ISO 9001:2015 Certified Institution

J.K.K.MUNIRAJAH COLLEGE OF TECHNOLOGY

(Approved by AICTE, New Delhi and Affiliated to Anna University, Chennai)

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"A" GRADE

02485 260754 / 55
principal@jkkmct.edu.in
www.jkkmct.edu.in

Smt. VASANTHAKUMARI MUNIRAJAH
Chairman & Managing Trustee

Mrs. M.KASTHURIPRIYA MBA.,
Secretary

DR.K.SRIDHARAN Ph.D.,
Principal

DATE: 20-02-2024

TO WHOMSOEVER IT MAY CONCERN

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

28/2/24

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1.3.1 List and description of courses which addresses the Gender and Environmental Sustainability, Human Values and Professional Ethics in to the curriculum

REGULATIONS 2017

S. No	Program Name	Course Code	Course Name
1	B.E.-Automobile Engineering	GE8291	Environmental Science And Engineering
2	B.E.-Automobile Engineering	GE8075	Intellectual Property Rights
3	B.E.-Automobile Engineering	GE8071	Disaster Management
4	B.E.-Automobile Engineering	MG8091	Entrepreneurship Development
5	B.E.-Civil Engineering	CE8005	Air Pollution And Control Engineering
6	B.E.-Civil Engineering	OAI551	Environment and Agriculture
7	B.E.-Computer Science Engineering	GE8074	Human Rights
8	B.E.-Electrical and Electronics Engineering	GE8076	Professional Ethics In Engineering
9	B.E.-Electronics and Communication Engineering	OBT551	Introduction to Bioenergy and Biofuels

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10	B.E.-Electronics and Communication Engineering	ORO551	Renewable Energy Sources
11	B.E.-Electronics and Communication Engineering	OGI751	Climate Change and its Impact
12	B.E.-Electronics and Communication Engineering	OEN751	Green Building Design
13	B.E.-Mechanical Engineering	ME8072	Renewable Sources Of Energy
14	B.Tech.-Information Technology	GE8291	Environmental Science And Engineering
15	M.C.A-Master Of Computer Applications	MC5006	Professional Ethics
16	M.C.A-Master Of Computer Applications	MC5009	Human Resource Management
17	M.B.A- Master Of Business Administration	BA5201	Applied Operations Research
18	M.B.A- Master Of Business Administration	BA5205	Information Management
19	M.B.A- Master Of Business Administration	BA5211	Data Analysis And Business Modeling
20	M.B.A- Master Of Business Administration	BA5015	Industrial Relations and Labour Welfare
21	M.B.A- Master Of Business Administration	BA5016	Labour Legislations

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DATE: 20-02-2024

TO WHOMSOEVER IT MAY CONCERN

1.3.1 List and description of courses which addresses the Gender and Environmental Sustainability, Human Values and Professional Ethics in to the curriculum

REGULATIONS 2021

S. No	Program Name	Course Code	Course Name
1	B.E.-Automobile Engineering	GE3451	Environmental Sciences and Sustainability
2	B.E.-Civil Engineering		
3	B.E.-Computer Science Engineering	NX3251	(Army Wing) NCC Credit Course Level I
4		MX3081	Introduction to Women and Gender Studies
5		MX3082	Elements of Literature
6		MX3083	Film Appreciation
7		MX3084	Disaster Risk Reduction and Management
8		MX3085	Well-Being with Traditional Practices-Yoga, Ayurveda and Siddha
9	B.E.-Electrical and Electronics Engineering	NX3252	(Naval Wing) NCC Credit Course Level I
10	B.E.-Electronics and Communication Engineering	NX3253	(Air Force Wing) NCC Credit Course Level I
11	B.E.-Mechanical Engineering	GE3252	Tamils and Technology

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12	B. Tech.-Information Technology	GE3152	Heritage of Tamils
13		MX3086	History of Science and Technology in India
14		MX3087	Political and Economic Thought for a Humane Society
15	B. Tech.-Information Technology	MX3088	State, Nation Building and Politics in India
16		MX3089	Industrial Safety
17	M.C.A-Master Of Computer Applications	MC4002	Professional Ethics In It
18	M.B.A- Master Of Business Administration	BA4203	Human Resource Management
19	M.B.A- Master Of Business Administration	BA 4015	Strategic Human Resource Management

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Courses addressing Human Values and Professional Ethics:

Sl. No	Course Code	Description
1	MC 5006-PROFESSIONAL ETHICS	Professionally accepted standards of personal and business behavior, values and guiding principles. Codes of professional ethics are often established by professional organizations to help guide members in performing their job functions according to consistent ethical principles.
2	MG 8091-ENTREPRENEURSHIP DEVELOPMENT	The objective of this course is to inculcate in students the skills necessary to craft strategies and initiatives which can enable growth and sustainability in an entrepreneurial venture, to include the effective management of inventory, receivables, production, human resources, financial resources and risk. Students will develop higher-level critical thinking skills, evidenced by analysis, evaluation, and synthesis.
3	GE 8075-INTELLECTUAL PROPERTY RIGHTS	Intellectual property (IP) is a legal term that refers to Intellectual Property creations of the mind. Examples of intellectual property include music, literature, and other artistic works discoveries and inventions; and words, phrases, symbols, and designs. Under intellectual property laws, owners of intellectual property are granted certain exclusive rights. Some common types of intellectual property rights (IPR) are copyright, patents, and industrial design rights; and the rights that protect trademarks, trade dress, and in some jurisdictions trade secrets. Intellectual property rights are themselves a form of property, called intangible property.
4	GE 8074-HUMAN RIGHTS	This course intends the Human rights are the basic rights and freedoms that belong to every person in the world, from birth until death. ... These basic rights are based on shared values like dignity, fairness, equality, respect and independence. These values are defined and protected by law
5	BA4203- HUMAN RESOURCE MANAGEMENT	The course topics include Evolution of human resource management, trends in Human resource policies, Importance of Human Resource Planning, Types of training methods, Self

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		development, Knowledge management and Method of performance evaluation.
6	BA 4015 -STRATEGIC HUMAN RESOURCE MANAGEMENT	To help students understand the transformation in the role of HR functions from being a support function to strategic function. Strategic Human Resource Management models, Strategic framework for HRM and HRD, Roles of HRD Professionals, Virtual learning and Orientation and Career planning and Process.
7	GE3152-HERITAGE OF TAMILS	This course intends the language and Classical Literature in Tamil, heritage ,rock art paintings, sculpture, folk and martial arts .It deals with ancient Cities and Ports of Sangam age, Contribution of Tamils to Indian Freedom Struggle and Inscriptions & Manuscripts.
8	MC 5009-HUMAN RESOURCE MANAGEMENT	Contribute to the development, implementation, and evaluation of employee recruitment, selection, and retention plans and processes. Research and support the development and communication of the organization's total compensation plan. Collaborate with others, in the development, implementation, and evaluation of organizational and health and safety policies and practices.
9	MG 8091-ENTREPRENEURSHIP DEVELOPMENT	The students develop and can systematically apply an entrepreneurial way of thinking that will allow them to identify and create business opportunities that may be commercialized successfully. Process; protection of intellectual property involving patents, trademarks, and copyrights.
10	BA 5015-INDUSTRIAL RELATION AND LABOUR WELFARE	To have an effective human resource practice, the knowledge of Labour Legislation is an indispensable part. Especially in the Indian scenario, the Labour welfare and security is paramount in industrial relations solutions. Thus to enable the students to have a good base in Labour Law, this paper focuses on various Labour legislations, dispute solving machineries and Judicial setup. There are modules with conceptual, descriptive, analytical, practical and legal aspects.
11	BA 5016-LABOUR LEGISLATION	To know the development and the judicial setup of Labour Laws. To learn the salient features of welfare and

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		wage Legislations. To learn the laws relating to Industrial Relations, Social Security and Working conditions. To understand the laws related to working conditions in different settings.
12	MC4002- PROFESSIONAL ETHICS IN IT	The goal of this course is to definite the Ethics, Right, Good, the Rational Basis of Ethics. Creating an Ethical Work Environment, IT Workers Professionals, Establishing a Security Policy, Workplace Monitoring and advanced Surveillance Technology. To explain Intellectual Property Rights and Social Networking Web Site.
13	NX3251-(ARMY WING) NCC Credit Course Level I	The objective of this course is to develop the National Integration among the people, Unity in diversity, Threats to National Security. Self-Awareness, Empathy, Critical & Creative Thinking, Decision making and problem solving, communication skills. To encourage the individual Leadership Capsule social service and community development.
14	NX3252-((NAVAL WING) NCC Credit Course Level I	
15	NX3253-(AIR FORCE WING) NCC Credit Course Level I	
16	GE3252- TAMILS AND TECHNOLOGY	The course covers to get exposure Weaving Industry during Sangam age and Ceramic technology. Designing and Structural construction House & Designs in household materials during Sangam age, great temples of cholas, Saracenic architecture at Madras.It deals with manufacturing technology by using stones, Agriculture and irrigation technology, tamil computing.
17	MX3081- INTRODUCTION TO WOMEN AND GENDER STUDIES	This course intends the concept of Sex vs. Gender, masculinity, femininity, socialization, patriarchy, public/ private, essentialism. It explains Feminist Theory, Women's movement, gender and language.
18	MX3082- ELEMENTS OF LITERATURE	This course to make the students aware about the finer sensibilities of human existence through an art form. The students will learn to appreciate different forms of literature as suitable modes ofexpressing human experience.
19	MX3083- FILM APPRECIATION	In this course on film appreciation, the students will be introduced broadly to the development of film as an art and

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		entertainment form. It will also discuss the language of cinema as it evolved over a century. The students will be taught as to how to read a film and appreciate the various nuances of a film as a text. The students will be guided to study film joyfully.
20	MX3085- WELL-BEING WITH TRADITIONAL PRACTICES-YOGA, AYURVEDA AND SIDDHA	The objective of this course is to enjoy life happily with fun filled new style activities that help to maintain health also. To adapt a few lifestyle changes that will prevent many health disorders. To develop immunity naturally that will improve resistance against many health disorders.
21	MX3087- POLITICAL AND ECONOMIC THOUGHT FOR A HUMANE SOCIETY	This course will begin with a short overview of human needs and desires and how different political-economic systems try to fullfill them. In the process, we will end with a critique of different systems and their implementations in the past, with possible future directions.
22	MX3088- STATE, NATION BUILDING AND POLITICS IN INDIA	The objective of the course is to provide an understanding of the state, how it works through its main organs, primacy of politics and political process, the concept of sovereignty and its changing contours in a globalized world.
23	MX3089- INDUSTRIAL SAFETY	The course covers to understand the Introduction and basic Terminologies safety. Enable the students to learn about the Important Statutory Regulations and standards. It assess the various Hazards and consequences through various Risk Assessment Techniques.

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Course addressing Environment and Sustainability

Sl. No	Course Code	Description
1	GE 8071-DISASTER MANAGEMENT	The goal of this course is to expose the under graduate students regarding different types of disasters and preparedness needed to mitigate their effects. The course matrix will cover various natural, biological, chemical and emerging hazards and risks that may cause property, loss of lives, and livestock's. Thus, the future engineers will understand the social responsibility for the preparedness and mitigation of the damages caused by the disasters.
2	GE3451-ENVIRONMENTAL SCIENCES AND SUSTAINABILITY	The course deals with environment and biodiversity, environmental pollution, renewable sources of energy, sustainability and management with are related to human beings.
3	ORO551-RENEWABLE ENERGY SOURCES	The course cover to get exposure on solar radiation and its environmental impact to power, to know about the various collectors used for storing solar energy along with various applications. The course will also cover about the wind energy, biomass and its economic aspects and also geothermal energy with other energy sources.
4	OEN751-GREEN BUILDING DESIGN	The course covers various aspects of bioclimatic architecture like climate sensitive design, passive solar architecture, water management, green building materials and construction techniques.
5	OG1751-CLIMATE CHANGE AND ITS IMPACT	The objective of this course is to understand the basics of weather and climate, an insight on Atmospheric dynamics and transport of heat, develop simple climate models and evaluate climate changes using models.
6	OBT551-INTRODUCTION TO BIOENERGY AND BIOFUELS	The course will be focused on achievement, acquisition of knowledge and enhancement of comprehension of information regarding bioenergy and biofuel technologies and their sustainable applications.

