



# A. R. ENGINEERING COLLEGE

(Approved by AICTE, New Delhi & Affiliated to Anna university, Chennai)  
Vadakuchipalayam, Kappiyampuliyur post, Villupuram-605601, Tamilnadu.

## Criteria 1–Curricular Aspects

### KeyIndicator–1.3.1Curriculum Enrichment


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

**NOTE: The supporting documents for this metric exceed the upload limit of 5MB. Hence the documents are made available in HEI website and links for the metric is given below.**

## INDEX

METRIC	PARAMETER	LINK TO RELEVANT DOCUMENTS
1.3.1	Institution integrates crosscutting issues relevant to Professional Ethics, Gender, Human values, Environment and Sustainability into the Curriculum	<a href="#">VIEW DOCUMENT</a>




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

## AUTHENTICATION CERTIFICATE

This is to certify that A.R. Engineering College Professional Ethics, Gender, Human values, Environment and Sustainability in transacting the Curriculum



  
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## ACADEMIC YEAR 2018-2023

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

### Courses relevant to Professional Ethics

COURSE	REGULATION	COURSE CODE	COURSE NAME	YEAR	DEPARTMENT
Professional Ethics	R2013	GE6075	Professional Ethics in Engineering	2018-2019	MECH (V SEM)
				2019-2020	MECH (V SEM) CSE (VIII SEM)
	R2017	GE8076	Professional Ethics in Engineering	2020-2021	CSE (VIII SEM) ECE (VIII SEM)
				2021-2022	CSE (VIII SEM) ECE (VIII SEM)
				2022-2023	CSE (VIII SEM) ECE (VIII SEM)
	R2013	GE6757	Total Quality Management	2018-2019	MECH (VII SEM) EEE (VIII SEM) CSE (VI SEM)
				2019-2020	MECH (VII SEM) EEE (VIII SEM)
	R2017	GE8077	Total Quality Management	2020-2021	CSE (VII SEM) EEE (VII SEM)
				2021-2022	CSE (VII SEM) EEE (VII SEM) CIVIL

  
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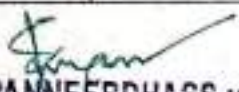
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## Courses relevant to Gender

COURSE	REGULATION	COURSE CODE	COURSE NAME	YEAR	DEPARTMENT
Gender	R2017	GE8071	Disaster Management	2021-2022	CSE ECE(VIISEM) EEE(VII SEM)
				2022-2023	CSE ECE(VIISEM) EEE(VII SEM)

## Courses relevant to Human values

COURSE	REGULATION	COURSE CODE	COURSE NAME	YEAR	DEPARTMENT
Human values	R2013	MG6851	Principles of Management	2018-2019	MECH(VISEM) ECE(VISEM) EEE(VIISEM)
				2019-2020	EEE(VIISEM) MECH(VISEM) ECE(VISEM)
	R2017	MG8591	Principles of Management	2019-2020	MECH(VIISEM) EEE(VIISEM) CSE(VIISEM) ECE(VISEM)
				2020-2021	MECH(VIISEM) EEE(VIISEM) CSE(VIISEM) ECE(VISEM)
				2021-2022	EEE(VIISEM) CSE(VIISEM) MECH(VIISEM) ECE(VISEM) CIVIL
	R2021	IP3151	Induction programming	2021-2022	ECE,EEE,MECH, CSE,CIVIL(ISEM)
				2022-2023	ECE,EEE,MECH, CSE,CIVIL(ISEM)

  
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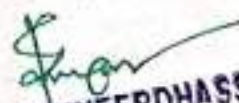


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## Courses relevant to Environment and Sustainability

COURSE	REGULATION	COURSE CODE	COURSE NAME	YEAR	DEPARTMENT
Environment and Sustainability	R2013	GE6351	Environmental Science and Engineering	2018-2019	MECH(IVSEM)
				2019-2020	MECH(IVSEM)
	R2013	ME6701	Power Plant Engineering	2018-2019	MECH(VIISEM) EEE(VISEM)
				2019-2020	MECH(VIISEM) EEE(VISEM)
	R2017	GE8291	Environmental Science and Engineering	2018-2019	EEE(II SEM) MECH(II SEM) CSE (II SEM) ECE(IV SEM)
				2019-2020	EEE(II SEM) MECH(II SEM) CSE (II SEM) ECE(IV SEM)
				2020-2021	EEE(II SEM) MECH(II SEM) CSE (II SEM) ECE(IV SEM)
				2021-2022	ECE(IV SEM) CIVIL
		ME8792	Power Plant Engineering	2018-2019	EEE(III SEM)
				2019-2020	EEE(III SEM)
				2020-2021	MECH(VII SEM) EEE(III SEM)
				2021-2022	MECH(VII SEM) EEE(III SEM)

  
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COURSE	REGULATION	COURSE CODE	COURSE NAME	YEAR	DEPARTMENT
Environment and Sustainability	R2017	EE8703	Renewable Eernergy Systems	2019-2020	MECH(V SEM)
				2020-2021	EEE(VII SEM) MECH(V SEM)
				2021-2022	EEE(VII SEM) MECH(V SEM)
	R2017	OCE551	Air Pollution And Control Engineering	2021-2022	ECE(V SEM) MECH(VSEM)
R2021	GE 3451	Environment and Sustainability	2022-2023	CIVIL CSE EEE MECH ECE (IV SEM)	

  
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MG8591

PRINCIPLES OF MANAGEMENT

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## 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.

### UNIT III ORGANISING 9

Nature and purpose – Formal and informal organization – organization chart – organization structure – types – Line and staff authority – 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:

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

*[Signature]*  
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## REFERENCES:

1. Stephen A. Robbins & David A. Decenzo & Mary Coulter, "Fundamentals of Management" Pearson Education, 7th Edition, 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

## TEXTBOOKS:

1. Thomas Erl, " Service Oriented Architecture: Concepts, Technology, and Design", Pearson Education, 2005
2. Sandeep Chatterjee and James Webber, "Developing Enterprise Web Services: An Architect's Guide", Prentice Hall, 2004

## REFERENCES:

1. James McGovern, Sameer Tyagi, Michael E Stevens, Sunil Mathew, "Java Web Services Architecture", Elsevier, 2003.
2. Ron Schmelzer et al. " XML and Web Services", Pearson Education, 2002.
3. Frank P. Coyle, "XML, Web Services and the Data Revolution", Pearson Education, 2002

GE8077

TOTAL QUALITY MANAGEMENT

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## 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

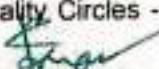
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The seven traditional tools of quality - New management tools - Six sigma: Concepts, Methodology, applications to manufacturing, service sector including IT - Bench marking - Reason to bench mark, Bench marking process - FMEA - Stages, Types.

## UNIT IV TQM TOOLS AND TECHNIQUES II

9

Quality Circles - Cost of Quality - Quality Function Deployment (QFD) - Taguchi quality loss

  
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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 ISO 14001—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.

### TEXT BOOK:

1. Dale H. Besterfield, Carol B. Michna, Glen H. Besterfield, Mary B. Sacre, Hemant Urdhwaresh and Rashmi Urdhwaresh, "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", 8<sup>th</sup> 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

ME8091

AUTOMOBILE ENGINEERING

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### 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

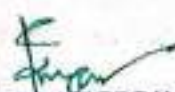
9

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

9

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).

  
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## UNIT III TRANSMISSION SYSTEMS

9

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

9

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

9

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**

### OUTCOMES:

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

- CO1 recognize the various parts of the automobile and their functions and materials.
- CO2 discuss the engine auxiliary systems and engine emission control.
- CO3 distinguish the working of different types of transmission systems.
- CO4 explain the Steering, Brakes and Suspension Systems.
- CO5 predict possible alternate sources of energy for IC Engines.

### TEXT BOOKS:

1. Jain K.K. and Asthana .R.B, "Automobile Engineering" Tata McGraw Hill Publishers, New Delhi, 2002.
2. Kirpal Singh, "Automobile Engineering", Vol 1 & 2, Seventh Edition, Standard Publishers, New Delhi, 13th Edition 2014..

### REFERENCES:

1. Ganesan V. "Internal Combustion Engines", Third Edition, Tata McGraw-Hill, 2012.
2. Heinz Heisler, "Advanced Engine Technology," SAE International Publications USA, 1998.
3. Joseph Heitner, "Automotive Mechanics," Second Edition, East-West Press, 1999.
4. Martin W, Stockel and Martin T Stockle , "Automotive Mechanics Fundamentals," The Good heart - Will Cox Company Inc, USA ,1978.
5. Newton ,Steeds and Garet, "Motor Vehicles", Butterworth Publishers,1989.

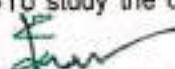
GE8291

**ENVIRONMENTAL SCIENCE AND ENGINEERING**

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**3 0 0 3**

### 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

  
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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, 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.

  
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## 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

### 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. Rajagopalan, R, 'Environmental Studies-From Crisis to Cure', Oxford University Press, 2005.
4. G. Tyler Miller and Scott E. Spoolman, 'Environmental Science', Cengage Learning India PVT, LTD, Delhi, 2014.

GE8071

DISASTER MANAGEMENT

LTPC  
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

  
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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 Processess 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 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 Vulnerable India: A Geographical Study of Disasters, IAS 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.

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

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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.

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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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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.

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- To study the image segmentation and representation techniques.
- To become familiar with image compression and recognition methods

CS8078	GREEN COMPUTING	L	T	P	C
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## OBJECTIVES:

- To learn the fundamentals of Green Computing.
- To analyze the Green computing Grid Framework.
- To understand the issues related with Green compliance.
- To study and develop various case studies.

## UNIT I FUNDAMENTALS 9

Green IT Fundamentals: Business, IT, and the Environment – Green computing: carbon foot print, scoop on power – Green IT Strategies: Drivers, Dimensions, and Goals – Environmentally Responsible Business: Policies, Practices, and Metrics.

## UNIT II GREEN ASSETS AND MODELING 9

Green Assets: Buildings, Data Centers, Networks, and Devices – Green Business Process Management: Modeling, Optimization, and Collaboration – Green Enterprise Architecture – Environmental Intelligence – Green Supply Chains – Green Information Systems: Design and Development Models.

## UNIT III GRID FRAMEWORK 9

Virtualization of IT systems – Role of electric utilities, Telecommuting, teleconferencing and teleporting – Materials recycling – Best ways for Green PC – Green Data center – Green Grid framework.

## UNIT IV GREEN COMPLIANCE 9

Socio-cultural aspects of Green IT – Green Enterprise Transformation Roadmap – Green Compliance: Protocols, Standards, and Audits – Emergent Carbon Issues: Technologies and Future.

## UNIT V CASE STUDIES 9

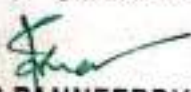
The Environmentally Responsible Business Strategies (ERBS) – Case Study Scenarios for Trial Runs – Case Studies – Applying Green IT Strategies and Applications to a Home, Hospital, Packaging Industry and Telecom Sector.

**TOTAL : 45 PERIODS**

## OUTCOMES:

Upon completion of the course, the students will be able to:

- Acquire knowledge to adopt green computing practices to minimize negative impacts on the environment.
- Enhance the skill in energy saving practices in their use of hardware.
- Evaluate technology tools that can reduce paper waste and carbon footprint by the stakeholders.
- Understand the ways to minimize equipment disposal requirements .

  
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## TEXT BOOKS:

1. Bhuvan Unhelkar, "Green IT Strategies and Applications-Using Environmental Intelligence", CRC Press, June 2014.
2. Woody Leonhard, Katherine Murray, "Green Home computing for dummies", August 2012.

## REFERENCES:

1. Alin Gales, Michael Schaefer, Mike Ebbers, "Green Data Center: steps for the Journey", Shroff/IBM rebook, 2011.
2. John Lamb, "The Greening of IT", Pearson Education, 2009.
3. Jason Harris, "Green Computing and Green IT- Best Practices on regulations & industry", Lulu.com, 2008
4. Carl speshocky, "Empowering Green Initiatives with IT", John Wiley & Sons, 2010.
5. Wu Chun Feng (editor), "Green computing: Large Scale energy efficiency", CRC Press

## OUTCOME :

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

## REFERENCES:

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

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HUMAN RIGHTS

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## OBJECTIVE:

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

## UNIT I

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. 9

## UNIT II

Evolution of the concept of Human Rights Magana carta – Geneva convention of 1864. Universal Declaration of Human Rights, 1948. Theories of Human Rights. 9

## UNIT III

Theories and perspectives of UN Laws – UN Agencies to monitor and compliance. 9

## UNIT IV

Human Rights in India – Constitutional Provisions / Guarantees. 9

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## 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**

## OUTCOME :

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

## REFERENCES:

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

  
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## 1.3.1 List of events organized under Professional Ethics, Gender, Human Values, Environment and Sustainability

### ACADEMIC YEAR 2018-19

Name Of The Activity	Organising Unit/ agency/Collaborating agency	Events related to cross cutting issues
Tree plantation	A.R. Engineering college.	Environment and Sustainability
Helmet Awareness program	A.R. Engineering college.	Human values
Flood Relief Material Distribution	Pondy, Villupuram and Cuddalore	Human values
Medical Camp	Primary Hospital, Radhapuram.	Human values
Blood camp	A.R. Engineering college.	Human values
Eye camp	Dr. Agarwals Eye Hospital, Villupuram.	Human values
Yoga Event	A.R. Engineering college.	Human values
Old age Home Visit	Annai therasa illam, Angarayanallur Village	Human values
Women's day Celebration	A.R. Engineering college.	Gender



  
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## TREE PLANTATION

### REPORT

PLACE: Melpathi Village.

DATE: 18 .10. 2018

Trees play an important role in reducing the air pollution and to maintain the good quality air level in an environment. Trees are also useful to reduce the erosion of soil which may lead to high flood situations. So every individual shall try to plant many trees as possible. Because day by day the pollution level in the environment is becoming worse. Hence to overcome this situation tree plantation is the only solution we have.

In this regard, the college NSS team organized a tree plantation programme on 18.10.2018 at Melpathi Village 30 NSS volunteers have actively participated and planted the saplings around the village.

The local village people voluntarily participated along with our NSS team. They motivated a lot and learn new things related to the environment.



