

Requirements of water distribution -Components -Service reservoirs -Functions and drawings - Network design -Economics -Computer applications -Analysis of distribution networks - Appurtenances -operation and maintenance -Leak detection, Methods. Principles of design of water supply in buildings -House service connection -Fixtures and fittings -Systems of plumbing and drawings of types of plumbing.

**TOTAL: 45 PERIODS**



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## OUTCOMES:

The students completing the course will have an insight into the structure of drinking water supply systems, including water transport, treatment and distribution an understanding of water quality criteria and standards, and their relation to public health, the ability to design and evaluate water supply project alternatives on basis of chosenselection criteria.

## TEXT BOOKS:

1. Garg, S.K., "Environmental Engineering", Vol.1 Khanna Publishers, New Delhi, 2005.
2. Modi, P.N. "Water Supply Engineering", Vol. I Standard Book House, New Delhi, 2005.
3. Punmia, B.C., Ashok K Jain and Arun K Jain, "Water Supply Engineering", Laxmi Publications Pvt. Ltd., New Delhi, 2005

## REFERENCES:

1. Government of India, "Manual on Water Supply and Treatment", CPHEEO, Ministry of Urban Development, New Delhi, 2003
2. Syed R. Qasim and Edward M. Motley Guang Zhu, "Water Works Engineering Planning", Design and Operation, Prentice Hall of India Private Limited, New Delhi, 2006.

CE6605

ENVIRONMENTAL ENGINEERING II

LT P C

3 0 0 3

## UNIT I PLANNING FOR SEWERAGE SYSTEMS

7

Sources of wastewater generation – Effects – Estimation of sanitary sewage of low –Estimation of storm runoff – Factors affecting Characteristics and composition of sewage and their significance – Effluent standards – Legislation requirements.

## UNIT II SEWER DESIGN

8

Sewerage – Hydraulics off low in sewers – Objectives – Design period - Design of sanitary and storm sewers – Small bore systems - Computer applications – Laying, joining & testing of sewers – appurtenances – Pumps – selection of pumps and pipe Drainage -. Plumbing System for Buildings – One pipe and two pipe system.

## UNIT I II PRIMARY TREATMENT OF SEWAGE

9

Objective – Selection of treatment processes – Principles, Functions, Design and Drawing of Units - Onsite sanitation - Septic tank with dispersion - Grey water harvesting – Primary treatment – Principles , functions design and drawing of screen, grit chambers and primary sedimentation tanks – Construction, operation and Maintenance aspects.



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## UNIT IV SECONDARY TREATMENT OF SEWAGE

12

Objective – Selection of Treatment Methods – Principles, Functions, Design and Drawing of Units - Activated Sludge Process and Trickling filter – Oxidation ditches, UASB – Waste Stabilization Ponds – Reclamation and Reuse of sewage – sewage recycle in residential complex - Recent Advances in Sewage Treatment – Construction and Operation & Maintenance of Sewage Treatment Plants.

## UNIT V DISPOSAL OF SEWAGE AND SLUDGE MANAGEMENT

9

Standards for Disposal - Methods – dilution – Self purification of surface water bodies – Oxygen sag curve – Land disposal – Sludge characterization – Thickening– Sludge digestion – Biogas recovery – Sludge Conditioning and Dewatering –disposal – Advances in Sludge Treatment and disposal.

**TOTAL: 45 PERIODS**

### OUTCOMES:

The students completing the course will have

- Ability to estimate sewage generation and design sewer system including sewage pumping stations.
- Required understanding out the characteristics and composition of sewage, self purification of streams.
- Ability to perform basic design of the unit operations and processes that are used in sewage treatment.


### TEXT BOOKS:

1. Garg, S.K .", Environmental Engineering" Vo I.I I, Khanna Publishers, New Delhi, 2003.
2. Punmia, B.C., Jain, A.K., and Jain. A .", Environmental Engineering", Vol.II, Lakshmi Publications, News letter, 2005.

### REFERENCES:

- 1 ". Manual on Sewerage and Sewage Treatment", CPHEEO, Ministry of Urban Development, Government of India, New Delhi, 1997.
2. Metcalf & Eddy ", Wastewater Engineering" – Treatment and Reuse, Tata McGraw Hill Company, New Delhi, 2003.
3. Karia G L & Christian R A ", Wastewater Treatment", Prentice Hall of India, New Delhi, 2013.



  
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## CE6611 ENVIRONMENTAL ENGINEERING LABORATORY

L T P C  
0 0 3 2

### OBJECTIVES:

- To understand the sampling and preservation methods and significance of characterization of wastewater.

### LIST OF EXPERIMENTS:

- Determination of Ammonia Nitrogen in wastewater.
- Coagulation and Precipitation process for treating waste water
- Determination of suspended, volatile, fixed and settleable solids in wastewater.
- B.O.D. test
- C.O.D. test
- Nitrate in wastewater.
- Phosphate in wastewater.
- Determination of Calcium, Potassium and Sodium.
- Heavy metals determination - Chromium, Lead and Zinc.  
(Demonstration only)

**TOTAL: 45 PERIODS**

### OUTCOMES:

- The students completing the course will be able to characterize wastewater and conduct treatability studies.

### REFERENCE:

- Standards Methods for the Examination of Water and Wastewater, 17th Edition, WPCF, APHA and AWWA, USA, 1989.

## CE6703 WATER RESOURCES AND IRRIGATION ENGINEERING

L T P C  
3 0 0 3

### OBJECTIVES:

- The student is exposed to different phases in Water Resources Management and National Water Policy. Further they will be imparted required knowledge on Reservoir planning, management and economic analysis including Irrigation and Irrigation management practices.



