

SCHEME AND SYLLABI
FOR
FOURTH SEMESTER
OF
BACHELOR OF TECHNOLOGY
IN
CIVIL ENGINEERING
FROM 2009 ADMISSION ONWARDS

CALICUT UNIVERSITY (P.O), THENHIPALAM

UNIVERSITY OF CALICUT
CIVIL ENGINEERING
SCHEME OF STUDIES AND EXAMINATION AND SYLLABUS FOR
B. TECH DEGREE (FULL-TIME)
III to VIII SEMESTERS 2009 SCHEME

3rd Semester

Sl. No	Code	Subject	Hours / week			Marks		Sem-end Duration Hours	Credits
			L	T	P/D	Inte- rnal	Sem- end		
1	EN09 301	Engineering Mathematics III	3	1	-	30	70	3	4
2	EN09 302	Humanities and Communication Skills	2	1	-	30	70	3	3
3	CE09 303	Mechanics of Solids	4	1	-	30	70	3	5
4	CE09 304	Building Technology I	3	1	-	30	70	3	4
5	CE09 305	Surveying I	3	1	-	30	70	3	4
6	CE09 306	Engineering Geology	3	1	-	30	70	3	4
7	CE09 307(P)	Surveying Lab I	-	-	3	50	50	3	2
8	CE09 308(P)	Materials Testing Lab I	-	-	3	50	50	3	2
		Total	18	6	6				28

4th Semester

Sl. No	Code	Subject	Hours / week			Marks		Sem-end Duration Hours	Credits
			L	T	P/D	Inte- rnal	Sem- end		
1	EN09 401A	Engineering Mathematics IV	3	1	-	30	70	3	4
2	EN09 402	Environmental Studies	2	1	-	30	70	3	3
3	CE09 403	Fluid Mechanics	4	1	-	30	70	3	5
4	CE09 404	Structural Analysis I	3	1	-	30	70	3	4
5	CE09 405	Engineering Economics & Principles of Management	3	1	-	30	70	3	4
6	CE09 406	Surveying II	3	1	-	30	70	3	4
7	CE09 407(P)	Surveying Lab II	-	-	3	50	50	3	2
8	CE09 408(P)	Civil Engineering Drawing I	-	-	3	50	50	3	2
		Total	18	6	6				28

5th Semester

Sl. No	Code	Subject	Hours / week			Marks		Sem-end Duration Hours	Credits
			L	T	P/D	Inte- rnal	Sem- end		
1	CE09 501	Transportation Engineering I	4	1	-	30	70	3	5
2	CE09 502	Structural Design I	3	1	-	30	70	3	4
3	CE09 503	Open Channel Hydraulics & Hydraulic Machinery	3	1	-	30	70	3	4
4	CE09 504	Geotechnical Engineering I	3	1	-	30	70	3	4
5	CE09 505	Structural Analysis II	3	1	-	30	70	3	4
6	CE09 506	Building Technology II	2	1	-	30	70	3	3
7	CE09507(P)	Civil Engineering Drawing II	-	-	3	50	50	3	2
8	CE09 508(P)	Fluid Mechanics Lab	-	-	3	50	50	3	2
		Total	18	6	6				28

6th Semester

Sl. No	Code	Subject	Hours / week			Marks		Sem-end Duration s Hours	Credit
			L	T	P/D	Inte S - rnal end	em- end		
1	CE09 601	Hydrology & Irrigation Engineering	4	1	-	30	70	3	5
2	CE09 602	Structural Design II	3	1	-	30	70	3	4
3	CE09 603	Structural Analysis III	3	1	-	30	70	3	4
4	CE09 604	Geotechnical Engineering II	3	1	-	30	70	3	4
5	CE09 605	Transportation Engineering II	2	1	-	30	70	3	3
6	CE09 Lxx	Elective I	3	1	-	30	70	3	4
7	CE09607(P)	Geotechnical Engineering Lab	-	-	3	50	50	3	2
8	CE09608(P)	Materials Testing Lab II	-	-	3	50	50	3	2
		Total	18	6	6				28

Elective I

- CE09 L01 Advanced Mechanics of Materials
- CE09 L02 Traffic Engineering
- CE09 L03 Maintenance and Repair of Buildings
- CE09 L04 Computer Applications and Operations Research
- CE09 L05 Functional Design of Buildings