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**TREE PLANTATION PROGRAMME AT MELPATHI VILLAGE ON 18.10.2018**

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## HELMET AWARENESS PROGRAM

### REPORT

PLACE: Koliyanur Cross Road.

DATE: 24.10.2018

The NSS unit of the A.R.Engineering College organized a Helmet Awareness Program on 24.10.2018 in Koliyanur Cross Road. Nowadays helmet is one of essential things which will help us to prevent the major injury if accident happened in our life. So that our government highly recommended is wearing the helmet, while driving the two wheeler vehicles. Totally 75 students and 5 number of faculty members were participated in order to create the awareness among the youths and public.

Responsibility of their safety, it's not for the law it's their safety too, create the awareness to wear the ISI brand helmet for better safety. In market so many models with varieties of helmet available but we have to choose the ISI brand only for better performance.

In our country more number of accident cases has been registered in every year. Most of the accident cases middle aged people. Our main target was focusing that particular age group. This event was conducted as per the requisition of Mr.Annamalai, RTO, and Villupuram. Our students participated in this awareness programme with slogan and placard.

All the necessary arrangement made by the NSS volunteers under the guidance of program officer Mr.K.Sivakumar.



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**STUDENTS PARTICIPATED IN HELMET AWARENESS PROGRAM**

*[Signature]*  
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## FLOOD RELIEF MATERIALS

### REPORT

PLACE: Pondy, Villupuram and Cuddalore

DATE: 26.11.2018

On 26.11.2008 a team of faculty members and 15 NSS volunteers visited Pondy, Villupuram and Cuddalore districts to distribute relief materials to people in the cyclone hit areas.

Generally relief materials are distributed during the time of disaster for natural calamities. This procedure is followed for optimal distribution plan. It directly reaches affected people also fairness in distribution is maintained throughout. 15 NSS volunteers participated in this event. The relief items comprised of dresses, food packets, Rice bags, pulses, carpets etc. In this event, nearly 300 families benefited during the calamities.



**OUR COLLEGE STUDENTS PROVIDED FOOD TO THE PEOPLE**



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**OUR COLLEGE STUDENTS PROVIDED RICE BAGS, PULSES TO THE PEOPLE**

  
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## MEDICAL CAMP

PLACE: Vadakuchipalayam

DATE: 02.02. 2019

As a part of our regular activity our NSS team was conducted on Medical Camp 02.02.2019. It was organized by our NSS program officer Mr.K.Sivakumar, and the Medical Camp was started at 10.00 a.m. In this Medical Camp, Radhapuram Primary Hospital Villupuram joined with us. Above 100 people were benefited in this camp.

The Medical Camp improved awareness and alertness, increased confidence approaching communities, and increased compassion towards patient care. Medical camps had an overall positive impact on volunteering students. They provide access to basic and specialized medical services, raise awareness about health issues, and can help prevent the spread of disease. Medical camps are a valuable tool in addressing health inequalities and improving the overall health of our society.

In this event 55 NSS volunteers were participated and this camp ended at 5.30p.m.



MEDICAL CAMP AT VADAKUCHIPALAYAM ON 02.02.2019



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## MEDICAL CAMP

PLACE: Vadakuchipalayam

DATE: 02.02.2019

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MEDICAL CAMP AT VADAKUCHIPALAYAM ON 02.02.2019

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## SWACHH BHARAT CLEANING PROGRAM

### REPORT

PLACE: Vadakuchipalayam

DATE: 03.02. 2019

Our college NSS team conducted the Swachh bharat cleaning program at Vadakuchipalayam Village on 03.02.2019. In this event we covered the school and temple area as per the panchayat requisition. Our college students were involved as per the guidelines of our Prime Minister. In this program 40 students were involved. Our beloved Principal-Dr.R.Panneer Dhass initiated this program and encouraged our students to take part this event to make our environment clean and free from all kind of pollution.

The purpose of conducting this event, creating the awareness among the students and people of this native if once they got aware of cleanliness, they never make any mistake again. It is our duty to make aware them. This is very important today because the global warming and decreasing of soil strength were formed because of this problem. After involving this program our students felt very happy to take part in this event and they highly interested to do again. They want to create the awareness to the people to make their environmental clean. Our Principal were appreciated our students after completing their work for their involvement.



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SCHOOL CLEANING AT VADAKUCHIPALAYAM VILLAGE ON 03.02.2019

  
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## BLOOD CAMP

### REPORT

PLACE: A.R.Engineering College

DATE: 04.02. 2019

The NSS of the A.R.Engineering College collaborated with Radhapuram Primary Hospital conducted a blood donation camp on 04<sup>th</sup> Feb 2019 in our college physics lab. As per the requisition of the Radhapuram Primary Hospital, our college principal is given the approval to conduct this blood camp on this date. Then the Hospital team visited our college and them taken around 120 units of blood our college students and village people.

The following factors has been screened those who are came for donate the blood that was aged above 18, hemoglobin eligibility, three months completion in their previous blood donation , shouldn't affected from jaundice and we suggested the students to get the prior permission from their parents to donate the blood. They provided the cool drinks and snacks to the donors. In this event 60 NSS volunteers were acatively participated.

The camp came to a close with a positive note.Students and village peoples are realized the significance of blood donation and their responsibility towards saving human lives.

Above 100 people donated their blood. In this event 60 NSS volunteers are participated and this camp ended at 5.30p.m.



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OUR STUDENTS DONATING BLOOD IN BLOOD DONATION CAMP



BLOOD DONATION CAMP AT A.R.ENGINEERING COLLEGE ON 04.02.2023

CHECKING BLOOD PRERSSURE IN BLOOD DONATION CAMP

*[Signature]*  
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## EYE CAMP

## REPORT

PLACE: Vadakuchipalayam.

DATE: 05.02.2019

As a part of our regular activity our NSS team conducted at Eye Camp on 05. 02.2022. It was organized by our NSS programme officer Mr.K.Sivakumar, and the Eye Camp started at 10.00a.m. In this Eye Camp, Dr. Agarwals Eye Hospital Villupuram, joined with us. Above 100 peoples are participated.

Eye camps are an essential part of comprehensive eye care in India. They provide a platform to screen a large number of people for eye diseases and provide immediate treatment and referral to those in need.

In this event 50 NSS volunteers are participated and this camp ended at 5.30p.m.



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EYE CAMP AT VADAKUCHIPALAYAM VILLAGE ON 05.02.2019

  
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(Approved by AICTE, New Delhi & Affiliated to Anna university, Chennai)  
Vadakuchipalayam, Kappiyampuliyur post, Villupuram-605601, Tamilnadu.

## YOGA EVENT

### REPORT

PLACE: A.R Engineering College.

DATE: 15.03.2019

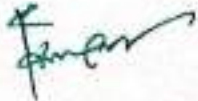
As part of our regular activity our NSS team conducted Yoga with health on 15.03.2019. It was organized by our NSS programme Officer Mr.K.Sivakumar, and the yoga activity started at 4.00pm.

As Yoga increases energy levels of body, it is good for counteracting fatigue. Yoga improves the production of FNDC5 proteins and releases it to the bloodstream. This type of protein facilitates existing brain cells to continuously reproduce. Thus, daily Yoga promotes a stronger and healthier brain.

Practicing Yoga results is reducing hyperactivity and inattentiveness in students, improving their attention span. A greater attention span helps in retaining the information for a longer period. The direct effects of Yoga on memory can be seen with better academic grades and a longer concentration span. Studies revealed that Yoga for students has a positive effect on the nervous system and brain. Yoga stabilizes the blood pressure and keeps the heart rate in control in pressure time. Yoga allows taking eyes off the books/laptops. Thus, eyes are relaxed for some times.

In this event 50 NSS volunteers are Participated and the yoga activity ended at 5.30 pm.



  
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STUDENTS ARE PRACTICING YOGA



YOGA EVENT AT A.R.ENGINEERING COLLEGE ON 15.03.2019

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**OLD AGE HOME VISIT (ANNAI TERESA ILLAM) AT ANGARAYANALLUR  
VILLAGE ON 16.04.2019**

**NSS PROGRAM OFFICER**

*[Handwritten Signature]*  
**PRINCIPAL**



*[Handwritten Signature]*  
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## WOMEN'S DAY CELEBRATION REPORT

A.R Engineering College organized INTERNATIONAL WOMEN'S DAY 2019 for students and faculty members on 08<sup>th</sup> March 2019. All of our girl students have participated in this programme.

Mrs.A.Geetha was the resource person for the enjoyable cum-motivational celebration of womens day programme. She explained about the womens mental development activities and the skills required for a women to face society.

In this programme, the events like Singing, Drawing, Debate, Rangoli, Hair dressing for Students. Certificates and prizes are given for the winners . The Programme was inaugurated by our chairmen Shri.G.Mahadevan, Vice Chairmen Shri. M. Kuberan, Secretary M.Prabu our principal Dr. S.Paneerdhass.

20 Participants from our college felt very interesting about the programme and happy for appreciation given by management and principal.



  
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RANGOLI COMPETITION PHOTOGRAPHY 06.03.2019

  
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# A. R. ENGINEERING COLLEGE

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Vadakkuruppalayam, Eranankuppam, Tamil Nadu - 605001, India

## 1.3.1 List of Courses with topics of Professional Ethics, Gender, Human Values, Environment and Sustainability

ACADEMIC YEAR 2019-2020

S.No	Program Code	Program Name	Course Code	Name of the course	Scope of the course	Integration of topic
1	102	Civil Engineering	CE20201	Environmental Science and Engineering	Environment and Sustainability	2017
2	101	Computer Science Engineering	WE2001	Principles of Management	Professional Ethics	2017
3	101	Computer Science Engineering	WE2001	Gender Management	Human Values	2017
4	101	Computer Science Engineering	WE2001	Environmental Science and Engineering	Environment and Sustainability	2017
5	101	Computer Science Engineering	WE2001	Green Computing	Environment and Sustainability	2017
6	101	Computer Science Engineering	WE2001	Total Quality Management	Professional Ethics	2017
7	102	Electrical And Electronics Engineering	WE2001	Principles of Management	Professional Ethics	2017
8	102	Electrical And Electronics Engineering	WE2001	Total Quality Management	Professional Ethics	2017
9	106	Electronics And Communication Engineering	WE2001	Environmental Science and Engineering	Environment and Sustainability	2017
10	106	Electronics And Communication Engineering	WE2001	Environmental Science and Engineering	Environment and Sustainability	2017
11	106	Electronics And Communication Engineering	WE2001	Principles of Management	Professional Ethics	2017
12	114	Mechanical Engineering	WE2001	Environmental Science and Engineering	Environment and Sustainability	2017
13	114	Mechanical Engineering	WE2001	Principles of Management	Professional Ethics	2017



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14	114	Mechanical Engineering	ME8091	Automobile Engineering	Environment and Sustainability	2017
15	114	Mechanical Engineering	GE8074	Human Rights	Human values	2017
16	104	Computer Science Engineering	GE6075	Professional Ethics in Engineering	Professional Ethics	2013
17	105	Electrical And Electronics Engineering	GE6757	Total Quality Management	Professional Ethics	2013

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MG8591

PRINCIPLES OF MANAGEMENT

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03

## 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.

<b>UNIT I</b>	<b>INTRODUCTION TO MANAGEMENT AND ORGANIZATIONS</b>	<b>9</b>
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.		
<b>UNIT II</b>	<b>PLANNING</b>	<b>9</b>
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.		
<b>UNIT III</b>	<b>ORGANISING</b>	<b>9</b>
Nature and purpose – Formal and informal organization – organization chart – organization structure – types – Line and staff authority — delegation of authority – centralization and decentralization – Job Design - Human Resource Management – HR Planning, Recruitment, selection, Training and Development, Performance Management , Career planning and management		
<b>UNIT IV</b>	<b>DIRECTING</b>	<b>9</b>
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.		
<b>UNIT V</b>	<b>CONTROLLING</b>	<b>9</b>
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:

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



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## REFERENCES:

1. Stephen A. Robbins & David A. Decenzo & Mary Coulter, "Fundamentals of Management" Pearson Education, 7th Edition, 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

## TEXTBOOKS:

1. Thomas Erl, " Service Oriented Architecture: Concepts, Technology, and Design", Pearson Education, 2005
2. Sandeep Chatterjee and James Webber, "Developing Enterprise Web Services: An Architect's Guide", Prentice Hall, 2004

## REFERENCES:

1. James McGovern, Sameer Tyagi, Michael E Stevens, Sunil Mathew, "Java Web Services Architecture", Elsevier, 2003.
2. Ron Schmelzer et al. " XML and Web Services", Pearson Education, 2002.
3. Frank P. Coyle, "XML, Web Services and the Data Revolution", Pearson Education, 2002

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, 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



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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 ISO 14001—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.

### TEXT BOOK:

1. Dale H. Besterfield, Carol B. Michna, Glen H. Besterfield, Mary B. Sacre, Hemant Urdhwaresh and Rashmi Urdhwaresh, "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", 8<sup>th</sup> 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

ME8091

AUTOMOBILE ENGINEERING

L	T	P	C
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### 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

9

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

9

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).



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## UNIT III TRANSMISSION SYSTEMS 9

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 9

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 9

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**

### OUTCOMES:

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

- CO1 recognize the various parts of the automobile and their functions and materials.
- CO2 discuss the engine auxiliary systems and engine emission control.
- CO3 distinguish the working of different types of transmission systems.
- CO4 explain the Steering, Brakes and Suspension Systems.
- CO5 predict possible alternate sources of energy for IC Engines.

### TEXT BOOKS:

1. Jain K.K. and Asthana .R.B, "Automobile Engineering" Tata McGraw Hill Publishers, New Delhi, 2002.
2. Kirpal Singh, "Automobile Engineering", Vol 1 & 2, Seventh Edition, Standard Publishers, New Delhi, 13th Edition 2014..

### REFERENCES:

1. Ganesan V. "Internal Combustion Engines", Third Edition, Tata McGraw-Hill, 2012.
2. Heinz Heisler, "Advanced Engine Technology," SAE International Publications USA, 1998.
3. Joseph Heitner, "Automotive Mechanics," Second Edition, East-West Press, 1999.
4. Martin W, Stockel and Martin T Stockle , "Automotive Mechanics Fundamentals," The Good heart - Will Cox Company Inc, USA ,1978.
5. Newton ,Steeds and Garet, "Motor Vehicles", Butterworth Publishers,1989.

