

M.KUMARASAMY COLLEGE OF ENGINEERING (Autonomous) – KARUR 639113

Department	CIVIL ENGINEERING					R 2016	Semester
Course Code	Course Name	Hours / Week			Credit	Total Hours	Maximum Marks
		L	T	P	C		
16CEZ01	BUILDING SERVICES	3	0	0	3	45	100
Course Objective (s):							
<ul style="list-style-type: none"> To impart knowledge on the machineries, electrical system in buildings, principles of illumination and design. To provide a thorough understanding of refrigeration principles and fire safety installation. 							
Course Outcomes: After successful completion of this course, the students will be able to							
<ol style="list-style-type: none"> Find essential services for the building Choose appropriate equipment for buildings Select lighting facilities in the building Choose suitable air conditioning system for the building Choose fire safety systems for various types of building 							
Unit I	MACHINERIES						9
Hot Water Boilers - Lifts and Escalators - Special features required for physically handicapped and elderly - Conveyors - Vibrators - Concrete mixers - DC/AC motors - Generators - Laboratory services - Gas, water, air and electricity							
Unit II	ELECTRICAL SYSTEMS IN BUILDINGS						9
Basics of electricity - Single / Three phase supply - Protective devices in electrical installations - earthing for safety - Types of earthing - ISI specifications - Types of wires, wiring systems and their choice - Planning electrical wiring for building - Main and distribution boards - Transformers and switch gears - Layout of substations							
Unit III	PRINCIPLES OF ILLUMINATION & DESIGN						9
Design of modern lighting - Lighting for stores, offices, schools, hospitals and house lighting. Elementary idea of special features required and minimum level of illumination required for physically handicapped and elderly in building types.							
Unit IV	REFRIGERATION PRINCIPLES & APPLICATIONS						9
Refrigerants-Refrigerant control devices - Electric motors - Starters - Air handling units - Cooling towers - Window type and packaged air- conditioners - Chilled water plant - Fan coil systems - Water piping - Cooling load - Air conditioning systems for different types of buildings - Protection against fire to be caused by A.C. Systems							
Unit V	FIRE SAFETY INSTALLATION						9
Causes of fire in buildings - Safety regulations - NBC - Planning considerations in buildings like non-combustible materials, construction, staircases and lift lobbies, fire escapes and A.C. systems.							

TEXT BOOK(S):	
1.	R.G.Hopkinson and J.D.Kay, "The Lighting of buildings", Faber and Faber, London, 2000.
2.	R.Udayakumar, 'A text book on building services', Eswar Press, Chennai, 2007.

REFERENCE(S):	
1.	Arora and Bindra, "Building construction", Dhanpatrai&Sons, 2012
2.	A.F.C. Sherratt, "Air-conditioning and Energy Conservation", The Architectural Press, London, 1997. .
3.	Handbook for Building Engineers in Metric systems, NBC, New Delhi, 2001.

M.KUMARASAMY COLLEGE OF ENGINEERING (Autonomous) – KARUR 639113

Department	CIVIL ENGINEERING					R 2016	Semester
Course Code	Course Name	Hours / Week			Credit	Total Hours	Maximum Marks
		L	T	P	C		
16CEZ02	DISASTER MANAGEMENT AND MITIGATION	3	0	0	3	45	100
Course Objective (s):							
<ul style="list-style-type: none"> To provide students an exposure to disasters, their significance and types. To ensure that students begin to understand the relationship between vulnerability, disasters, disaster mitigation and risk reduction 							
Course Outcomes: After successful completion of this course, the students will be able to							
<ol style="list-style-type: none"> Differentiate the types of disasters, causes and their impact on environment and society Assess vulnerability and various methods of risk reduction measures as well as mitigation Explain disaster damage assessment and management Identify the disaster management techniques for Indian context Develop the disaster management alternatives flow through case studies and team-oriented technical presentations 							
Unit I	INTRODUCTION TO DISASTERS						9
Definition: Disaster, Hazard, Vulnerability, Resilience, Risks - Disasters: Types of disasters - Earthquake, Landslide, Flood, Drought, Fire etc - Classification, Causes, Impacts including social, economic, political, environmental, health, psychosocial, etc.- Differential impacts- in terms of caste, class, gender, age, location, disability - Global trends in disasters: urban disasters, pandemics, complex emergencies, Climate change- Dos and Don'ts during various types of Disasters.							
Unit II	APPROACHES TO DISASTER RISK REDUCTION						9
Disaster cycle - Phases, Culture of safety, prevention, mitigation and preparedness community based DRR, Structural- nonstructural measures, Roles and responsibilities of- community, Panchayati Raj Institutions/Urban Local Bodies (PRIs/ULBs), States, Centre, and other stakeholders- Early Warning System							
Unit III	INTER-RELATIONSHIP BETWEEN DISASTERS AND DEVELOPMENT						9
Factors affecting Vulnerabilities, differential impacts, impact of Development projects such as dams, embankments, changes in Land-use etc.- Climate Change Adaptation- IPCC Scenario and Scenarios in the context of India - Relevance of indigenous knowledge, appropriate technology and local resources.							
Unit IV	DISASTER RISK MANAGEMENT IN INDIA						9
Hazard and Vulnerability profile of India, Components of Disaster Relief: Water, Food, Sanitation, Shelter, Health, Waste Management, Institutional arrangements (Mitigation, Response and Preparedness, Disaster Management Act and Policy - Other related policies, plans, programmes and legislation - Role of GIS and Information Technology Components in Preparedness, Risk Assessment, Response and Recovery Phases of Disaster - Disaster Damage Assessment.							
Unit V	DISASTER MANAGEMENT: APPLICATIONS AND CASE STUDIES AND FIELD WORKS						9
Landslide Hazard Zonation: Case Studies, Earthquake Vulnerability Assessment of Buildings and Infrastructure: Case Studies, Forest Fire: Case Studies, Man Made disasters: Case Studies, Space Based Inputs for Disaster Mitigation and Management .							

TEXT BOOK(S):	
1.	Singhal J.P. "Disaster Management", Laxmi Publications, 2010.
2.	Tushar Bhattacharya, "Disaster Science and Management", McGraw Hill India Education Pvt. Ltd., 2012
3	Gupta Anil K, Sreeja S. Nair. Environmental Knowledge for Disaster Risk Management, NIDM, New Delhi, 2011
4	KapurAnu Vulnerable India: A Geographical Study of Disasters, IIAS and Sage Publishers, New Delhi, 2010.

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

M.KUMARASAMY COLLEGE OF ENGINEERING (Autonomous) – KARUR 639113

Department	CIVIL ENGINEERING					R 2016	Semester
Course Code	Course Name	Hours / Week			Credit	Total Hours	Maximum Marks
		L	T	P	C		
16CEZ03	ENVIRONMENTAL MANAGEMENT	3	0	0	3	45	100
Course Objective (s):							
<ul style="list-style-type: none"> To understand the importance of nature and study about the water, air and soil pollution control as well as solid waste management. 							
Course Outcomes: After successful completion of this course, the students will be able to							
<ol style="list-style-type: none"> Assess the sources, causes and effects of water, air and noise pollution Explain about water pollution and its control Identify the control technologies for air and noise pollution Use alternatives to effectively carry out solid waste management Explain various environmental management techniques 							
Unit I	NATURE AND SCOPE OF ENVIRONMENTAL PROBLEMS						9
Environment and sustainable development - Natural and human environmental disturbances - Global warming - acid rain - ozone depletion - effects and control - climate change conventions - Kyoto protocol - India's efforts for Environmental protection - Public policy and role of NGO's							
Unit II	WATER POLLUTION AND CONTROL						9
Fresh water and its pollution - Natural processes - sources and pollutants - pollution due to industrial, agricultural and municipal wastes - effects on streams - limitations of disposal by dilution - Oxygen Sag Curve - Strategies for sustainable water management Water management - Marine environment and its management - Water acts							
Unit III	CONTROL OF AIR AND NOISE POLLUTION						9
Pollutant emissions - sources and sink - effects of air pollution on human health, vegetation and climate- Global effects - prevention and control of air pollution - Control of particulates - Air pollution survey sand sampling - Air quality monitoring - Air Act 1981 - Management of air pollution Noise pollution - Sound level - Effect of noise- Control of Noise pollution - noise pollution rules, 2000 .							
Unit IV	SOLID WASTE MANAGEMENT AND SOIL POLLUTION						9
Sources - Characteristics - Quantities - Collection methods - Processing and disposal techniques - Onsite Handling, storage and processing - sanitary landfill - Incineration and pyrolysis - Composting - aerobic and anaerobic of composting - Recycling and reuse of solid wastes -soil pollution -wetland conservation .							
Unit V	ENVIRONMENTAL MANAGEMENT SYSTEM						9
Terminology - installation and common motives of EMS - Environmental standards - ISO 14000 (Series) - basic principles - Environmental Audit - Environmental Impact assessment - Trade rules and environmental protection-Practices For Waste Minimisation And Cleaner Production.							