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7	ME 8072-RENEWABLE SOURCES OF ENERGY	The course cover to get exposure on solar radiation and its environmental impact to power, to know about the various collectors used for storing solar energy along with various applications. The course will also cover about the wind energy, biomass and its economic aspects and also geothermal energy with other energy sources.
8	CE 8005-AIR POLLUTION AND CONTROL ENGINEERING	The objective of this course is to understand the basics principle and design of control of Indoor/particulate/gaseous air pollutant and its emerging trends.
9	MX3084- DISASTER RISK REDUCTION AND MANAGEMENT	The course deals with the impart knowledge on concepts related to disaster, disaster risk reduction, disastermanagement. To acquaint with the skills for planning and organizing disaster response
10	MX3086- HISTORY OF SCIENCE AND TECHNOLOGY IN INDIA	The objective of the course is to study the meaning of History. It also deals with Objectivity, Determinism, Relativism, Causation, and Generalization in History; Moral judgment in history Extent of subjectivity, contrast with physical sciences, interpretation and speculation, causation verses evidence, concept of historical inevitability, Historical Positivism.

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CURRICULUM

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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.

UNITI 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.

UNITII 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.

UNITIII 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

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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, useofalternateenergysources.casestudies–Landresources:Landasaresource,landdegradation, 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.

UNITIV 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- Publicawareness.

UNITV HUMAN POPULATION ANDTHE 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 thecourse.
- Public awareness of environmental is at infantstage.
- Ignorance and incomplete knowledge has lead tomisconceptions
- Development and improvement in std. of living has lead to serious environmentaldisasters

TEXT BOOKS:

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

REFERENCES :

1. DharmendraS.Sengar,'Environmentallaw',PrenticehallofIndiaPVTLTD,NewDelhi,2007.
2. ErachBharucha, "Textbook of Environmental Studies", Universities Press(I) PVT, LTD, Hydrabad, 2015.
3. Rajagopalan, R, 'Environmental Studies-From Crisis to Cure', Oxford University Press,2005.

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4. G. Tyler Miller and Scott E. Spoolman, "Environmental Science", Cengage Learning India PVT, LTD, Delhi, 2014.

GE8075 **INTELLECTUAL PROPERTY RIGHTS** **L T P C**
3 0 0 3

OBJECTIVE:

- To give an idea about IPR, registration.

UNITI INTRODUCTION **9**

Introduction to IPRs, Basic concepts and need for Intellectual Property - Patents, Copyrights, Geographical Indications, IPR in India and Abroad – Genesis and Development – the way from WTO to WIPO –TRIPS, Nature of Intellectual Property, Industrial Property, technological Research, Inventions and Innovations – Important examples of IPR.

UNITII REGISTRATION OF IPRs **10**

Meaning and practical aspects of registration of Copy Rights, Trademarks, Patents, Geographical Indications, Trade Secrets and Industrial Design registration in India and Abroad

UNITIII AGREEMENTS AND LEGISLATIONS **10**

International Treaties and Conventions on IPRs, TRIPS Agreement, PCT Agreement, Patent Act of India, Patent Amendment Act, Design Act, Trademark Act, Geographical Indication Act.

UNITIV DIGITAL PRODUCTS AND LAW **9**

Digital Innovations and Developments as Knowledge Assets – IP Laws, Cyber Law and Digital Content Protection – Unfair Competition – Meaning and Relationship between Unfair Competition and IP Laws – CaseStudies.

UNITV ENFORCEMENT OF IPRs **7**

Infringement of IPRs, Enforcement Measures, Emerging issues – Case Studies.

TOTAL :45 PERIODS

OUTCOME:

- Ability to manage Intellectual Property portfolio to enhance the value of thefirm.

TEXT BOOKS

1. S.V. Satarkar, Intellectual Property Rights and Copy Rights, EssEss Publications, NewDelhi, 2002
2. V. ScopleVinod, Managing Intellectual Property, Prentice Hall of India pvt Ltd,2012

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REFERENCES

1. Deborah E. Bouchoux, "Intellectual Property: The Law of Trademarks, Copyrights, Patents and Trade Secrets", Cengage Learning, Third Edition,2012.
2. Edited by Derek Bosworth and Elizabeth Webster, The Management of Intellectual Property, Edward Elgar Publishing Ltd., 2013.
3. PrabuddhaGanguli,"Intellectual Property Rights: Unleashing the Knowledge Economy", McGraw Hill Education, 2011.

GE8071 **DISASTER MANAGEMENT** **L T P C**
3 0 0 3

OBJECTIVES:

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

UNITI 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.

UNITII APPROACHES TO DISASTER RISKREDUCTION(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 AppropriateAgencies.

UNITIII INTER-RELATIONSHIP BETWEEN DISASTERSANDDEVELOPMENT **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

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

UNITIV DISASTER RISK MANAGEMENTININDIA **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 DamageAssessment.

UNITV 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 disastermanagement.

TOTAL: 45 PERIODS

OUTCOMES:

The students will be able to

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

TEXT BOOKS:

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

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

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MG8091	ENTREPRENEURSHIP DEVELOPMENT	L	T	P	C
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OBJECTIVE:

- To develop and strengthen entrepreneurial quality and motivation in students and to impart basic entrepreneurial skills and understanding to run a business efficiently and effectively.

UNIT I ENTREPRENEURSHIP **9**

Entrepreneur – Types of Entrepreneurs – Difference between Entrepreneur and Intrapreneur Entrepreneurship in Economic Growth, Factors Affecting Entrepreneurial Growth.

UNIT II MOTIVATION **9**

Major Motives Influencing an Entrepreneur – Achievement Motivation Training, Self Rating, Business Games, Thematic Apperception Test – Stress Management, Entrepreneurship Development Programs – Need,Objectives.

UNIT III BUSINESS **9**

Small Enterprises – Definition, Classification – Characteristics, Ownership Structures – Project Formulation – Steps involved in setting up a Business – identifying, selecting a Good Business opportunity, Market Survey and Research, Techno Economic Feasibility Assessment – Preparation of Preliminary Project Reports – Project Appraisal – Sources of Information – Classification of Needs andAgencies.

UNIT IV FINANCING AND ACCOUNTING **9**

Need – Sources of Finance, Term Loans, Capital Structure, Financial Institution, Management of working Capital, Costing, Break Even Analysis, Taxation – Income Tax, Excise Duty – Sales Tax.

UNIT V SUPPORT TO ENTREPRENEURS **9**

Sickness in small Business – Concept, Magnitude, Causes and Consequences, Corrective Measures - Business Incubators – Government Policy for Small Scale Enterprises – Growth Strategies in small industry – Expansion, Diversification, Joint Venture, Merger and Sub Contracting.

TOTAL : 45 PERIODS

OUTCOME:

- Upon completion of the course, students will be able to gain knowledge and skills needed to run a businesssuccessfully.

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TEXT BOOKS :

1. Donald F Kuratko, "Entreprenuership – Theory, Process and Practice", 9th Edition, Cengage Learning,2014.
2. Khanka. S.S., "Entrepreneurial Development" S.Chand& Co. Ltd., Ram Nagar, New Delhi, 2013.

REFERENCES :

1. EDII "Faulty and External Experts – A Hand Book for New Entrepreneurs Publishers: Entrepreneurship Development", Institute of India, Ahmadabad,1986.
2. Hisrich R D, Peters M P, "Entrepreneurship" 8th Edition, Tata McGraw-Hill,2013.
3. Mathew J Manimala, "Enterprenuership theory at cross roads:paradigms and praxis"2 Edition Dream tech, 2005.
4. Rajeev Roy, "Entrepreneurship" 2nd Edition, Oxford University Press,2011.

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CE8005 AIR POLLUTION AND CONTROL ENGINEERING L T P C

3 0 0 3

OBJECTIVE:

- To impart knowledge on the principle and design of control of Indoor/ particulate/ gaseous air pollutant and its emerging trends.

UNITI INTRODUCTION 7

Structure and composition of Atmosphere – Definition, Scope and Scales of Air Pollution – Sources and classification of air pollutants and their effect on human health, vegetation, animals, property, aesthetic value and visibility- Ambient Air Quality and Emission standards –Ambient and stack sampling and Analysis of Particulate and Gaseous Pollutants.

UNITII METEOROLOGY 6

Effects of meteorology on Air Pollution - Fundamentals, Atmospheric stability, Inversion, Wind profiles and stack plume patterns- Atmospheric Diffusion Theories – Dispersion models, Plume rise.

UNITIII CONTROL OFPARTICULATECONTAMINANTS 11

Factors affecting Selection of Control Equipment – Gas Particle Interaction – Working principle, Design and performance equations of Gravity Separators, Centrifugal separators Fabric filters, Particulate Scrubbers, Electrostatic Precipitators – Operational Considerations.

UNITIV CONTROL OFGASEOUS CONTAMINANTS 11

Factors affecting Selection of Control Equipment – Working principle, Design and performance equations of absorption, Adsorption, condensation, Incineration, Bio scrubbers, Bio filters – Process control and Monitoring - Operational Considerations.

UNITV INDOOR AIRQUALITY MANAGEMENT 10

Sources, types and control of indoor air pollutants, sick building syndrome and Building related illness- Sources and Effects of Noise Pollution – Measurement – Standards –Control and Preventive measures.

TOTAL: 45 PERIODS

OUTCOMES:

The students completing the course will have

- an understanding of the nature and characteristics of air pollutants, noise pollution and basic concepts of air quality management
- ability to identify, formulate and solve air and noise pollution problems
- ability to design stacks and particulate air pollution control devices to meet applicable standards.
- Ability to select control equipments.
- Ability to ensure quality, control and preventive measures.

TEXTBOOKS:

1. Lawrence K. Wang, Norman C. Pareira, Yung Tse Hung, "Air Pollution Control

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Engineering", Tokyo, springer science + science mediaLLC,2004.
2. Noel de Nevers, "Air Pollution Control Engineering", Waveland press,Inc2017.
3. Anjaneyulu. Y, "Air Pollution and Control Technologies" , Allied Publishers (P) Ltd., India 2002.

REFERENCES:

1. David H.F. Liu, Bela G. Liptak, "Air Pollution", Lweis Publishers,2000.
2. Arthur C. Stern, "Air Pollution (Vol.I – Vol.VIII)", Academic Press,2006.
3. Wayne T.Davis, "Air Pollution Engineering Manual", John Wiley & Sons, Inc,2000.
4. M.N Rao and HVN Rao, "Air Pollution",Tata Mcgraw Hill Publishing Companylimited,2007.
5. C.S.Rao, "Environmental Pollution Control Engineering",New Age International(P) Limited Publishers,2006.

OAI551 ENVIRONMENTAND AGRICULTURE L T P C

3 0 0 3

OBJECTIVE:

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

UNITI ENVIRONMENTAL CONCERNS

8

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

UNITII ENVIRONMENTAL IMPACTS **9**

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

UNITIII CLIMATE CHANGE

8

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

UNITIV ECOLOGICAL DIVERSITYANDAGRICULTURE **10**

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

UNITV EMERGINGISSUES

10

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

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its impacts – Sustainable agriculture.

TOTAL: 45 PERIODS

OUTCOMES:

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

TEXTBOOKS:

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

REFERENCES:

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

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GE8074 **HUMAN RIGHTS** **L T P C**

3 0 0 3

OBJECTIVE :

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

UNIT I **9**

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

UNIT II **9**

Evolution of the concept of Human Rights Magana 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:

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

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GE8076 **PROFESSIONAL ETHICS IN ENGINEERING**

L T P C

3 0 0 3

OBJECTIVES:

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

UNIT I HUMAN VALUES **10**

Morals, values and Ethics – Integrity – Work ethic – Service learning – Civic virtue – Respect for others – Living peacefully – Caring – Sharing – Honesty – Courage – Valuing time – Cooperation – Commitment – Empathy – Self confidence – Character – Spirituality – Introduction to Yoga and meditation for professional excellence and stress management.

UNIT II ENGINEERING ETHICS **9**

Senses of _Engineering Ethics' – Variety of moral issues – Types of inquiry – Moral dilemmas – Moral Autonomy – Kohlberg's theory – Gilligan's theory – Consensus and Controversy – Models of professional roles - Theories about right action – Self-interest – Customs and Religion – Uses of Ethical Theories.