7th Semester

Sl. No	Code	Subject	Hours / week			Marks		Sem-end Duration Hours	Credits
			L	T	P/D	Inte S - rnal end	em- end		
1	CE09 701	Structural Design III	4	1	-	30	70	3	5
2	CE09 702	Design of Hydraulic Structures	2	-	2	30	70	3	4
3	CE09 703	Environmental Engineering I	2	1	-	30	70	3	3
4	CE09 704	Construction Engineering & Management	2	1	-	30	70	3	3
5	CE09 Lxx	Elective II	3	1	-	30	70	3	4
6	CE09 Lxx	Elective III	3	1	-	30	70	3	4
7	CE09 707(P)	Computer Applications Lab	-	-	3	50	50	3	2
8	CE09 708(P)	Environmental Engineering Lab	-	-	3	50	50	3	2
9	CE09 709(P)	Project	-	-	1	100	-	3	1
		Total	16	5	9				28

8th Semester

Sl. No	Code	Subject	Hours / week			Marks		Sem-end Duration Hours	Credits
			L	T	P/D	Inte S	em- nal end		
1	CE09 801	Environmental Engineering II	4	1	-	30	70	3	5
2	CE09 802	Quantity Survey & Valuation	2	1	-	30	70	3	3
3	CE09 Lxx	Elective IV	3	1	-	30	70	3	4
4	CE09 Lxx	Elective V	3	1	-	30	70	3	4
5	CE09 805(P)	Seminar	-	-	3	100	-	3	2
6	CE09 806(P)	Project	-	-	11	100	-	3	7
7	CE09 807(P)	Viva Voce	-	-	-	-	100	3	3
		Total	12	4	14				28

Electives for 7th and 8th Semesters

CE09 L06 Advanced Structural Design I
 CE09 L07 Advanced Structural Design II
 CE09 L08 Advanced Geotechnical Engineering I
 CE09 L09 Advanced Geotechnical Engineering II
 CE09 L10 Highway Pavement Design
 CE09 L11 Ecology and Environmental Chemistry
 CE09 L12 Industrial Structures
 CE09 L13 Structural Dynamics & Seismic Design
 CE09 L14 Soil Exploration, Testing and Evaluation
 CE09 L15 Surface Hydrology and Water Power
 CE09 L16 Urban Transportation Planning
 CE09 L17 Architecture and Town Planning
 CE09 L18 Advanced Construction Engineering and Management
 CE09 L19 Coastal Engineering & Marine Structures
 CE09 L20 Ground Water Hydrology
 CE09 L21 Ground Improvement Techniques
 CE09 L22 Environmental Pollution Control Engineering*
 CE09 L23 Experimental Stress Analysis*
 CE09 L24 Remote Sensing and GIS*
 CE09 L25 Finite Element Methods*

Global Electives

CS09 L24 Computer Based Numerical Methods
 PE09 L24 Industrial Psychology
 PE09 L25 Entrepreneurship
 ME09 L22 Quality Engineering and Management
 ME09 L25 Energy Engineering and Management
 ME09 L23 Industrial Safety Engineering
 AN09 L24 Project Management
 CH09 L24 Industrial Pollution Control
 EC09 L23 Data Structures and Algorithms
 EE09 L22 Soft Computing Techniques

EN09 401A: Engineering Mathematics IV

(Common for ME, CE, PE, CH, BT, PT, AM, and AN)

Teaching scheme

Credits: 4

3 hours lecture and 1 hour tutorial per week

Objective

The use of probability models and statistical methods for analyzing data has become common practice in virtually all scientific disciplines. Two modules of this course attempt to provide a comprehensive introduction to those models and methods most likely to be encountered and used by students in their careers in engineering. A broad introduction to some important partial differential equations is also included to make the student get acquainted with the basics of PDE.

Module I: Probability Distributions (13 hours)

Random variables – Mean and Variance of probability distributions – Binomial Distribution – Poisson Distribution – Poisson approximation to Binomial distribution – Hyper Geometric Distribution – Geometric Distribution – Probability densities – Normal Distribution – Uniform Distribution – Gamma Distribution.

Module II: Theory of Inference (14 hours)

Population and Samples – Sampling Distribution – Sampling distribution of Mean (σ known) – Sampling distribution of Mean (σ unknown) – Sampling distribution of Variance – Interval Estimation – Confidence interval for Mean – Null Hypothesis and Tests of Hypotheses – Hypotheses concerning one mean – Hypotheses concerning two means – Estimation of Variances – Hypotheses concerning one variance – Hypotheses concerning two variances – Test of Goodness of fit.