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## UNIT I WATER RESOURCES

9

Water resources survey – Water resources of India and Tamilnadu – Description of water resources planning – Estimation of water requirements for irrigation and drinking- Single and multipurpose reservoir – Multi objective - Fixation of Storage capacity -Strategies for reservoir operation - Design flood-levees and flood walls.

## UNIT II WATER RESOURCE MANAGEMENT

9

Economics of water resources planning; – National Water Policy – Consumptive and non consumptive water use - Water quality – Scope and aims of master plan - Concept of basin as a unit for development - Water budget- Conjunctive use of surface and ground water.

## UNIT III IRRIGATION ENGINEERING

9

Need – Merits and Demerits – Duty, Delta and Base period – Irrigation efficiencies – Crops and Seasons - Crop water Requirement – Estimation of Consumptive use of water.

## UNIT IV CANAL IRRIGATION

9

Types of Impounding structures: Gravity dam – Diversion Head works - Canal drop – Cross drainage works – Canal regulations – Canal outlets – Canal lining - Kennady's and Lacey's Regime theory.

## UNIT V IRRIGATION METHODS AND MANAGEMENT

9

Lift irrigation – Tank irrigation – Well irrigation – Irrigation methods: Surface and Sub-Surface and Micro Irrigation - Merits and demerits – Irrigation scheduling – Water distribution – Participatory irrigation management with a case study.

**TOTAL :45 PERIODS**

### OUT COMES:

- The students will have knowledge and skills on Planning, design, operation and management of reservoir system.
- The student will gain knowledge on different methods of irrigation including canal irrigation.

### TEXTBOOKS:

1. Linsley R.K. and Franzini J.B, “Water Resources Engineering”, McGraw-Hill Inc, 2000.
2. Punmia B.C., et. al; Irrigation and water power Engineering, Laxmi Publications, 16<sup>th</sup> Edition, New Delhi, 2009



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3. Garg S. K., "Irrigation Engineering and Hydraulic structures", Khanna Publishers, 23<sup>rd</sup> Revised Edition, New Delhi, 2009.

## REFERENCES:

1. Duggal, K.N. and Soni, J.P., "Elements of Water Resources Engineering", New Age International Publishers, 2005
2. Chaturvedi M.C., "Water Resources Systems Planning and Management", Tata McGraw- Hill Inc., New Delhi, 1997.
3. Michael A.M., Irrigation Theory and Practice, 2nd Edition, Vikas Publishing House Pvt. Ltd., Noida, Up, 2008
4. Dilip Kumar Majumdar, "Irrigation Water Management", Prentice-Hall of India, New Delhi, 2008.
5. Asawa, G.L., "Irrigation Engineering", NewAge International Publishers, New Delhi, 2000.

MG6851

PRINCIPLES OF MANAGEMENT

LT P C

3 0 0 3

## OBJECTIVES:

- To enable the students to study the evolution of Management, to study the functions and principles of management and to learn the application of the principles in an organization.

## UNIT I INTRODUCTION TO MANAGEMENT AND ORGANIZATIONS

9

Definition of Management – Science or Art – Manager Vs Entrepreneur - types of managers - managerial roles and skills – Evolution of Management – Scientific, human relations , system and contingency approaches – Types of Business organization - Sole proprietorship, partnership, company-public and private sector enterprises - Organization culture and Environment – Current trends and issues in Management.

## UNIT II PLANNING

9

Nature and purpose of planning – planning process – types of planning – objectives – setting objectives – policies – Planning premises – Strategic Management – Planning Tools and Techniques – Decision making steps and process.



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## UNIT III ORGANISING

9

Nature and purpose – Formal and informal organization – organization chart – organization structure – types – Line and staff authority – departmentalization – delegation of authority – centralization and decentralization – Job Design - Human Resource Management – HR Planning, Recruitment, selection, Training and Development, Performance Management , Career planning and management.

## UNIT IV DIRECTING

9

Foundations of individual and group behaviour – motivation – motivation theories – motivational techniques – job satisfaction – job enrichment – leadership – types and theories of leadership – communication – process of communication – barrier in communication – effective communication – communication and IT.

## UNIT V CONTROLLING

9

System and process of controlling – budgetary and non-budgetary control techniques – use of computers and IT in Management control – Productivity problems and management – control and performance – direct and preventive control – reporting.

**TOTAL: 45 PERIODS**

## OUTCOMES:

- Upon completion of the course, students will be able to have clear understanding of managerial functions like planning, organizing, staffing, leading & controlling and have same basic knowledge on international aspect of management.


## TEXTBOOKS:

1. Stephen P. Robbins & Mary Coulter, "Management", 10th Edition, Prentice Hall (India) Pvt. Ltd., 2009.
2. JAF Stoner, Freeman R.E and Daniel R Gilbert "Management", 6th Edition, Pearson Education, 2004.

## REFERENCES:

1. Stephen A. Robbins & David A. Decenzo & Mary Coulter, "Fundamentals of Management" 7th Edition, Pearson Education, 2011.
2. Robert Kreitner & Mamata Mohapatra, "Management", Biztantra, 2008.
3. Harold Koontz & Heinz Weihrich "Essentials of management" Tata McGraw Hill, 1998.
4. Tripathy PC & Reddy PN, "Principles of Management", Tata McGraw Hill, 1999



  
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EN6501

MUNICIPAL SOLID WASTE MANAGEMENT

L T P C

3 0 0 3

## OBJECTIVES:

- To make the students conversant with different aspects of the types, sources, generation, storage, collection, transport, processing and disposal of municipal solid waste.

## UNIT I SOURCES AND TYPES

8

Sources and types of municipal solid wastes-waste generation rates-factors affecting generation, characteristics- methods of sampling and characterization; Effects of improper disposal of solid wastes- Public health and environmental effects. Elements of solid waste management –Social and Financial aspects – Municipal solid waste (M&H) rules – integrated management-Public awareness; Role of NGO's.