UNIT III ENGINEERING AS SOCIAL EXPERIMENTATION **9**

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

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

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

UNIT V GLOBAL ISSUES **8**

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

TOTAL: 45 PERIODS

OUTCOMES:

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

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TEXT BOOKS:

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

REFERENCES:

1. Charles B. Fleddermann, -Engineering Ethicsl, Pearson Prentice Hall, New Jersey, 2004.
2. Charles E. Harris, Michael S. Pritchard and Michael J. Rabins, -Engineering Ethics – Concepts and Casesl, Cengage Learning, 2009.
3. John R Boatright, -Ethics and the Conduct of Businessl, Pearson Education, New Delhi, 2003
4. Edmund G Seebauer and Robert L Barry, -Fundamentals of Ethics for Scientists and Engineersl, Oxford University Press, Oxford, 2001.
5. Laura P. Hartman and Joe Desjardins, -Business Ethics: Decision Making for Personal Integrity and Social Responsibilityl Mc Graw Hill education, India Pvt. Ltd.,New Delhi, 2013.
6. World Community Service Centre, _ Value Education', Vethathiri publications, Erode, 2011.

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OBT551	INTRODUCTION TO BIOENERGY AND BIOFUELS	L T P C 3 0 0 3

OBJECTIVE:

- This course will be focussed on achievement, acquisition of knowledge and enhancement of comprehension of information regarding bioenergy and biofuel technologies and their sustainable applications.

UNIT I CONCEPTS 9

Biopower, Bioheat, Biofuesl, advanced liquid fuels, drop-in fuels, biobased products

UNIT II FEEDSTOCKS 9

Harvested Feedstocks: First generation biofuels, Second generation biofuels, third generation biofuels. Residue Feedstocks: Agricultural wastes, forestry wastes, farm waste, organic components of residential, commercial, institutional and insdustrial waste.

UNIT III CONVERSION TECHNOLOGIES 9

Biorefinery concept — biorefineries and end products, Biochemical conversion — hydrolysis, enzyme and acid hydrolysis, fermentation, anaerobic digestion and trans-esterification, Thermochemical conversion — Combustion, Gasification, Pyrolysis, other thermochemical conversion technologies. Scaling up of emerging technologies.

UNIT IV BIOFUELS 9

Pros and cons of Biofuels, Algal biofuels, Cyanobacteria and producers of biofuels, Jatropha as biodiesel producer, Bioethanol, Biomethane, biohydrogen, biobutanol, metabolic engineering of fuel molecules, Engineering aspects of biofuels, Economics of biofuels.

UNIT V SUSTAINABILITY & RESILIENCE 9

Environmental Sustainability, bioenergy sustainability, emissions of biomass to power generation applications, emissions from biofuels. ILUC issues, Carbon footprint, Advanced low carbon fuels.

TOTAL : 45 PERIODS

TEXTBOOKS:

1. Biorenewable Resources — Engineering new products. Robert C Brown. Blackwell Publishing Professional, 2003.
2. Biofuels. Wim Soetaert and Erik Vandamme (Editors) Wiley. 2009.
3. Biomass for Renewable Energy, Fuels and Chemicals. Donald Klass. Academic press. 1998

REFERENCES:

1. Introduction to Bioenergy.Vaughn C.Nelson and Kenneth L.Starcher
2. Bioenergy: Biomass to Biofuels by by Anju Dahiya
3. Bioenergy: Principles and Applications by Yebo Li and Samir Kumar Khanal
4. Bioenergy by Judy D. Wall and Caroline S. Harwood
5. Bioenergy: Sustainable Perspectives by Ted Weyland

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ORO551	RENEWABLE ENERGY SOURCES	L T P C 3 0 0 3

OBJECTIVES:

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

UNIT I PRINCIPLES OF SOLAR RADIATION **10**

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

UNIT II SOLAR ENERGY COLLECTION **8**

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

UNIT III SOLAR ENERGY STORAGE AND APPLICATIONS **7**

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

UNIT IV WIND ENERGY **10**

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

UNIT V GEOTHERMAL ENERGY: **9**

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

TOTAL : 45 PERIODS

OUTCOMES:

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

TEXT BOOKS:

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

REFERENCES:

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

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OGI751 **CLIMATE CHANGE AND ITS IMPACT** L T P C
3 0 0 3

OBJECTIVES:

- To understand the basics of weather and climate
- To have an insight on Atmospheric dynamics and transport of heat
- To develop simple climate models and evaluate climate changes using models

UNIT I BASICS OF WEATHER AND CLIMATE: 9

Shallow film of Air- stratified & disturbed atmosphere - law - atmosphere Engine. Observation of parameters: Temperature – Humidity – Wind - Pressure – precipitation-surface – networks. Constitution of atmosphere: well stirred atmosphere - process around turbopause - in dry air - ozone – carbon Dioxide - Sulphur Dioxide- Aerosol - water. Evolution of Atmosphere. State of atmosphere: Air temperature - pressure - hydrostatic - Chemistry - Distribution - circulation

UNIT II ATMOSPHERIC DYNAMICS: 9

Atmosphere dynamics: law - isobaric heating and cooling - adiabatic lapse rates - equation of motion - solving and forecasting. Forces - Relative and absolute acceleration - EARTH'S rotation *CORIOLIS* on sphere - full equation of motion - Geostrophy;- Thermal winds -departures - small-scale motion. Radiation, convection and advections: sun & solar radiation - energy balance - terrestrial radiation and the atmosphere - Green house effect- Global warming - Global budget - radiative fluxes - heat transport. Atmosphere and ocean systems convecting & advecting heat. Surface and boundary layer – smaller scale weather system - larger scale weather system.

UNIT III GLOBAL CLIMATE 9

Components and phenomena in the climate system: Time and space scales - interaction and parameterization problem. Gradients of Radiative forcing and energy transports by atmosphere and ocean – atmospheric circulation – latitude structure of the circulation - latitude – longitude dependence of climate features. Ocean circulation: latitude - longitude dependence of climate features - ocean vertical structure - ocean *THERMOHALINE* circulation - land surface processes - carbon cycle.

UNIT IV CLIMATE SYSTEM PROCESSES 9

Conservation of motion: Force – *CORIOLIS* - pressure gradient- velocity equations - Application - geotropic wind - pressure co-ordinates. Equation of State - atmosphere - ocean. Application: thermal circulation - sea level rise. Temperature equation: Ocean - air - Application - decay of sea surface temperature. Continuity equation: ocean - atmosphere. Application: coastal upwelling - equatorial upwelling – conservation of warm water mass. Moisture and salinity equation: conservation of mass – moisture. Source & sinks – latent heat. Moist processes – saturation – convection - Wave processes in atmosphere and ocean.

UNIT V CLIMATE CHANGE MODELS 9

Constructing a climate model - climate system modeling - climate simulation and drift - Evaluation of climate model simulation - regional (RCM) - global (GCM) - Global average response to warming - climate change observed to date. .

TOTAL : 45 PERIODS

OUTCOMES:

AT THE END OF THE COURSE THE STUDENT WILL BE ABLE TO UNDERSTAND

- The concepts of weather and climate
- The principles of Atmospheric dynamics and transport of heat and air mass
- The develop simple climate models and to predict climate change

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TEXTBOOKS:

1. Fundamentals of weather and climate (2nd Edition) Robin Moilveen (2010), Oxford University Press
2. Climate change and climate modeling, J. David Neelin (2011) Cambridge University press.

OEN751	GREEN BUILDING DESIGN	L T P C 3 0 0 3

UNIT I ENVIRONMENTAL IMPLICATIONS OF BUILDINGS **9**

Energy use, carbon emissions, water use, waste disposal; Building materials: sources, methods of production and environmental Implications. Embodied Energy in Building Materials: Transportation Energy for Building Materials; Maintenance Energy for Buildings.

UNIT II IMPLICATIONS OF BUILDING TECHNOLOGIES EMBODIED ENERGY OF BUILDINGS **9**

Framed Construction, Masonry Construction. Resources for Building Materials, Alternative concepts. Recycling of Industrial and Buildings Wastes. Biomass Resources for buildings.

UNIT III COMFORTS IN BUILDING **9**

Thermal Comfort in Buildings- Issues; Heat Transfer Characteristic of Building Materials and Building Techniques. Incidence of Solar Heat on Buildings-Implications of Geographical Locations.

UNIT IV UTILITY OF SOLAR ENERGY IN BUILDINGS **9**

Utility of Solar energy in buildings concepts of Solar Passive Cooling and Heating of Buildings. Low Energy Cooling. Case studies of Solar Passive Cooled and Heated Buildings.

UNIT V GREEN COMPOSITES FOR BUILDINGS **9**

Concepts of Green Composites. Water Utilisation in Buildings, Low Energy Approaches to Water Management. Management of Solid Wastes. Management of Sullage Water and Sewage. Urban Environment and Green Buildings. Green Cover and Built Environment.

TOTAL: 45 PERIODS

TEXT BOOKS:

1. K.S.Jagadish, B. U. Venkataramareddy and K. S. Nanjundarao. Alternative Building Materials and Technologies. New Age International, 2007.
2. Low Energy Cooling For Sustainable Buildings. John Wiley and Sons Ltd, 2009.
3. Sustainable Building Design Manual. Vol 1 and 2, Teri, New Delhi, 2004.

REFERENCES:

1. Osman Attmann Green Architecture Advanced Technologies and Materials. McGraw Hill, 2010.
2. Jerry Yudelson Green building Through Integrated Design. McGraw Hill, 2009.
3. Fundamentals of Integrated Design for Sustainable Building By Marian Keeler, Bill Burke

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ME8072	RENEWABLE SOURCES OF ENERGY	L	T	P	C
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OBJECTIVE:

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

UNIT I INTRODUCTION 9

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

UNIT II SOLAR ENERGY 9

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

UNIT III WIND ENERGY 9

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

UNIT IV BIO - ENERGY 9

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

UNIT V OTHER RENEWABLE ENERGY SOURCES 9

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

TOTAL : 45 PERIODS

OUTCOMES:

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

CO1 Discuss the importance and Economics of renewable Energy
CO2 Discuss the method of power generation from Solar Energy
CO3 Discuss the method of power generation from Wind Energy
CO4 Explain the method of power generation from Bio Energy
CO5 Explain the Tidal energy, Wave Energy, OTEC, Hydro energy, Geothermal Energy, Fuel Cells and Hybrid Systems.

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TEXT BOOKS:

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

REFERENCES:

1. Chetan Singh Solanki, Solar Photovoltaics, "Fundamentals, Technologies and Applications", PHI Learning Private Limited, New Delhi, 2015.
2. David M. Mousdale – "Introduction to Biofuels", CRC Press, Taylor & Francis Group,

USA2017
3. Freris. L.L., "Wind Energy Conversion Systems", Prentice Hall, UK, 1990.
4. Godfrey Boyle, "Renewable Energy, Power for a Sustainable Future", Oxford University Press, U.K., 2012.
5. Johnson Gary, L. "Wind Energy Systems", Prentice Hall, New York, 1985.

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MC5006 **PROFESSIONAL ETHICS** L T P C
3 0 0 3

OBJECTIVES:

- To Understand the concepts of computer ethics in work environment.
- To understand the threats in computing environment
- To Understand the intricacies of accessibility issues
- To ensure safe exits when designing the software projects

UNIT I COMPUTER ETHICS INTRODCUTION AND COMPUTER HACKING 9

A general Introduction – Computer ethics: an overview – Identifying an ethical issue – Ethics and law – Ethical theories - Professional Code of conduct – An ethical dilemma – A framework for ethical decision making - Computer hacking – Introduction – definition of hacking – Destructive programs – hacker ethics - Professional constraints – BCS code of conduct – To hack or not to hack? – Ethical positions on hacking.

UNIT II ASPECTS OF COMPUTER CRIME AND INTELLECTUAL PROPERTY RIGHTS 9

Aspects of computer crime - Introduction - What is computer crime – computer security measures – Professional duties and obligations - Intellectual Property Rights – The nature of Intellectual property – Intellectual Property – Patents, Trademarks, Trade Secrets, Software Issues, Copyright - The extent and nature of software piracy – Ethical and professional issues – free software and open source code.

UNIT III REGULATING INTERNET CONTENT, TECHNOLOGY AND SAFETY 9

Introduction – In defence of freedom expression – censorship – laws upholding free speech – Free speech and the Internet - Ethical and professional issues - Internet technologies and privacy – Safety and risk – assessment of safety and risk – risk benefit analysis – reducing risk.

UNIT IV COMPUTER TECHNOLOGIES ACCESSIBILITY ISSUES 9

Introduction – Principle of equal access – Obstacles to access for individuals – professional responsibility - Empowering computers in the workplace – Introduction – computers and employment – computers and the quality of work – computerized monitoring in the work place – telecommuting – social, legal and professional issues - Use of Software, Computers and Internet-based Tools - Liability for Software errors - Documentation Authentication and Control – Software engineering code of ethics and practices – IEEE-CS – ACM Joint task force.