GE8291

**ENVIRONMENTAL SCIENCE AND ENGINEERING**

**L T P C**  
**3 0 0 3**

### 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



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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, 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.



  
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## 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.

### OUTCOMES:

TOTAL: 45 PERIODS

- 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

### 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. Rajagopalan, R, 'Environmental Studies-From Crisis to Cure', Oxford University Press, 2005.
4. G. Tyler Miller and Scott E. Spoolman, "Environmental Science", Cengage Learning India PVT, LTD, Delhi, 2014.

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.

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

9

Disaster cycle - Phases, Culture of safety, prevention, mitigation and preparedness community



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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 Processess 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 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 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.



  
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- To study the image segmentation and representation techniques.
- To become familiar with image compression and recognition methods

CS8078	GREEN COMPUTING	L	T	P	C
		3	0	0	3

## OBJECTIVES:

- To learn the fundamentals of Green Computing.
- To analyze the Green computing Grid Framework.
- To understand the issues related with Green compliance.
- To study and develop various case studies.

## UNIT I FUNDAMENTALS 9

Green IT Fundamentals: Business, IT, and the Environment – Green computing: carbon foot print, scoop on power – Green IT Strategies: Drivers, Dimensions, and Goals – Environmentally Responsible Business: Policies, Practices, and Metrics.

## UNIT II GREEN ASSETS AND MODELING 9

Green Assets: Buildings, Data Centers, Networks, and Devices – Green Business Process Management: Modeling, Optimization, and Collaboration – Green Enterprise Architecture – Environmental Intelligence – Green Supply Chains – Green Information Systems: Design and Development Models.

## UNIT III GRID FRAMEWORK 9

Virtualization of IT systems – Role of electric utilities, Telecommuting, teleconferencing and teleporting – Materials recycling – Best ways for Green PC – Green Data center – Green Grid framework.

## UNIT IV GREEN COMPLIANCE 9

Socio-cultural aspects of Green IT – Green Enterprise Transformation Roadmap – Green Compliance: Protocols, Standards, and Audits – Emergent Carbon Issues: Technologies and Future.

## UNIT V CASE STUDIES 9

The Environmentally Responsible Business Strategies (ERBS) – Case Study Scenarios for Trial Runs – Case Studies – Applying Green IT Strategies and Applications to a Home, Hospital, Packaging Industry and Telecom Sector.

**TOTAL : 45 PERIODS**

## OUTCOMES:

Upon completion of the course, the students will be able to:

- Acquire knowledge to adopt green computing practices to minimize negative impacts on the environment.
- Enhance the skill in energy saving practices in their use of hardware.
- Evaluate technology tools that can reduce paper waste and carbon footprint by the stakeholders.
- Understand the ways to minimize equipment disposal requirements .



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## TEXT BOOKS:

1. Bhuvan Unhelkar, "Green IT Strategies and Applications-Using Environmental Intelligence", CRC Press, June 2014.
2. Woody Leonhard, Katherine Murray, "Green Home computing for dummies", August 2012.

## REFERENCES:

1. Alin Gales, Michael Schaefer, Mike Ebbers, "Green Data Center: steps for the Journey", Shroff/IBM rebook, 2011.
2. John Lamb, "The Greening of IT", Pearson Education, 2009.
3. Jason Harris, "Green Computing and Green IT- Best Practices on regulations & industry", Lulu.com, 2008
4. Carl speshocky, "Empowering Green Initiatives with IT", John Wiley & Sons, 2010.
5. Wu Chun Feng (editor), "Green computing: Large Scale energy efficiency", CRC Press

## OUTCOME :

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

## REFERENCES:

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

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HUMAN RIGHTS

L T P C  
3 0 0 3

## OBJECTIVE:

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

### UNIT I

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. 9

### UNIT II

Evolution of the concept of Human Rights Magna carta – Geneva convention of 1864. Universal Declaration of Human Rights, 1948. Theories of Human Rights. 9


### UNIT III

Theories and perspectives of UN Laws – UN Agencies to monitor and compliance. 9

### UNIT IV

Human Rights in India – Constitutional Provisions / Guarantees. 9



  
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## 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**

## OUTCOME :

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

## REFERENCES:

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

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## 1.3.1 List of events organized under Professional Ethics, Gender, Human Values, Environment and Sustainability

### ACADEMIC YEAR 2019-2020

Name Of The Activity	Organising Unit/ agency/Collaborating agency	Events related to cross cutting issues
World Environmental Day Competition	Government Higher Secondary School-panaiyapuram.	Environment and Sustainability
Tree Plantation	Vakkur village	Environment and Sustainability
Blood Donation Camp	Radhapuram Primary Hospital, Radhapuram.	Human values
Dental Camp	AG Dental Clinic, pondy.	Human values
Fit India Programme	A.R Engineering college	Human values
Covid-19 Awareness Programme(school students)	Radhapuram Primary Hospital, Radhapuram.	Human values
Covid-19 Awareness Programme(college students)	Radhapuram Primary Hospital, Radhapuram.	Human values
Importance of social distance during pandemic period	A.R Engineering college	Human values
Mask distribution to public during Covid -19	A.R Engineering college	Human values
women's day celebration	A.R Engineering college	Gender



  
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## WORLD ENVIRONMENTAL DAY COMPETITION

### REPORT

PLACE: Panaiyapuram Village.

DATE: 05.06.2019

The world Environment day celebrated on 5<sup>th</sup> June. On this day across the globe millions of people participate and outreach others to create awareness on protecting the environment. It is a global platform engaging government, civil societies, school and colleges, celebrities and different community join together on this day to save the globe.

In this regard college NSS unit visited Government Higher Secondary School, at Panaiyapuram Village, Villupuram District. Student from 9<sup>th</sup> to 12<sup>th</sup> std participated in the competition organized by the NSS unit. The NSS volunteers organized Essay Competition, Poetry Writing, Drawing and Oratorical competition. In all these competition themes related to environmental protection was given to the students. The students actively participated in all these competition. Around 150 students participated in this competition and the winners were awarded with certificates and prizes. This also includes distribution of certificates for all participants. The school Head Mistress appreciated the motivational and support extended by the NSS unit of the college.

Environmental awareness fosters a sense of responsibility and stewardship towards the planet. People are encouraged to engage in actions that protect and conserve natural resources, reduce pollution and mitigate the impacts of human activities on ecosystems.

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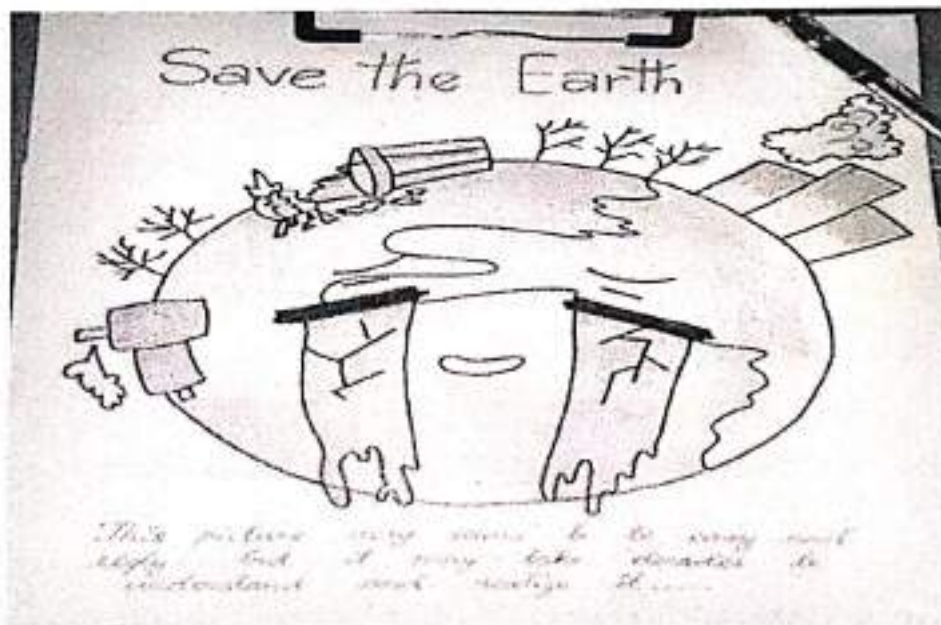


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**DRAWING COMPETITION AT GOVERNMENT HIGHER SECONDARY SCHOOL,  
PANASIYAPURAM VILLAGE, VILLUPURAM DISTRICT ON 05.06.2019**



**DRAWING BY THE STUDENT**

*[Signature]*  
**PRINCIPAL**

## TREE PLANTATION

*[Signature]*

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## REPORT

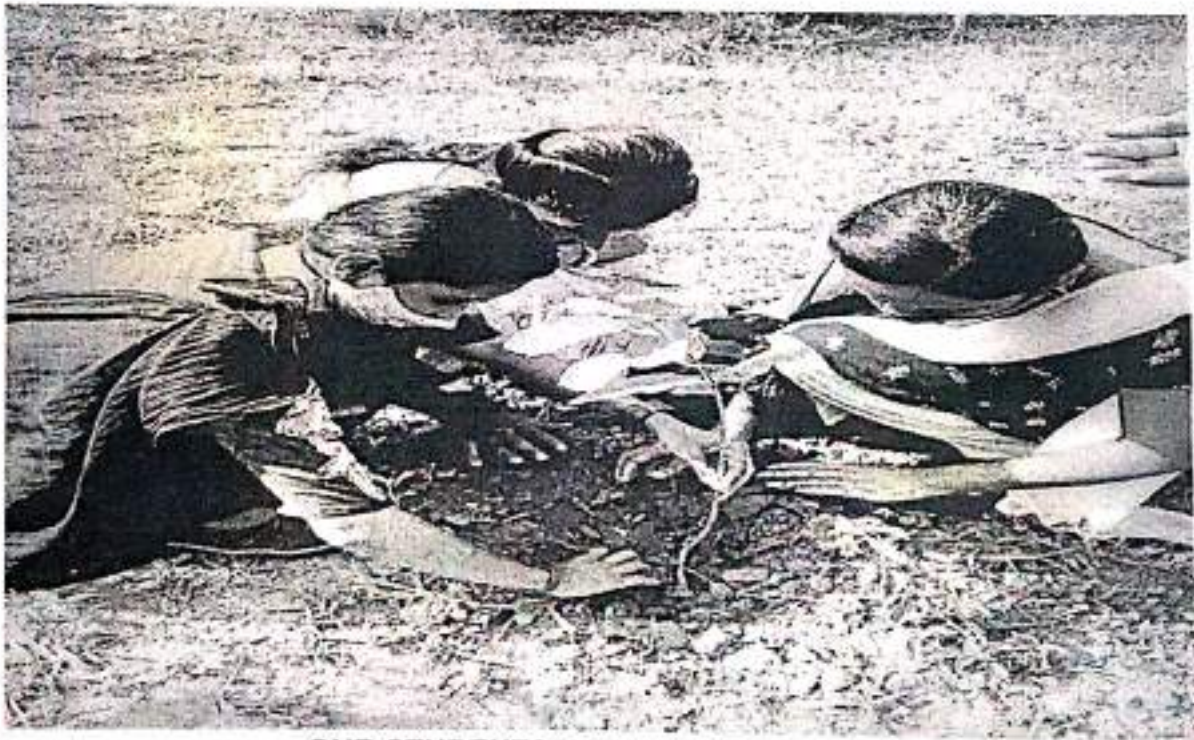
**PLACE:** Vakkur Village.

**DATE:** 21.08.2019

Trees play an important role in reducing the air pollution and to maintain the good quality air level in an environment. Trees are also useful to reduce the erosion of soil which may lead to high flood situations. So every individual shall try to plant many trees as possible. Because day by day the pollution level in the environment is becoming worse. Hence to overcome this situation tree plantation is the only solution we have.

In this regard, the college NSS team organized a tree plantation programme on 21.08.2019 at Vakkur Village 30 NSS volunteers have actively participated and planted the saplings around the village.

The local village people voluntarily participated along with our NSS team. They motivated a lot and learn new things related to the environment.



**OUR STUDENTS WITH TREE SAPLINGS**

*[Signature]*  
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## BLOOD DONATION CAMP

*[Signature]*

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## REPORT

PLACE: A.R.Engineering College

DATE: 29.08. 2019

The NSS of the A.R.Engineering College collaborated with Radhapuram Primary Hospital conducted a blood donation camp on 29<sup>th</sup> August 2019 in our college physics lab. As per the requisition of the Radhapuram Primary Hospital, our college principal given the approval to conduct this blood camp on this date. Then the Hospital team visited our college and they taken around 120 units of blood our college students.

The following factors has been screened those who are came for donate the blood that was aged above 18, hemoglobin eligibility, three months completion in their previous blood donation , shouldn't affected from jaundice and we suggested the students to get the prior permission from their parents to donate the blood. They provided the cool drinks and snacks to the donors. In this event 68 NSS volunteers were acatively participated.

The camp came to a close with a positive note.Students and village peoples are realized the significance of blood donation and their responsibility towards saving human lives.



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**FIT INDIA PROGRAMME**

  
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## REPORT

PLACE: A.R Engineering College

DATE: 12.10.2019

Fit India movement was launched by Honourable Prime Minister with a view to make fitness an integral part of our daily lives. We have conducted this event to our 1st & 2nd year students. During the program various points regarding the fitness has been discussed. The mission of the movement is to bring about behavioural changes and move towards a more physically active lifestyle. Fit India mission encourages people to become part of fit India movement by including 30 minutes of physical activities in their day to day lives. The mission of the movement is to bring about behavioral changes and move towards a more physically active lifestyle.

As per the instruction given by the Central government to conduct Fit India movement programs for the youngsters, a workshop was conducted to the students. Towards achieving this mission, Fit India proposes to undertake various and conduct events to achieve the objectives. It created awareness on fitness and various physical activities that promote fitness.

An online Fit India program was organized by the NSS unit of the college 12.09.2019. In this program the Prime Minister Mr. Narendra Modi addressed the gathering through proper exercise practise. Totally 50 students participated in the events.