## UNIT II ON-SITE STORAGE AND PROCESSING

8

On-site storage methods – Effect of storage, materials used for containers – segregation of solid wastes – Public health and economic aspects of open storage – waste segregation and storage – case studies under Indian conditions – source reduction of waste – Reduction, Reuse and Recycling.

## UNIT III COLLECTION AND TRANSFER

8

Methods of Residential and commercial waste collection – Collection vehicles – Manpower- Collection routes – Analysis of collection systems; Transfer stations – Selection of location, operation & maintenance; options under Indian conditions – Field problems- solving.

## UNIT IV OFF-SITE PROCESSING

12

Objectives of waste processing – Physical Processing techniques and Equipments; Resource recovery from solid waste composting and biomethanation; Thermal processing options – case studies under Indian conditions.

## UNIT V DISPOSAL

9

Land disposal of solid waste; Sanitary landfills – site selection, design and operation of sanitary landfills – Landfill liners – Management of leachate and landfill gas- Landfill bioreactor- Dumpsite Rehabilitation

TOTAL: 45 PERIODS



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## OUTCOMES:

The students completing the course will have

- An understanding of the nature and characteristics of municipal solid wastes and the regulatory requirements regarding municipal solid waste management
- ability to plan waste minimisation and design storage, collection, transport, processing and disposal of municipal solid waste

## TEXTBOOKS:

1. Tchobanoglous, G., Theisen, H. M., and Eliassen, R. "Solid. Wastes: Engineering Principles and Management Issues". McGraw Hill, New York, 1993.
2. Vesilind, P.A. and Rimer, A.E., "Unit Operations in Resource Recovery Engineering", Prentice Hall, Inc., 1981
3. Paul T Williams, "Waste Treatment and Disposal", John Wiley and Sons, 2000

## REFERENCES:

1. Government of India, "Manual on Municipal Solid Waste Management", CPHEEO, Ministry of Urban Development, New Delhi, 2000.
2. Bhide A.D. and Sundaresan, B.B. "Solid Waste Management Collection", Processing and Disposal, 2001
3. Manser A.G.R. and Keeling A.A., " Practical Handbook of Processing and Recycling of Municipal solid Wastes", Lewis Publishers, CRC Press, 1996
4. George Tchobanoglous and Frank Kreith "Handbook of Solidwaste Management", McGraw Hill, New York, 2002

**GE6083**

**DISASTER MANAGEMENT**

**L T P C**

**3 0 0 3**

## OBJECTIVES:

- To provide students an exposure to disasters, their significance and types.
- To ensure that students begin to understand the relationship between vulnerability, disasters, disaster prevention and risk reduction
- To gain a preliminary understanding of approaches of Disaster Risk Reduction (DRR)
- To enhance awareness of institutional processes in the country and
- To develop rudimentary ability to respond to their surroundings with potential disaster response in areas where they live, with due sensitivity



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## UNIT I INTRODUCTION TO DISASTERS

Definition: Disaster, Hazard, Vulnerability, Resilience, Risks – Disasters: Types of disasters – Earthquake, Landslide, Flood, Drought, Fire etc - Classification, Causes, Impacts including social, economic, political, environmental, health, psychosocial, etc.- Differential impacts- in terms of caste, class, gender, age, location, disability - Global trends in disasters: urban disasters, pandemics, complex emergencies, Climate change- Dos and Don'ts during various types of Disasters.

## UNIT II APPROACHES TO DISASTER RISK REDUCTION (DRR)

Disaster cycle - Phases, Culture of safety, prevention, mitigation and preparedness community based DRR, Structural- nonstructural measures, Roles and responsibilities of- community, Panchayati Raj Institutions/Urban Local Bodies (PRIs/ULBs), States, Centre, and other stakeholders- Institutional Processes and Framework at State and Central Level- State Disaster Management Authority(SDMA) – Early Warning System – Advisories from Appropriate Agencies.

## UNIT III INTER-RELATIONSHIP BETWEEN DISASTERS AND DEVELOPMENT

Factors affecting Vulnerabilities, differential impacts, impact of Development projects such as dams, embankments, changes in Land-use etc.- Climate Change Adaptation- IPCC Scenario and Scenarios in the context of India - Relevance of indigenous knowledge, appropriate technology and local resources.

## UNIT IV DISASTER RISK MANAGEMENT IN INDIA

Hazard and Vulnerability profile of India, Components of Disaster Relief: Water, Food, Sanitation, Shelter, Health, Waste Management, Institutional arrangements (Mitigation, Response and Preparedness, Disaster Management Act and Policy - Other related policies, plans, programmes and legislation – Role of GIS and Information Technology Components in Preparedness, Risk Assessment, Response and Recovery Phases of Disaster – Disaster Damage Assessment.

## UNIT V DISASTER MANAGEMENT: APPLICATIONS AND CASE STUDIES AND FIELD WORKS

Landslide Hazard Zonation: Case Studies, Earthquake Vulnerability Assessment of Buildings and Infrastructure: Case Studies, Drought Assessment: Case Studies, Coastal Flooding: Storm Surge Assessment, Floods: Fluvial and Pluvial Flooding: Case Studies; Forest Fire: Case Studies, Man Made disasters: Case Studies, Space Based Inputs for Disaster Mitigation and Management and field works related to disaster management.



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**TOTAL : 45 PERIODS**

## OUTCOMES:

The students will be able to

- Differentiate the types of disasters, causes and their impact on environment and society
- Assess vulnerability and various methods of risk reduction measures as well as mitigation.
- Draw the hazard and vulnerability profile of India, Scenarios in the Indian context, Disaster damage assessment and management.