UNIT V SOFTWARE DEVELOPMENT AND SOCIAL NETWORKING 9

Software Development – strategies for engineering quality standards – Quality management standards – Social Networking – Company owned social network web site – the use of social networks in the hiring process – Social Networking ethical issues – Cyber bullying – cyber stalking – Online virtual world – Crime in virtual world - digital rights management - Online defamation – Piracy – Fraud.

TOTAL : 45 PERIODS

OUTCOMES:

- Helps to examine situations and to internalize the need for applying ethical principles, values to tackle with various situations.
- Develop a responsible attitude towards the use of computer as well as the technology.
- Able to envision the societal impact on the products/ projects they develop in the career
- Understanding the code of ethics and standards of computer professionals

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- Analyze the professional responsibility and empowering access to information in the work place.

REFERENCES:

1. Caroline Whitback," Ethics in Engineering Practice and Research ", Cambridge University Press, 2011.
2. George Reynolds, "Ethics in Information Technology", Cengage Learning, 2011.
3. John Weckert and Douglas Adeney, Computer and Information Ethics, Greenwood Press, 1997.
4. Penny Duquenoy, Simon Jones and Barry G Blundell, "Ethical , legal and professional issues in computing", Middlesex University Press, 2008.
5. Richard Spinello, "Case Studies in Information and Computer Ethics", Prentice Hall, 1997.
6. Sara Baase, "A Gift of Fire: Social, Legal, and Ethical Issues for Computing and the
7. http://www.infosectoday.com/Articles/Intro_Computer_Ethics.html

MC5009	HUMAN RESOURCE MANAGEMENT	L	T	P	C
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OBJECTIVES:

- To understand the importance of human resources.
- To describe the steps involved in the human resource planning process
- To understand the stages of employee socialization and training needs.
- To know about the purposes of performance management systems and appraisal.
- To know the list of occupational safety and health administration enforcement priorities

UNIT I UNDERSTANDING HRM WITH LEGAL & ETHICAL CONTEXT **9**

Introduction- Importance of HRM – functions – Structure of HRM Department-Trends and opportunities – External Influences Affect HRM- HRM in global environment – The Changing World of Technology- HR & Corporate Ethics – Equal Employment Opportunities -Laws Affecting discriminatory practices – Enforcing Equal Opportunity Employment-Discipline & Employee Rights.

UNIT II STAFFING, RECRUITING AND FOUNDATIONS OF SELECTION **9**

Introduction – An Organizational Framework- Job analysis -Methods -Purpose– Recruiting Goals – Recruiting Sources – Recruiting A Global Perspective- Selection Process – Selection from Global Perspective- job offers – Avoiding hiring mistakes - key element for successful predictors.

UNIT III TRAINING AND DEVELOPMENT **9**

Introduction – Socialization Process-Purpose of New employee orientation, Employee

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training- Employee Development– Organization development Calm Waters Metaphor – White-Water Rapids Metaphor – Evaluating training and Development Effectiveness-international training and development issues – Career Development -Value for organization and individual – mentoring and coaching – traditional career stages.

UNIT IV PERFORMANCE EVALUATION, REWARDS AND BENEFITS 9

Appraisal process – methods – factors distort appraisal – team appraisal – international appraisal —rewards –Theories of motivation - compensation administration – job evaluation and pay structure – special cases of compensation – executive compensation programs – employee benefits Voluntary Benefits- International Compensation.

UNIT V SAFE AND HEALTHY WORK ENVIRONMENT 9

Occupational safety and health act -Contemporary Health and Safety Issues –Employee assistance program – International Safety & Health -labor management - employee unions – labor legislation- Unionizing Employees- Collective Bargaining.

TOTAL : 45 PERIODS

OUTCOMES:

- Identify the primary external influences affecting HRM.
- Outline the components and the goals of staffing, training and development.
- Understand the selection procedure in various organizations.
- Understand the practices used to retain the employees and able to evaluate their performance.
- Able to identify the stress and the cause of burn out

REFERENCES:

1. Biswajeet Pattanayak, Human Resource Management, Prentice Hall of India, 2001
2. Decenzo and Robbins, Human Resource Management, Wilsey, 10th edition, 2010
3. Dessler Human Resource Management, Pearson Education Limited, 2002
4. Human Resource Management, Eugence Mckenna and Nic Beach, Pearson Education Limited, 2002
5. Ivancevich, Human Resource Management, McGraw Hill 2002.
6. Mamoria C.B. and Mamoria S.Personnel Management, Himalaya Publishing Company, 1997.
7. Wayne Cascio, Managing Human Resource, McGraw Hill, 1998.

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BA5201	APPLIED OPERATIONS RESEARCH	L T P C
		3 0 0 3

OBJECTIVE:

□ To learn the concepts of operations research applied in business decision making.

UNIT I INTRODUCTION TO LINEAR PROGRAMMING (LP) 9

Introduction to applications of operations research in functional areas of management. Linear Programming-formulation, solution by graphical and simplex methods (Primal - Penalty, Two Phase), Special cases. Dual simplex method. Principles of Duality. Sensitivity Analysis.

UNIT II LINEAR PROGRAMMING EXTENSIONS 9

Transportation Models (Minimising and Maximising Problems) – Balanced and unbalanced Problems – Initial Basic feasible solution by N-W Corner Rule, Least cost and Vogel's approximation methods. Check for optimality. Solution by MODI / Stepping Stone method. Case of Degeneracy. Transhipment Models. Assignment Models (Minimising and Maximising Problems) – Balanced and Unbalanced Problems. Solution by Hungarian and Branch and Bound Algorithms. Travelling Salesman problem. Crew Assignment Models.

UNIT III INTEGER PROGRAMMING AND GAME THEORY 9

Solution to pure and mixed integer programming problem by Branch and Bound and cutting plane algorithms. Game Theory-Two person Zero sum games-Saddle point, Dominance Rule, Convex Linear Combination (Averages), methods of matrices, graphical and LP solutions.

UNIT IV INVENTORY MODELS, SIMULATION AND DECISION THEORY 9

Inventory Models – EOQ and EBQ Models (With and without shortages), Quantity Discount Models. Decision making under risk – Decision trees – Decision making under uncertainty. Monte-carlo simulation.

UNIT V QUEUING THEORY AND REPLACEMENT MODELS 9

Queuing Theory - single and Multi-channel models – infinite number of customers and infinite calling source. Replacement Models-Individuals replacement Models (With and without time value of money) – Group Replacement Models.

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TOTAL: 45 PERIODS

OUTCOME:

□ To facilitate quantitative solutions in business decision making under conditions of certainty, risk and uncertainty.

REFERENCES :

1. Paneerselvam R., Operations Research, Prentice Hall of India, Fourth Print, 2008.
2. N. D Vohra, Quantitative Techniques in Management,Tata Mcgraw Hill, 2010.
3. Hamdy A Taha, Introduction to Operations Research, Prentice Hall India, Ninth Edition, 2010.
4. Anderson , Sweeney Williams Solutions Manual to Accompany AnIntroduction to Management Science Quantitative Approaches To Decision, Cengage , 12th edition , 2012
5. G. Srinivasan, Operations Research – Principles and Applications, II edition , PHI, 2010.
6. Bernard W.Taylor ,Introduction to Management Science , 12 th edition, 2012

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BA5205 **INFORMATION MANAGEMENT** **L T P C**

3 0 0 3

OBJECTIVES :

- To understand the importance of information in business
- To know the technologies and methods used for effective decision making in an organization.

UNIT I INTRODUCTION 10

Data, Information, Intelligence, Information Technology, Information System, evolution, types based on functions and hierarchy, System development methodologies, Functional Information Systems, DSS, EIS, KMS, GIS, International Information System.

UNIT II SYSTEM ANALYSIS AND DESIGN 10

Case tools - System flow chart, Decision table, Data flow Diagram (DFD), Entity Relationship (ER), Object Oriented Analysis and Design(OOAD), UML diagram.

UNIT III DATABASE MANAGEMENT SYSTEMS 9

DBMS – HDBMS, NDBMS, RDBMS, OODBMS, Query Processing, SQL, Concurrency Management, Data warehousing and Data Mart

UNIT IV SECURITY, CONTROL AND REPORTING 8

Security, Testing, Error detection, Controls, IS Vulnerability, Disaster Management, Computer Crimes, Securing the Web, Intranets and Wireless Networks, Software Audit, Ethics in IT, User Interface and reporting.

UNIT V NEW IT INITIATIVES 8

Role of information management in ERP, e-business, e-governance, Data Mining, Business Intelligence, Pervasive Computing, Cloud computing, CMM.

TOTAL: 45 PERIODS

OUTCOME

- Gains knowledge on effective applications of information systems in business

REFERENCES :

1. Robert Schultheis and Mary Summer, Management Information Systems – The Managers View, Tata McGraw Hill, 2008.

2. Kenneth C. Laudon and Jane Price Laudon, Management Information Systems – Managing the digital firm, PHI Learning / Pearson Education, PHI, Asia, 2012.

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3. Rahul de, MIS in Business, Government and Society, Wiley India Pvt Ltd, 2012

4. Gordon Davis, Management Information System : Conceptual Foundations, Structure and Development, Tata McGraw Hill, 21st Reprint 2008.

5. Haag, Cummings and Mc Cubbrey, Management Information Systems for the Information Age, McGraw Hill, 2005. 9th edition, 2013.

6. Turban, McLean and Wetherbe, Information Technology for Management –Transforming Organisations in the Digital Economy, John Wiley, 6th Edition, 2008.

7. Raymond McLeod and Jr. George P. Schell, Management Information Systems,Pearson Education, 2007.

8. James O Brien, Management Information Systems – Managing Information Technology in the E-business enterprise, Tata McGraw Hill, 2004.

9. Raplh Stair and George Reynolds, Information Systems, Cengage Learning, 10th Edition, 2012

10. Corey Schou and Dan Shoemaker, Information Assurance for the Enterprise – A Roadmap to Information Security, Tata McGraw Hill, 2007.

11. Frederick Gallegor, Sandra Senft, Daniel P. Manson and Carol Gonzales,Information Technology Control and Audit, Auerbach Publications, 4th Edition, 2013.

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BA5211 **DATA ANALYSIS AND BUSINESS MODELING** **L T P C**

0 0 4 2

OBJECTIVE :

□ to have hands-on experience on decision modeling.

[Business models studied in theory to be practiced using Spreadsheet / Analysis Software]

S.No.	Exp. No.	Details of experiments	Duration
Name			
1	1	Descriptive Statistics	4
2	2	Hypothesis - Parametric	4
3	3	Hypothesis – Non-parametric	4
4	4	Correlation & Regression	4
5	5	Forecasting	4
6	-	Extended experiment – 1	4
7	6	Portfolio Selection	4
8	7	Risk Analysis & Sensitivity Analysis	4
9	8	Revenue Management	4
10	-	Extended experiment – 2	4
11	9	Transportation & Assignment	4
12	10	Networking Models	4
13	11	Queuing Theory	4

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14	12	Inventory Models	4
15	-	Extended experiments – 3	4

□ Spreadsheet Software and
□ Data Analysis Tools

TOTAL: 60 PERIODS

OUTCOME

□ Knowledge of spreadsheets and data analysis software for business modeling.

TEXTBOOKS

1. David M. Levine et al, "Statistics for Managers using MS Excel' (6th Edition) Pearson, 2010
2. David R. Anderson, et al, 'An Introduction to Management Sciences: Quantitative approaches to Decision Making, (13th edition) South-Western College Pub, 2011.
3. Hansa Lysander Manohar , " Data Analysis and Business Modelling using MS Excel ",PHI Learning private Ltd, 2017.
4. William J. Stevenson, Ceyhun Ozgur, 'Introduction to Management Science with Spreadsheet', Tata McGraw Hill, 2009.
5. Wayne L. Winston, Microsoft Excel 2010: Data Analysis & Business Modeling, 3rd edition, Microsoft Press, 2011.
6. Vikas Gupta, Comdex Business Accounting with Ms Excel, 2010 and Tally ERP 9.0 Course Kit, Wiley India, 2012
7. Kiran Pandya and Smriti Bulsari, SPSS in simple steps, Dreamtech, 2011.