  
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OUR STUDENTS ATTENDING FIT INDIA PROGRAMME



*[Signature]*  
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## COVID-19 AWARENESS PROGRAMME(SCHOOL STUDENTS)

### REPORT

PLACE:A.R Engineering College

DATE:05.02. 2020


Covid 19 awareness program has conducted by the NSS team of A.R.Engineering College for school students on 05.02.2010. In this program the following precaution has been explained to the students . As a movement to fight against covid-19 and current pandemic conditions in all over India. COVID awareness is the only tools to prevent corona virus by following rules and guidelines given by GOI. During the COVID-19 situation.

The objective of this program is to improve general quality of life by promoting post COVID-19 awareness camp regarding social distance, hand washing , wearing mask, etc. Covid-19 is an infectious disease caused by novel corona virus. It can also be transmitted from person. This virus spreads through droplets of saliva or discharge from the nose when an infected person coughs or sneezes. The diseases is contagious and dangerous leading to deaths among human beings. The symptoms of covid-19 H1N1 are fever, dry cough, headache, cold, sore throat, diarrhea, loss of smell or taste etc. It is recommended to visit the doctor as soon as person suffers any of these symptoms. Preventive measures are as follows,

1. The best way to prevent COVID-19 is maintaining social distance.
2. Highly recommended to wear masks on mouth and nose so that they do not intake the virus from the environment.
3. Wash your hands properly using soap or santizer. This prevents the virus to get into the body and infect us.
4. Avoid contact with people infected with corona virus.

In this camp the NSS Programme Officer and 20 NSS volunteers are actively participated and gained awareness about health and fitness.



  
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CORONA VIRUS AWARENESS PROGRAMME(SCHOOL STUDENTS)

*[Signature]*  
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## COVID-19 AWARENESS PROGRAMME(COLLEGE STUDENTS)

### REPORT

PLACE: A.R Engineering College

DATE: 24.02. 2020


As a movement to fight against covid-19 and current pandemic conditions in all over India. COVID awareness is the only tools to prevent corona virus by following rules and guidelines given by GOI. During the COVID-19 situation, NSS of A.R.Engineering College has organized the COVID awareness program on 24.02.2020. the key speaker of the program was Dr.Mahalakshmi, Radhapuram Primary Hospital,Radhapuram.

The objective of this program is to improve general quality of life by promoting post COVID-19 awareness camp regarding social distance, hand washing , wearing mask, etc. Covid-19 is an infectious disease caused by novel corona virus. It can also be transmitted from person. This virus spreads through droplets of saliva or discharge from the nose when an infected person coughs or sneezes. The diseases is contagious and dangerous leading to deaths among human beings. The symptoms of covid-19 H1N1 are fever, dry cough, headache, cold, sore throat, diarrhea, loss of smell or taste etc. It is recommended to visit the doctor as soon as person suffers any of these symptoms. Preventive measures are as follows,

1. The best way to prevent COVID-19 is maintaining social distance.
2. Highly recommended to wear masks on mouth and nose so that they do not intake the virus from the environment.
3. Wash your hands properly using soap or sanitizer. This prevents the virus to get into the body and infect us.
4. Avoid contact with people infected with corona virus.

In this camp the NSS Programme Officer and 49 NSS volunteers are actively participated and gained awareness about health and fitness.



  
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AWARENESS TALK ABOUT COVID-19



OUR VOLUNTEERS DURING AWARENESS PROGRAM

*[Signature]*  
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*[Signature]*  
Dr. R. PANNEERDHASS, M.E., Ph.D.,  
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## IMPORTANCE OF SOCIAL DISTANCE DURING PANDEMIC PERIOD

### REPORT

PLACE:Koliyanur

DATE:14.03.2020

Importance of social distance during pandemic period of COVID-19 at Koliyanur on 14.03.2020 conducted by Mr.K.Sivakumar, NSS Coordinator. In that program we gave mask to public and shop worker and said importance of mask wear. Also said to public importance of social distance during pandemic period. We gave mask to more than 100 people. It went on well with the enthusiastic participant of 25 numbers of NSS students of our college.



**IMPORTANCE OF SOCIAL DISTANCE DURING PANDEMIC PERIOD OF COVID-19**

**AT KOLIYANUR ON 14.03.2020**

  
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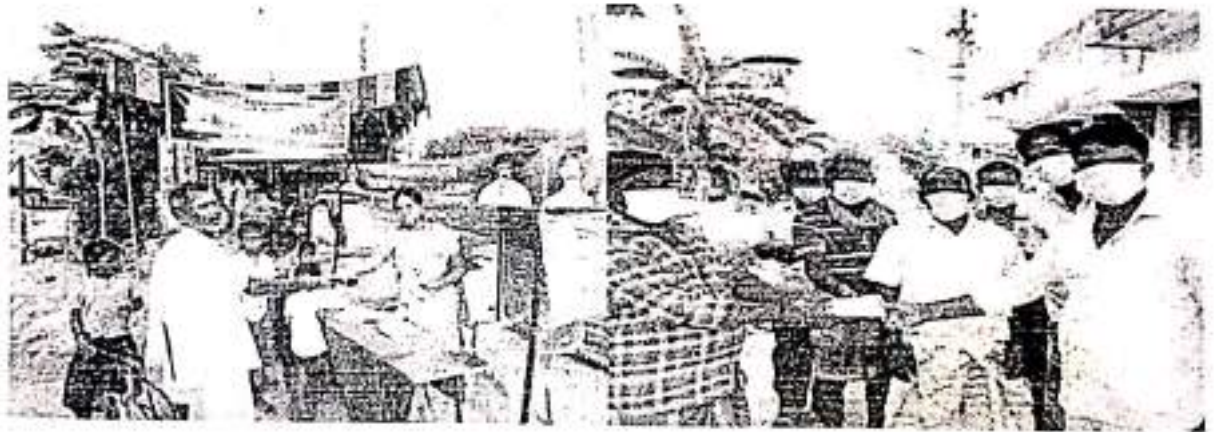
## THE MASK DISTRIBUTION TO PUBLIC DURING COVID -19

### REPORT

PLACE:Kappiyampuliyur

DATE:21.03. 2020

Mask distribution to public during COVID-at Kappiyampuliyur on21.03.2020 conducted by Mr. D.Muthukumaran NSS Coordinator. In that program we gave mask to public and shop worker and said importance of mask wear. We gave mask to more than 200 people. It went on well with the enthusiastic participant of 30 numbers of NSS students of our college.



**MASK DISTRIBUTION TO PUBLIC DURING COVID-AT**

**KAPPIYAMPULIYUR ON21.03.2020**



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## WOMEN'S DAY CELEBRATION REPORT

A.R Engineering College organized INTERNATIONAL WOMEN'S DAY 2020 for students and faculty members on 06<sup>th</sup> March 2020. All of our girl students have participated in this programme.

Mrs.D.Padmavathi was the resource person for the enjoyable cum-motivational celebration of womens day programme. She explained about the womens mental development activities and the skills required for a women to face society.

In this programme, the events like Singing, Drawing, Poster presentation, Rangoli, junk artsfor Students. Certificates and prizes are given for the winners.The Programme was inaugurated by our chairmen Shri.G.Mahadevan, Vice Chairmen Shri. M. Kuberan, Secretary M.Prabu B.E.,MBA our principal Dr. S.Paneerdhass.

20 Participants from our college felt very interesting about the programme and happy for appreciation given by management and principal.



  
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JUNK ARTS COMPETITION 05.03.2020

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## 1.3.1 List of Courses with topics of Professional Ethics, Gender, Human Values, Environment and Sustainability

### ACADEMIC YEAR 2020-2021

S.NO	Program code	Program Name	Course code	Name of the course	Name of the topics	Regulation of Anna University
1	103	Civil Engineering	GE8291	Environmental Science and Engineering	Environment and Sustainability	2017
2	104	Computer Science Engineering	MG8591	Principles of Management	Professional Ethics	2017
3	104	Computer Science Engineering	GE8071	Disaster Management	Human values	2017
4	104	Computer Science Engineering	GE8291	Environmental Science and Engineering	Environment and Sustainability	2017
5	104	Computer Science Engineering	CS8078	Green Computing	Environment and Sustainability	2017
6	104	Computer Science Engineering	GE8077	Total Quality Management	Professional Ethics	2017
7	105	Electrical And Electronics Engineering	MG8591	Principles of Management	Professional Ethics	2017
8	105	Electrical And Electronics Engineering	GE8077	Total Quality Management	Professional Ethics	2017
9	106	Electronics And Communication Engineering	GE8291	Environmental Science and Engineering	Environment and Sustainability	2017
10	106	Electronics And Communication Engineering	GE8291	Environmental Science and Engineering	Environment and Sustainability	2017
11	106	Electronics And Communication Engineering	MG8591	Principles of Management	Professional Ethics	2017
12	114	Mechanical Engineering	GE8291	Environmental Science and Engineering	Environment and Sustainability	2017
13	114	Mechanical Engineering	MG8591	Principles of Management	Professional Ethics	2017



  
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14	114	Mechanical Engineering	ME8091	Automobile Engineering	Environment and Sustainability	2017
15	114	Mechanical Engineering	GE8074	Human Rights	Human values	2017



  
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MG8581

PRINCIPLES OF MANAGEMENT

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## 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.

## UNIT III ORGANISING 9

Nature and purpose – Formal and informal organization – organization chart – organization structure – types – Line and staff authority — 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:

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



  
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## REFERENCES:

1. Stephen A. Robbins & David A. Decenzo & Mary Coulter, "Fundamentals of Management" Pearson Education, 7th Edition, 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

## TEXTBOOKS:

1. Thomas Erl, "Service Oriented Architecture: Concepts, Technology, and Design", Pearson Education, 2005
2. Sandeep Chatterjee and James Webber, "Developing Enterprise Web Services: An Architect's Guide", Prentice Hall, 2004

## REFERENCES:

1. James McGovern, Sameer Tyagi, Michael E Stevens, Sunil Mathew, "Java Web Services Architecture", Elsevier, 2003.
2. Ron Schmelzer et al. "XML and Web Services", Pearson Education, 2002.
3. Frank P. Coyle, "XML, Web Services and the Data Revolution", Pearson Education, 2002

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, 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



  
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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 ISO 14001—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.

### TEXT BOOK:

1. Dale H. Besterfield, Carol B. Michna, Glen H. Besterfield, Mary B. Sacre, Hemant Urdhwareeshe and Rashmi Urdhwareeshe, "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", 8<sup>th</sup> 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

ME8091

AUTOMOBILE ENGINEERING

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### 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

9

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

9

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).



  
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- UNIT III TRANSMISSION SYSTEMS** 9  
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** 9  
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** 9  
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**

## OUTCOMES:

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

- CO1 recognize the various parts of the automobile and their functions and materials.  
CO2 discuss the engine auxiliary systems and engine emission control.  
CO3 distinguish the working of different types of transmission systems.  
CO4 explain the Steering, Brakes and Suspension Systems.  
CO5 predict possible alternate sources of energy for IC Engines.

## TEXT BOOKS:

- Jain K.K. and Asthana .R.B, "Automobile Engineering" Tata McGraw Hill Publishers, New Delhi, 2002.
- Kirpal Singh, "Automobile Engineering", Vol 1 & 2, Seventh Edition, Standard Publishers, New Delhi, 13th Edition 2014..

## REFERENCES:

- Ganesan V. "Internal Combustion Engines", Third Edition, Tata McGraw-Hill, 2012.
- Heinz Heisler, "Advanced Engine Technology," SAE International Publications USA, 1998.
- Joseph Heitner, "Automotive Mechanics," Second Edition, East-West Press, 1999.
- Martin W, Stockel and Martin T Stockle , "Automotive Mechanics Fundamentals," The Good heart - Will Cox Company Inc, USA ,1978.
- Newton ,Steeds and Garet, "Motor Vehicles", Butterworth Publishers,1989.

GE8291


**ENVIRONMENTAL SCIENCE AND ENGINEERING**

**L T P C**  
**3 0 0 3**

## 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



  
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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, 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.



  
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**UNIT V HUMAN POPULATION AND THE ENVIRONMENT** 6  
Population growth, variation among nations – population explosion – family welfare programmes – 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

**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. Rajagopalan, R, 'Environmental Studies-From Crisis to Cure', Oxford University Press, 2005.
4. G. Tyler Miller and Scott E. Spoolman, "Environmental Science", Cengage Learning India PVT, LTD, Delhi, 2014.

**GE8071**

**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

**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



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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 Processess 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 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 Vulnerable India: A Geographical Study of Disasters, IAS 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.

  
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## TEXT BOOKS:

1. Bhuvan Unhelkar, "Green IT Strategies and Applications-Using Environmental Intelligence", CRC Press, June 2014.
2. Woody Leonhard, Katherine Murray, "Green Home computing for dummies", August 2012.

## REFERENCES:

1. Alin Gales, Michael Schaefer, Mike Ebbers, "Green Data Center: steps for the Journey", Shroff/IBM rebook, 2011.
2. John Lamb, "The Greening of IT", Pearson Education, 2009.
3. Jason Harris, "Green Computing and Green IT- Best Practices on regulations & industry", Lulu.com, 2008
4. Carl speshocky, "Empowering Green Initiatives with IT", John Wiley & Sons, 2010.
5. Wu Chun Feng (editor), "Green computing: Large Scale energy efficiency", CRC Press

## OUTCOME :

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

## REFERENCES:

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

GE8074

HUMAN RIGHTS

L T P C  
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## OBJECTIVE:

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

## UNIT I

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. 9

## UNIT II

Evolution of the concept of Human Rights Magna carta – Geneva convention of 1864. Universal Declaration of Human Rights, 1948. Theories of Human Rights. 9


## UNIT III

Theories and perspectives of UN Laws – UN Agencies to monitor and compliance. 9

## UNIT IV

Human Rights in India – Constitutional Provisions / Guarantees. 9



  
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## 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**

### OUTCOME :

- Engineering students will acquire the basic knowledge of human rights

### REFERENCES:

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

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## 1.3.1 List of events organized under Professional Ethics, Gender, Human Values, Environment and Sustainability

### ACADEMIC YEAR 2020-2021

Name Of The Activity	Organising Unit/ agency/Collaborating agency	Events related to cross cutting issues
Kabasura Kudineer issue to people	A.R.Engineering college	Human values
Importance of social distance	A.R.Engineering college	Human values
During COVID-19 sanitizer stand for public	A.R.Engineering college	Human values
During pandemic period large number of mask handover to Talk Office	A.R.Engineering college	Human values
1000 mask handover to Government Hospital during COVID-19	A.R.Engineering college	Human values
Immunity Booster Distribution	Radhapuram Primary Hospital	Human values
Covid Vaccination Camp- Phase I	Radhapuram Primary Hospital	Human values
Covid Vaccination Camp- Phase II	Radhapuram Primary Hospital	Human values
Women's Day Celebration Day	A.R.Engineering college	Gender



  
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## KABASURA KUDINEER ISSUE TO PEOPLE

### REPORT

PLACE: Kappiyampuliyur village.