## TEXT BOOKS:

1. Singhal J.P. "Disaster Management", Laxmi Publications, 2010. ISBN-10: 9380386427 ISBN-13: 978-9380386423
2. Tushar Bhattacharya, "Disaster Science and Management", McGraw Hill India Education Pvt. Ltd., 2012. ISBN-10: 1259007367, ISBN-13: 978-1259007361]
3. Gupta Anil K, Sreeja S. Nair. Environmental Knowledge for Disaster Risk Management, NIDM, New Delhi, 2011
4. Kapur Anu Vulnerable India: A Geographical Study of Disasters, IIAS and Sage Publishers, New Delhi, 2010.

## REFERENCES

1. Govt. of India: Disaster Management Act , Government of India, New Delhi, 2005
2. Government of India, National Disaster Management Policy, 2009.

**GE6757**

**TOTAL QUALITY MANAGEMENT**

## OBJECTIVES:

- To facilitate the understanding of Quality Management principles and process.

## UNIT I INTRODUCTION

Introduction - Need for quality - Evolution of quality - Definitions of quality - Dimensions of product and service quality - Basic concepts of TQM - TQM Framework - Contributions of Deming, Juran and Crosby - Barriers to TQM - Quality statements - Customer focus - Customer orientation, Customer satisfaction, Customer complaints, Customer retention - Costs of quality.

## UNIT II TQM PRINCIPLES

Leadership - Strategic quality planning, Quality Councils - Employee involvement - Motivation, Empowerment, Team and Teamwork, Quality circles Recognition and Reward, Performance



  
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appraisal - Continuous process improvement - PDCA cycle, 5S, Kaizen - Supplier partnership - Partnering, Supplier selection, Supplier Rating.

### UNIT III TQM TOOLS AND TECHNIQUES I

The seven traditional tools of quality - New management tools - Six sigma: Concepts, Methodology, applications to manufacturing, service sector including IT - Bench marking - Reason to bench mark, Bench marking process - FMEA - Stages, Types.

### UNIT IV TQM TOOLS AND TECHNIQUES II

Control Charts - Process Capability - Concepts of Six Sigma - Quality Function Development (QFD) - Taguchi quality loss function - TPM - Concepts, improvement needs - Performance measures.

### UNIT V QUALITY SYSTEMS

Need for ISO 9000 - ISO 9001-2008 Quality System - Elements, Documentation, Quality Auditing - QS 9000 - ISO 14000 - Concepts, Requirements and Benefits - TQM Implementation in manufacturing and service sectors.

**TOTAL : 45 PERIODS**

### OUTCOMES:

- The student would be able to apply the tools and techniques of quality management to manufacturing and services processes.

### TEXT BOOK:

1. Dale H. Besterfield, et al., "Total quality Management", Pearson Education Asia, Third Edition, Indian Reprint (2006).

### REFERENCES:

1. James R. Evans and William M. Lindsay, "The Management and Control of Quality", 8th Edition, First Indian Edition, Cengage Learning, 2012.
2. Suganthi.L and Anand Samuel, "Total Quality Management", Prentice Hall (India) Pvt. Ltd., 2006.
3. Janakiraman. B and Gopal .R.K., "Total Quality Management - Text and Cases", Prentice Hall (India) Pvt. Ltd., 2006.



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**GE6075**

**PROFESSIONAL ETHICS IN ENGINEERING**

**L T P C**

**3 0 0 3**

## **OBJECTIVES:**

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

## **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, discuss the ethical issues related to engineering and realize the responsibilities and rights in the society



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## TEXTBOOKS:

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.

## 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
3. John R Boatright, "Ethics and the Conduct of Business", Pearson Education, New Delhi, 2003
4. Edmund G Seebauer and Robert L Barry, "Fundamentals of Ethics for Scientists and Engineers", Oxford University Press, Oxford, 2001
5. Laura P. Hartman and Joe Desjardins, "Business Ethics: Decision Making for Personal Integrity and Social Responsibility" Mc Graw Hill education, India Pvt. Ltd., New Delhi 2013.
6. World Community Service Centre, "Value Education", Vethathiri publications, Erode, 2011

## WEB SOURCES:

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)

ME6504

METROLOGY AND MEASUREMENTS

## OBJECTIVES:

- To provide knowledge on various Metrological equipments available to measure the dimension of the components.
- To provide knowledge on the correct procedure to be adopted to measure the dimension of the components.



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## UNIT I BASICS OF METROLOGY

5

Introduction to Metrology – Need – Elements – Work piece, Instruments – Persons – Environment – their effect on Precision and Accuracy – Errors – Errors in Measurements – Types – Control – Types of standards.

## UNIT II LINEAR AND ANGULAR MEASUREMENTS

10

Linear Measuring Instruments – Evolution – Types – Classification – Limit gauges – gauge design – terminology – procedure – concepts of interchange ability and selective assembly – Angular measuring instruments – Types – Bevel protractor clinometers angle gauges, spirit levels sine bar – Angle alignment telescope – Autocollimator – Applications.

## UNIT III ADVANCES IN METROLOGY

12

Basic concept of lasers Advantages of lasers – laser Interferometers – types – DC and AC Lasers interferometer – Applications – Straightness – Alignment. Basic concept of CMM – Types of CMM – Constructional features – Probes – Accessories – Software – Applications – Basic concepts of Machine Vision System – Element – Applications.

## UNIT IV FORM MEASUREMENT

10

Principles and Methods of straightness – Flatness measurement – Thread measurement, gear measurement, surface finish measurement, Roundness measurement – Applications.

## UNIT V MEASUREMENT OF POWER, FLOW AND TEMPERATURE

8

Force, torque, power – mechanical , Pneumatic, Hydraulic and Electrical type. Flow measurement: Venturimeter, Orifice meter, rotameter, pitot tube – Temperature: bimetallic strip, thermocouples, electrical resistance thermometer – Reliability and Calibration – Readability and Reliability.