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BA5015 INDUSTRIAL RELATIONS AND LABOUR WELFARE L T P C

3 0 0 3

OBJECTIVE:

 To explore contemporary knowledge and gain a conceptual understanding of industrial relations.

UNIT I INDUSTRIAL RELATIONS 7

Concepts – Importance – Industrial Relations problems in the Public Sector – Growth of Trade Unions – Codes of conduct. 42

UNIT II INDUSTRIAL CONFLICTS 12

Disputes – Impact – Causes – Strikes – Prevention – Industrial Peace – Government Machinery – Conciliation – Arbitration – Adjudication.

UNIT III LABOUR WELFARE 8

Concept – Objectives – Scope – Need – Voluntary Welfare Measures – Statutory Welfare Measures – Labour – Welfare Funds – Education and Training Schemes.

UNIT IV INDUSTRIAL SAFETY 9

Causes of Accidents – Prevention – Safety Provisions – Industrial Health and Hygiene – Importance – Problems – Occupational Hazards – Diseases – Psychological problems – Counseling – Statutory Provisions.

UNIT V WELFARE OF SPECIAL CATEGORIES OF LABOUR 9

Child Labour – Female Labour – Contract Labour – Construction Labour – Agricultural Labour – Differently abled Labour –BPO & KPO Labour - Social Assistance – Social Security – Implications.

TOTAL: 45 PERIODS

OUTCOME:

 Students will know how to resolve industrial relations and human relations problems and promote welfare of industrial labour.

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REFERENCES :

1. Mamoria C.B., Sathish Mamoria, Gankar, Dynamics of Industrial Relations, Himalaya Publishing House, New Delhi, 2012.

2. Arun Monappa, Ranjeet Nambudiri, Patturaja Selvaraj. Industrial relations & Labour Laws. Tata McGraw Hill. 2012.

3. Ratna Sen, Industrial Relations in India, Shifting Paradigms, Macmillan India Ltd., New Delhi, 2007.

4. C.S.Venkata Ratnam, Globalisation and Labour Management Relations, Response Books, 2007.

5. Srivastava, Industrial Relations and Labour laws, Vikas, 2007.

6. P.N.Singh, Neeraj Kumar. Employee relations Management. Pearson. 2011.

7. P.R.N Sinha, Indu Bala Sinha, Seema Priyardarshini Shekhar. Industrial Relations, Trade Unions and Labour Legislation. Pearson. 2004

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BA5016 **LABOUR LEGISLATIONS** **L T P C**

3 0 0 3

OBJECTIVE:

 To have a broad understanding of the legal principles governing the employment relationship at individual and collective level.

 To familarise the students to the practical problems inherent in the implementation of labour statutes.

Contained in the following acts are to be studied.

Periods

1. The Factories Act, 1948 3
2. The Trade Unions Act, 1926 4
3. The Payment of Wages Act, 1936 3
4. The Minimum Wages Act, 1948 2
5. The Industrial Disputes Act, 1947 5
6. The Workmen's Compensation Act, 1923 2
7. The Payment of Gratuity Act, 1972 3 43
8. The Payment of Bonus Act, 1965 3
9. The Employee's Provident Fund & Misc. Act, 1952 3
10. The Employees State Insurance Act, 1948 4
11. The Industrial Employment (Standing Orders) Act, 1946 3
12. The Apprentices Act, 1961 2
13. The Equal Remuneration Act, 1976 2
14. The Maternity Benefit Act, 1961 2
15. Contract Labour Regulations and Abolition Act, 1970 2
16. The Child Labour Prevention and Regulation Act, 1986 2

TOTAL: 45 PERIODS

OUTCOMES:

 To appreciate the application of labour laws.

 Legal Provision relating to

a) Wages

b) Working Conditions and Labour Welfare

c) Industrial Relations

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d) Social Security

REFERENCES :

1. P.K. Padhi, Industrial Laws, PHI, 2008.

2. Kapoor N. D , Elements of Mercantile Law, Sultan Chand, 2008

3. Tax Mann, Labour Laws, 2008.

4. D. R. N. Sinha, Indu Balasinha & Semma Priyadarshini Shekar, Industrial Relation,Trade unions and Labour Legislation, 2004.

5. Arun Monappa, Ranjeet Nambudiri, Patturaja Selvaraj. Industrial relations & Labour Laws. Tata McGraw Hill. 2012

6. Srivastava, Industrial Relations and Labour laws, Vikas, 2007.

7. Respective Bare Acts.

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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 (OHASMS). 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.
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.

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REFERENCES

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

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NCC Credit Course Level 1*

NX3251	(ARMY WING) NCC Credit Course Level - I	L	T	P	C
		2	0	0	2

NCC GENERAL		**6**
NCC 1	Aims, Objectives & Organization of NCC	1
NCC 2	Incentives	2
NCC 3	Duties of NCC Cadet	1
NCC 4	NCC Camps: Types & Conduct	2
NATIONAL INTEGRATION AND AWARENESS		**4**
NI 1	National Integration: Importance & Necessity	1
NI 2	Factors Affecting National Integration	1
NI 3	Unity in Diversity & Role of NCC in Nation Building	1
NI 4	Threats to National Security	1
PERSONALITY DEVELOPMENT		**7**
PD 1	Self-Awareness, Empathy, Critical & Creative Thinking, Decision Making and Problem Solving	2
PD 2	Communication Skills	3
PD 3	Group Discussion: Stress & Emotions	2
LEADERSHIP		**5**
L 1	Leadership Capsule: Traits, Indicators, Motivation, Moral Values, Honour Code	3
L 2	Case Studies: Shivaji, Jhasi Ki Rani	2
SOCIAL SERVICE AND COMMUNITY DEVELOPMENT		**8**
SS 1	Basics, Rural Development Programmes, NGOs, Contribution of Youth	3
SS 4	Protection of Children and Women Safety	1
SS 5	Road / Rail Travel Safety	1
SS 6	New Initiatives	2
SS 7	Cyber and Mobile Security Awareness	1

TOTAL : 30 PERIODS

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MANDATORY COURSES I

MX3081 INTRODUCTION TO WOMEN AND GENDER STUDIES **L T P C**
3 0 0 0

COURSE OUTLINE

UNIT I CONCEPTS

Sex vs. Gender, masculinity, femininity, socialization, patriarchy, public/ private, essentialism, binaryism, power, hegemony, hierarchy, stereotype, gender roles, gender relation, deconstruction, resistance, sexual division of labour.

UNIT II FEMINIST THEORY

Liberal, Marxist, Socialist, Radical, Psychoanalytic, postmodernist, ecofeminist.

UNIT III WOMEN'S MOVEMENTS: GLOBAL, NATIONAL AND LOCAL

Rise of Feminism in Europe and America.Women"s
Movement in India.

UNIT IV GENDER AND LANGUAGE

Linguistic Forms and Gender.Gender and narratives.

UNIT V GENDER AND REPRESENTATION

Advertising and popular visual media.Gender and Representation in Alternative Media.Gender and social media.

TOTAL : 45 PERIODS

MX3082 ELEMENTS OF LITERATURE **L T P C**
3 0 0 0

COURSE OBJECTIVE:

- To make the students aware about the finer sensibilities of human existence through an art form. The students will learn to appreciate different forms of literature as suitable modes of expressing human experience.

1. COURSE CONTENTS

Introduction to Elements of Literature

1. Relevance of literature

a) Enhances Reading, thinking, discussing and writing skills.

b) Develops finer sensibility for better human relationship.

c) Increases understanding of the problem of humanity without bias.

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d) Providing space to reconcile and get a cathartic effect.

2. Elements of fiction

a) Fiction, fact and literary truth.

b) Fictional modes and patterns.

c) Plot character and perspective.

3. Elements of poetry

a) Emotions and imaginations.

b) Figurative language.

c) (Simile, metaphor, conceit, symbol, pun and irony).

d) Personification and animation.

e) Rhetoric and trend.

4. Elements of drama

a) Drama as representational art.

b) Content mode and elements.

c) Theatrical performance.

d) Drama as narration, mediation and persuasion.

e) Features of tragedy, comedy and satire.

3. READINGS:

1. An Introduction to the Study of English Literature, W.H. Hudson, Atlantic, 2007.

2. An Introduction to Literary Studies, Mario Klarer, Routledge, 2013.

3. The Experience of Poetry, Graham Mode, Open college of Arts with Open Unv Press,1991.

4. The Elements of Fiction: A Survey, Ulf Wolf (ed), Wolfstuff, 2114.

5. The Elements of Drama, J.L.Styan, Literary Licensing, 2011.

Textbook:

*Reference Books:: To be decided by the teacher and student, on the basis of individual studentso as to enable him or her to write the term paper.

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4. OTHER SESSION:

*Tutorials:

*Laboratory:

*Project: The students will write a term paper to show their understanding of a particular piece ofliterature

5.*ASSESSMENT:

HA:

Quizzes-HA:

Periodical Examination: one

Project/Lab: one (under the guidance of the teachers the students will take a volume of poetry, fiction or drama and write a term paper to show their understanding of it in a given context; sociological, psychological, historical, autobiographical etc.

Final Exam:

TOTAL : 45 PERIODS

OUTCOME OF THE COURSE:

- Students will be able to understand the relevance of literature in human life and appreciateits aspects in developing finer sensibilities.

MX3083 **FILM APPRECIATION** **L T P C**
3 0 0 0

In this course on film appreciation, the students will be introduced broadly to the development of filmas an art and entertainment form. It will also discuss the language of cinema as it evolved over a century. The students will be taught as to how to read a film and appreciate the various nuances of a film as a text. The students will be guided to study film joyfully.

Theme - A: The Component of Films

A-1: The material and equipment
A-2: The story, screenplay and script
A-3: The actors, crew members, and the director
A-4: The process of film making... structure of a film

Theme - B: Evolution of Film Language

B-1: Film language, form, movement etc.
B-2: Early cinema... **silent film** (Particularly French)
B-3: The emergence of feature films: **Birth of a Nation**
B-4: Talkies

Theme - C: Film Theories and Criticism/Appreciation
C-1: Realist theory; Auteurists
C-2: Psychoanalytic, Ideological, Feminists

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C-3: How to read films?
C-4: Film Criticism / Appreciation

Theme – D: Development of Films

D-1: Representative Soviet films
D-2: Representative Japanese filmsD-
3: Representative Italian films
D-4: Representative Hollywood film and the studio system

Theme - E: Indian Films

E-1: The early era
E-2: The important films made by the directorsE-
3: The regional films
E-4: The documentaries in India

READING:

A Reader containing important articles on films will be prepared and given to the students. Thestudents must read them and present in the class and have discussion on these.

MX3084 DISASTER RISK REDUCTION AND MANAGEMENT L T P C
3 0 0 0

COURSE OBJECTIVE

- To impart knowledge on concepts related to disaster, disaster risk reduction, disaster management
- To acquaint with the skills for planning and organizing disaster response

UNIT I HAZRADS, VULNERABILITY AND DISASTER RISKS 9

Definition: Disaster, Hazard, Vulnerability, Resilience, Risks – Types of Disasters: Natural, Human induced, Climate change induced –Earthquake, Landslide, Flood, Drought, Fire etc – Technological disasters- Structural collapse, Industrial accidents, oil spills -Causes, Impacts including social, Economic, political, environmental, health, psychosocial, etc.- Disaster vulnerability profile of India and Tamil Nadu - Global trends in disasters: urban disasters, pandemics, Complex emergencies, -
-, Inter relations between Disasters and Sustainable development Goals

UNIT II DISASTER RISK REDUCTION (DRR) 9

Sendai Framework for Disaster Risk Reduction, Disaster cycle - Phases, Culture of safety, prevention, mitigation and preparedness community Based DRR, Structural- nonstructural measures, Roles and responsibilities of- community, Panchayati Raj Institutions / Urban Local Bodies (PRIs/ULBs), States, Centre, and other stakeholders- Early Warning System — Advisories from Appropriate Agencies.- Relevance of indigenous Knowledge, appropriate technology and Localresources.