Module III: Series Solutions of Differential Equations (14 hours)

Power series method for solving ordinary differential equations – Legendre's equation – Legendre polynomials – Rodrigue's formula – Generating functions – Relation between Legendre polynomials – Orthogonality property of Legendre polynomials (Proof not required) – Frobenius method for solving ordinary differential equations – Bessel's equation – Bessel functions – Generating functions – Relation between Bessel functions – Orthogonality property of Bessel functions (Proof not required).

Module IV: Partial Differential Equations (13 hours)

Introduction – Formation of PDE – Complete Solution – Equations solvable by direct integration – Linear PDE of First order, Lagrange's Equation: $Pp + Qq = R$ – Non-Linear PDE of First Order, $F(p,q) = 0$, Clairaut's Form: $z = px + qv + F(p,q)$, $F(z,p,q) = 0$, $F_1(x,q) = F_2(y,q)$ – Classification of Linear PDE's – Derivation of one dimensional wave equation and one dimensional heat equation – Solution of these equation by the method of separation of variables – D'Alembert's solution of one dimensional wave equation.

Text Books

Module I:

Richard A Johnson, CB Gupta, Miller and Freund's Probability and statistics for Engineers, 7e, Pearson Education- Sections: 4.1, 4.2, 4.3, 4.4, 4.6, 4.8, 5.1, 5.2, 5.5, 5.7

Module II:

Richard A Johnson, CB Gupta, Miller and Freund's Probability and statistics for Engineers, 7e, Pearson Education- Sections: 6.1, 6.2, 6.3, 6.4, 7.2, 7.4, 7.5, 7.8, 8.1, 8.2, 8.3, 9.5

Module III:

Erwin Kreysig, Advanced Engineering Mathematics, 8e, John Wiley and Sons, Inc.- Sections: 4.1, 4.3, 4.4, 4.5

Module IV:

N Bali, M Goyal, C Watkins, Advanced Engineering Mathematics, A Computer Approach, 7e, Infinity Science Press, Fire Wall Media- Sections: 16.1, 16.2, 16.3, 16.4, 16.5, 16.6, 16.7, 16.8, 16.9
Erwin Kreysig, Advanced Engineering Mathematics, 8e, John Wiley and Sons, Inc. Sections: 11.2, 11.3, 11.4, 9.8 Ex.3, 11.5

Reference books

1. William Hines, Douglas Montgomery, David Goldman, Connie Borror, Probability and Statistics in Engineering, 4e, John Wiley and Sons, Inc.
2. Sheldon M Ross, Introduction to Probability and Statistics for Engineers and Scientists, 3e, Elsevier, Academic Press.
3. Anthony Croft, Robert Davison, Martin Hargreaves, Engineering Mathematics, 3e, Pearson Education.
4. H Parthasarathy, Engineering Mathematics, A Project & Problem based approach, Ane Books India.
5. B V Ramana, Higher Engineering Mathematics, McGrawHill.
6. Sarveswara Rao Koneru, Engineering Mathematics, Universities Press.
7. J K Sharma, Business Mathematics, Theory and Applications, Ane Books India.
8. John bird, Higher Engineering Mathematics, Elsevier, Newnes.
9. M Chandra Mohan, Vargheese Philip, Engineering Mathematics-Vol. I, II, III & IV., Sanguine Technical Publishers.
10. Wylie C.R and L.C. Barret, Advanced Engineering Mathematics, McGraw Hill.
11. V R Lakshmy Gorty, Advanced Engineering Mathematics-Vol. I, II., Ane Books India.
12. Sastry S.S., Advanced Engineering Mathematics-Vol. I and II., Prentice Hall of India.
13. Michael D Greenberg, Advanced Engineering Mathematics, Pearson Education.

Internal Continuous Assessment (Maximum Marks-30)

60% - Tests (minimum 2)

30% - Assignments (minimum 2) such as home work, problem solving, group discussions, quiz, literature survey, seminar, term-project, software exercises, etc.

10% - Regularity in the class

University Examination Pattern

PART A: Short answer questions (one/two sentences)

5 x 2 marks=10 marks

All questions are compulsory. There should be at least one question from each module and not more than two questions from any module.

PART B: Analytical/Problem solving questions

4 x 5 marks=20 marks

Candidates have to answer four questions out of six. There should be at least one question from each module and not more than two questions from any module.

PART C: Descriptive/Analytical/Problem solving questions

4 x 10 marks=40 marks

Two questions from each module with choice to answer one question.