DATE: 07.08.2020

Kabasura Kudineer issue to the people during COVID-19 at Kappiyampuliyur village on 07.08.2020 conducted by Mr.K.Sivakumar, NSS Coordinator joint to gather with Mr.P.Saravanan, Assistant Professor, ECE and we gave near 500 people to this Kabasura Kudineer (create immunity in our body). It went on well with the enthusiastic participant of 25 numbers of NSS students of our college along with public.



**KABASURA KUDINEER ISSUE TO THE PEOPLE DURING COVID -19 AT  
KAPPIYAMPULIYUR VILLAGE ON 07.08.2020**

*[Signature]*  
PRINCIPAL

*[Signature]*

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## IMPORTANCE OF SOCIAL DISTANCE

### REPORT

PLACE: Melpathi village.

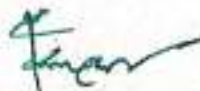
DATE: 08.09.2020

Importance of social distance at Melpathi village on 08.09.2020 conducted by NSS Coordinator Mr.K.Sivakumar, AP/ECE and joined with Mr.D.Manikandan AP/MECH. In this event, we distribute COVID-19 awareness notice to various shop, public and explained about how to avoid COVID spread from others and how we was avoid that. It went on well with the enthusiastic participant of 25 numbers of NSS students of our college along with public.



IMPORTANCE OF SOCIAL DISTANCE DURING COVID -19 AT MELPATHI VILLAGE ON 08.09.2020

  
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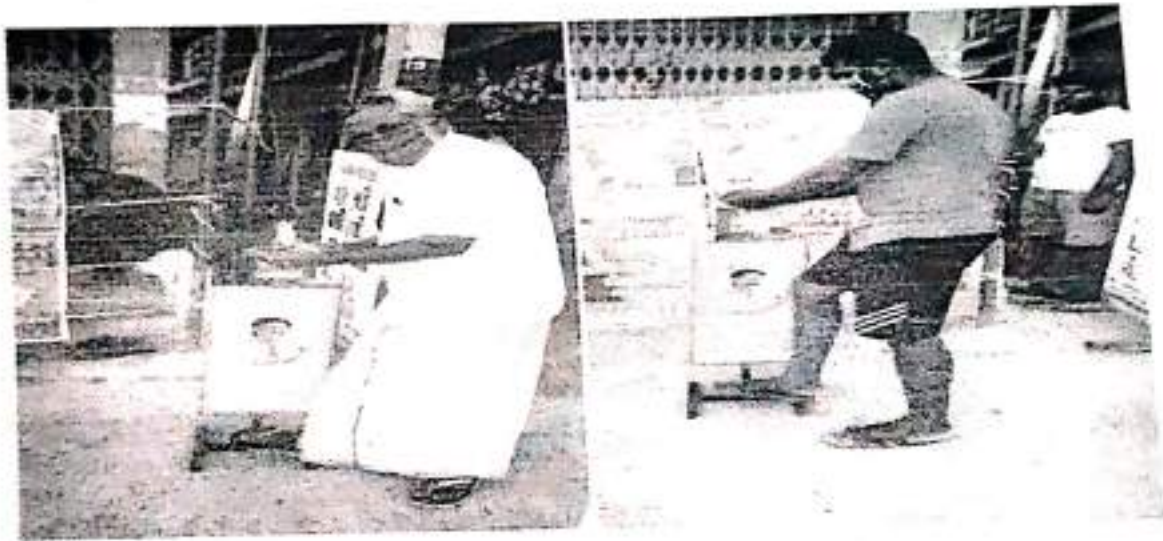
## DURING COVID-19 SANITIZER STAND FOR PUBLIC

### REPORT

PLACE: Koliyanur village.

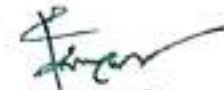
DATE: 17.09.2020

During Covid-19 Sanitizer Stand for Public at Koliyanur village on 17.09.2020 conducted by Mr.K.Sivakumar,, NSS Coordinator AP/ECE and joined with Mr.D.Manikandan AP/MECH. They made arrangement in bus stop for using public people and it went on well with the enthusiastic participant of 25 numbers of NSS students of our college along with public.



DURING COVID-19 SANITIZER STAND FOR PUBLIC TO KOLIYANUR VILLAGE  
ON 17.09.2020

  
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(Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai)  
Vadakuchipalayam, Kappiyampuliyur post, Villupuram-605601, Tamilnadu.

## DURING PANDEMIC PERIOD LARGE NUMBER OF MASK HANDOVER TO TALUK OFFICE

### REPORT

PLACE: Vikkaravandi town

DATE: 26.09.2020

During pandemic period large number of mask handover to Taluk office at Vikkaravandi town on 26.09.2020 conducted by Mr.K.Sivakumar, NSS Coordinator AP/ECE and joined with Mr.D.Manikandan AP/MECH and it went on well with the enthusiastic participant of 10 numbers of NSS students of our college along with public.



**DURING PANDEMIC PERIOD LARGE NUMBER OF MASK HANDOVER TO TALUK  
OFFICE AT VIKKARAVANDI ON 26.09.2020**

*[Signature]*  
PRINCIPAL

*[Signature]*  
Dr.R.PANNEERDHASS, M.E., Ph.D.,  
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## 1000 MASK HANDOVER TO GOVERNMENT HOSPITAL

### REPORT

PLACE: Radhapuram village.

DATE: 09.10.2020

1000 mask handover to Government Hospital during COVID-19 at Radhapuram Village on 06.10.2021 at 10.30am conducted by Mr.K.Sivakumar,, NSS Coordinator joint to gather with Mr.P.Saravanan, Assistant Professor, AP/ ECE. It went on well with the enthusiastic participant of 25 numbers of NSS students of our college along with public.



1000 MASK HANDOVER TO THE GOVERNMENT HOSPITAL DURING COVID-19 AT RADHAPURAM VILLAGE ON 09.10.2021.

*[Signature]*  
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## IMMUNITY BOOSTER DISTRIBUTION

### REPORT

PLACE: A.R Engineering College, Kappiyampuliyur


DATE: 08.03.2021

Immunity Booster Distribution during COVID-19 at A.R Engineering College, Kappiyampuliyur on 08.03.2021 at 10.30am conducted by Mr.K.Sivakumar., NSS Coordinator joint to gather with Mr.P.Saravanan, AP/ ECE. It went on well with the enthusiastic participant of 25 numbers of NSS students of our college along with public.



IMMUNITY BOOSTER DISTRIBUTION DURING COVID-19 AT  
RADHAPURAM VILLAGE ON 08.03.2021.

  
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## COVID VACCINATION CAMP PHASE-I

### REPORT

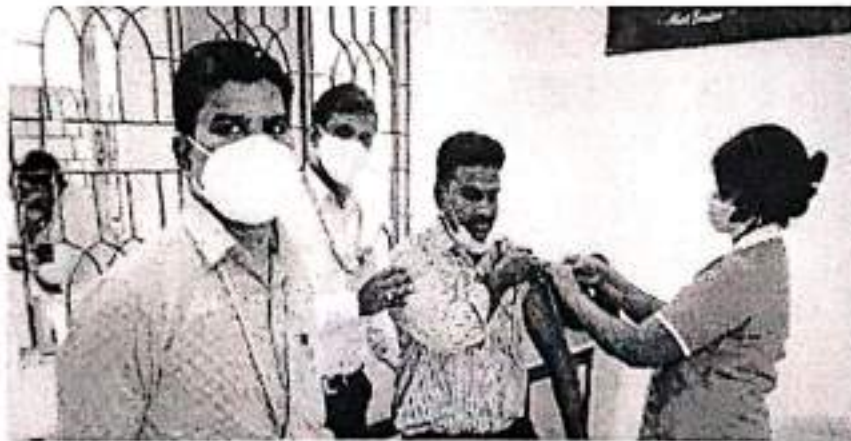
PLACE: A.R Engineering College, Kappiyampuliyur.

DATE: 29.03.2021

According to suggestion from our ministry of health department, A.R Engineering College NSS cell and Radhapuram Primary Hospital, Radhapuram provide timely benefit of vaccine to more no of staff. Vaccine camp was organized on 29.03.2021 for the persons aged 18 years and above in which mainly college students, staff and family members participated and benefited.

During the camp, all the protective measures related to COVID-19 were adopted. The principal of the college, Dr.R.Panneer Dhass said that if we want to defect corona, then it is necessary to get ourselves and our family vaccinated, vaccine is your protective shield to fight the corona epidemic. He said that by developing a collective immunity by getting more and more vaccinations, we will be able to save the society from the coming danger of corona in future. Apart from this, habits like Covid style like mask, two yards, hand and mouth cleaning are very important even after vaccination.

In this event totally 35 number of staff from several of our college got benefited and totally 25 number of students were participated from various branches.



COVID VACCINATION CAMP PHASE-I AT A.R ENGINEERING COLLEGE,  
KAPPIYAMPULIYUR ON 29.03.2021

*Dr. R. Panneer Dhass*  
PRINCIPAL

*Dr. R. Panneer Dhass*  
Dr. R.PANNEERDHASS, M.E., Ph.D.,  
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## OVID VACCINATION CAMP PHASE-II

### REPORT

**PLACE:** A.R Engineering College, Kappiyampuliyur village.


**DATE:** 12.04.2021

According to suggestion from our ministry of health department, A.R Engineering College NSS cell and Radhapuram Primary Hospital, Radhapuram provide timely benefit of vaccine to more no of staff. Vaccine camp was organized on 12.04.2021 for the persons aged 18 years and above in which mainly college students, staff and family members participated and benefited.

During the camp, all the protective measures related to COVID-19 were adopted. The principal of the college, Dr.R.Panneer Dhass said that if we want to defect corona, then it is necessary to get ourselves and our family vaccinated, vaccine is your protective shield to fight the corona epidemic. He said that by developing a collective immunity by getting more and more vaccinations, we will be able to save the society from the coming danger of corona in future. Apart from this, habits like Covid style like mask, two yards, hand and mouth cleaning are very important even after vaccination.

In this event totally 35 number of staff from several of our college got benefited and totally 30 number of students were participated from various branches.



  
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## WOMEN'S DAY CELEBRATION REPORT

A.R Engineering College organized INTERNATIONAL WOMEN'S DAY 2021 for students and faculty members on 08<sup>th</sup> March 2021. All of our girl students have participated in this online programme.

Mrs.Revathi.v, was the resource person for the enjoyable cum-motivational celebration of womens day programme. She explained about the womens mental development activities and the skills required for a women to face society.

In this online programme, the events like Singing, Drawing, Debate, Rangoli, Vegetable carving for Students .Certificates and prizes are given for the winners . The online Programme was inaugurated by our chairmen Shri.G.Mahadevan, Vice Chairmen Shri. M. Kuberan, Secretary M.Prabu B.E.,MBA our principal Dr. S.Paneerdhass .

20 Participants from our college felt very interesting about the online programme and happy for appreciation given by management and principal.

  
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VEGETABLE CARVING COMPETITION 04.03.2021

  
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## 1.3.1 List of Courses with topics of Professional Ethics, Gender, Human Values ,Environment and Sustainability

### ACADEMIC YEAR 2021-2022

S.NO	Program code	Program Name	Course code	Name of the course	Name of the topics	Regulation of Anna University
1	103	Civil Engineering	GE8291	Environmental Science and Engineering	Environment and Sustainability	2017
2	103	Civil Engineering	IP3151	Induction programming	Human values	2021
3	104	Computer Science Engineering	MG8591	Principles of Management	Professional Ethics	2017
4	104	Computer Science Engineering	GE8071	Diasater Management	Human values	2017
5	104	Computer Science Engineering	GE8291	Environmental Science and Engineering	Environment and Sustainability	2017
6	104	Computer Science Engineering	CS8078	Green Computing	Environment and Sustainability	2017
7	104	Computer Science Engineering	GE8077	Total Quality Management	Professional Ethics	2017
8	104	Computer Science Engineering	IP3151	Induction programming	Human values	2021
9	105	Electrical And Electronics Engineering	MG8591	Principles of Management	Professional Ethics	2017
10	105	Electrical And Electronics Engineering	GE8077	Total Quality Management	Professional Ethics	2017
11	105	Electrical And Electronics Engineering	IP3151	Induction programming	Human values	2021
12	106	Electronics And Communication Engineering	GE8291	Environmental Science and Engineering	Environment and Sustainability	2017
13	106	Electronics And Communication Engineering	GE8291	Environmental Science and Engineering	Environment and Sustainability	2017
14	106	Electronics And Communication Engineering	MG8591	Principles of Management	Professional Ethics	2017



  
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15	106	Electronics And Communication Engineering	IP3151	Induction programming	Human values	2021
16	114	Mechanical Engineering	GE8291	Environmental Science and Engineering	Environment and Sustainability	2017
17	114	Mechanical Engineering	MG8591	Principles of Management	Professional Ethics	2017
18	114	Mechanical Engineering	ME8091	Automobile Engineering	Environment and Sustainability	2017
19	114	Mechanical Engineering	GE8074	Human Rights	Human values	2017
30	114	Mechanical Engineering	IP3151	Induction programming	Human values	2021



  
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IP3151

## INDUCTION PROGRAMME

This is a mandatory 2 week programme to be conducted as soon as the students enter the institution. Normal classes start only after the induction program is over.

The induction programme has been introduced by AICTE with the following objective:

"Engineering colleges were established to train graduates well in the branch/department of admission, have a holistic outlook, and have a desire to work for national needs and beyond. The graduating student must have knowledge and skills in the area of his/her study. However, he/she must also have broad understanding of society and relationships. Character needs to be nurtured as an essential quality by which he/she would understand and fulfill his/her responsibility as an engineer, a citizen and a human being. Besides the above, several meta-skills and underlying values are needed."