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UNIT III DISASTER MANAGEMENT 9

Components of Disaster Management – Preparedness of rescue and relief, mitigation, rehabilitation and reconstruction- Disaster Risk Management and post disaster management – Compensation

and Insurance- Disaster Management Act (2005) and Policy - Other related policies, plans, programmers and legislation - Institutional Processes and Framework at State and Central Level- (NDMA –SDMA-DDMA-NRDF- Civic Volunteers)

UNIT IV TOOLS AND TECHNOLOGY FOR DISASTER MANAGEMENT 9

Early warning systems -Components of Disaster Relief: Water, Food, Sanitation, Shelter, Health, Waste Management, Institutional arrangements (Mitigation, Response and Preparedness, – Role of GIS and Information Technology Components in Preparedness, Risk Assessment, Response and Recovery Phases of Disaster — Disaster Damage Assessment. - Elements of Climate Resilient Development –Standard operation Procedure for disaster response – Financial planning for disasterManagement

UNIT V DISASTER MANAGEMENT: CASE STUDIES 9

Discussion on selected case studies to analyse the potential impacts and actions in the contest of disasters-Landslide Hazard Zonation: 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.- Field work-Mock drill -

TOTAL : 45 PERIODS

TEXT BOOKS:

1 Taimpo (2016), Disaster Management and Preparedness, CRC Publications

2 Singh R (2017), Disaster Management Guidelines for earthquakes, Landslides, Avalanches andtsunami, Horizon Press Publications

3 Singhal J.P. "Disaster Management", Laxmi Publications, 2010. ISBN-10: 9380386427 ISBN-13: 978-9380386423

4 Tushar Bhattacharya, "Disaster Science and Management", McGraw Hill India Education Pvt. Ltd., 2012. **ISBN-10:** 1259007367, **ISBN-13:** 978-1259007361]

REFERENCES

1. Govt. of India: Disaster Management Act, Government of India, New Delhi, 2005.
2. Government of India, National Disaster Management Policy, 2009.
3. Shaw R (2016), Community based Disaster risk reduction, Oxford University Press

COURSE OUTCOME:

CO1: To impart knowledge on the concepts of Disaster, Vulnerability and Disaster Risk reduction(DRR)

CO2: To enhance understanding on Hazards, Vulnerability and Disaster Risk Assessmentprevention and risk reduction

CO3: To develop disaster response skills by adopting relevant tools and technology

CO4: Enhance awareness of institutional processes for Disaster response in the country and

CO5: Develop rudimentary ability to respond to their surroundings with potential Disaster responsein areas where they live, with due sensitivity

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MANDATORY COURSES II

MX3085 WELL-BEING WITH TRADITIONAL PRACTICES-YOGA, AYURVEDA AND SIDDHA

L T P C
3 0 0 0

COURSE OBJECTIVES:

- To enjoy life happily with fun filled new style activities that help to maintain health also
- To adapt a few lifestyle changes that will prevent many health disorders
- To be cool and handbill every emotion very smoothly in every walk of life
- To learn to eat cost effective but healthy foods that are rich in essential nutrients
- To develop immunity naturally that will improve resistance against many health disorders

UNIT I HEALTH AND ITS IMPORTANCE **2+4**

Health: Definition - Importance of maintaining health - More importance on prevention thantreatment Ten types of health one has to maintain - Physical health - Mental health - Social health - Financial health - Emotional health - Spiritual health - Intellectual health - Relationship health - Environmental health - Occupational/Professional heath.

Present health status - The life expectancy-present status - mortality rate - dreadful diseases - Non-communicable diseases (NCDs) the leading cause of death - 60% - heart disease – cancer – diabetes - chronic pulmonary diseases - risk factors — tobacco — alcohol - unhealthy diet - lack of physical activities.

Types of diseases and disorders - Lifestyle disorders – Obesity – Diabetes - Cardiovascular diseases – Cancer – Strokes – COPD - Arthritis - Mental health issues.

Causes of the above diseases / disorders - Importance of prevention of illness - Takes careof health - Improves quality of life - Reduces absenteeism - Increase satisfaction - Saves time

Simple lifestyle modifications to maintain health - Healthy Eating habits (Balanced diet according to age) Physical Activities (Stretching exercise, aerobics, resisting exercise) - Maintaining BMI-Importance and actions to be taken

UNIT II DIET **4+6**

Role of diet in maintaining health - energy one needs to keep active throughout the day - nutrientsone needs for growth and repair - helps one to stay strong and healthy - helps to prevent diet-relatedillness, such as some cancers - keeps active and - helps one to maintain a healthy weight - helps toreduce risk of developing lifestyle disorders like diabetes — arthritis — hypertension — PCOD — infertility – ADHD – sleeplessness -helps to reduce the risk of heart diseases - keeps the teeth and bones strong.

Balanced Diet and its 7 Components - Carbohydrates – Proteins – Fats – Vitamins – Minerals -Fibre and Water.

Food additives and their merits & demerits - Effects of food additives - Types of food additives - Food additives and processed foods - Food additives and their reactions

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Definition of BMI and maintaining it with diet

Importance - Consequences of not maintaining BMI - different steps to maintain optimal BM

Common cooking mistakes

Different cooking methods, merits and demerits of each method

UNIT III ROLE OF AYURVEDA & SIDDHA SYSTEMS IN MAINTAINING HEALTH 4+4

AYUSH systems and their role in maintaining health - preventive aspect of AYUSH - AYUSH asa soft therapy.

Secrets of traditional healthy living - Traditional Diet and Nutrition - Regimen of Personal and Social Hygiene - Daily routine (Dinacharya) - Seasonal regimens (Ritucharya) - basic sanitation andhealthy living environment - Sadvritta (good conduct) - for conducive social life.

Principles of Siddha & Ayurveda systems - Macrocosm and Microcosm theory - PancheekaranaTheory / (Five Element Theory) 96 fundamental Principles - Uyir Thathukkal (Tri-Dosha Theory) - Udal Thathukkal

Prevention of illness with our traditional system of medicine

Primary Prevention - To decrease the number of new cases of a disorder or illness - Health promotion/education, and - Specific protective measures - Secondary Prevention - To lower the rate of established cases of a disorder or illness in the population (prevalence) - Tertiary Prevention - Todecrease the amount of disability associated with an existing disorder.

UNIT IV MENTAL WELLNESS 3+4

Emotional health - Definition and types - Three key elements: the subjective experience - the physiological response - the behavioral response - Importance of maintaining emotional health - Role of emotions in daily life -Short term and long term effects of emotional disturbances - Leading a healthy life with emotions - Practices for emotional health - Recognize how thoughts influence emotions - Cultivate positive thoughts - Practice self-compassion - Expressing a full range of emotions.

Stress management - Stress definition - Stress in daily life - How stress affects one"s life - Identifying the cause of stress - Symptoms of stress - Managing stress (habits, tools, training, professional help) - Complications of stress mismanagement.

Sleep - Sleep and its importance for mental wellness - Sleep and digestion.

Immunity - Types and importance - Ways to develop immunity

UNIT V YOGA 2+12

Definition and importance of yoga - Types of yoga - How to Choose the Right Kind for individuals according to their age - The Eight Limbs of Yoga - Simple yogasanas for cure and prevention of health disorders - What yoga can bring to our life.

TOTAL : 45 PERIODS

TEXT BOOKS:

1. Nutrition and Dietetics - Ashley Martin, Published by White Word Publications,New York, NY 10001, USA
2. Yoga for Beginners_ 35 Simple Yoga Poses to Calm Your Mind and Strengthen Your Body,by Cory Martin, Copyright © 2015 by Althea Press, Berkeley, California

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REFERENCES:

1. WHAT WE KNOW ABOUT EMOTIONAL INTELLIGENCE How It Affects Learning, Work Relationships, and Our Mental Health, by Moshe Zeidner, Gerald Matthews, and Richard D. Roberts
2. A Bradford Book, The MIT Press, Cambridge, Massachusetts, London, England The Mindful Self-Compassion Workbook, Kristin Neff, Ph.D Christopher Germer, Ph.D, Published by The Guilford Press A Division of Guilford Publications, Inc.370 Seventh

1. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4799645/
2. **Simple lifestyle modifications to maintain health** https://www.niddk.nih.gov/health-information/diet-nutrition/changing-habits-better-health#:~:text=Make%20your%20new%20healthy%20habit,t%20have%20time%20to%20cook.
3. **Read more**: https://www.legit.ng/1163909-classes-food-examples-functions.html
4. https://www.yaclass.in/p/science-state-board/class-9/nutrition-and-health-5926
5. **Benefits of healthy eating** https://www.cdc.gov/nutrition/resources-publications/benefits-of-healthy-eating.html
6. **Food additives** https://www.betterhealth.vic.gov.au/health/conditionsandtreatments/food-additives
7. **BMI** https://www.hsph.harvard.edu/nutritionsource/healthy-weight/ https://www.who.int/europe/news-room/fact-sheets/item/a-healthy-lifestyle---who-recommendations
8. **Yoga** https://www.healthifyme.com/blog/types-of-yoga/ https://yogamedicine.com/guide-types-yoga-styles/ **Ayurveda** : https://vikaspedia.in/health/ayush/ayurveda-1/concept-of-healthy-living-in-ayurveda
9. **Siddha** : http://www.tkdl.res.in/tkdl/langdefault/Siddha/Sid_Siddha_Concepts.asp
10. **CAM :** https://www.hindawi.com/journals/ecam/2013/376327/
11. **Preventive** herbs : https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3847409/

COURSE OUTCOMES:

After completing the course, the students will be able to: **CO1:**Learn the importance of different components of health**CO2**:Gain confidence to lead a healthy life

CO3:Learn new techniques to prevent lifestyle health disorders

CO4:Understand the importance of diet and workouts in maintaining health

MX3086	HISTORY OF SCIENCE AND TECHNOLOGY IN INDIA	L T P C
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UNIT I CONCEPTS AND PERSPECTIVES

Meaning of History

Objectivity, Determinism, Relativism, Causation, Generalization in History; Moral judgment in historyExtent of subjectivity, contrast with physical sciences, interpretation and speculation, causation verses evidence, concept of historical inevitability, Historical Positivism.

Science and Technology-Meaning, Scope and Importance, Interaction of science, technology & society, Sources of history on science and technology in India.

UNIT II HISTORIOGRAPHY OF SCIENCE AND TECHNOLOGY IN INDIA

Introduction to the works of D.D. Kosambi, Dharmpal, Debiprasad Chattopadhyay, Rehman, S. IrfanHabib, Deepak Kumar, Dhruv Raina, and others.

UNIT III SCIENCE AND TECHNOLOGY IN ANCIENT INDIA

Technology in pre-historic period

Beginning of agriculture and its impact on technology Science and Technology during Vedic and Later Vedic timesScience and technology from 1st century AD to C-1200.

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UNIT IV SCIENCE AND TECHNOLOGY IN MEDIEVAL INDIA

Legacy of technology in Medieval India, Interactions with Arabs

Development in medical knowledge, interaction between Unani and Ayurveda and alchemyAstronomy and Mathematics: interaction with Arabic Sciences

Science and Technology on the eve of British conquest

UNIT V SCIENCE AND TECHNOLOGY IN COLONIAL INDIA

Science and the Empire

Indian response to Western Science Growth of

techno-scientific institutions

UNIT VI SCIENCE AND TECHNOLOGY IN A POST-INDEPENDENT INDIA

Science, Technology and Development discourse Shaping of

the Science and Technology Policy Developments in the field

of Science and TechnologyScience and technology in

globalizing India

Social implications of new technologies like the Information Technology and Biotechnology

TOTAL : 45 PERIODS

MX3087 POLITICAL AND ECONOMIC THOUGHT FOR A HUMANE SOCIETY L T P C
3 0 0 0

Pre-Requisite: None. (Desirable: Universal Human Values 1, Universal Human Values 2)

COURSE OBJECTIVES:

- This course will begin with a short overview of human needs and desires and how different political-economic systems try to fullfill them. In the process, we will end with a critique of different systems and their implementations in the past, with possible future directions.

COURSE TOPICS:

Considerations for humane society, holistic thought, human being"s desires, harmony in self,harmony in relationships, society, and nature, societal systems. **(9 lectures, 1 hour each)**

(Refs: A Nagaraj, M K Gandhi, JC Kumarappa)

Capitalism – Free markets, demand-supply, perfect competition, laissez-faire, monopolies,imperialism. Liberal democracy. **(5 lectures)**

(Refs: Adam smith, J S Mill)

Fascism and totalitarianism. World war I and II. Cold war. **(2 lectures)**

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Communism — Mode of production, theory of labour, surplus value, class struggle, dialecticalmaterialism, historical materialism, Russian and Chinese models.