Maximum Total Marks: 70

EN09 402: ENVIRONMENTAL SCIENCE

(Common for all branches)

Teaching scheme

Credits: 3

2 hours lecture and 1 hour tutorial per week

Objectives

- To understand the problems of pollution, loss of forest, solid waste disposal, degradation of environment, loss of biodiversity and other environmental issues and create awareness among the students to address these issues and conserve the environment in a better way.

Module I (8 hours)

The Multidisciplinary nature of environmental science

Definition-scope and importance-need for public awareness.

Natural resources

Renewable and non-renewable resources:

Natural resources and associated problems-forest resources: Use and over exploitation, deforestation, case studies. Timber extraction, mining, dams and their defects 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 studies.- Food resources: World food problems, changes caused by agriculture over grazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies.-Energy resources: Growing energy needs, renewable and non-renewable energy resources, use of alternate energy resources, Land resources: Land as a resource, land degradation, man induced land slides, soil erosion and desertification.

Module II (8 hours)

Ecosystems-Concept of an ecosystem-structure and function of an ecosystem – producers, consumers, decomposers-energy flow in the ecosystem-Ecological succession- Food chains, food webs and Ecological pyramids-Introduction, types, characteristics features, structure and function of the following ecosystem-Forest ecosystem- Grassland ecosystem –Desert ecosystem-Aquatic ecosystem(ponds, streams, lakes, rivers, oceans , estuaries)

Biodiversity and its consideration

Introduction- 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 level-India at mega – diversity nation- Hot spot of biodiversity-Threats to biodiversity: habitat loss, poaching of wild life, man , wild life conflicts –Endangered and endemic species of India-Conservation of biodiversity : In-situ and Ex-situ conservation of biodiversity.

Module III (10 hours)

Environmental pollution

Definition-Causes, effects and control measures of Air pollution-m Water pollution –

soil pollution-Marine pollution-Noise pollution-Thermal pollution-Nuclear hazards-

Solid waste management: Causes, effects and control measures of urban and industrial

wastes-Role of an individual in prevention of pollution-pollution case studies-Disaster

management: floods , earth quake, cyclone and landslides-Environmental impact

assessment

Module IV (10 hours)

Environment and sustainable development-Sustainable use of natural resources-

Conversion of renewable energy resources into other forms-case studies-Problems

related to energy and Energy auditing-Water conservation, rain water harvesting,

water shed management-case studies-Climate change, global warming, acid rain,

ozone layer depletion, nuclear accidents and holocaust-Waste land reclamation-

Consumerism and waste products-Reduce, reuse and recycling of products-Value education.

Text Books

1. Clark, R.S., Marine pollution, Clanderson Press Oxford.
2. Mhaskar A. K. Matter Hazrdous, Techno-science Publications.
3. Miller T. G. Jr., Environmental Science, Wadsworth Publishing Co.
4. Townsend C., Harper J, Michael Begon, Essential of Ecology, Blackwell Science
5. Trivedi R. K., Goel P. K., Introduction to Air Pollution, Techno-Science Publications.

Reference Books.

1. Raghavan Nambiar, K, Text book of Environmental Studies, Nalpat Publishers Kochi
 2. Bharucha Erach, Biodiversity of India, Mapin Publishing Pvt. Ltd., Ahmedabad – 380 013, India, Email: mapin@icenet.net
 3. Cunningham, W.P., Cooper, T.H., Gorhani, E & Hepworth, M.T. 2001 Environmental encyclopedia Jaico publ. House Mumbai 1196p
 4. Down to Earth, Centre for Science and Environment
 5. Hawkins, R.E. Encyclopedia of Indian Natural History, Bombay Natural History Society, Bombay
 6. McKinney, M.L. & School, R.M. 1996. Environmental Science system & Solutions, Web enhanced edition, 639p.
 7. Odum, E.P. 1971. Fundamentals of Ecology. W.B. Saunders Co. USA, 574p
 8. Rao, M.N. & Datta, A.K 1987. Waste Water treatment. Oxford & IBH Publ. Co. Pvt. Ltd., 345p
 9. Survey of the Environment, The Hindu (M)
 10. Wagner, K.D. 1998. Environmental Management. W.B. Saunders Co. Philadelphia, USA 499p
- *M Magazine

Internal Continuous Assessment (Maximum Marks-30)

- 60% - Tests (minimum 2)
30% - Assignments (minimum 2) such as Report of field work, literature survey, seminar etc.
10% - Regularity in the class

Note: Field work can be Visit to a local area to document environmental assets-river/forest/grass land/mountain or Visit to local polluted site-urban/rural/industrial/agricultural etc. or Study of common plants, insects, birds etc. or Study of simple ecosystems-pond, river, hill slopes etc. or mini project work on renewable energy and other natural resources , management of wastes etc.