**TOTAL : 45 PERIODS**

### OUTCOMES:

- Upon completion of this course, the Students can demonstrate different measurement technologies and use of them in Industrial Components

### TEXT BOOKS:

1. Jain R.K. “Engineering Metrology”, Khanna Publishers, 2005.
2. Gupta. I.C., “Engineering Metrology”, Dhanpatrai Publications, 2005.

### REFERENCES:

1. Charles Reginald Shotbolt, “Metrology for Engineers”, 5th edition, Cengage Learning EMEA, 1990.
2. Backwith, Marangoni, Lienhard, “Mechanical Measurements”, Pearson Education , 2006.



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ME6602

AUTOMOBILE ENGINEERING

L T P C

3 0 0 3

## OBJECTIVES:

- To understand the construction and working principle of various parts of an automobile.
- To have the practice for assembling and dismantling of engine parts and transmission System

## UNIT I VEHICLE STRUCTURE AND ENGINES

Types of automobiles, vehicle construction and different layouts, chassis, frame and body, Vehicle aerodynamics (various resistances and moments involved), IC engines – components functions and materials, variable valve timing (VVT).

## UNIT II ENGINE AUXILIARY SYSTEMS

Electronically controlled gasoline injection system for SI engines, Electronically controlled diesel injection system (Unit injector system, Rotary distributor type and common rail direct injection system), Electronic ignition system (Transistorized coil ignition system, capacitive discharge ignition system), Turbo chargers (WGT, VGT), Engine emission control by three way catalytic converter system, Emission norms (Euro and BS).

## UNIT III TRANSMISSION SYSTEMS

Clutch-types and construction, gear boxes- manual and automatic, gear shift mechanisms, Over drive, transfer box, fluid flywheel, torque converter, propeller shaft, slip joints, universal joints, Differential and rear axle, Hotchkiss Drive and Torque Tube Drive.

## UNIT IV STEERING, BRAKES AND SUSPENSION SYSTEMS

Steering geometry and types of steering gear box-Power Steering, Types of Front Axle, Types of Suspension Systems, Pneumatic and Hydraulic Braking Systems, Antilock Braking System (ABS), electronic brake force distribution (EBD) and Traction Control.

## UNIT V ALTERNATIVE ENERGY SOURCES

Use of Natural Gas, Liquefied Petroleum Gas, Bio-diesel, Bio-ethanol, Gasohol and Hydrogen in Automobiles- Engine modifications required –Performance, Combustion and Emission Characteristics of SI and CI engines with these alternate fuels - Electric and Hybrid Vehicles, Fuel Cell Note: Practical Training in dismantling and assembling of Engine parts and Transmission Systems should be given to the students.

**TOTAL: 45 PERIODS**



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## OUTCOMES:

- Upon completion of this course, the students will be able to identify the different components in automobile engineering.
- Have clear understanding on different auxiliary and transmission systems usual.

## TEXT BOOKS:

1. Kirpal Singh, "Automobile Engineering", Vol 1 & 2, Seventh Edition, Standard Publishers, New Delhi, 1997.
2. Jain K.K. and Asthana .R.B, "Automobile Engineering" Tata McGraw Hill Publishers, New Delhi, 2002.

## REFERENCES:

1. Newton ,Steeds and Garet, "Motor Vehicles", Butterworth Publishers,1989.
2. Joseph Heitner, "Automotive Mechanics," Second Edition, East-West Press, 1999.
3. Martin W, Stockel and Martin T Stockle , "Automotive Mechanics Fundamentals," The Good heart –Will Cox Company Inc, USA ,1978.
4. Heinz Heisler, "Advanced Engine Technology," SAE International Publications USA, 1998.
5. Ganesan V. "Internal Combustion Engines", Third Edition, Tata McGraw-Hill, 2007.

ME6003

RENEWABLE SOURCES OF ENERGY

L T P C

3 0 0 3

## OBJECTIVES:

- At the end of the course, the students are expected to identify the new methodologies technologies for effective utilization of renewable energy sources.

## UNIT I INTRODUCTION

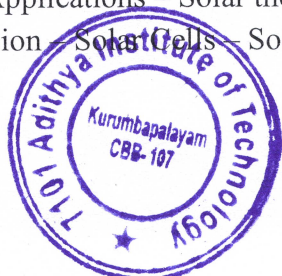
9

World Energy Use – Reserves of Energy Resources – Environmental Aspects of Energy Utilisation – Renewable Energy Scenario in Tamil nadu, India and around the World – Potentials - Achievements / Applications – Economics of renewable energy systems.

## UNIT II SOLARENERGY

9

Solar Radiation – Measurements of Solar Radiation - Flat Plate and Concentrating Collectors – Solar direct Thermal Applications – Solar thermal Power Generation - Fundamentals of Solar Photo Voltaic Conversion – Solar Cells – Solar PV Power Generation – Solar PV Applications.



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## UNIT III WINDENERGY 9

Wind Data and Energy Estimation – Types of Wind Energy Systems – Performance – Site Selection – Details of Wind Turbine Generator – Safety and Environmental Aspects

## UNIT IV BIO - ENERGY 9

Biomass direct combustion – Biomass gasifiers – Biogas plants – Digesters – Ethanol production – Bio diesel – Cogeneration - Biomass Applications

## UNIT V OTHER RENEWABLE ENERGY SOURCES 9

Tidal energy – Wave Energy – Open and Closed OTEC Cycles – Small Hydro-Geothermal Energy – Hydrogen and Storage - Fuel Cell Systems – Hybrid Systems.

**TOTAL : 45 PERIODS**

### OUTCOMES:

- Upon completion of this course, the students can able to identify the new methodologiestechnologies for effective utilization of renewable energy sources.