(Refs: Marx, Lenin, Mao, M N Roy) **(5 lectures)**

Welfare state. Relation with human desires. Empowered human beings, satisfaction. **(3 lectures)**

with nature. **(6 lectures)**

(Refs: M K Gandhi, Schumacher, Kumarappa) Essential

elements of Indian civilization. **(3 lectures)**(Refs: Pt

Sundarlal, R C Mazumdar, Dharampal)

Technology as driver of society, Role of education in shaping of society. Future directions. **(4lectures)** (Refs: Nandkishore Acharya, David Dixon, Levis Mumford)

Conclusion (2 lectures)

Total lectures: 39

Preferred Textbooks: See Reference Books

Reference Books: Authors mentioned along with topics above. Detailed reading list will beprovided.

GRADING:

Mid sems	30
End sem	20
Home Assign	10
Term paper	40

TOTAL : 45 PERIODS

COURSE OUTCOME:

- The students will get an understanding of how societies are shaped by philosophy, political and economic system, how they relate to fulfilling human goals & desires with some case studies ofhow different attempts have been made in the past and how they have fared.

MX3088 **STATE, NATION BUILDING AND POLITICS IN INDIA** **L T P C**
3 0 0 0

COURSE OBJECTIVE:

The objective of the course is to provide an understanding of the state, how it works through its mainorgans, primacy of politics and political process, the concept of sovereignty and its changing contours in a globalized world. In the light of this, an attempt will be made to acquaint the students with the main development and legacies of national movement and constitutional development in India, reasons for adopting a Parliamentary-federal system, the broad philosophy of the Constitutionof India and the changing nature of Indian Political System. Challenges/ problems and issues concerning national integration and nation-building will also be discussed in the contemporary context with the aim of developing a future vision for a better India.

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TOPICS:

Understanding the need and role of State and politics.

Development of Nation-State, sovereignty, sovereignty in a globalized world.

Organs of State – Executive, Legislature, Judiciary. Separation of powers, forms of government-unitary-

The idea of India.

1857 and the national awakening.

1885 Indian National Congress and development of national movement – itslegacies.
Constitution making and the Constitution of India.
Goals, objective and philosophy. Why
a federal system?
National integration and nation-building.

Challenges of nation-building – State against democracy (Kothari)New
social movements.
The changing nature of Indian Political System, the future scenario. What can
we do?

OUTCOME OF THE COURSE:

It is expected that this course will make students aware of the theoretical aspect of the state, its organs, its operationalization aspect, the background and philosophy behind the founding of the present political system, broad streams and challenges of national integration and nation-building in India. It will equip the students with the real understanding of our political system/ process in correctperspective and make them sit up and think for devising ways for better participation in the system with a view to making the governance and delivery system better for the common man who is often left unheard and unattended in our democratic setup besides generating a lot of dissatisfaction anddifficulties for the system.

SUGGESTED READING:

i. Sunil Khilnani, The Idea of India. Penguin India Ltd., New Delhi.
ii. Madhav Khosla, The Indian Constitution, Oxford University Press. New Delhi, 2012.
iii. Brij Kishore Sharma, Introduction to the Indian Constitution, PHI, New Delhi, latest edition.
iv. Sumantra Bose, Transforming India: Challenges to the World"s Largest Democracy, Picador India, 2013.
v. Atul Kohli, Democracy and Discontent: India"s Growing Crisis of Governability, Cambridge University Press, Cambridge, U. K., 1991.
vi. M. P. Singh and Rekha Saxena, Indian Politics: Contemporary Issues and Concerns, PHI,New Delhi, 2008, latest edition.
vii. Rajni Kothari, Rethinking Democracy, Orient Longman, New Delhi, 2005.

TOTAL : 45 PERIODS

MX3089	INDUSTRIAL SAFETY	L T P C
		3 0 0 0

COURSE OBJECTIVES

- To Understand the Introduction and basic Terminologies safety.
- To enable the students to learn about the Important Statutory Regulations and standards.
- To enable students to Conduct and participate the various Safety activities in the Industry.
- To have knowledge about Workplace Exposures and Hazards.
- To assess the various Hazards and consequences through various Risk Assessment Techniques.

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UNIT I SAFETY TERMINOLOGIES

Hazard-Types of Hazard- Risk-Hierarchy of Hazards Control Measures-Lead indicators- lag Indicators- Flammability- Toxicity Time-weighted Average (TWA) - Threshold LimitValue (TLV) - Short Term Exposure Limit (STEL)- Immediately dangerous to life or health (IDLH)- acute and chronic Effects- Routes of Chemical Entry-Personnel Protective Equipment- Health and Safety Policy-Material Safety Data Sheet MSDS

UNIT II STANDARDS AND REGULATIONS

Indian Factories Act-1948- Health- Safety- Hazardous materials and Welfare- ISO 45001:2018 occupational health and safety (OH&S) - Occupational Safety and Health Audit IS14489:1998- Hazard Identification and Risk Analysis- code of practice IS 15656:2006

UNIT III SAFETY ACTIVITIES

Toolbox Talk- Role of safety Committee- Responsibilities of Safety Officers and Safety Representatives- Safety Training and Safety Incentives- Mock Drills- On-site Emergency Action Plan- Off-site Emergency Action Plan- Safety poster and Display- Human Error Assessment

UNIT IV WORKPLACE HEALTH AND SAFETY

Noise hazard- Particulate matter- musculoskeletal disorder improper sitting poster and lifting Ergonomics RULE & REBA- Unsafe act & Unsafe Condition- Electrical Hazards- Crane Safety- Toxic gas Release

UNIT V HAZARD IDENTIFICATION TECHNIQUES

Job Safety Analysis-Preliminary Hazard Analysis-Failure mode and Effects Analysis- Hazard and Operability- Fault Tree Analysis- Event Tree Analysis Qualitative and Quantitative Risk Assessment- Checklist Analysis- Root cause analysis- What-If Analysis- and Hazard Identification and Risk Assessment

TOTAL : 45 PERIODS

COURSE OUTCOMES:

Course outcomes on completion of this course the student will be able:

CO1:Understand the basic concept of safety.

CO2:Obtain knowledge of Statutory Regulations and standards.

CO3:Know about the safety Activities of the Working Place.

CO4:Analyze on the impact of Occupational Exposures and their Remedies

CO5:Obtain knowledge of Risk Assessment Techniques.

TEXTBOOKS

1. R.K. Jain and Prof. Sunil S. Rao Industrial Safety, Health and Environment ManagementSystems KHANNA PUBLISHER
2. L. M. Deshmukh Industrial Safety Management: Hazard Identification and Risk Control McGraw-Hill Education

REFERENCES

1. Frank Lees (2012) „Lees" Loss Prevention in Process Industries.Butterworth-Heinemann publications, UK, 4th Edition.
2. John Ridley & John Channing (2008)Safety at Work: Routledge, 7th Edition.
3. Dan Petersen (2003) Techniques of Safety Management: A System Approach.
4. Alan Waring.(1996).Safety management system: Chapman &Hall,England
5. Society of Safety Engineers, USA

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ONLINE RESOURCES

ISO 45001:2018 occupational health and safety (OH&S) International Organization forStandardization https://www.iso.org/standard/63787.html

Indian Standard code of practice on occupational safety and health audit https://law.resource.org/pub/in/bis/S02/is.14489.1998.pdf

Indian Standard code of practice on Hazard Identification and Risk Analysis IS 15656:2006 https://law.resource.org/pub/in/bis/S02/is.15656.2006.pdf

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NCC Credit Course Level 1*

NX3252	(NAVAL WING) NCC Credit Course Level - I	L	T	P	C
		2	0	0	2

NCC GENERAL		**6**
NCC 1	Aims, Objectives & Organization of NCC	1
NCC 2	Incentives	2
NCC 3	Duties of NCC Cadet	1
NCC 4	NCC Camps: Types & Conduct	2
NATIONAL INTEGRATION AND AWARENESS		**4**
NI 1	National Integration: Importance & Necessity	1
NI 2	Factors Affecting National Integration	1
NI 3	Unity in Diversity & Role of NCC in Nation Building	1
NI 4	Threats to National Security	1
PERSONALITY DEVELOPMENT		**7**
PD 1	Self-Awareness, Empathy, Critical & Creative Thinking, Decision Making and Problem Solving	2
PD 2	Communication Skills	3
PD 3	Group Discussion: Stress & Emotions	2
LEADERSHIP		**5**
L 1	Leadership Capsule: Traits, Indicators, Motivation, Moral Values, Honour Code	3
L 2	Case Studies: Shivaji, Jhasi Ki Rani	2
SOCIAL SERVICE AND COMMUNITY DEVELOPMENT		**8**
SS 1	Basics, Rural Development Programmes, NGOs, Contribution of Youth	3
SS 4	Protection of Children and Women Safety	1
SS 5	Road / Rail Travel Safety	1
SS 6	New Initiatives	2
SS 7	Cyber and Mobile Security Awareness	1

TOTAL : 30 PERIODS

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NCC Credit Course Level 1*

NX3253	(AIR FORCE WING) NCC Credit Course Level - I	L	T	P	C
		2	0	0	2

NCC GENERAL		**6**
NCC 1	Aims, Objectives & Organization of NCC	1
NCC 2	Incentives	2
NCC 3	Duties of NCC Cadet	1
NCC 4	NCC Camps: Types & Conduct	2
NATIONAL INTEGRATION AND AWARENESS		**4**
NI 1	National Integration: Importance & Necessity	1
NI 2	Factors Affecting National Integration	1
NI 3	Unity in Diversity & Role of NCC in Nation Building	1
NI 4	Threats to National Security	1
PERSONALITY DEVELOPMENT		**7**
PD 1	Self-Awareness, Empathy, Critical & Creative Thinking, Decision Making and Problem Solving	2
PD 2	Communication Skills	3
PD 3	Group Discussion: Stress & Emotions	2
LEADERSHIP		**5**
L 1	Leadership Capsule: Traits, Indicators, Motivation, Moral Values, Honour Code	3
L 2	Case Studies: Shivaji, Jhasi Ki Rani	2
SOCIAL SERVICE AND COMMUNITY DEVELOPMENT		**8**
SS 1	Basics, Rural Development Programmes, NGOs, Contribution of Youth	3
SS 4	Protection of Children and Women Safety	1
SS 5	Road / Rail Travel Safety	1
SS 6	New Initiatives	2
SS 7	Cyber and Mobile Security Awareness	1

TOTAL : 30 PERIODS

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GE3252	TAMILS AND TECHNOLOGY	L T P C 1 0 0 1

UNIT I WEAVING AND CERAMIC TECHNOLOGY 3

Weaving Industry during Sangam Age – Ceramic technology – Black and Red Ware Potteries (BRW) – Graffiti on Potteries.

UNIT II DESIGN AND CONSTRUCTION TECHNOLOGY 3

Designing and Structural construction House & Designs in household materials during Sangam Age - Building materials and Hero stones of Sangam age – Details of Stage Constructions in Silappathikaram - Sculptures and Temples of Mamallapuram - Great Temples of Cholas and other worship places - Temples of Nayaka Period - Type study (Madurai Meenakshi Temple)- Thirumalai Nayakar Mahal - Chetti Nadu Houses, Indo - Saracenic architecture at Madras during British Period.

UNIT III MANUFACTURING TECHNOLOGY 3

Art of Ship Building - Metallurgical studies - Iron industry - Iron smelting, steel -Copper and gold-Coins as source of history - Minting of Coins – Beads making-industries Stone beads -Glass beads - Terracotta beads -Shell beads/ bone beats - Archeological evidences - Gem stone types described in Silappathikaram.

UNIT IV AGRICULTURE AND IRRIGATION TECHNOLOGY 3

Dam, Tank, ponds, Sluice, Significance of Kumizhi Thoompu of Chola Period, Animal Husbandry - Wells designed for cattle use - Agriculture and Agro Processing - Knowledge of Sea - Fisheries – Pearl - Conche diving - Ancient Knowledge of Ocean - Knowledge Specific Society.

UNIT V SCIENTIFIC TAMIL & TAMIL COMPUTING 3

Development of Scientific Tamil - Tamil computing – Digitalization of Tamil Books – Development of Tamil Software – Tamil Virtual Academy – Tamil Digital Library – Online Tamil Dictionaries – Sorkuvai Project.