University Examination pattern

PART A: Short answer questions

5×2 marks=10 Marks

All questions are compulsory. There should be at least one question from each module and not more than two questions from any module.

PART B: Analytical / Problem solving questions

4×5 marks=20 Marks

Candidates have to answer four questions out of six. There should be at least one question from each module and not more than two questions from any module.

PART C: Descriptive/Analytical / Problem solving questions.

4×10 marks= 40 Marks

Two questions from each module with choice to answer one question.

The weightage for numerical questions may be modified

Maximum Total marks: 70

CE09 403: FLUID MECHANICS

Teaching scheme

Credits: 5

4 hours lecture and 1 hour tutorial per week

Objective:

- This course gives an introduction to the fundamentals of fluid flow and its behavior so as to equip the students to learn related subjects and their applications in the higher semesters.

Module I (19hours)

Fluid - definition - types of fluids - fluids as a continuum - fluid properties - density – specific gravity - surface tension and capillarity - vapour pressure - viscosity and compressibility - classification of fluids - fluid statics - fluid pressure - absolute and gauge pressure – measurement of pressure - fluid static force on immersed surfaces - buoyant forces - stability of floating and submerged bodies - hydraulic press, cranes, lifts - fluid kinetics - methods of describing fluid flow - Lagrangian and Eulerian approaches - types of fluid flow - rotational and irrotational flows - vorticity and circulation - velocity and acceleration - local and convective acceleration - potential flows - velocity potential and stream function - laplace equation - flownets - uses and limitations - methods of analysis of flow net

Module II (18 hours)

Fluid dynamics - forces influencing fluid motion - types of forces - body and surface forces - energy and head - equations of fluid dynamics - Euler equation and application - integration of Euler equation to get Bernoullis' equation - momentum equation - vortex motion - free and forced vortex - application of Bernoullis' equation in measurement of flows - stagnation pressure - pitot tube, prandtl tube, venturi meter, orifice plate - flow nozzles, orifices, mouthpieces, notches and weirs.

Module III (18 hours)

Pipe flow - transition from laminar flow to turbulent flow - problems in pipe flow - losses in pipe flow - major and minor losses - losses in transition - losses in fittings and valves - friction loss in pipe - coefficient of friction - commercial pipes in use - different arrangements of pipes – pipes open to atmosphere - pipe connecting reservoirs - branching pipes - pipes in parallel and series - equivalent lengths – power transmission in pipes - waterhammer - cavitation - syphons – laminar flow in pipes - Hagen Poisuille's equation.

Module IV (17 hours)

Forces around submerged bodies – Introduction to boundary layer-
Dimensional analysis – scope of dimensional analysis - dimensions -
dimensional homogeneity - dimensional groups - dimensional analysis
using Buckingham's π theorem method - examples of drag on immersed
bodies - pipe flow - flow over weirs and orifices - model testing - similitude
- special model laws - Froude, Reynold, Weber, Cauchy and Mach.laws -
problem solution using Froude and Reynold laws.

Text books:

1. Modi P.N. & Seth S.M., Hydraulics & Fluid Mechanics, Standard Book House
- 2.Bensal R K A Text Book of Fluid Mechanics and Hydraulic Machines, Laxmi Publications

Reference books:

1. Streeter V.L., Fluid Mechanics, McGraw Hill
2. Garde R.J., Fluid Mechanics Through Problems, Wiley eastern
3. Subramanya K., Theory and Applications of Fluid Mechanics, Tata McGraw Hill
4. Duncan, Tom & Young, Fluid Mechanics, ELBS

Internal Continuous Assessment (Maximum Marks-30)

60% - Tests (minimum 2)

30% - Assignments (minimum 2) such as home work, problem solving, group discussions, quiz, literature survey, seminar, term-project, software exercises, etc.

10% - Regularity in the class

Note: Students shall be encouraged to solve problems using software like spreadsheet, MATLAB etc.)

University Examination pattern

PART A: Short answer questions

5×2 marks=10 Marks

All questions are compulsory. There should be at least one question from each module and not more than two questions from any module.

PART B: Analytical / Problem solving questions

4×5 marks=20 Marks

Candidates have to answer four questions out of six. There should be at least one question from each module and not more than two questions from any module.

PART C: Descriptive/Analytical / Problem solving questions.

4×10 marks= 40 Marks

Two questions from each module with choice to answer one question.

The weightage for numerical questions may be modified

Maximum Total marks: 70

CE09 404: STRUCTURAL ANALYSIS - I

Teaching scheme

Credits: 4

3 hours lecture and 1 hour tutorial per week

Objectives

- To equip the students with the comprehensive methods of structural analysis with emphasis on analysis of elementary structures.

Module 1 (14 hours)

Elastic theorems and energy principles. Strain energy due to axial load, bending moment, shear and torsion- principle of superposition

Principle of virtual work-Castigliano's theorem for deflection-theorem of complementary energy- Betti's theorem-Maxwell's law of reciprocal deflections-principle of least work-application of unit load method and strain energy method for determination of deflection of statically determinate frames -pin jointed trusses -temperature effects, lack of fit.

Statically indeterminate structures-degree of static and kinematic indeterminacies. Analysis of fixed beams by strain energy method.

Module II (14 hours)

Fixed and continuous beams.

Brief introduction to force and displacement methods-analysis of beams and rigid frames of different geometry by consistent deformation method-settlement effects- -analysis of pin jointed trusses by consistent deformation method-external and internal redundant trusses-effect of settlement and prestrain.

Beams curved in plan-Analysis of cantilever beam curved in plan - analysis of circular beams over simple supports.

Module III (13 hours)

Moving loads and influence lines .

Introduction to moving loads-concept of influence lines-influence lines for reaction, shear force and bending moment in simply supported beams and over hanging beams-Muller Breslau principle-Application to propped cantilevers -influence lines for forces in beams and trusses analysis for different types of moving loads-single concentrated load-several concentrated loads uniformly distributed load shorter and longer than the span.

Module IV (13 hours)

Cables, suspension bridges and arches.

Analysis of forces in cables-temperature effects-suspension bridges with three hinged and two hinged stiffening girders-theory of arches-Eddy's theorem-analysis of three hinged and two hinged arches -settlement and temperature effects.

Text books:

1. Gere and Timoshenko, Mechanics of materials, CBS. Publishers
2. Wilbur J.B. and Norris C.H., Elementary structural Analysis, McGraw Hill
3. Wang C.K., Intermediate Structural Analysis, McGraw Hill
4. Hibbeler., Structural Analysis, Pearson Education
5. Daniel L Schodak, Structures, Pearson Education/Prentice Hall India

References:

1. Kinney S., Indeterminate Structural Analysis, Oxford & IBH
2. Coates, Coutie and Kong , Structural Analysis, ELBS Publishers
3. Reddy C.S., Indeterminate Structural Analysis, Tata McGraw Hill
4. Timoshenko S.P.& Young D.H., Theory of Structures, McGraw Hill

Internal Continuous Assessment (Maximum Marks-30)

60% - Tests (minimum 2)

30% - Assignments (minimum 2) such as home work, problem solving, group discussions, quiz, literature survey, seminar, term-project, software exercises, etc.

10% - Regularity in the class

University Examination pattern

PART A: Short answer questions

5×2 marks=10 Marks

All questions are compulsory. There should be at least one question from each module and not more than two questions from any module.

PART B: Analytical / Problem solving questions

4×5 marks=20 Marks

Candidates have to answer four questions out of six. There should be at least one question from each module and not more than two questions from any module.

PART C: Analytical / Problem solving questions

4×10 marks= 40 Marks

Two questions from each module with choice to answer one question.

Maximum Total marks: 70

CE09 405: ENGINEERING ECONOMICS AND PRINCIPLES OF MANAGEMENT

Credits: 4

Section 1 ENGINEERING ECONOMICS

Teaching scheme: 2 hours lecture per week

Objective:

- Impart fundamental economic principles that can assist engineers to make more efficient and economical decisions.

Pre-requisite: NIL

Module1 (14 Hrs.)

Economic reasoning, Circular Flow in an economy, Law of supply and demand, Economic efficiency. Element of costs, Marginal cost, Marginal Revenue, Sunk cost, Private and Social cost, Opportunity cost. Functions of Money and commercial Banking. Inflation and deflation: concepts and regulatory measures. Economic Policy Reforms in India since 1991: Industrial policy, Foreign Trade policy, Monetary and fiscal policy, Impact on industry.

Module II. (13 Hrs).

