

**7<sup>th</sup> Semester:**
**A. THEORY**

| Sl No.       | Code Number    | Subject                                  | Contact Hours |   |   |       | Credit Point |
|--------------|----------------|--|---------------|---|---|-------|--------------|
|              |                |  | L             | T | P | Total |              |
| 1            | TIU-UCE-T401   | Career Advancement & Skill Development # | 3             | 0 | 0 | 3     | 3            |
| 2            | TIU-UCE-T403   | Environmental Engineering – I            | 3             | 0 | 0 | 3     | 3            |
| 3            | TIU-UCE-T405   | Foundation Engineering                   | 3             | 0 | 0 | 3     | 3            |
| 4            | TIU-UCE-T407   | Water Resources Engineering – II         | 3             | 0 | 0 | 3     | 3            |
| 5            | TIU-UCE-E41X*  | Elective – I                             | 3             | 1 | 0 | 4     | 4            |
| 6            | TIU-UCE-E42Y** | Elective – II                            | 3             | 1 | 0 | 4     | 4            |
| Total Theory |                |  | 20            |   |   |       | 20           |

**B. PRACTICAL**

|                 |              |  |   |   |   |   |   |
|-----------------|--------------|--|---|---|---|---|---|
| 7               | TIU-UCE-L401 | Computer Application in Civil Engg. – II | 0 | 0 | 3 | 3 | 2 |
| 8               | TIU-UCE-L403 | Environmental Engineering Lab            | 0 | 0 | 3 | 3 | 2 |
| Total Practical |              |  | 6 |   |   |   | 4 |

**C. SESSIONAL**

|                 |              |                                    |   |   |   |   |   |
|-----------------|--------------|------------------------------------|---|---|---|---|---|
| 9               | TIU-UCE-P499 | Project – I                        | 0 | 0 | 3 | 3 | 3 |
| 10              | TIU-UCE-S499 | Seminar                            | 0 | 0 | 3 | 3 | 2 |
| 11              | TIU-UES-S499 | Entrepreneurship Skill Development | 0 | 0 | 0 | 0 | 2 |
| Total Sessional |              |                                    | 6 |   |   |   | 7 |

Total of Semester

32 31

\* X to be replaced by 1/3/5/7 or any other number depending upon the subject offered in a particular year (Vide the List of Elective subjects for Elective - I)

\*\* Y to be replaced by 1/3/5/7 or any other number depending upon the subject offered in a particular year (Vide the List of Elective subjects for Elective - II)

**8<sup>th</sup> Semester:**
**A. THEORY**

| Sl No.       | Code Number     | Subject                                      | Contact Hours |   |   |       | Credit Point |
|--------------|-----------------|--|---------------|---|---|-------|--------------|
|              |                 |  | L             | T | P | Total |              |
| 1            | TIU-UCE-T412    | Environmental Engineering – II               | 3             | 0 | 0 | 3     | 3            |
| 2            | TIU-UCE-T414    | Construction Planning and Project Management | 3             | 0 | 0 | 3     | 3            |
| 3            | TIU-UMG-T410    | Economics and Accountancy                    | 4             | 0 | 0 | 4     | 4            |
| 4            | TIU-UCE-E43Z*** | Elective – III                               | 3             | 1 | 0 | 4     | 4            |
| Total Theory |                 |  | 14            |   |   |       | 14           |

**C. SESSIONAL**

|                 |              |                                    |    |   |    |    |    |
|-----------------|--------------|------------------------------------|----|---|----|----|----|
| 4               | TIU-UCE-P498 | Project – II                       | 0  | 0 | 12 | 12 | 12 |
| 5               | TIU-UCE-G498 | Grand Viva-Voce                    | 0  | 0 | 0  | 0  | 3  |
| 6               | TIU-UES-S498 | Entrepreneurship Skill Development | 0  | 0 | 0  | 0  | 2  |
| Total Sessional |              |                                    | 12 |   |    |    | 17 |

Total of Semester

26 31

\*\*\* Z to be replaced by 2/4/6/8 or any other number depending upon the subject offered in a particular year (Vide the List of Elective subjects for Elective - III)

**Total Credit Points (3<sup>rd</sup> to 8<sup>th</sup> Semester):**
**182**

|                 |                 |     |      |                 |
|-----------------|-----------------|-----|------|-----------------|
| External Expert | External Expert | HOD | Dean | Vice Chancellor |
|-----------------|-----------------|-----|------|-----------------|



## 8<sup>TH</sup> SEMESTER

### ENVIRONMENTAL ENGINEERING – II

TIU-UCE-T412

**L-T-P: 3-0-0**

**Credits: 3**

**Air pollution:** sources & types and effects on biosphere; Introduction to air pollution meteorology; Air pollutant monitoring and control;

**Global effects of air pollution:** Green-house effects, acid rain and ozone layer depletion; international agreements for mitigating global air pollution effects.

