

B.TECH CE 2018-2022												
SEMESTER VII												
S.No.	CATEGORY	CODE	COURSE TITLE	Periods			Evaluation Scheme				Subject Total	Credit
				L	T	P	Assignment	TA	Total	ESE		
1	PROFESSIONAL ELECTIVE V (Select any one of the following)											
	Professional Elective Courses V(5APECCEEL401	Design of Concrete Structures-I	3	0	0	20	10	30	70	100	3
		5APECCEEL402	Concrete Technology	3	0	0	20	10	30	70	100	3
		5APECCEEL403	Reinforced Concrete	3	0	0	20	10	30	70	100	3
2	PROFESSIONAL ELECTIVE VI (Select any one of the following)											
	Professional Elective Courses	5APECCEEL404	Design of Steel Structures	3	0	0	20	10	30	70	100	3
		5APECCEEL405	Metal Structure Behaviour- I	3	0	0	20	10	30	70	100	3
		5APECCEEL406	Civil Engineering Design-I	3	0	0	20	10	30	70	100	3
3	OPEN ELECTIVE II (Select any one of the following)											
	Open Elective Courses	5A0EEL401	Seminar in Executive Communication	3	0	0	20	10	30	70	100	3
	Open Elective Courses	5A0EEL402	Principle of Management	3	0	0	20	10	30	70	100	3
	Open Elective Courses	5A0EEL403	Green Building	3	0	0	20	10	30	70	100	3
PRACTICAL /SESSIONAL												
1	Project	PROJ-CE401	Project I	3	0	12			100	100	200	6
									TOTAL		800	15

** NOTE: Qualifying Non Credit Course

Program: B.Tech

Semester: Seven

Course: Design of concrete Structures I (Professional elective V)

Course Code: 5A0EEL401

L	T	P	C
3	0	0	0

Course Objective:

- *Students will become familiar with the reinforced concrete fabrication and construction process*
- *Students will be required to design a concrete mix design and form, pour, construct, and test reinforced concrete beam.*
- *Students will be required to perform as a group, each with individual assignments, on an industry relevant design project*

Concrete Materials. Examines the influence of constituent materials (cements, aggregates and admixtures) on the properties of fresh and hardened concrete; Recycled aggregates recovered from construction and demolition wastes; M-Sand; Light-weight aggregates; Use of Fly Ash in concrete; Fibre-reinforced concrete with various types of metallic and non-metallic fibres; various types of concrete such as Self Compacting Concrete, High Performance Concrete, etc.; mix design; handling and placement of concrete; Effect of revibration of concrete; behavior of concrete under various types of loading and environment; test methods. Laboratory practice is an integral part of the course.

Reinforced Concrete. Study of the strength, behavior, and design of reinforced concrete members subjected to moments, shear, and axial forces; extensive discussion of the influence of the material properties on behavior.

Prerequisite:

Concrete Technology. Concrete; Properties of ingredients, tests, Production of concrete, mixing, compaction curing, Properties of fresh concrete; Defects in Concrete, Concrete additives.; Behavior of concrete in tension and compression, shear and bond, Influence of various factors on test results, Time dependent behavior of concrete -creep, shrinkage and fatigue; Concrete mix design; Proportioning of concrete mixes, basic considerations, cost specifications, factors in the choice of mix proportion, different method of mix design. Quality control, Behavior of concrete in extreme environment; temperature problem in concreting, hot weather, cold weather and under water conditions, Resistance to freezing, sulphate and acid attack, efflorescence, fire resistance; Inspection and testing of concrete-Concrete cracking, types of cracks, causes and remedies Non-destructive tests on concrete; Chemical tests on cement and aggregates; Special concrete; types and specifications, Fibre reinforced and steel Fibre reinforced concrete, Polymer concrete, Use of admixtures; Deterioration of concrete and its prevention Repair and rehabilitation.

Design of Concrete Structures- I. Study of the strength, behavior, and design of indeterminate reinforced concrete structures, Load and stresses, load combinations, Working stress and limit state approach. Analysis and design of sections in bending – working stress and limit state method, Rectangular and T-sections, Beams with reinforcement in compression, One-way slab. Design for shear and bond, Mechanism of shear and bond failure, Design of shear using limit state concept, Development length of bars; Design of sections in torsion. Design of two-way slabs; Design of flat slab – direct method; Circular slab; Slab type staircase, Placement of reinforcement in slabs; Voided slab. Design of compression members, Short column, Columns with uni-axial and bi-axial bending; Long columns, use of design charts. Design of foundation; Wall footing, Isolated and combined footing for columns. All designs to be as per the most recent BIS standards as applicable Prerequisite:

Suggested Reading:

- 1.Reinforced Concrete Design, B.C. Punmia, Laxmi Publication*
- 2.Fundamentals of Reinforced Concrete, N.C. Sinha & S.K. Roy, S. Chand & Company*
- 3.R.C.C Design & Drawing, Neelam Sharma, S.K. Kataria& Sons*
- 4.Design of Reinforced Concrete Structures, S. Ramarutham, DhanpatRai*
- 5.Reinforced Concrete Design, S.U. Pillai &DevdasMenon, Tata McGraw Hill*

Program: B.Tech

Semester: Seven

Course: Design of Steel Structures (Professional elective VI)

Course Code: 5A0EEL404

L	T	P	C
3	0	0	0

Course Objective:

- Ability to analyze and design of tension members
- Ability to analyze and design of columns
- Ability to analyze and design of beams

Design of Steel Structures. Properties of materials; loads and stresses, Design of semi-rigid, rigid and moment resistant connections; Built-up sections Design of tension members subjected to axial tension and bending, splicing of tension member, Design of compression members, Beam-column connections, Design of columns and their bases Design of flexural members and Plate girder; loads, specification and design Industrial buildings; loads, design of purlins, trusses, bracings; gantry girders; Introduction to Plastic analysis; Simple cases of beams and frames; All design steps/process to as per the most recent BIS code of practices.

Metal Structure Behavior- I. Introduction to the design of metal structures; behavior of members and their connections; and theoretical, experimental, and practical bases for proportioning members and their connections.

Metal Structure Behavior-II. Metal members under combined loads; connections, welded and bolted; moment- resistant connections; plate girders, conventional behavior, and tension field action.

Suggested Reading:

1. *Design of Steel Structures, L.S. Negi, Tata McGraw Hill, Publication*
2. *Design of Steel Structure, P. Dayaratnam, S. Chand*
3. *Design of Steel Structures, S.K. Duggal, Tata McGraw Hill, Publication*
4. *Design of Steel Structures, M. Raghupati, Tata McGraw Hill, Publication*

Program: B.Tech

Semester: Seven

Course: Seminar in Executive Communication (Open Elective II)

Course Code: 5A0EEL401

L	T	P	C
2	0	0	0

Course Objective: To impart more advanced basic skills through intensive practice, in this unit again the students get opportunities to apply their general awareness and classroom learning to practical situation to achieve the targeted career goal in this increasingly competitive world. Some of the career-oriented units are Discussion Skills, Interview Skills, Job Search Strategies, Job Correspondence etc., they need to undergo,

- An average student acquires basic skills required for a cherished job.
- Their appreciative personality development becomes a value-added attribute in their professional sphere.
- The course enhances communication, leadership and teamwork skills; and personal development skills using practical approach and exposure of students to the realities of the world
- To put greater emphasis on development of non-technical skills, such as flexibility, leadership and good communication.

(Activity Based)

WORKSHOPS

- Debate
- Extempore
- Group Discussion
- Panel Discussion
- Presentation-Paper & Oral
- Reports: Survey Report, Project Report, Case Study

Suggested Readings:

1. Monippally, Matthukuty. M. 2001. *Business Communication Strategies*. 11th Reprint. Tata McGraw-Hill. New Delhi
2. Swets, Paul. W. 1983. *The Art of Talking So That People Will Listen: Getting Through to Family, Friends and Business Associates*. Prentice Hall Press. New York
3. Lewis, Norman. 1991. *Word Power Made Easy*. Pocket Books
4. Sen, Leena. *Communication Skills*; Eastern Economy Edition
5. David Green. *Contemporary English Grammar, Structure & Composition*; MacMillan
6. *Dictionary*; Oxford
7. *Dictionary*; Longman

Websites



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- www.tatamcgrawhill.com/digital_solutions/monippally
- www.dictionary.cambridge.org
- www.wordsmith.org
- www.edufind.com
- www.english_grammar_lessons.com
- www.wikipedia.org/wiki/english_grammar

Program: B.Tech

Semester: Seven

Course: Principle of Management (Open Elective II)

Course Code: 5AOEEL402

L	T	P	C
3	0	0	3

Course Objective:

- Explain strategic management in business operations.
- Define management, quality management, and project management.
- Identify relevant issues in human resource management

Module 1

Overview of Business- Types of Business- Service, Manufacturing, Trade, Industrial sectors- Introduction to, Engineering Industry, Process Industry, Textile Industry, Chemical Industry, Agro Industry Globalization-Introduction, Advantages & disadvantages w.r.t India Intellectual Property Rights (IPR), Concept, Types of IPR

Management Process-What is Management, Evolution, and Various Definitions, concept of Management, Levels of Management, Administration and Management, Scientific Management by F.W. TAYLOR? Principles of Management (14 principles of Henry Fayol), Functions of Management-Planning, Organizing, Coordinating, Directing, Controlling, Decision Making

