MTEE -301 (A) ENERGY EFFICIENT & ENVIRONMENT FRIENDLY CONSTRUCTION MATERIALS & TECHNIQUES

UNIT-I

Concepts of energy efficient & environment friendly materials and techniques.

Cost effective materials :- Soil, Fly ash, Ferrocement, Lime, Fibers, Stone Dust, Red mud, Gypsum, Alternate Wood, Polymer.

Energy Efficient & Environment friendly building material products :-

Walls - Stabilized and sun dried, soil blocks & bricks, Solid & Hollow concrete blocks, stone masonry blocks, Ferrocement partitions.

Roofs - Precast R.C. Plank & Joists roof, Precast channel roof, Precast L-panel roof, Precast Funicular shells, Ferrocement shells, Filler Slab, Seasal Fibre roof, Improved country tiles, Thatch roof, M.C.R. tile.

UNIT-II

Cost effective construction techniques and equipments :-

(a) Techniques :- Rat trap bond construction, Energy Efficient roofings, Ferrocement technique, Mud Technology.

(b) Equipments :- Brick molding machine, Stabilized soil block making machine and plants for the manufacturing of concrete blocks, M.C.R. tile making machine, Ferrocement wall panel & Roofing channel making machine, R.C.C. Chaukhat making m/c.

UNIT-III

Cost effective sanitation:-

(a) Waste water disposal system

(b) Cost effective sanitation for rural and urban areas

(c) Ferrocement Drains

UNIT-IV

Low Cost Road Construction:-

Cost effective road materials, stabilization, construction techniques tests, equipment used for construction, drainage, maintenance.

UNIT-V

Cost analysis and comparison:-

(a) All experimental materials

(b) All experimental technique

W.e.f. Academic Session 2015-16

MTEE 301 (b) ADVANCED TREATMENT METHODS

Chemical oxidation : Oxidation processes, principle & theory of chemical oxidation, oxygen, Ozone, permagnet chlorine, chlorine dioxide.

Disinfection : Disinfection processes, non-chemical methods for disinfection, chemical disinfectants, Halogens other than chlorine, oxidizing agents other than halogen, miscellaneous reagents.

Effect of chemical constituents in waste water Unit operations and process and treatment flow sheets.

Nitrogen Conversion and Removal : Nitrification, denitrification, nitrification-denitrification

Nitrogen removal by by physical-chemical process phosphorous removal, removal of repactory organics, removal of dissolved inorganic substances, removal of dissolved, inorganic substances,.

Ultimate disposal of contaminants.

Land treatment method : Development of land treatment systems. Land application of sludge, effluent disposal & reuse.

MTEE 301(c) NOISE POLLUTION

- Nature of noise, effects, sources
- Comparison of noise & air pollution
- Assessment and measurement of sound
- Principles of noise control at various fields - at home, civil engg.
- Works, industries, aircrafts.
- Legal aspects of noise pollution
- Assessment of impacts of noise environment.

MTEE- 30I (d) INSTRUMENTATION AND PROCESS CONTROL

Basic concepts of resolution, accuracy, precision, sensitivity, calibration and control of error. Analysis and interpretation of data. Transducers for the sensing of strain, displacement, velocity, acceleration, pressure, flow, temperature, humidity, moisture content, and electromagnetic radiation. Signal conditioning for noise reduction and control. Operational amplifiers. Systems for data acquisition, telemetry, display, recording and processing. Computer interfacing. Concept of transfer functions. Response of simple chemical processes to step, ramp, and sinusoidal inputs. Transient response of interacting elements in series. Frequency response analysis of simple systems. On-off control, proportional, integral, derivative, and combinations of these control actions. Feed-back and feed-forward control. Controller tuning and algorithms. Simple stability analysis. Dynamics and control of common chemical process units.

MTEE- 302(a) ENVIRONMENTAL MODELLING

Data models and data quality : Problems & Prospects Atmospheric modeling and its spatial representation of land surface characteristics
Application in agriculture : Global climate modelling requirements Regional air quality and acid deposition modelling
Role of visualization Hydrological modeling :
Water treatment, storage, distribution
Three dimensional-finite element model.
Distributed Rain fall - run off model.
Simple Biosphere Model Gostatistices-tool for environmental modelers
Wastewater treatment technology and disposal model.

MTEE – 302 (B) RISK ASSESSMENT

- Risk and hazard- a three culture problem.
- Natural hazard assessment
- Evaluation of ecological risk.
- Impact assessment of socio-economic environment,
- Water environment, noise environment
- Methods of analysis.
- Case studies of EIA
- Health effects, treatment methods

W.e.f. Academic Session 2015-16

MTEE 302 (C) ENVIRONMENTAL ECONOMICS AND MANAGEMENT

UNIT-I

Concerned agencies: Agencies for planning, execution and maintenance, their structure, power and responsibilities. Village panchayat municipalities, corporation, district boards, statutory board; setup at state and federal level ; national water supply and sanitation programme.

Organizational set-up:

Requirement of good management; line and staff organization, decentralization of power requirements, set-up for operation and maintenance of scheme; private and public managed utilities.

UNIT-II

Personnel's: Basic principle of good personnel administration, evaluation of job and determination of relative wages, pay scales and fringe benefits recruitment, in service on outside training; employees organization legal controls, participation in management by employ's representation.

UNIT-III

Administrative procedure: Purchase procedure, stress inventories, payment inter departmental relationship, relationship with city administration; record consumer, billing and collections, defaulters, damage claim and complaint's, periodic reports and checking, PWD contract agreement, technical report schemes and letter writing.

UNIT-IV

Public relations: Importance of good public relation, contacts with consumer: Public information and educational ways of promoting of good public relation; report for public information : advertising.

UNIT-V

Economics and financing: Total cost of project, capital and maintenance cost, financing procedure, international and national agencies, subsidies, grants and capital sharing.

MTEE -302 (D) ENVIRONMENTAL PLANNING

UNIT-I

Environmental problems : Introduction, air pollution-sources, control and harmful effects of CO, NO_x, SO_x, HC, automobile pollution, water pollution and its control, solid waste management, noise pollution.

UNIT-II

Land use planning: Deforestation and soil erosion, water logging, afforestation, forest conservation, wild life management, photometry and remote sensing for mapping of land scapes and land use, principles of town and country planning.

UNIT-III

Environmental impact assessment: Framework, statement, predication and assessment of impact of air, water noise, cultural and socioeconomic environment, methods of impact assessment.

UNIT-IV

Environmental protection and legislation: Environmental organization and agencies, pollution control Acts, standards of emission and effluent, environmental education, public participation.

UNIT-V

Global Environmental Issues: Green House Effect, Global warming and its effects, Ozone depletion – causes, chemical reactions, consequences, El-Nino phenomenon, Acid rains, Case studies.

Reference Books:

1. Christian Ndubisi Madu : Environmental Planning and Management ; Imperial College Press
2. James K, Lein : Integrated Environmental Planning ; Wiley-Blackwell, 2003
3. Paul H Selman : Environmental Planning; SAGE, 2000
4. K.D. Saksena : Environmental Planning Policies & Programmes in India; Shipra Pub. 1993
5. Walter E Westman : Ecology, Impact assessment and Environmental Planning; John Wiley and Sons, 1985

W.e.f. Academic Session 2015-16