### TEXT BOOKS:

1. Rai. G.D., "Non Conventional Energy Sources", Khanna Publishers, New Delhi, 2011.
2. Twidell, J.W. & Weir, A., "Renewable Energy Sources", EFN Spon Ltd., UK, 2006.

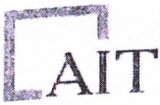
### REFERENCES:

1. Sukhatme. S.P., "Solar Energy", Tata McGraw Hill Publishing Company Ltd., New Delhi, 1997.
2. Godfrey Boyle, "Renewable Energy, Power for a Sustainable Future", Oxford University Press, U.K., 1996.
3. Tiwari. G.N., Solar Energy – "Fundamentals Design, Modelling & Applications", Narosa



  
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	<b>ADITHYA INSTITUTE OF TECHNOLOGY</b> <b>COIMBATORE - 107</b>		<b>ACD/CTT/01</b> <b>Date :</b> <b>22.01.09</b>
	<b>CLASS TIME – TABLE</b>		<b>Page No:1/1</b>
<b>Academic Year</b> <b>2019 - 20</b>	<b>Sem: ODD</b>	<b>II MECH</b> <b>(Class room : N102)</b>	<b>Issue Date :</b> <b>10.08.2019 R1</b>

Hours → Days	1 09.00 – 09:50	2 09:50 – 10:40	Tea Break	3 10:55 – 11:45	4 11:45 – 12:35	Lunch Break	5 01:25 - 02:15	6 02:15 – 02:55	Tea Break	7 03:10 – 03:50	8 03:50 – 04:30	
Mon	FM	ETD		TPDE	EDC		ETD	MT I		ISLS		
Tue	TPDE	EDC		QA & LR			MT I	MT I		Mentoring Activity	TPDE	
Wed	ETD(T)	←		EDC / MT I LAB B1 / B2			TPDE(T)	TPDE		FM	Online Course	
Thu	EDC	MT I		FM	ETD		EDC	←		MT I / EDC LAB B1 / B2		
Fri	FM	EDC		ETD	TPDE		MT I	←		CAD LAB		
Sat	MT I	ETD		FM(T)	TPDE		FM	Club Activity		Club Activity	Sports	

### Theory

S. No	Sub. Code	Course Title	L	T	L + T	C	Faculty
1.	MA8353	Transforms and Partial Differential Equation (TPDE)	5	1	6	4	Mrs.K.M.Shenthilvadvukkarasi
2.	ME8391	Engineering Thermodynamics (ETD)	4	1	5	4	Mr.P.L.Navaneethakrishnan
3.	CE8394	Fluid Mechanics & Machinery (FM)	4	1	5	4	Mr.G.Vivek kumar
4.	ME8351	Manufacturing Technology-I (MT-I)	4	0	4	3	Mr.A.Karthick
5.	EE8353	Electrical Drives & Control systems (EDC)	4	0	4	3	Mr.T.Kirubhakaran
6.		Quantitative Aptitude & Logical Reasoning (QA & LR)	-	-	-	-	External Faculty

### Practical

S.No	Sub. Code	Course Title	L	T	P	C	Faculty
1.	ME8361	Manufacturing Technology-I (MT-I)	0	0	3	2	Mr.G.Vivek kumar
2.	ME8381	Computer Aided Machine Drawing (CAD Lab)	0	0	3	2	Mr.V.T.Vijayaraj
3.	EE8361	Electrical Engineering Lab (EE)	0	0	3	2	Mr.G.Vinoth
4.	HS8381	Interpersonal Skills / Listening & Speaking (ISLS - Communication lab)	0	0	2	1	Mrs.S.Sasikala

L-Lecture; T-Tutorial; P-Practical; C-Credit; B – Batch; QA & LR - Quantitative Aptitude & Logical Reasoning;

Tutor : Mr.G.Vivek kumar

P.L. Jay  
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	<b>CLASS TIME - TABLE</b>		<b>Page No:1/1</b>
<b>Academic Year</b> <b>2019 - 20</b>	<b>Sem: ODD</b>	<b>III MECH - B</b> <b>(Class room : N204)</b>	<b>Issue Date :</b> <b>28.06.2019</b>

<div>Hours ↓ Days</div>	1 9.00 – 09:55	2 9:55 – 10:50	Tea Break	3 11:05 – 12:00	4 12:00 – 12:55	Lunch Break	5 1:35 - 2:30	6 2:30 – 3:25	Tea Break	7 3:35 – 4:30
Mon	MM	TE II		TE II(T)	DOM		LM	DME		Online Course
Tue	LM	←		KD / MM LAB B1 / B2			DOM	DOM(T)		MM
Wed	DOM	LM		DME	DME		QA & LR			DOM
Thu	DME	DME		TE II	TE II		MM / TE LAB B1 / B2			→
Fri	LM	TE II		MM	Mentoring Activity		TE / KD LAB B1 / B2			→
Sat	MM	TE II		DOM	DME(T)		Club Activity			Sports

### Theory

S. No	Sub. Code	Course Title	L	T	L + T	C	Faculty
1.	ME8595	Thermal Engineering- II (TE II)	5	1	6	3	Dr.D.Palaniswamy
2.	ME8593	Design of Machine Elements (DME)	5	1	6	3	Mr.V.T.Vijayaraj
3.	ME8501	Metrology and Measurements (MM)	4	0	4	3	Mr.D.Rameshkumar
4.	ME8594	Dynamics of Machines (DOM)	5	1	6	4	Mr.M.Subramanian
5.	OIM552	Lean Manufacturing (LM)	4	0	4	3	Mr.K.T.Shabarinathan
6.		Quantitative Aptitude & Logical Reasoning (QA & LR)	-	-	-	-	External Faculty