Module-2

Organizational Management Organization-Definition, Steps in forming organization Types of Organization- Line, Line & staff, Functional, Project type Departmentation- Centralized & Decentralized, Authority & Responsibility, Span of Control (Management) Forms of ownerships-Proprietorship, Partnership, Joint Stock Company, Co-operative society, Govt. Sector

Module-3

Human Resource Management Personnel Management-Introduction, Definition, Function Staffing-Introduction to HR, Introduction to HR Planning, Recruitment procedure Personnel- Training & Development, Types of training, Induction, Skill enhancement Leadership & Motivation-Leadership-Styles & types, Motivation-Definition, Intrinsic & Extrinsic, Maslow's theory of Motivation and its significance Safety Management- Causes of Accidents, Safety Procedures. Introduction, Objectives & feature of Industrial Legislation such as, Factory Act, ES Act, Workman Compensation Act, Industrial Dispute Act.

Financial Management- Financial Management-Objectives & Functions, Capital Generation & Management-Types of capitals, Sources of finance, Budgets and Accounts-Types of Budgets, Production Budget (including Variance Report) Labor Budget, Introduction to Profit & Loss Account (Only concept) Balance sheet etc., Introduction to Various Taxes, Excise Service Tax, Income Tax, VAT, Custom Duty.

Module-3

Materials Management- Inventory Management-Meaning & Objectives, ABC Analysis Economic Order Quantity-Introduction& Graphical Representation Purchase Procedure-Objectives of Purchasing, Functions of Purchasing Department, and Steps in Purchasing, Modern Techniques of Material Management, and Introductory treatment to just in Time (JIT)/System Applications & Products (SAP)/Enterprise Resource Planning (ERP).

Project Management (Simple/Elementary Numerical)-Project Management-Introduction & Meaning, Introduction to CPM/PERT Techniques (simple network problems), Concept of Break-Even Analysis and its significance; Quality Management- Definition of Quality, Concept of Quality, Quality, Circle, Quality Assurance, Introduction to TQM, Kaizen, 5'S'&SixSigma.

Suggested Readings:

1. *Industrial Engg & Management, Dr. O.P. Khanna, Dhanpat Rai & sons New Delhi*
2. *Business Administration & Management, Dr. S.C. Saxena, Sahitya Bhavan Agra*
3. *The process of Management, W.H. Newman, E. Kirby Warren, Prentice-Hall of India Pvt. Ltd. New Delhi-110001*

Program: B.Tech

Semester: Seven

Course: Green Building (Open Elective II)

Course Code: 5AOEEL403

L	T	P	C
3	0	0	3

Course Objective:

- Ability to understand the principles and choices in home design and construction.
- Ability to know innovative materials, systems, and construction methods.
- Ability to learn about energy-efficient systems including onsite power generation.
- Ability to distinguish cost-benefits of retrofitting, remodeling, or renovating existing homes

Module-1

Green Building Process and Ecological Design Fundamental Principles of Green Building, Introduction to high-performance green buildings, Conventional versus green building delivery systems - Design and construction relationships - Green building project execution - the integrated design process - green building documentation requirements - design versus ecological design - historical perspective - contemporary ecological design - future ecological design - green design to regenerative design.

Module-2

Green Building Systems

Sustainable sites Design and landscaping – selection of green materials - products and practices - passive design strategy – internal load reduction – indoor environment quality strategies - Building energy system strategies – Water cycle strategies- building water and waste management IGBC standards.

Module-3

Green Building Implementation

Site protection planning - health and safety planning - construction and demolition waste management - reducing the footprint of construction operations - maximizing the value of building commissioning in HVAC System, lighting and non-mechanical Systems - costs and benefits relevance to IGBC standards.

Module-4

Assessment and Economics

Methods and tools for building assessment. Future directions in green high performance building technologies-Carbon Accounting-Green Building specifications. Business case for high-performance green buildings - the economics of green building - benefits - managing initial costs - cost barrier in project management – long term environment benefits.

Suggested Reading:

1. Jerry Yudelson, *Green Building A To Z, Understanding The Buildings*, 2008.
2. *Green Building Guidelines: Meeting The Demand For Low-Energy, Resource Efficient Homes*. Washington, D.C.: Sustainable Buildings Industry Council, 2004.
1. Jerry Yudelson, *Green Building Through Integrated Design*, McGraw Hill, 2008
2. Alex Wilson And Mark Peipkorn., *Green Building Products: The Green Spec Guide To Residential Building Materials*, 2nd Edition, Gabriola Island, BC:
3. Jane Anderson, David E. Shiers, And Mike Sinclair. *The Green Guide To Specification: An Environmental Profiling System For Building Materials And Components*, 3rd Edition, Oxford; Malden, MA: Blackwell Science, 2002.
4. Charles J. Kibert, *Sustainable Construction: Green Building Design And Delivery*, 2nd Edition, