B.Tech Civil Engineering (AKU Syllabus) SEMESTER- III

ORGANIZATIONAL BEHAVIOR & INDUSTRIAL PSYCHOLOGY Credit : 3

1. Concept of organization & organizational Behavior. Lecture : 2
2.(a) Personality : meaning, concept , determinants, personality theories (psychoanalytic Theory, Trait Theory andSelf Theory).
(b) Perception-meaning , concept, process of perception, significance of perception.
(c) Leaning- meaning, concept, nature, component of leaning process.
(d) Attitude- meaning, concept, factors in attitude formation, method of finding Employee's attitude.
(e) Value - Meaning and types, value and attitude – similarity and difference.
(f) Motivation- meaning, theory of motivation (Maslow's Theory & Herzberg's Theory). Lecture : 11
3.(a) Group & Group Dynamics - concept, importance, classification of groups , reason for group, formation, groupcohesiveness.
(b) Team work :meaning , concept, types , creating, an effective team. Lecture : 4
4.(a) Communication- concept, process, importance, barrier.
(b) Organizational conflict- meaning, concept, types, stages of conflict, resolution of conflict.
(c) Power & politics- nature and concept, Ethics of power & politics, types of power.
(d) Leadership- concept, qualities and functions of a leader, approaches to the analysis of leadership Lecture : 8
5. Concept of organization theory, concept of organization structure, form of organizational structure

BUILDING SCIENCE

1. Building construction : Overview of building process; Introduction to Building Law and IS Codes Different types of loads in Buildings, Load Combinations, IS Code provisions for Loads in Buildings. Lecture : 7
2. Foundation : shallow foundation (simple calculation) Lecture : 5
3. Super structure : Load bearing masonry, arches, lintels, scaffolding, formwork, Floors and roofs – flat and pitched roofs, concerning, floor finishes staircase and other element of construction; Doors and windows, Building services – vertical transportation, plumbing electrical, Ventilation and Air-conditioning, Energy efficiency, Fire protection, Acoustic and sound insulation. Damp proofing, termite proofing, Carpentry and joinery. Lecture : 10
4. Concrete : Concrete making materials, properties and types of cement, properties of concrete in fresh and hardened state, durability, spatial coherence Lecture : 7
5. Building stones : Varieties of Indian stones. Quarrying blasting Dressing of stones, characteristics of good building stones, Slate, Marble artificial stones. Stone preservation. Brick and brick masonry; Manufacture properties. Classification and specification, Brick masonry and principles of design of masonry structure.Lecture : 9
6. Timber steel : Properties and types miscellaneous materials; polymers and plastics .composites and smart materials. Lecture : 6

ENGINEERING GEOLOGY Credit : 4

1.Basic Geology : General Geology, Mineralogy, Petrology (igneous, sedimentary and metamorphic), Structural geology, Crystallography. Lecture : 06
2.Engineering properties of rocks : Geomorphology (Geomorphic processes weathering, Erosion, Origin and formation of solids). Lecture : 06
3.Geological hazards (landslides, earthquakes and volcanoes), Groundwater, Recent concepts in Geology, Plate tectonics and Sea – floor spreading. Lecture : 07
4. Applied Geology : Geophysical mapping : seismic, resistivity, gravity, radar, geotomography, logging; Geological exploration of an engineering site. Lecture : 08
5. S. I. Desk Study : Site investigation Boreholes: Remote sensing, GIS and GPS: Basic principle and their applications in studying and monitoring Lithosphere, Hydrosphere, Cryosphere and Atmosphere. Lecture : 08
6.Cut Slopes in rocks and clays; Geological factors affecting the construction of dams, reservoirs and tunnels. Criteria and factors for site selection for Dam, tunnels, waste/radioactive disposal sites, Indian Geology, Outline of stratography of India. Lecture : 10

FLUID MECHANICS Credit : 05

Introduction, fluid properties: density, viscosity, compressibility, ideal and real fluids. Lecture : 04
1. Hydrostatics; fluid force on plane and curved surfaces, manometry, buoyancy, uniformly accelerated motion. Lecture : 06
2. Kinematics of fluid flow. Generalized continuity equation, Irrotational motion and solution to Laplace equation. Concept of stream lines, Equipotential Lines, Flow Nets. Lecture : 09

3. Dynamics of fluid flow, Control volume concepts, Euler and Bernoulli's theorems and various application like pivot tube, venturimeter, orifice meter, notches and weir etc; Impulse momentum theory and application.
Lecture : 10
4. Introduction to Navier Stokes Equation. Flow of fluid in closed conduits, Laminar flow of viscous incompressible fluids, Darcy-Weisbach equation, Moody's diagram, and Minor losses Hardy-cross method for pipe networks. Lecture : 09
5. Forces on immersed bodies, concepts of separation, drag force, circulation and lift force. Dimensional Analysis, Model Similitude : Theory and application. Lecture : 08

INDUSTRIAL ECONOMICS & ACCOUNTING Credit : 4

1. Various definitions of Economics : Nature of Economic Problem, Relation between science, Engineering. Technology & Economics Lecture : 3
2. Meaning of demand, Law of Demand, Elasticity of demand, Practical importance & application of the concept of elasticity of Demand Lecture : 5
3. Meaning of Production and factor of Production : Land, labor, Capital ,Entrepreneur & Organization – their Characteristics law of variable Proportion .Return to Scale Lecture : 5
4. Cost Analysis : Various concept of cost, Cost function, Short & Long run cost. Concept of Revenue ,Break-Even Analysis Lecture : 5
5. Meaning of Market : Type of market – Perfect completion, Monopoly ,Oligopoly ,Monopolistic competition ,Main feature of these market), Meaning of Supply and Law of Supply, R ole of Demand & Supply in price in prime determination imperfect t competition L : 7
6. Engineering Economy :
(a) Simple and compound interest, Annuities, (b)Basic methods For making economy Studies - (i) Present worth method, (ii) Future worth method (iii)I.R.R method (c) Comparison of alternative – (i) Present worth method, (ii\) Future Worth method (iii) I.R.R method. Lecture : 7
7. Accounting: Meaning Scope and Role of accounting , Accounting concept & Convention. Accounting as information System. Recording of transaction in journal and Ledgers. Trial –Balance, Preparation of final Account. Lecture : 9

MATHEMATICS – III

1. ORDINARY DIFFERENTIAL EQUATIONS &SPECIAL FUNCTIONS : Series solution of differential equations (Frobenious method), Bessel's equation, Its solution, Bessel's function of first & second kind, Recurrence formula, Legendre's equation, Its solution, Legendre polynomials, Rodrigue's formula, Orthogonality of Legendre polynomial. Lecture : 10
2. PARTIAL DIFFERENTIAL EQUATION : Basic concept, 1st & 2nd order linear & quasi – linear partial differential equation, Classification of second order P.D.E., Boundary and initial conditions, wave equations, Separation of variables, use of fourier series, D'Alembert's solution of wave equation, Heat equation, Solution by fourier series. Lec : 10
3. COMPLEX ANALYSIS - I : Function of complex variables – limit, continuity, differentiability and analyticity of functions Cauchy-Riemann equations, Laplace's equation, harmonic function, Cauchy's integral theorem, Cauchy's integral formula, Taylor's and Laurent series, Residues and its applications to evaluating real integrals. Lecture : 10
4. PROBABILITY & STATISTICS : Theorems on probability, including Baye's rule, Random variable – cumulative distribution function, Probability mass function, probability density function, Mathematical expectation, mean variance, moment, generating function & characteristics function, standard probability models Binomials, Poisson exponential, Weibull, normal and lognormal, sampling & sampling distribution, Chi- square and F distributions, large and small sample tests of significance. Lec: 12