### Practical

S.No	Sub. Code.	Course Title	L	T	P	C	Faculty
1.	ME8511	Kinematics and Dynamics Laboratory (KD Lab)	0	0	3	2	Mr.M.Subramanian
2.	ME8512	Thermal Engineering Laboratory (TE Lab)	0	0	3	2	Mr.P.L.Navaneethakrishnan
3.	ME8513	Metrology and Measurements Laboratory (MM Lab)	0	0	3	2	Mr.A.Karthick

L-Lecture; T-Tutorial; P-Practical; C-Credit; B – Batch; QA & LR - Quantitative Aptitude & Logical Reasoning;

**Tutor : Mr.P.L.Navaneethakrishnan**

P.L. → ay 28/6  
Time table I/C

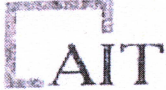


HoD 29/6/19

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	<b>CLASS TIME – TABLE</b>		<b>Page No:1/1</b>
<b>Academic Year</b> <b>2019 - 20</b>	<b>Sem: ODD</b>	<b>IV MECH - A</b> <b>(Class room : N103)</b>	<b>Issue Date :</b> <b>10.08.2019 R1</b>

Hours ↓ Days	1 09.00 – 09:50	2 09:50 – 10:40	Tea Break	3 10:55 – 11:45	4 11:45 – 12:35	Lunch Break	5 01:25 - 02:15	6 02:15 – 02:55	Tea Break	7 03:10 – 03:50	8 03:50 – 04:30
Mon	TQM	PPE		WT	MTS		PPE	ME		Comp. Lab	
Tue	MTS	TQM		CIM	ME		MTS	←		CASA / MTS LAB B1 / B2	
Wed	ME	TQM		WT	PPE		WT	MTS		CIM	PPE
Thu	PPE	MTS		Online Course	Mentoring Activity		TQM	CIM		TQM	ME
Fri	CIM	←		MTS / CASA LAB B1 / B2			CIM	WT		MTS	WT
Sat	PPE	TQM		CIM	WT		ME	Club Activity		Club Activity	Sports

### Theory

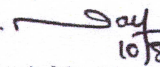
S. No	Sub. Code	Course Title	L	T	L + T	C	Faculty
1.	ME6701	Power Plant Engineering (PPE)	5	0	5	3	Mr.K.T.Shabarinathan
2.	ME6702	Mechatronics(MTS)	5	0	5	3	Mr.R.M.Udhayachandran
3.	ME6703	Computer Integrated Manufacturing Systems (CIM)	5	0	5	3	Dr.K.Mylsamy
4.	GE6757	Total Quality Management (TQM)	5	0	5	3	Dr.M.Natarajan
5.	ME6008	Welding Technology	5	0	5	3	Mr.A.Karthick
6.	ME6012	Maintenance Engineering	4	0	4	3	Dr.S.Muthu

### Practical

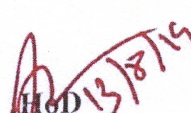
S.No	Sub. Code.	Course Title	L	T	P	C	Faculty
1.	ME6711	Simulation and Analysis Laboratory (SA LAB - CAD Lab)	0	0	3	2	Mr.K.T.Shabarinathan
2.	ME6712	Mechatronics Laboratory (MTS Lab)	0	0	3	2	Mr.R.M.Udhayachandran
3.	ME6713	Comprehension (Comp. Lab- CP Lab 6)	0	0	2	1	Mr.G.Vivek kumar

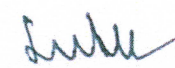
L-Lecture; T-Tutorial; P-Practical; C-Credit; B – Batch; QA & LR - Quantitative Aptitude & Logical Reasoning;

Tutor : Mr.K.T.Shabarinathan

P. I.   
Time table I/C




  
HOD 13/8/19

  
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	<b>ADITHYA INSTITUTE OF TECHNOLOGY</b> <b>COIMBATORE - 107</b>			<b>ACD/CTT/01</b> <b>Date :</b> <b>22.01.09</b>
	<b>CLASS TIME – TABLE</b>			<b>Page No:1/1</b>
<b>Academic Year</b> <b>2019 - 20</b>	<b>Sem: ODD</b>	<b>IV MECH - A</b> <b>(Class room : N103)</b>		<b>Issue Date :</b> <b>28.06.2019</b>

<div>Hours →</div> <div>Days ↓</div>	1 9.00 – 09:55	2 9:55 – 10:50	Tea Break	3 11:05 – 12:00	4 12:00 – 12:55	Lunch Break	5 1:35 - 2:30	6 2:30 – 3:25	Tea Break	7 3:35 – 4:30
Mon	TQM	PPE		WT	MTS		ME	Comp. Lab		Comp. Lab
Tue	MTS	TQM		CIM	ME		CASA / MTS LAB B1 / B2			→
Wed	ME	TQM		WT	PPE		MTS	CIM		PPE
Thu	PPE	MTS		Online Course	Mentoring Activity		CIM	TQM		ME
Fri	CIM	←		MTS / CASA LAB B1 / B2			WT	MTS		WT
Sat	PPE	TQM		CIM	WT		Club Activity			Sports

### Theory

S. No	Sub. Code	Course Title	L	T	L + T	C	Faculty
1.	ME6701	Power Plant Engineering (PPE)	5	0	5	3	Mr.K.T.Shabarinathan
2.	ME6702	Mechatronics(MTS)	5	0	5	3	Mr.R.M.Udhayachandran
3.	ME6703	Computer Integrated Manufacturing Systems (CIM)	5	0	5	3	Dr.K.Mylsamy
4.	GE6757	Total Quality Management (TQM)	5	0	5	3	Dr.M.Natarajan
5.	ME6008	Welding Technology	5	0	5	3	Mr.A.Karthick
6.	ME6012	Maintenance Engineering	4	0	4	3	Dr.S.Muthu