"One will have to work closely with the newly joined students in making them feel comfortable, allow them to explore their academic interests and activities, reduce competition and make them work for excellence, promote bonding within them, build relations between teachers and students, give a broader view of life, and build character."

Hence, the purpose of this programme is to make the students feel comfortable in their new environment, open them up, set a healthy daily routine, create bonding in the batch as well as between faculty and students, develop awareness, sensitivity and understanding of the self, people around them, society at large, and nature.

The following are the activities under the induction program in which the student would be fully engaged throughout the day for the entire duration of the program.

(i) Physical Activity

This would involve a daily routine of physical activity with games and sports, yoga, gardening, etc.

(ii) Creative Arts

Every student would choose one skill related to the arts whether visual arts or performing arts. Examples are painting, sculpture, pottery, music, dance etc. The student would pursue it every day for the duration of the program. These would allow for creative expression. It would develop a sense of aesthetics and

also enhance creativity which would, hopefully, grow into engineering design later.

(iii) Universal Human Values

This is the anchoring activity of the Induction Programme. It gets the student to explore oneself and allows one to experience the joy of learning, stand up to peer pressure, take decisions with courage, be aware of relationships with colleagues and supporting stay in the hostel and department, be sensitive to others, etc. A module in Universal Human Values provides the base. Methodology of teaching this content is extremely important. It must not be through do's and don't's, but get students to explore and think by engaging them in a dialogue. It is best taught through group discussions and

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real life activities rather than lecturing.

Discussions would be conducted in small groups of about 20 students with a faculty

mentor each. It would be effective that the faculty mentor assigned is also the faculty advisor for the student for the full duration of the UG programme.

(iv) Literary Activity

Literary activity would encompass reading, writing and possibly, debating, enacting a play etc.

(v) Proficiency Modules

This would address some lacunas that students might have, for example, English, computer familiarity etc.

(vi) Lectures by Eminent People

Motivational lectures by eminent people from all walks of life should be arranged to give the students exposure to people who are socially active or in public life.

(vii) Visits to Local Area

A couple of visits to the landmarks of the city, or a hospital or orphanage could be organized. This would familiarize them with the area as well as expose them to the under privileged.

(viii) Familiarization to Dept./Branch & Innovations

They should be told about what getting into a branch or department means what role it plays in society, through its technology. They should also be shown the laboratories, workshops & other facilities.

(ix) Department Specific Activities

About a week can be spent in introducing activities (games, quizzes, social interactions, small experiments, design thinking etc.) that are relevant to the particular branch of Engineering / Technology / Architecture that can serve as a motivation and kindle interest in building things (become a maker) in that particular field. This can be conducted in the form of a workshop. For example, CSE and IT students may be introduced to activities that kindle computational thinking, and get them to build simple games. ECE students may be introduced to building simple circuits as an extension of their knowledge in Science, and so on. Students may be asked to build stuff using their knowledge of science.

**Induction Programme is totally an activity based programme and therefore there shall be no tests / assessments during this programme.**

References:

Guide to Induction program from AICTE

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GE3451 ENVIRONMENTAL SCIENCES AND SUSTAINABILITY L T P C

2 0 0 2

**UNIT I ENVIRONMENT AND BIODIVERSITY 6**

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

**UNIT II ENVIRONMENTAL POLLUTION 6**

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

**UNIT III RENEWABLE SOURCES OF ENERGY 6**

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

**UNIT IV SUSTAINABILITY AND MANAGEMENT 6**

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

**UNIT V SUSTAINABILITY PRACTICES 6**

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

**TOTAL: 30**

**PERIODS**

**TEXT BOOKS:**

1. Anubha Kaushik and C. P. Kaushik's "Perspectives in Environmental Studies", 6th Edition, New Age International Publishers, 2018.
2. Benny Joseph, 'Environmental Science and Engineering', Tata McGraw-Hill, New Delhi, 2016.

  
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3. Gilbert M.Masters, 'Introduction to Environmental Engineering and Science', 2nd edition, Pearson Education, 2004.
4. Allen, D. T. and Shonnard, D. R., Sustainability Engineering: Concepts, Design and Case Studies, Prentice Hall.
5. Bradley. A.S; Adebayo, A.O., Maria, P. Engineering applications in sustainable design and development, Cengage learning.
6. Environment Impact Assessment Guidelines, Notification of Government of India, 2006.
7. Mackenthun, K.M., Basic Concepts in Environmental Management, Lewis Publication, London, 1998.

## REFERENCES:

1. R.K. Trivedi, 'Handbook of Environmental Laws, Rules, Guidelines, Compliances and Standards', Vol. I and II, Enviro Media. 38 . Edition 2010.
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, Third Edition, 2015.
5. Erach Bharucha "Textbook of Environmental Studies for Undergraduate Courses" Orient Blackswan Pvt. Ltd. 2013.

**MG8591**

**PRINCIPLES OF MANAGEMENT**

**LTPC**

**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

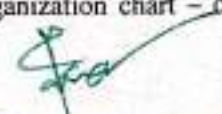
Definition of Management – Science or Art – Manager Vs Entrepreneur - types of managers - managerial roles and skills – Evolution of Management – Scientific, human relations , system and contingency approaches – Types of Business organization - Sole proprietorship, partnership, company-public and private 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.

## UNIT III ORGANISING 9

Nature and purpose – Formal and informal organization – organization chart – organization

  
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structure – types – Line and staff authority — 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 PERIODS : 45**

### 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 some basic knowledge on international aspect of management

### TEXTBOOKS:

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

### REFERENCES:

1. Stephen A. Robbins & David A. Decenzo & Mary Coulter, "Fundamentals of Management" Pearson Education, 7th Edition, 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

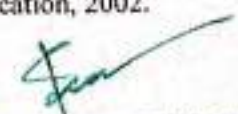
### TEXTBOOKS:

1. Thomas Erl, " Service Oriented Architecture: Concepts, Technology, and Design", Pearson Education, 2005
2. Sandeep Chatterjee and James Webber, "Developing Enterprise Web Services: An Architect's Guide", Prentice Hall, 2004

### REFERENCES:

1. James McGovern, Sameer Tyagi, Michael E Stevens, Sunil Mathew, "Java Web Services Architecture", Elsevier, 2003.
- Ron Schmelzer et al. "XML and Web Services", Pearson Education, 2002.



  
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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, and 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, 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 ISO 14001—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.

### TEXT BOOK:

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

### REFERENCES:

- James R. Evans and William M. Lindsay, "The Management and Control of Quality", 8<sup>th</sup> Edition, First Indian Edition, Cengage Learning, 2012.



*[Signature]*  
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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

**ME8091**

**AUTOMOBILE  
ENGINEERING**

**L T P C**

**3003**

## 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 9

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 9

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 9

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 9

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 9

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**



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## PERIODS

### OUTCOMES:

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

- CO1 recognize the various parts of the automobile and their functions and materials.
- CO2 discuss the engine auxiliary systems and engine emission control.
- CO3 distinguish the working of different types of transmission systems.
- CO4 explain the Steering, Brakes and Suspension Systems.
- CO5 predict possible alternate sources of energy for IC Engines.

### TEXT BOOKS:

1. Jain K.K. and Asthana .R.B, "Automobile Engineering" Tata McGraw Hill Publishers, NewDelhi, 2002.
2. Kirpal Singh, "Automobile Engineering", Vol 1 & 2, Seventh Edition, Standard Publishers, NewDelhi, 13th Edition 2014..

### REFERENCES:

1. Ganesan V. "Internal Combustion Engines", Third Edition, Tata McGraw-Hill, 2012.
2. Heinz Heisler "Advanced Engine Technology," SAE International Publications USA, 1998.
3. Joseph Heitner, "Automotive Mechanics," Second Edition, East-West Press, 1999.
4. Martin W, Stockel and Martin T Stockle, "Automotive Mechanics Fundamentals," The Goodheart - Will Cox Company Inc, USA, 1978.
5. Newton, Steeds and Garet, "Motor Vehicles", Butterworth Publishers, 1989.

## GE8291 ENVIRONMENTAL SCIENCE AND ENGINEERING

L T P C

3 0 0 3

### 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 – biogeographically classification of India – value of biodiversity: consumptive



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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, 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



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## 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

## 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. Rajagopalan, R, 'Environmental Studies-From Crisis to Cure', Oxford University Press, 2005.
4. G. Tyler Miller and Scott E. Spoolman, "Environmental Science", Cengage Learning India PVT. LTD, Delhi, 2014.

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.

## 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



  
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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 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 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, and 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 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.

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- impacts on the environment.
- Enhance the skill in energy saving practices in their use of hardware.
- Evaluate technology tools that can reduce paper waste and carbon footprint by the stakeholders.
- Understand the ways to minimize equipment disposal requirements.

## TEXT BOOKS:

1. Bhuvan Unhelkar, "Green IT Strategies and Applications-Using Environmental Intelligence", CRC Press, June 2014.
2. Woody Leonhard, Katherine Murray, "Green Home computing for dummies", August 2012.

## REFERENCES:

1. Alin Gales, Michael Schaefer, Mike Ebbers, "Green Data Center: steps for the Journey", Shroff/IBM rebook, 2011.
2. John Lamb, "The Greening of IT", Pearson Education, 2009.
3. Jason Harris, "Green Computing and Green IT- Best Practices on regulations & industry", Lulu.com, 2008
4. Carl speshocky, "Empowering Green Initiatives with IT", John Wiley & Sons, 2010.
5. Wu Chun Feng (editor), "Green computing: Large Scale energy efficiency", CRC Press

## OUTCOME:

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

## REFERENCES:

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

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

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.

9

## UNIT II

9



*[Signature]*

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

**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

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. 9

## UNIT II



  
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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

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

## UNIT IV

Human Rights in India – Constitutional Provisions / Guarantees.

## UNIT V

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**

### OUTCOME:

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

### REFERENCES:

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

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## 1.3.1 List of events organized under Professional Ethics, Gender, Human Values, Environment and Sustainability

### ACADEMIC YEAR 2021-2022

Name Of The Activity	Organising Unit/ agency/Collaborating agency	Events related to cross cutting issues
Seed Distribution For Public	A.R.Engineering college.	Environment and Sustainability
Rally for Pollution Awareness	A.R.Engineering college	Environment and Sustainability
Medical Camp	Primary Hospital, Radhapuram	Human values
Yoga Event	A.R.Engineering college	Human values
Rally For Environment Awareness	Panniyapuram village	Environment and Sustainability
Eye Camp	Primary Hospital, Radhapuram	Human values
Women's day celebration	A.R.Engineering college	Gender

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## SEED DISTRIBUTION FOR PUBLIC

### REPORT

PLACE: A.R Engineering College, Kappiyampuliyur.

DATE: 05.08.2021

As a part of our regular activity our NSS team conducted the seed distribution dated on 05.08.2021. It was organized by our NSS Programme officer Mr.N.Muthukumaran and the seed distribution started at 9.00am. We distributed the seed to the nearby village people, in their event 68 NSS volunteers participated and the seed distribution ended at 1.00pm.



SEED DISTRIBUTION FOR PUBLIC ON A.R ENGINEERING COLLEGE AT  
05.08.2021

  
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## RALLY FOR POLLUTION AWARENESS

### REPORT

PLACE: A.R. Engineering College, Kappiyampuliyur.

DATE: 15.09.2021

Our NSS team conducted the pollution awareness rally on 15.09.2021. It was organized by our NSS Program officer Mr.N.Muthukumaran. It was started at 9am. 71 NSS volunteers participated in this rally. Environmental awareness rallies play a crucial role in raising awareness about pressing environmental issues such as climate change, deforestation, and pollution. Our NSS students created awareness to the people by this rally and the rally ended at 12pm.



RALLY FOR POLLUTION AWARENESS AT A.R. ENGINEERING  
COLLEGE ON 15.09.2021

  
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## MEDICAL CAMP

### REPORT


PLACE: Kappiyampuliyur Village.

DATE: 26.10.2021

As a part of our regular activity our NSS team was conducted on Medical Camp 26.10.2021. It was organized by our NSS program officer Mr.Muthukumaran,, and the Medical Camp was started at 10.00 a.m. In this Medical Camp, Radhapuram Primary Hospital Villupuram joined with us. Above 100 people were benefited in this camp.

The Medical Camp improved awareness and alertness, increased confidence approaching communities, and increased compassion towards patient care. Medical camps had an overall positive impact on volunteering students. They provide access to basic and specialized medical services, raise awareness about health issues, and can help prevent the spread of disease. Medical camps are a valuable tool in addressing health inequalities and improving the overall health of our society.

In this event 55 NSS volunteers were participated and this camp ended at 5.30p.m.

  
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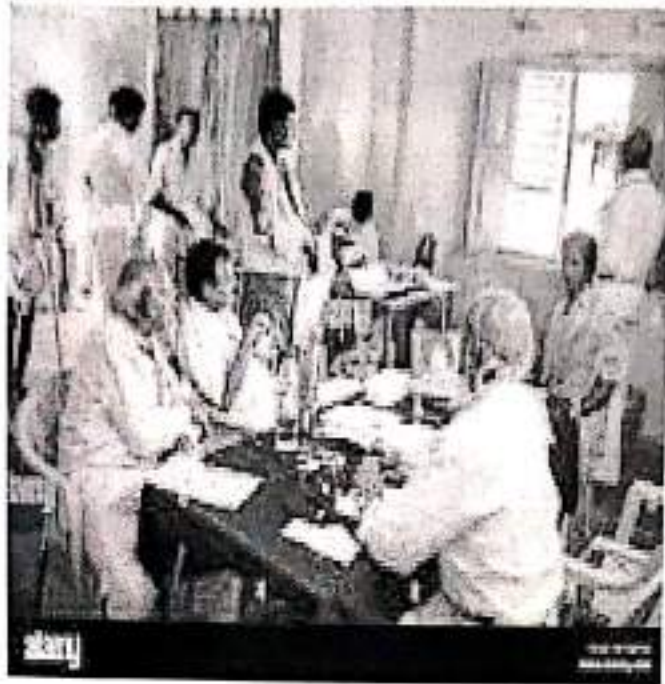






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MEDICAL CAMP

  
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## RALLY FOR ENVIRONMENT AWARENESS

### REPORT

PLACE: Panaiyapuram Cross Road Village.

DATE: 09.12.2021

Our NSS team conducted Environment awareness rally on 09.12.2021. It was organized by our NSS Program officer Mr.N.Muthukumaran. It was started at 9am. 50 NSS volunteers participated in this rally.

Environmental awareness rallies play a crucial role in raising awareness about pressing environmental issues such as climate change, deforestation, and pollution. These rallies bring together individuals, communities, and organizations to advocate for sustainable practices, conservation efforts, and policy reforms.

Spreading environmental awareness can preserve our natural resources and reduce the destruction of Earth.

Our NSS students created awareness to the people by this rally and the rally ended at 12pm.

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RALLY FOR ENVIRONMENT AWARENESS

  
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## BLOOD CAMP

### REPORT

**PLACE:** Radhapuram village,  
26.02.2022

**DATE:**

As a part of our regular activity our NSS team conducted on Blood Camp 26.02.2022. It was organized by our NSS programme officer Mr.N.Muthukumar, and the Blood Camp started at 10.00a.m. In this Blood Camp, Villupuram Blood Centre Services, Villupuram, joined with us.

The following factors has been screened those who are came for donate the blood that was aged above 18, hemoglobin eligibility, three months completion in their previous blood donation , shouldn't affected from jaundice and we suggested the students to get the prior permission from their parents to donate the blood. They provided the cool drinks and snacks to the donors. In this event 60 NSS volunteers were acatively participated.

The camp came to a close with a positive note. Students and village peoples are realized the significance of blood donation and their responsibility towards saving human lives.

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Above 100 people donated their blood. In this event 50 NSS volunteers are participated and this camp ended at 5.30p.m



BLOOD CAMP

  
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## EYE CAMP

## REPORT

PLACE: Radhapuram Primary Hospital, Villupuram.

DATE: 16.03.2022

As a part of our regular activity our NSS team conducted on Eye Camp 16.03.2022. It was organized by our NSS programme officer Mr.N.Muthukumaran, and the Eye Camp started at 10.00a.m. In this Eye Camp, Villupuram Blood Centre Services, Villupuram, joined with us. Above 100 people donated their blood. In this event 50 NSS volunteers are participated and this camp ended at 5.30p.m.

The event not only helped to prevent the further deterioration of the eyesight of the students but also provided a sense of relief to the parents. Eye exams also check for other eye diseases such as cataracts, glaucoma, and macular degeneration, which can lead to blindness if left untreated. During the eye check-up camp, we perform a variety of tests to assess the health of your eyes. Eye check-ups can **help ensure that your eyes are healthy overall**. Many individuals ignore early signs of eye disease, or even worse, they do not notice the signs of such conditions and fail to seek treatment in a timely manner, leading to preventable vision loss. Simply put, **if people do not know what is broken, they will not know what to fix.**

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Above 100 people donated their blood. In this event 50 NSS volunteers are participated and this camp ended at 5.30p.m.



EYE CAMP

  
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## WOMEN'S DAY CELEBRATION REPORT

A.R Engineering College organized INTERNATIONAL WOMEN'S DAY 2022 for students and faculty members on 08<sup>th</sup> March 2022. All of our girl students have participated in this programme.

Mrs.Girija.v, was the resource person for the enjoyable cum-motivational celebration of womens day programme. She explained about the womens mental development activities and the skills required for a women to face society.

In this programme, the events like Singing, Drawing, Debate, Rangoli, Hair dressing for Students. Certificates and prizes are given for the winners . The Programme was inaugurated by our chairmen Shri.G.Mahadevan, Vice Chairmen Shri. M. Kuberan, Secretary M.Prabu B.E.,MBA our principal Dr. S.Paneerdhass.

23 Participants from our college felt very interesting about the programme and happy for appreciation given by management and principal.



  
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HAIR DRESSING COMPETITION PHOTOGRAPHY 24.02.2022

  
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## 1.3.1 List of Courses with topics of Professional Ethics, Gender, Human Values, Environment and Sustainability

### ACADEMIC YEAR 2022-2023

S.NO	PROGRAM CODE	PROGRAM NAME	COURSE CODE	NAME OF THE COURSE	NAME OF THE TOPICS	REGULATION OF ANNA UNIVERSITY
1	103	Civil Engineering	GE8291	Environmental Science and Engineering	Environment and Sustainability	2017
2	103	Civil Engineering	GE 3451	Environment and Sustainability	Environment and Sustainability	2021
3	103	Civil Engineering	IP3151	Induction programming	Human values	2021
4	104	Computer Science Engineering	MG8591	Principles of Management	Professional Ethics	2017
5	104	Computer Science Engineering	GE8071	Disaster Management	Human values	2017
6	104	Computer Science Engineering	GE8291	Environmental Science and Engineering	Environment and Sustainability	2017
7	104	Computer Science Engineering	CS8078	Green Computing	Environment and Sustainability	2017
8	104	Computer Science Engineering	GE8077	Total Quality Management	Professional Ethics	2017
9	104	Computer Science Engineering	IP3151	Induction programming	Human values	2021
10	104	Computer Science Engineering	GE 3451	Environment and Sustainability	Environment and Sustainability	2021
11	105	Electrical And Electronics Engineering	MG8591	Principles of Management	Professional Ethics	2017
12	105	Electrical And	GE8077	Total Quality	Professional	2017




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		Electronics Engineering		Management	Ethics	
13	105	Electrical And Electronics Engineering	IP3151	Induction programming	Human values	2021
14	105	Electrical And Electronics Engineering	GE 3451	Environment and Sustainability	Environment and Sustainability	2021
15	106	Electronics And Communication Engineering	GE8291	Environmental Science and Engineering	Environment and Sustainability	2017
16	106	Electronics And Communication Engineering	GE8291	Environmental Science and Engineering	Environment and Sustainability	2017
17	106	Electronics And Communication Engineering	MG8591	Principles of Management	Professional Ethics	2017
18	106	Electronics And Communication Engineering	IP3151	Induction programming	Human values	2021
19	106	Electronics And Communication Engineering	GE 3451	Environment and Sustainability	Environment and Sustainability	2021
20	114	Mechanical Engineering	GE8291	Environmental Science and Engineering	Environment and Sustainability	2017
21	114	Mechanical Engineering	MG8591	Principles of Management	Professional Ethics	2017
22	114	Mechanical Engineering	ME8091	Automobile Engineering	Environment and Sustainability	2017
23	114	Mechanical Engineering	GE8074	Human Rights	Human values	2017
24	114	Mechanical Engineering	IP3151	Induction programming	Human values	2021
25	114	Mechanical Engineering	GE 3451	Environment and Sustainability	Environment and Sustainability	2021
26	234	Artificial Intelligence and Data Science	IP3151	Induction programming	Human values	2021



  
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IP3151

## INDUCTION PROGRAMME

This is a mandatory 2 week programme to be conducted as soon as the students enter the institution. Normal classes start only after the induction program is over.

**The induction programme has been introduced by AICTE with the following objective:**

"Engineering colleges were established to train graduates well in the branch/department of admission, have a holistic outlook, and have a desire to work for national needs and beyond. The graduating student must have knowledge and skills in the area of his/her study. However, he/she must also have broad understanding of society and relationships. Character needs to be nurtured as an essential quality by which he/she would understand and fulfill his/her responsibility as an engineer, a citizen and a human being. Besides the above, several meta-skills and underlying values are needed."

"One will have to work closely with the newly joined students in making them feel comfortable, allow them to explore their academic interests and activities, reduce competition and make them work for excellence, promote bonding within them, build relations between teachers and students, give a broader view of life, and build character."

Hence, the purpose of this programme is to make the students feel comfortable in their new environment, open them up, set a healthy daily routine, create bonding in the batch as well as between faculty and students, develop awareness, sensitivity and understanding of the self, people around them, society at large, and nature.

The following are the activities under the induction program in which the student would be fully engaged throughout the day for the entire duration of the program.

(i) Physical Activity

This would involve a daily routine of physical activity with games and sports, yoga, gardening, etc.

(ii) Creative Arts


Every student would choose one skill related to the arts whether visual arts or performing arts. Examples are painting, sculpture, pottery, music, dance etc. The student would pursue it every day for the duration of the program. These would allow for creative expression. It would develop a sense of aesthetics and

also enhance creativity which would, hopefully, grow into engineering design later.

(iii) Universal Human Values

This is the anchoring activity of the Induction Programme. It gets the student to explore oneself and allows one to experience the joy of learning, stand up to peer pressure, take decisions with courage, be aware of relationships with colleagues and supporting stay in the hostel and department, be sensitive to others, etc. A module in Universal Human Values provides the base. Methodology of teaching this content is extremely important. It must not be through do's and don'ts, but get students to explore and think by engaging them in a dialogue. It is best taught through group discussions and



  
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real life activities rather than lecturing.

Discussions would be conducted in small groups of about 20 students with a faculty

mentor each. It would be effective that the faculty mentor assigned is also the faculty advisor for the student for the full duration of the UG programme.

(iv) Literary Activity

Literary activity would encompass reading, writing and possibly, debating, enacting a play etc.

(v) Proficiency Modules

This would address some lacunas that students might have, for example, English, computer familiarity etc.

(vi) Lectures by Eminent People

Motivational lectures by eminent people from all walks of life should be arranged to give the students exposure to people who are socially active or in public life.

(vii) Visits to Local Area

A couple of visits to the landmarks of the city, or a hospital or orphanage could be organized. This would familiarize them with the area as well as expose them to the under privileged.

(viii) Familiarization to Dept./Branch & Innovations

They should be told about what getting into a branch or department means what role it plays in society, through its technology. They should also be shown the laboratories, workshops & other facilities.

(ix) Department Specific Activities

About a week can be spent in introducing activities (games, quizzes, social interactions, small experiments, design thinking etc.) that are relevant to the particular branch of Engineering / Technology / Architecture that can serve as a motivation and kindle interest in building things (become a maker) in that particular field. This can be conducted in the form of a workshop. For example, CSE and IT students may be introduced to activities that kindle computational thinking, and get them to build simple games. ECE students may be introduced to building simple circuits as an extension of their knowledge in Science, and so on. Students may be asked to build stuff using their knowledge of science.

**Induction Programme is totally an activity based programme and therefore there shall be no tests / assessments during this programme.**

References:

Guide to Induction program from AICTE

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GE3451 ENVIRONMENTAL SCIENCES AND SUSTAINABILITY L T P C  
2 0 0 2

**UNIT I ENVIRONMENT AND BIODIVERSITY 6**  
Definition, scope and importance of environment – need for public awareness. Eco-system and Energy flow– ecological succession. Types of biodiversity: genetic, species and ecosystem diversity– values of biodiversity, India as a mega-diversity nation – hot-spots of biodiversity – threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts – endangered and endemic species of India – conservation of biodiversity: In-situ and ex-situ.

**UNIT II ENVIRONMENTAL POLLUTION 6**  
Causes, Effects and Preventive measures of Water, Soil, Air and Noise Pollutions. Solid, Hazardous and E-Waste management. Case studies on Occupational Health and Safety Management system (OHSMS). Environmental protection, Environmental protection acts.

**UNIT III RENEWABLE SOURCES OF ENERGY 6**  
Energy management and conservation, New Energy Sources: Need of new sources. Different types new energy sources. Applications of- Hydrogen energy, Ocean energy resources, Tidal energy conversion. Concept, origin and power plants of geothermal energy.

**UNIT IV SUSTAINABILITY AND MANAGEMENT 6**  
Development , GDP ,Sustainability- concept, needs and challenges-economic, social and aspects of sustainability-from unsustainability to sustainability-millennium development goals, and protocols- Sustainable Development Goals-targets, indicators and intervention areas Climate change- Global, Regional and local environmental issues and possible solutions-case studies. Concept of Carbon Credit, Carbon Footprint. Environmental management in industry-A case study.

**UNIT V SUSTAINABILITY PRACTICES 6**  
Zero waste and R concept, Circular economy, ISO 14000 Series, Material Life cycle assessment, Environmental Impact Assessment. Sustainable habitat: Green buildings, Green materials, Energy efficiency, Sustainable transports. Sustainable energy: Non-conventional Sources, Energy Cycles-carbon cycle, emission and sequestration, Green Engineering: Sustainable urbanization- Socio-economical and technological change.

**TOTAL: 30**

## PERIODS

### TEXT BOOKS:

1. Anubha Kaushik and C. P. Kaushik's "Perspectives in Environmental Studies", 6th Edition, New Age International Publishers, 2018.
2. Benny Joseph, 'Environmental Science and Engineering', Tata McGraw-Hill, New Delhi, 2016.



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structure – types – Line and staff authority – 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.

### OUTCOMES:

TOTAL PERIODS : 45

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", Prentice Hall (India) Pvt. Ltd., 10<sup>th</sup> Edition, 2009.
2. JAF Stoner, Freeman R.E and Daniel R Gilbert "Management", Pearson Education, 6th Edition, 2004.

### REFERENCES:

1. Stephen A. Robbins & David A. Decenzo & Mary Coulter, "Fundamentals of Management" Pearson Education, 7th Edition, 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

### TEXTBOOKS:

1. Thomas Erl, " Service Oriented Architecture: Concepts, Technology, and Design", Pearson Education, 2005
2. Sandeep Chatterjee and James Webber, "Developing Enterprise Web Services: An Architect's Guide", Prentice Hall, 2004

### REFERENCES:

1. James McGovern, Sameer Tyagi, Michael E Stevens, Sunil Mathew, "Java Web Services Architecture", Elsevier, 2003.
2. Ron Schmelzer et al. "XML and Web Services", Pearson Education, 2002.



  
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3. Frank P.Coyle, "XML, Web Services and the Data Revolution", Pearson Education,2002

## 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, and 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, 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 ISO 14001—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.

### TEXT BOOK:

1. Dale H.Besterfield, Carol B.Michna,Glen H. Besterfield,Mary B.Sacre,Hemant



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Urdhwarsheshe and Rashmi Urdhwarsheshe, "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", 8<sup>th</sup> 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

**ME8091**

**AUTOMOBILE  
ENGINEERING**

**L T P C  
3003**

## 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 9**

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 9**

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 9**

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 9**

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 9**



  
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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

## OUTCOMES:

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

- CO1 recognize the various parts of the automobile and their functions and materials.
- CO2 discuss the engine auxiliary systems and engine emission control.
- CO3 distinguish the working of different types of transmission systems.
- CO4 explain the Steering, Brakes and Suspension Systems.
- CO5 predict possible alternate sources of energy for IC Engines.