TEXT BOOK(S):	
1.	N.K.Uberoi, Environmental Management, Excel Books, New Delhi(2006).
2.	Techobanoglous, Environmental, McGraw Hill Book Company (2006).
3.	Arceivala S. J., "Waste Water Treatment and disposal, Marceldekker publishers,1981.
4.	C.S.Rao, Environmental Pollution Control Engineering, New age International (P) ltd, (2006)

REFERENCE(S):	
1.	S.Vigneahwaran, M.Sundaravadivel and D.S.Chaudhary ,Environmental Management, SCITECH Publications(India) Pvt.Ltd, Chennai & Hyderabad (2004).
2.	Manahan, S.E., "Environmental Chemistry", Ninth Edition, CRC press, 2009.

M.KUMARASAMY COLLEGE OF ENGINEERING (Autonomous) – KARUR 639113

Department	CIVIL ENGINEERING					R 2016	Semester
Course Code	Course Name	Hours / Week			Credit	Total Hours	Maximum Marks
		L	T	P	C		
16CEZ04	EXPERIMENTAL STRESS ANALYSIS	3	0	0	3	45	100

Course Objective (s):

- To make students aware of various measurement techniques and experimental planning and procedures adopted in laboratory.

Course Outcomes: After successful completion of this course, the students will be able to

- Know about the gauges in various process
- Know about the electrical measurement systems
- Describe the elasticity and its properties
- They are able to make a model and do the research
- Describe the process of coatings

UNIT I | STRAIN GAUGES

9

Definition of Gauge length, sensitivity and range - Characteristics of an ideal strain gauge - Different types of mechanical strain gauges for use in metal and concrete specimens - Optical strain gauge - Acoustic strain gauge - Pneumatic strain gauge - Merits and demerits.

UNIT II | ELECTRICAL STRAIN GAUGES

9

Inductance, capacitance and piezo - electric gauges - Bonded and unbonded resistance gauges and their application in stress analysis - Fixing technique and measurement of strains - Rosettes - Determination of principal strains using rosettes - Mohr's stress circle - Analytical solution.

UNIT III | PHOTOELASTICITY

9

Principles - Maxwell's stress optic law - Plane and circularly polarised light and their use in photo elasticity - Polariscopes - Diffusion type, lense type and reflection type polariscopes - Isochromatics and Isoclinics - Model materials - Calibration methods for finding material fringe value - Model fringe value .

UNIT IV | MODEL ANALYSIS

9

Direct and indirect models - Laws of structural similitude - Choice of scales - Limitation of model studies - Buckingham piktheorem - Dimensional analysis - Model materials - Simple design of models for direct and indirect model analysis.

UNIT V | BRITTLE COATINGS

9

Historical review - Stress Coat - Ceramic coatings - Application - Moire fringe method of stress analysis.

TEXT BOOK(S):

- T.K.Roy, "Experimental Analysis of Stress and Strains", S.Chand and Company Ltd., New Delhi, 2000
- Sadhu Singh, "Experimental Stress Analysis", Khanna Publishers, New Delhi, 2004.

REFERENCE(S):

- J.W.Dally and W.F.Riley, "Experimental Stress Analysis", McGraw Hill Book, New York, 1990
- L.S. Srinath, "Experimental Stress Analysis", Tata-McGraw Hill Book Company, New Delhi, 2001
- Hetenyi. M., Hand Book of Experimental Stress Analysis, John Wiley and Sons Inc., New York, 1966