**Solid Waste Management:** Municipal solid waste management; Composition and quantity of MSW; Separation for recycling and reuse; Disposal of MSW; Environmental Impacts of solid wastes

**Noise Pollution:** Definition and Introduction; The effects of noise; Levels of noise; Noise level standards Sources of noise and their noise level; Noise abatement and control

*Offered to Civil Engineering Semester 8:*

|                 |                 |     |      |                 |
|-----------------|-----------------|-----|------|-----------------|
| External Expert | External Expert | HOD | Dean | Vice Chancellor |
|-----------------|-----------------|-----|------|-----------------|



## CONSTRUCTION PLANNING AND PROJECT MANAGEMENT

TIU-UCE-T414

L-T-P: 3-0-0

Credits: 3

**Planning:** General consideration, Definition of aspect, prospect, roominess, grouping, circulation privacy, occlusion

**Regulation and Bye laws:** Bye Laws in respect of side space, Back and front space, Covered areas height of building etc., Lavatory blocks, ventilation, Requirements for stairs, lifts in public assembly building, offices

**Fire Protection:** Fire-fighting arrangements in public assembly buildings, planning, offices, auditorium

**Construction plants & Equipment:** Plants & equipment for earth moving, road constructions, excavators, dozers, scrapers, spreaders, rollers, their uses. Plants & Equipment for concrete construction: Batching plants, Ready Mix Concrete, concrete mixers, Vibrators etc., quality control.

**Planning & Scheduling of constructions Projects:** Planning by CPM & PERT, Preparation of network, Determination of slacks or floats. Critical activities. Critical path, project duration. expected mean time, probability of completion of project, Estimation of critical path, problems.

**Management:** Professional practice, Definition, Rights and responsibilities of owner, engineer, Contractors, types of contract

**Departmental Procedures:** Administration, Technical and financial sanction, operation of PWD, Tenders and its notification, EMD and SD, Acceptance of tenders, Arbitration.

*Offered to Civil Engineering Semester 8:*

|                 |                 |     |      |                 |
|-----------------|-----------------|-----|------|-----------------|
| External Expert | External Expert | HOD | Dean | Vice Chancellor |
|-----------------|-----------------|-----|------|-----------------|

## ECONOMICS AND ACCOUNTANCY

### TIU-UMG-T410

**L-T-P: 4-0-0**

**Credits: 4**

#### **Unit I Introduction**

Economics - microeconomics, macroeconomics, Managerial Economics – Relationship with other disciplines - Firms: Types, objectives and goals - Managerial decisions – Decision analysis.

#### **Unit II Demand & Supply Analysis**

Demand - Types of demand –Determinants of demand - Demand function – Demand elasticity – Demand forecasting. Supply – Determinants of supply – Supply function – Supply elasticity.

#### **Unit III Production and Cost Analysis**

Production function – Returns to scale – Production optimization – Least cost input – Isoquants - Managerial uses of production function. Cost Concepts – Cost function – Types of Cost – Determinants of cost – Short run and Long run cost curves – Cost Output Decision – Estimation of Cost

#### **Unit IV Pricing**

Determinants of Price – Pricing under different objectives and different market structures – Price discrimination – Pricing methods in practice – role of Government in pricing control.

#### **Unit V Accountancy (Elementary Treatment)**

Balance Sheet and related concepts - Profit & Loss Statement and related concepts - Financial Ratio Analysis – Cash Flow Analysis – Fund Flow Analysis – Comparative financial statements - Analysis & Interpretation of financial statements. Investments – Risks and return evaluation of investment decision – Average rate of return – Payback Period – Net Present Value –Internal rate of return.

*Offered to Civil Engineering Semester 8:*

|                 |                 |     |      |                 |
|-----------------|-----------------|-----|------|-----------------|
| External Expert | External Expert | HOD | Dean | Vice Chancellor |
|-----------------|-----------------|-----|------|-----------------|

**ELECTIVE – III: BRIDGE ENGINEERING**

**TIU-UCE-E432**

**L-T-P: 3-1-0**

**Credits: 4**

**Introduction:** Definition and Basic Forms, Component of bridge, classification of bridge, short history of bridge development. IRC Loads. Analysis of IRC Loads, Impact factors, Other loads to be considered, Importance of Hydraulic factors in Bridge Design.

**Reinforced concrete solid slab bridge:** Introduction, General design features, Effective width method. Simply supported and cantilever Slab Bridge, analysis and design

**Box Culvert:** Introduction, Design method and Design example

**Beam and Slab Bridges:** Introduction, Design of interior panel of slab. Pigeauds method, Design of longitudinal girder, Calculation of longitudinal moment, design example.

**Balanced Cantilever Bridges:** General Features, Arrangement of supports, design features Articulation, Design example.

**Steel Bridges:** General features, types of stress, Design example.

**Plate Girder Bridge:** Elements, design, lateral bracing, Box- girder Bridges.

**Composite Bridges:** General aspects, method of construction, analysis of composite section, shear connectors, design of composite beam.