## TEXT BOOKS:

1. Jain K.K. and Asthana .R.B, "Automobile Engineering" Tata McGraw Hill Publishers, NewDelhi, 2002.
2. Kirpal Singh, "Automobile Engineering", Vol 1 & 2, Seventh Edition, Standard Publishers, NewDelhi, 13th Edition 2014..

## REFERENCES:

1. Ganesan V. "Internal Combustion Engines", Third Edition, Tata McGraw-Hill, 2012.
2. Heinz Heisler "Advanced Engine Technology," SAE International Publications USA, 1998.
3. Joseph Heitner, "Automotive Mechanics," Second Edition, East-West Press, 1999.
4. Martin W, Stockel and Martin T Stockle, "Automotive Mechanics Fundamentals," The Goodheart - Will Cox Company Inc, USA, 1978.
5. Newton, Steeds and Garet, "Motor Vehicles", Butterworth Publishers, 1989.

**GE8291 ENVIRONMENTAL SCIENCE AND ENGINEERING L T P C**

**3 0 0 3**

## 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



  
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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 – biogeographically 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, 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.



  
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## 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

### 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. Rajagopalan, R, 'Environmental Studies-From Crisis to Cure', Oxford University Press, 2005.
4. G. Tyler Miller and Scott E. Spoolman, "Environmental Science", Cengage Learning India PVT, LTD, Delhi, 2014.

GE8071

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

## 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



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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 stake-holders- Institutional Processess 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 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, and 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 Vulnerable India: A Geographical Study of Disasters, IIAS and Sage Publishers,



  
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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.

- To study the image segmentation and representation techniques.
- To become familiar with image compression and recognition methods

CS8071

GREEN COMPUTING

L T P C

3 0 0 3

## OBJECTIVES:

- To learn the fundamentals of Green Computing.
- To analyze the Green computing Grid Framework.
- To understand the issues related with Green compliance.
- To study and develop various case studies.

## UNIT I FUNDAMENTALS

9

Green IT Fundamentals: Business, IT, and the Environment – Green computing: carbon foot print, scoop on power – Green IT Strategies: Drivers, Dimensions, and Goals – Environmentally Responsible Business: Policies, Practices, and Metrics.

## UNIT II GREEN ASSETS AND MODELING

9

Green Assets: Buildings, Data Centers, Networks, and Devices – Green Business Process Management: Modeling, Optimization, and Collaboration – Green Enterprise Architecture – Environmental Intelligence – Green Supply Chains – Green Information Systems: Design and Development Models.

## UNIT III GRID FRAMEWORK

9

Virtualization of IT systems – Role of electric utilities, Telecommuting, teleconferencing and teleporting – Materials recycling – Best ways for Green PC – Green Data center – Green Grid framework.

## UNIT IV GREEN COMPLIANCE

9

Socio-cultural aspects of Green IT – Green Enterprise Transformation Roadmap – Green Compliance: Protocols, Standards, and Audits – Emergent Carbon Issues: Technologies and Future.

## UNIT V CASE STUDIES

9

The Environmentally Responsible Business Strategies (ERBS) – Case Study Scenarios for Trial Runs – Case Studies – Applying Green IT Strategies and Applications to a Home, Hospital, Packaging Industry and Telecom Sector.



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TOTAL: 45 PERIODS

## OUTCOMES:

Upon completion of the course, the students will be able to:

- Acquire knowledge to adopt green computing practices to minimize negative impacts on the environment.
- Enhance the skill in energy saving practices in their use of hardware.
- Evaluate technology tools that can reduce paper waste and carbon footprint by the stakeholders.
- Understand the ways to minimize equipment disposal requirements.

## TEXT BOOKS:

1. Bhuvan Unhelkar, "Green IT Strategies and Applications-Using Environmental Intelligence", CRC Press, June 2014.
2. Woody Leonhard, Katherine Murray, "Green Home computing for dummies", August 2012.

## REFERENCES:

1. Alin Gales, Michael Schaefer, Mike Ebbers, "Green Data Center: steps for the Journey", Shroff/IBM rebook, 2011.
2. John Lamb, "The Greening of IT", Pearson Education, 2009.
3. Jason Harris, "Green Computing and Green IT- Best Practices on regulations & industry", Lulu.com, 2008
4. Carl speshocky, "Empowering Green Initiatives with IT", John Wiley & Sons, 2010.
5. Wu Chun Feng (editor), "Green computing: Large Scale energy efficiency", CRC Press

## OUTCOME:

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

## REFERENCES:

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

GE8074

HUMAN RIGHTS

L T P C

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## OBJECTIVE:

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

## UNIT I

9



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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**

## OUTCOME:

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

## REFERENCES:

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

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## 1.3.1 List of events organized under Professional Ethics, Gender, Human Values, Environment and Sustainability

### ACADEMIC YEAR 2022-2023

Name Of The Activity	Organising Unit/ agency/Collaborating agency	Events related to cross cutting issues
Awareness about Dengue Fever	Siga Higher Sec.school, Kappiyampuliyur.	Human values
Tree plantation	Kappiyampuliyur Village	Environment and Sustainability
Plastic Eradication Awareness	Mathirimangalam Village	Environment and Sustainability
Blood camp	A.R. Engineering College, Kappiyampuliyur Village.	Human values
Medical camp	Melpathi village	Human values
Women's day celebration	A.R. Engineering College,	Gender



  
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## AWARENESS ABOUT DENGUE FEVER

### REPORT

PLACE: Siga Higher Sec.school, Kappiyampuliyur

DATE: 25.08.2022

To make awareness about dengue fever among the students and Nilavembu Kashayam was given to the students in Siga Higher Sec.school. It was organized by our NSS Program officer Mr.N.Muthukumaran.

Most people who get dengue will not have symptoms. But for those who do, the most common symptoms are high fever, headache, body aches, nausea, and rash. Most will get better in 1-2 weeks. Some people develop severe dengue and need care in a hospital.

Dengue awareness is a collaborative effort that involves individuals, communities, healthcare providers, and government agencies. Communities can work together with local health departments to develop action plans, implement preventive strategies, and respond effectively to outbreaks.

In this event 106 volunteers participated and .This event ended at 4.45p.m.

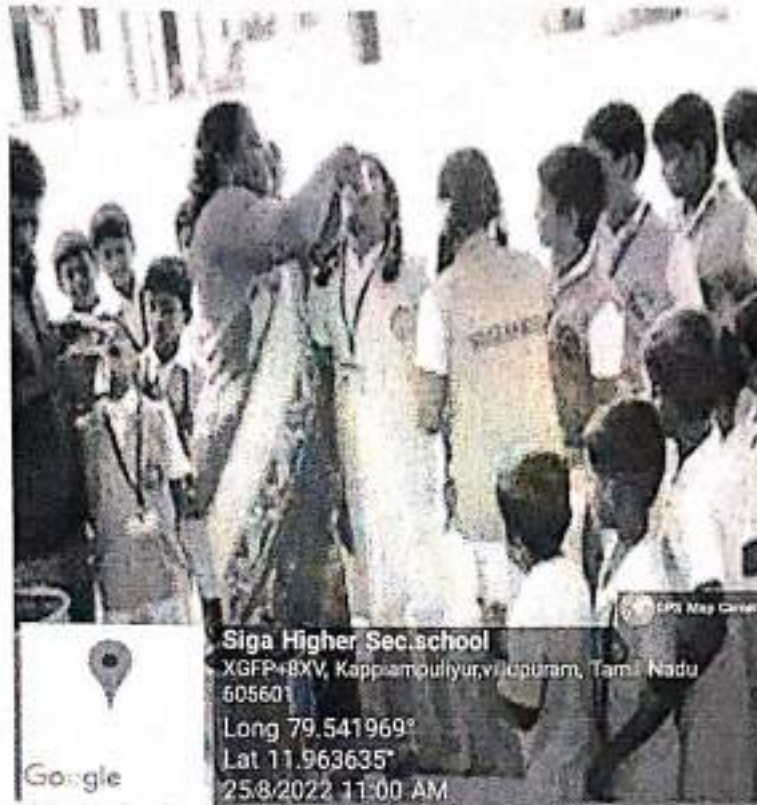


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## AWARENESS ABOUT DENGUE FEVER AT SIGA HIGHER SEC.SCHOOL, KAPPIYAMPULIYUR

  
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## TREE PLANTATION

### REPORT

PLACE: Kappiyampuliyur Village

DATE: 14.09.2022


"A Man doesn't plant a tree for himself, he plants it for posterity" As a part of our regular activity, the tree plantation was conducted on 09-09-2022. It was organized by our NSS program officer Mr.N.Muthukumaran and the event was started by our honorable Principal Mr. PANNEERDHASS M.E. PhD at 10.a.m

Trees play an important role in reducing the air pollution and to maintain the good quality air level in an environment. Trees are also useful to reduce the erosion of soil which may lead to high flood situations. So every individual shall try to plants many trees as possible . Because day by day the pollution level in the environment is becoming worse. Hence to overcome this situation tree plantation is the only solution we have.

The local village people voluntarily participated along with our NSS team. They motivated a lot and learn new things related to the environment.

In this event 75 volunteers participated and the event was ended at 2.00p.m.



  
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PLANT A TREE, SAVE THE WORLD



TREE PLANTATION AT KAPPIYAMPULIYUR VILLAGE ON 14.09.2022

  
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**TREE PLANTATION AT KAPPIYAMPULIYUR VILLAGE ON 14.09.2022**

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PRINCIPAL

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## PLASTIC ERADICATION AWARENESS

### REPORT

PLACE: Mathirimangalam Village

DATE: 22.12.2022

Our NSS team was conducted Plastic Eradication Awareness on 22.12.2022. It was organized by our NSS program officer Mr.N.Muthukumaran. It was started at 10a.m. 70 NSS volunteers were participated in this event. Our NSS students were created awareness to the people.

### AWARENESS PRECEDES CHANGE

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**Maathirimangalam Village**

NH36, Madirimangalam, Tamil Nadu 605602, India

Long 79.542668°

Lat 11.960032°

22/12/2022 10:30 AM

me Center  
Google

**PLASTIC ERADICATION AWARENESS PROGRAM AT MATHIRIMANGALAM  
VILLAGE ON 22.12.2022**

  
PRINCIPAL



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## BLOOD CAMP

### REPORT

PLACE: A.R. Engineering College, Kappiyampuliyur Village.

DATE: 04.03.2023

As a part of our regular activity our NSS team conducted on Blood Camp 04.03.2023. It was organized by our NSS Program officer Mr.N.Muthukumaran and the blood Camp started at 10.00a.m. In this Blood Camp, Radhapuram Primary Hospital, Villupuram, joined with us .Above 100 people donated their blood. In this event 66 NSS volunteers were participated and this camp ended at 5.30 p.m.



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## MEDICAL CAMP

### REPORT

PLACE: Melpathi Village

DATE: 13.04.2023

As a part of our regular activity our NSS team was conducted on Medical Camp 13.04.2023. It was organized by our NSS program officer Mr.N.Muthukumaran, and the Medical Camp was started at 10.00 a.m. In this Medical Camp, Radhapuram Primary Hospital Villupuram joined with us. Above 100 people were benefited in this camp. In this event 74 NSS volunteers were participated and this camp ended at 5.30 p.m.



MEDICAL CAMP CONDUCTED ON 13.04.2023 IN MELPATHI VILLAGE

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## WOMEN'S DAY CELEBRATION REPORT

A.R Engineering College organized INTERNATIONAL WOMEN'S DAY 2023 for students and faculty members on 08 March 2023. All of our girl students have participated in this programme.

Mrs.Mahalakshimi.s was the resource person for the enjoyable cum-motivational celebration of womens day programme. She explained about the womens mental development activities and the skills required for a women to face society.

In this programme, the events like Singing, Drawing, Debate, Rangoli, Hair dressing for Students. Certificates and prizes are given for the winners . The Programme was inaugurated by our chairmen Shri.G.Mahadevan, Vice Chairmen Shri. M. Kuberan, Secretary M.Prabu B.E.,MBA ,our principal Dr. S.Pancerdhas.

20 Participants from our college felt very interesting about the programme and happy for appreciation given by management and principal.

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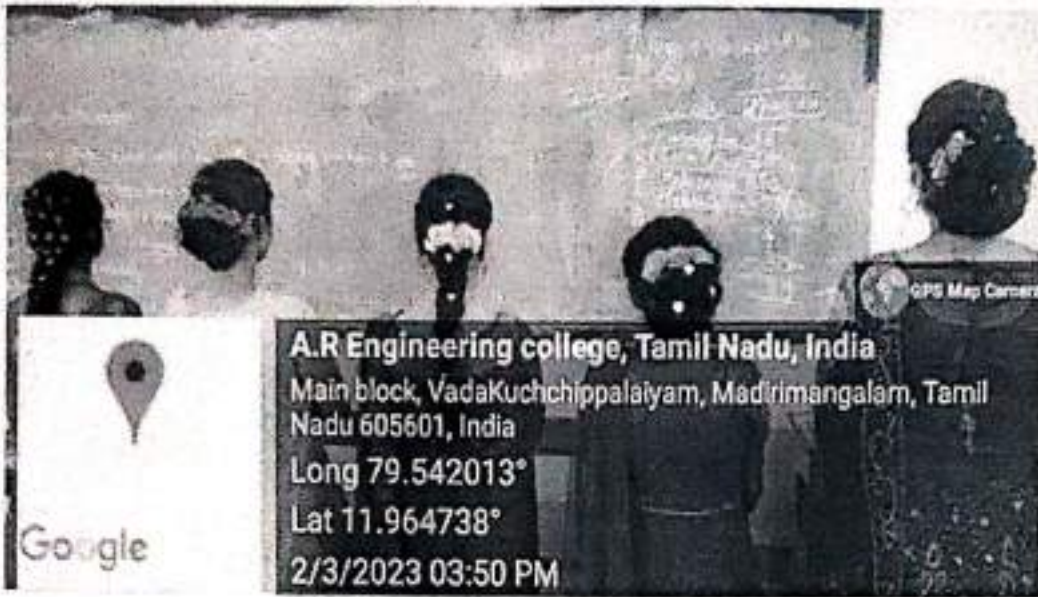






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HAIR DRESSING COMPETITION 02.03.2023

  
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