Value Analysis – Function, aims, procedure.–Time value of money, Single payment compound amount factor, Single payment present worth factor, Equal payment series sinking fund factor, Equal payment series payment Present worth factor- equal payment series capital recovery factor-Uniform gradient series annual equivalent factor. Methods of project analysis (pay back, ARR, NPV, IRR and Benefit -Cost ratio) Break-even analysis-, Process planning.

Text books

- 1 Panneer Selvam, R, Engineering economics, Prentice Hall of India, New Delhi, 2002.
2. Wheeler R(Ed) Engineering economic analysis, Oxford University Press, 2004.

Internal Continuous assessment

Maximum marks15

One Series test (9marks),

One assignment (4 marks)

Regularity in attendance (2marks).

University question pattern (35marks)

Part A: 3 Analytical questions of five marks from the two modules with not less than one from each (3 x 5 = 15)

Part B: 2 questions of ten marks from the two modules with equal number of choices (2 x 10 = 20)

Section 11 PRINCIPLES OF MANAGEMENT

Teaching scheme: 2 hours per week

Objective:

- To provide knowledge on principles of management, decision making techniques, accounting principles and basic management streams

Module III (18 hours)

Principles of management – Evolution of management theory and functions of management

Organizational structure – Principle and types

Decision making – Strategic, tactical & operational decisions, decision making under certainty, risk & uncertainty and multistage decisions & decision tree

Human resource management – Basic concepts of job analysis, job evaluation, merit rating, wages, incentives, recruitment, training and industrial relations

Module IV (18 hours)

Financial management – Time value of money and comparison of alternative methods

Costing – Elements & components of cost, allocation of overheads, preparation of cost sheet, break even analysis

Basics of accounting – Principles of accounting, basic concepts of journal, ledger, trade, profit & loss account and balance sheet

Marketing management – Basic concepts of marketing environment, marketing mix, advertising and sales promotion

Project management – Phases, organisation, planning, estimating, planning using PERT & CPM

References

1. F. Mazda, Engineering management, Addison Wesley, Longman Ltd., 1998
2. Lucy C Morse and Daniel L Babcock, Managing engineering and technology, Pearson Prentice Hall
3. O. P. Khanna, Industrial Engineering and Management, Dhanpat Rai and Sons, Delhi, 2003.
4. P. Kotler, Marketing Management: Analysis, Planning, Implementation and Control, Prentice Hall, New Jersey, 2001
5. Venkata Ratnam C.S & Srivastva B.K, Personnel Management and Human Resources, Tata McGraw Hill.
6. Prasanna Chandra, Financial Management: Theory and Practice, Tata McGraw Hill.
7. Bhattacharya A.K., Principles and Practice of Cost Accounting, Wheeler Publishing
8. Weist and Levy, A Management guide to PERT and CPM, Prantice Hall of India
9. Koontz H, O'Donnel C & Weihrich H, Essentials of Management, McGraw Hill.
10. Ramaswamy V.S & Namakumari S, Marketing Management : Planning, Implementation and Control, MacMillan

Internal Continuous assessment

Maximum marks 15

One Series test (9marks),

One assignment (4 marks)

Regularity in attendance (2marks).

University question pattern (35marks)

Part A: 3 Analytical questions of five marks from the two modules with not less than one from each ($3 \times 5 = 15$)

Part B: 2 questions of ten marks from the two modules with equal number of choices ($2 \times 10 = 20$)

Note: University question paper shall have separate sections I and II for Engineering Economics and Principles of Management respectively and students shall answer in two separate answer books.

CE09 406: SURVEYING II

Teaching Scheme

Credits: 4

3 hours lecture and 1 hour tutorial per week

Objective:

- To understand advanced concepts of surveying by using basic instruments to study modern trends in surveying.

Module I (13 hours)

Tacheometric surveying – stadia system – fixed and movable hair methods – staff held vertical & normal – instrument constants – analytic lens – tangential system – subtense bar
Hydrographic survey – scope – shoreline survey - soundings - sounding equipment - methods - ranges – locating sounding - plotting - three point problem

Module II (14 hours)

Triangulation - principle - reconnaissance - selection of site for base line - selection of stations - orders of triangulation - triangulation figures - scaffolds and signals - marking of stations - intervisibility and heights of stations - satellite stations - base line measurement - equipment and corrections. Adjustment of observations - laws of weight - probable error - most probable value - station adjustment – figure adjustment - adjustment of geodetic quadrilateral - adjustments of a level network - adjustment of a closed traverse

Module III (14 hours)

Field astronomy - definitions - solution of an astronomical triangle - co-ordinate systems - time - solar, sidereal and standard equation of time - sundial - determination of time, azimuth, latitude and longitude