TOTAL : 15 PERIODS

TEXT-CUM-REFERENCE BOOKS

1. தமிழக வரலாறு – மக்களும் பண்பாடும் – கே.கே. பிள்ளை (வெளியீடு: தமிழ்நாடு பாடநூல் மற்றும் கல்வியியல் பணிகள் கழகம்).
2. கணினித் தமிழ் – முனைவர் இல. சுந்தரம். (விகடன் பிரசுரம்).
3. கீழடி – வைகை நதிக்கரையில் சங்ககால நகர நாகரிகம் (தொல்லியல் துறை வெளியீடு)
4. பொருநை – ஆற்றங்கரை நாகரிகம். (தொல்லியல் துறை வெளியீடு)
5. Social Life of Tamils (Dr.K.K.Pillay) A joint publication of TNTB & ESC and RMRL – (in print)
6. Social Life of the Tamils - The Classical Period (Dr.S.Singaravelu) (Published by: International Institute of Tamil Studies.
7. Historical Heritage of the Tamils (Dr.S.V.Subatamanian, Dr.K.D. Thirunavukkarasu) (Published by: International Institute of Tamil Studies).
8. The Contributions of the Tamils to Indian Culture (Dr.M.Valarmathi) (Published by: International Institute of Tamil Studies.)
9. Keeladi - 'Sangam City C ivilization on the banks of river Vaigai' (Jointly Published by: Department of Archaeology & Tamil Nadu Text Book and Educational Services Corporation, Tamil Nadu)
10. Studies in the History of India with Special Reference to Tamil Nadu (Dr.K.K.Pillay) (Published

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by: The Author)

11. Porunai Civilization (Jointly Published by: Department of Archaeology & Tamil Nadu Text Book and Educational Services Corporation, Tamil Nadu)
12. Journey of Civilization Indus to Vaigai (R.Balakrishnan) (Published by: RMRL) – Reference Book.

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GE3152 HERITAGE OF TAMILS LT P C
1 0 0 1

UNIT I LANGUAGE AND LITERATURE 3

Language Families in India - Dravidian Languages – Tamil as a Classical Language - ClassicalLiterature in Tamil – Secular Nature of Sangam Literature – Distributive Justice in Sangam Literature
- Management Principles in Thirukural - Tamil Epics and Impact of Buddhism & Jainism in Tamil Land
- Bakthi Literature Azhwars and Nayanmars - Forms of minor Poetry - Development of Modernliterature in Tamil - Contribution of Bharathiyar and Bharathidhasan.

UNIT II HERITAGE - ROCK ART PAINTINGS TO MODERN ART – SCULPTURE 3

Hero stone to modern sculpture - Bronze icons - Tribes and their handicrafts - Art of temple car making - - Massive Terracotta sculptures, Village deities, Thiruvalluvar Statue at Kanyakumari, Making of musical instruments - Mridhangam, Parai, Veenai, Yazh and Nadhaswaram - Role of Temples in Social and Economic Life of Tamils.

UNIT III FOLK AND MARTIAL ARTS 3

Therukoothu, Karagattam, Villu Pattu, Kaniyan Koothu, Oyillattam, Leather puppetry, Silambattam, Valari, Tiger dance - Sports and Games of Tamils.

UNIT IV THINAI CONCEPT OF TAMILS 3

Flora and Fauna of Tamils & Aham and Puram Concept from Tholkappiyam and Sangam Literature - Aram Concept of Tamils - Education and Literacy during Sangam Age - Ancient Cities and Ports of Sangam Age - Export and Import during Sangam Age - Overseas Conquest of Cholas.

UNIT V CONTRIBUTION OF TAMILS TO INDIAN NATIONAL MOVEMENT AND INDIAN CULTURE 3

Contribution of Tamils to Indian Freedom Struggle - The Cultural Influence of Tamils over the other parts of India – Self-Respect Movement - Role of Siddha Medicine in Indigenous Systems of Medicine – Inscriptions & Manuscripts – Print History of Tamil Books.

TOTAL : 15 PERIODS

TEXT-CUM-REFERENCE BOOKS

தமிழ்க வரலாறு – மக்களும் பண்பாடும் – கே.கே. பிள்ளை (வெளியீடு: தமிழ்நாடு பாடநூல் மற்றும் கல்வியியல் பணிகள் கழகம்).

கணினித் தமிழ் – முனைவர் இல. சுந்தரம். (விகடன் பிரசுரம்).

கீழடி – வைகை நதிக்கரையில் சங்ககால நகர நாகரிகம் (தொல்லியல் துறை வெளியீடு)

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9. Keeladi - 'Sangam City Civilization on the banks of river Vaigai' (Jointly Published by: Department ofArchaeology & Tamil Nadu Text Book and Educational Services Corporation,Tamil Nadu)
10. Studies in the History of India with Special Reference to Tamil Nadu (Dr.K.K.Pillay) (Publishedby: The Author)
11. Porunai Civilization (Jointly Published by: Department of Archaeology & Tamil Nadu Text Bookand Educational Services Corporation, Tamil Nadu)
12. Journey of Civilization Indus to Vaigai (R.Balakrishnan) (Published by: RMRL) – Reference Book.

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MC4002	PROFESSIONAL ETHICS IN IT	L T P C-
		3 0 0 3

COURSE OBJECTIVES:

To understand the concepts of computer ethics in the work environment.

- To understand the threats in computing environment
- To Understand the intricacies of accessibility issues
- To ensure safe exits when designing the software projects

UNIT I INTRODUCTION TO ETHICS 9

Definition of Ethics- Right, Good, Just- The Rational Basis of Ethics -Theories of Right: Intuitionist vs. End-Based vs. Duty-Based -Rights, Duties, Obligations -Theory of Value - Conflicting Principles and Priorities -The Importance of Integrity -The Difference Between Morals, Ethics, and Laws -Ethics in the Business World - Corporate Social Responsibility - Creating an Ethical Work Environment -Including Ethical Considerations in Decision Making

UNIT II ETHICS IN INFORMATION TECHNOLOGY, INTERNET CRIME 9

IT Professionals - Are IT Workers Professionals- Professional Relationships That Must Be Managed - Professional Codes of Ethics - Professional Organizations - Certification - IT Professional Ethics, Three Codes of Ethics, Management Conflicts. The Reveton Ransomware Attacks -IT Security Incidents: A Major Concern - Why Computer Incidents Are So Prevalent - Types of Exploits -Types of Perpetrators-Federal Laws for Prosecuting Computer AttacksImplementing Trustworthy Computing -Risk Assessment -Establishing a Security Policy - Educating Employees and Contract Workers

UNIT III FREEDOM OF EXPRESSION, PRIVACY 9

First Amendment Rights -Obscene Speech-Defamation -Freedom of Expression: Key Issues - Controlling Access to Information on the Internet -Strategic Lawsuit Against Public Participation (SLAPP)-Anonymity on the Internet-Hate Speech- Privacy Protection and the Law- Information Privacy- Privacy Laws, Applications, and Court Rulings-Key Privacy and Anonymity IssuesData Breaches -Electronic Discovery-Consumer Profiling- Workplace Monitoring -Advanced Surveillance Technology

UNIT IV FREEDOM OF EXPRESSION, INTELLECTUAL PROPERTY RIGHTS 9

Intellectual Property Rights-Copyrights-Copyright Term - Eligible Works -Fair Use Doctrine - Software Copyright Protection –Copyright Laws and the internet-Copyright and Piracy–Patents- -Software Patents -Cross-Licensing Agreements -Trade Secrets-Trade Secret Laws -Employees and Trade Secrets-Key Intellectual Property Issues-Plagiarism -Reverse Engineering-Open Source Code- Competitive Intelligence -Trademark Infringement -Cyber squatting

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UNIT V SOCIAL NETWORKING ETHICS AND ETIQUETTES 9

Social Networking Web Site- Business Applications of Online Social Networking-Social Network Advertising-The Use of Social Networks in the Hiring Process-Social Networking Ethical Issues –Cyber bullying- Online Virtual Worlds-Crime in Virtual Worlds-Educational and Business Uses of Virtual Worlds

TOTAL:45 PERIODS

COURSE OUTCOMES: Upon Completion of the course, the students will be able to

CO1: Examine situations and to internalize the need for applying ethical principles, values to tackle various situations.

CO2: Develop a responsible attitude towards the use of computers as well as the technology.

CO3: Envision the societal impact on the products/ projects they develop in their career

CO4: Understand the code of ethics and standards of computer professionals.

CO5: Analyze professional responsibility and empower access to information in the workplace.

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BA4203 HUMAN RESOURCE MANAGEMENT **L T P C**

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COURSE OBJECTIVE:

- To provide knowledge about management issues related to staffing, training, performance, compensation, human factors consideration and compliance with human resource requirements.

UNIT I PERSPECTIVES IN HUMAN RESOURCE MANAGEMENT **9**

Evolution of human resource management – The importance of the human capital – Role of human resource manager –Challenges for human resource managers - trends in Human resource policies – Computer applications in human resource management – Human resource accounting and audit.

UNIT II HUMAN RESOURCE PLANNING AND RECRUITMENT **9**

Importance of Human Resource Planning – Forecasting human resource requirement –matching supply and demand - Internal and External sources- Organizational Attraction-. Recruitment, Selection, Induction and Socialization- Theories, Methods and Process.

UNIT III TRAINING AND DEVELOPMENT **9**

Types of training methods –purpose- benefits- resistance. Executive development programme – Common practices - Benefits – Self development – Knowledge management.

UNIT IV EMPLOYEE ENGAGEMENT **9**

Compensation plan – Reward – Motivation – Application of theories of motivation – Career management Mentoring - Development of mentor – Protégé relationships- Job Satisfaction, Employee Engagement,Organizational Citizenship Behavior: Theories, Models.

UNIT V PERFORMANCE EVALUATION AND CONTROL **9**

Method of performance evaluation – Feedback – Industry practices. Promotion, Demotion, Transfer and Separation – Implication of job change. The control process – Importance – Methods – Requirement of effective control systems grievances – Causes – Implications – Redressal methods.

TOTAL: 45 PERIODS

COURSE OUTCOMES:

1. Students would have gained knowledge on the various aspects of HRM
2. Students will gain knowledge needed for success as a human resources professional.
3. Students will develop the skills needed for a successful HR manager
4. Students would be prepared to implement the concepts learned in the workplace.
5. Students would be aware of the emerging concepts in the field of HRM

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BA 4015 STRATEGIC HUMAN RESOURCE MANAGEMENT L T P C

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COURSE OBJECTIVE

To help students understand the transformation in the role of HR functions from being a support function to strategic function.

UNIT I CONTEXT OF SHRM 9

SHRM - SHRM models - strategic HRM vs Traditional HRM - Barriers to Strategic HR- Adopting an Investment Perspective - Understanding and Measuring Human capital - Human side of corporate strategies - strategic work redesign - Strategic Capability - Bench Marking.

UNIT II HUMAN RESOURCE DEVELOPMENT 9

Meaning – Strategic framework for HRM and HRD – Vision, Mission and Values – Importance – Challenges to Organisations – HRD Functions - Roles of HRD Professionals - HRD Needs Assessment - HRD practices – Measures of HRD performance – Links to HR, Strategy and Business Goals – HRD Program Implementation and Evaluation – Recent trends –HRD Audit.

UNIT III E-HRM 9

e- Employee profile– e- selection and recruitment - Virtual learning and Orientation – e - training and development – e-learning strategies- e- Performance management - and Compensation design - Use of mobile applications in HR functions– Development and Implementation of HRIS – Designing HR portals Issues in employee privacy – Employee surveys online.

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UNIT IV CAREER & COMPETENCY DEVELOPMENT 9

Career Concepts – Roles – Career stages – Career planning and Process – Career development Models– Career Motivation and Enrichment –Managing Career plateaus- Designing Effective Career Development Systems – Competencies and Career Management – Competency Mapping Models – Equity and Competency based Compensation.

UNIT V EMPLOYEE COACHING & COUNSELING 9

Need for Coaching – Role of HR in coaching – Coaching and Performance – Skills for Effective Coaching Coaching Effectiveness– Need for Counseling – Role of HR in Counseling - Components of Counseling Programs – Counseling Effectiveness – Employee Health and Welfare Programs.

TOTAL: 45 PERIODS

COURSE OUTCOMES:

1. Understand the relationship of HR strategy with overall corporate strategy, the strategic role ofspecific HR systems.
2. Appreciate SHRM in the context of changing forms of organisation and will have a better understanding of the tools and techniques used by organizations to meet current challenges.
3. To be more sensitive to cross-cultural issues and understanding of international approaches to dealing with people in organisations. Students will look at HRM in a broader, comparative and international perspective to deal with complex issues and manifold risks.
4. Providing an overview of the counselling and coaching processes and techniques, Devel opingalternative approach to dealing with problem situations in organisations
5. Understand the career development theories and models and gain necessary self -insight, skills and techniques to become effective HR managers.

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