### Practical

S.No	Sub. Code.	Course Title	L	T	P	C	Faculty
1.	ME6711	Simulation and Analysis Laboratory (SA LAB - CAD Lab)	0	0	3	2	Mr.K.T.Shabarinathan
2.	ME6712	Mechatronics Laboratory (MTS Lab)	0	0	3	2	Mr.R.M.Udhayachandran
3.	ME6713	Comprehension (Comp. Lab- CP Lab 6 )	0	0	2	1	Mr.G.Vivek kumar

L-Lecture; T-Tutorial; P-Practical; C-Credit; B – Batch; QA & LR - Quantitative Aptitude & Logical Reasoning;

Tutor : Mr.K.T.Shabarinathan

P.L.R. 28/6/19  
Time table I/C



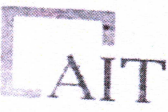
HoD 29/6/19

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	ADITHYA INSTITUTE OF TECHNOLOGY COIMBATORE - 107			ACD/CTT/01 Date : 22.01.09
	CLASS TIME - TABLE			Page No:1/1
Academic Year 2019 - 20	Sem: ODD	IV MECH - B (Class room : N104)		Issue Date : 28.06.2019

Hours ↓ Days	1 9.00 – 09:55	2 9:55 – 10:50	Tea Break	3 11:05 – 12:00	4 12:00 – 12:55	Lunch Break	5 1:35 - 2:30	6 2:30 – 3:25	Tea Break	7 3:35 – 4:30	
Mon	ME	MTS		TQM	PPE		TQM	MTS		WT	
Tue	PPE	CIM		MTS	TQM		CIM	ME		Online Course	
Wed	WT	←		MTS / CASA LAB B1 / B2			PPE	WT		Mentoring Activity	
Thu	TQM	CIM		WT	ME		CASA / MTS LAB B1 / B2			→	
Fri	MTS	PPE		WT	ME		CIM	Comp. Lab		Comp. Lab	
Sat	CIM	MTS		PPE	TQM		Club Activity			Sports	

### Theory

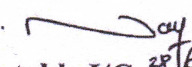
S. No	Sub. Code	Course Title	L	T	L + T	C	Faculty
1.	ME6701	Power Plant Engineering (PPE)	5	0	5	3	Mr.P.L.Navaneethakrishnan
2.	ME6702	Mechatronics(MTS)	5	0	5	3	Mr.R.M.Udhayachandran
3.	ME6703	Computer Integrated Manufacturing Systems (CIM)	5	0	5	3	Mr.G.Vivek kumar
4.	GE6757	Total Quality Management (TQM)	5	0	5	3	Dr.M.Natarajan
5.	ME6008	Welding Technology	5	0	5	3	Mr.A.Karthick
6.	ME6012	Maintenance Engineering	4	0	4	3	Mr.V.T.Vijayaraj

### Practical

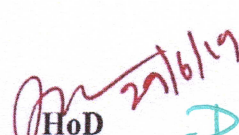
S.No	Sub. Code.	Course Title	L	T	P	C	Faculty
1.	ME6711	Simulation and Analysis Laboratory (SA LAB - CAD Lab)	0	0	3	2	Mr.D.Rameshkumar
2.	ME6712	Mechatronics Laboratory (MTS Lab)	0	0	3	2	Mr.R.M.Udhayachandran
3.	ME6713	Comprehension (Comp. Lab- CP Lab 6)	0	0	2	1	Mr.G.Vivek kumar

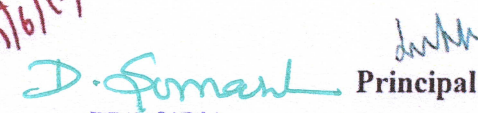
L-Lecture; T-Tutorial; P-Practical; C-Credit; B – Batch; QA & LR - Quantitative Aptitude & Logical Reasoning;

Tutor : Mr.V.T.Vijayaraj

P.L.   
Time table I/C 28/6




  
HoD 27/6/19

  
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	<b>INDIVIDUAL TIME TABLE</b>		<b>Page No:1/1</b>
<b>Academic Year</b> <b>2019 - 20</b>	<b>Sem: ODD</b>	<b>Mr. G.VIVEK KUMAR</b>	<b>Issue Date :</b> <b>21.08.2019 R1</b>

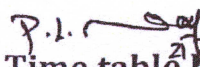
Hours ↓ Days	1 09.00 – 09:50	2 09:50 – 10:40	Tea Break	3 10:55 – 11:45	4 11:45 – 12:35	Lunch Break	5 01:25 - 02:15	6 02:15 – 02:55	Tea Break	7 03:10 – 03:50	8 03:50 – 04:30	
Mon	FM II						CIM IV B			Comp.L IV A		
Tue		CIM IV B						CIM IV B		Mentoring Activity	FM II	
Wed		←		MT LAB I II MECH			FM II				Online Course	
Thu		CIM IV B		FM II						MT LAB I II MECH		
Fri	FM II							CIM IV B		Comp.L IV B		
Sat	CIM IV B			FM II	TE II(T) III A		FM II					

### Theory

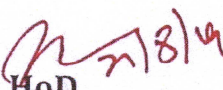
S. No	Course Title	L	T	P	C	Class
1.	Fluid Mechanics and Machinery	4	1	0	4	II MECH
2.	Computer Integrated Manufacturing Systems	5	0	0	3	IV MECH B
3.	Manufacturing Technology Laboratory - I	0	0	6	2	II MECH
4.	Comprehension	0	0	2	1	IV MECH A
5.	Comprehension	0	0	2	1	IV MECH B

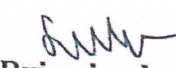
S.No	Details	Class
1.	Tutor ward meeting(TWM)	II MECH
2.	Library (LIB)	


Theory	Lab	Lab (Assist)	TWM	Others	Total
13	10	-	-	3	26

P.L.   
Time table I/C



  
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