Module IV (13 hours)

Trigonometric levelling - various methods - photogrammetry - fundamental principles of ground and aerial photogrammetry - analytical and graphical methods - field work - phototheodolite and its use - methods of aerial surveying - interpretation of air photographs - introduction of modern instruments - electronic distance measuring – total station – types, working principles, measurement techniques and error corrections - automatic levels

Reference books:

1. Kanetkar T.P. & Kulkarni S.V., Surveying Vol. I &II, Vidyarthigriha Prakasan
2. Punmia B.C., Surveying Vol. I &II, Laxmi Pub
3. Arora K.R., Surveying Vol. I & II, Standard Book House

Internal Continuous Assessment (Maximum Marks-30)

60% - Tests (minimum 2)

30% - Assignments (minimum 2) such as home work, problem solving, quiz, literature survey, term-project, software exercises, etc.

10% - Regularity in the class

University Examination pattern

PART A: Short answer questions

5×2 marks=10 Marks

All questions are compulsory. There should be at least one question from each module and not more than two questions from any module.

PART B: Analytical / Problem solving questions

4×5 marks=20 Marks

Candidates have to answer four questions out of six. There should be at least one question from each module and not more than two questions from any module.

PART C: Descriptive/Analytical / Problem solving questions.

4×10 marks= 40 Marks

Two questions from each module with choice to answer one question.

Maximum Total marks: 70

CE09 407(P): SURVEYING LAB II

Teaching Scheme
3 hours practical per week

Credits: 2

Objective

- To give a practical knowledge in different aspects of Theodolite Surveying & Tacheometry

List of exercises

1. Theodolite surveying - horizontal angle by repetition & reiteration methods.
2. Determination of tacheometric constants
3. Heights and distances by stadia tacheometry
4. Heights and distances by tangential tacheometry
5. Heights and distances by solution of triangles
6. Setting out of simple curves - linear methods
7. Setting out of simple curves - angular method
8. Setting out of transition curve
9. Theodolite traversing
10. Study of modern instruments - Automatic levels, Total station and Electronic theodolite
11. Total station – Horizontal and vertical angles, Horizontal distance, Level difference, traversing & Area calculation.

Internal Continuous Assessment (Maximum Marks-50)

60%-Laboratory practical and record
30%- Test/s
10%- Regularity in the class

Note: A term project, like an application oriented field survey, is to be completed as part of this practical subject.

Semester End Examination (Maximum Marks-50)

70% - Procedure, conducting experiment, results, tabulation, and inference
20% - Viva voce
10% - Fair record

CE09 408(P): CIVIL ENGINEERING DRAWING I

Teaching scheme
3 hours per week

Credits: 2

Objectives

- To make the students aware about the basic principles of Building Drawing
- To make the students to know Basic commands of a popular drafting package
- Make the students to draw plan, elevation and section of buildings

Module 0: Introduction of a Popular Drafting Package (6 Hours)

- Basic Commands and simple drawings

Module 1: Detailed drawing of Components (21 Hours)

- Panelled doors, glazed windows and ventilators in wood (2 Sheets)
- Steel windows (1 Sheet)
- Roof truss in structural steel sections (2 sheets)
- Reinforced Concrete staircase (2 sheets)

Module –II: From given line sketch and specification, develop Working drawings (plan, elevation and section) of the following buildings (27 Hours)

- Single storied residential building with flat and tiled roof (4 Sheets)
- Public buildings like office, dispensary, post office, bank etc. (3 sheets)
- Factory building with trusses supported on Brick walls and pillars (2 sheets)

Assignment: preparing drawings in any popular drafting package.

Reference Books:

Balagopal T.S. Prabhu, Building drawing and detailing, Spades Publishers
Shah & Kale ,Building Drawing, Tata McGraw Hill
B.P. Verma, Civil Engineering Drawing and housing Planning, Khanna Publishers

Internal Continuous Assessment (Maximum Marks-50)

Any 5 sheets in Module 1- $5 \times 2 = 10$ marks
Any 6 sheets in Module II – $6 \times 2 = 12$ Marks
Assignment - 8 marks
Test - 20 marks
Total - 50 marks

University Examination pattern:

- 1) No Questions from Module 0
 - 2) 3 Questions of 10 marks each from Module I with Choice to answer any two
($2 \times 10 = 20$ marks)
 - 3) One compulsory question of 30 marks from Module II ($1 \times 30 = 30$ marks)
- Total - 50 marks