**Cable Stayed Bridge:** General features, Philosophy of design.

***Offered to Civil Engineering Semester 8:***

|                 |                 |     |      |                 |
|-----------------|-----------------|-----|------|-----------------|
|                 |                 |     |      |                 |
| External Expert | External Expert | HOD | Dean | Vice Chancellor |



**ELECTIVE – III: WATER RESOURCES MANAGEMENT AND PLANNING**

**TIU-UCE-E434**

**L-T-P: 3-1-0**

**Credits: 4**

**Planning and analysis of Water Resource Systems:** Introduction, System Analysis, Engineers and Policymakers

**Methods of Analysis:** Introduction, Evaluation of Time streams of Benefits and Costs. Plan formulation, Planning models and solution procedures, Lagranges Multipliers, Dynamic Programming, Recursive equations, Bellmans’ principle of optimality. Curse of dimensionality of discrete dynamic programming. Examples

**Reservoir Operation:** Sequential process, single Reservoir problem - with release as decision variable, with storage as decision variable (deterministic approach). Examples, Related Computer Programming. Multi-reservoir problems (Deterministic approach)

**Water Resources Planning under Uncertainty:** Introduction, probability concepts and Methods – Random variable and Distributions, Univariate probability Distributions, properties of Random variable – Moment and Expectation (Univariate Distributions), Moment Generating Functions, Measures of Central tendency, Measures of Dispersion, Measures of symmetry (Skewness), measures of peakedness (kurtosis), examples

**Stochastic River Basin Planning Model:** Introduction, Reservoir operation, Stochastic, Dynamic programming, Operating Model, Probability Distribution of Storage volumes and Releases, examples

**Water quality Management:** Prediction and Simulation, Water quality Management Modeling

*Offered to Civil Engineering Semester 8:*

|                 |                 |     |      |                 |
|-----------------|-----------------|-----|------|-----------------|
|                 |                 |     |      |                 |
| External Expert | External Expert | HOD | Dean | Vice Chancellor |

**ELECTIVE – III: SOIL DYNAMICS AND MACHINE FOUNDATIONS**

**TIU-UCE-E436**

**L-T-P: 3-1-0**

**Credits: 4**

**Introduction:** Types of Machine Foundations, General requirement of Machine foundations, Dimensional criteria, Design data, Permissible amplitude, Permissible Bearing pressure

**Fundamental of vibrations:** Degrees of freedom, Natural frequency, Undamped single degree freedom system, damped single degree freedom system, Transmissibility, Response to ground motion, Introduction to multiple degree freedom system; Dynamic properties of Soil; Laboratory and field evaluation of soil properties as per IS codes;

**Analysis and design of Block Type Machine Foundation:** Modes of Vibrations, Methods of Dynamic Analysis, Design considerations for dynamically loaded foundations and constructional features; Design procedures for foundations for hammers, reciprocating engines, Vibration Isolation and damping

**Liquefaction of soils:** Definition, Causes and effects of Liquefaction, Evaluation of Liquefaction potential, Mitigation of Liquefaction Hazards

**Propagation of elastic waves in soils:** Mechanism of wave propagation, Body waves, Surface waves, Rayleigh waves

***Offered to Civil Engineering Semester 8:***

|                 |                 |     |      |                 |
|-----------------|-----------------|-----|------|-----------------|
|                 |                 |     |      |                 |
| External Expert | External Expert | HOD | Dean | Vice Chancellor |



**ELECTIVE – III: ENVIRONMENTAL POLLUTION & CONTROL**

**TIU-UCE-E438**

**L-T-P: 3-1-0**

**Credits: 4**

**Introduction:** Environment. Pollution, Pollution control

**Air Pollution:** Air Pollutants: Types, Sources, Effects; Air Pollution Meteorology: Lapse Rate, Inversion, Plume Pattern; Air Pollution Dispersion Model: Point Source Gaussian Plume Model, Stability Classes, Stability Charts, Design of Stack Height.

**Air pollution Control:** Self cleansing properties of the environment; Dilution method; Engineered Control of Air Pollutants: Control of the particulates, Control of Gaseous Pollutants, Control of Air pollution from Automobiles.

**Noise Pollution:** Definition; Sound Pressure, Power and Intensity; Noise Measurement: Relationships among Pressure, Power and Intensity, Levels, Frequency Band, Decibel Addition, Measures of community Noise i.e.  $L_N$ ,  $L_{eq}$ ,  $L_{dn}$ ,  $L_{NP}$ ; Sources; Effects; Control.

**Water pollution:** Pollution Characteristics of Typical Industries, Suggested Treatments.

**Global Environmental Issues:** Ozone Depletion, Acid Rain, Global Warming-Green House Effects

**Administrative Control on Environment:** Functions of Central and State Pollution Control Boards; Environmental Clearance Process for Industries and Infrastructural Projects

**Environmental Laws:** Water Act, Air Act, Motor Vehicle Act

*Offered to Civil Engineering Semester 8:*

|                 |                 |     |      |                 |
|-----------------|-----------------|-----|------|-----------------|
| External Expert | External Expert | HOD | Dean | Vice Chancellor |
|-----------------|-----------------|-----|------|-----------------|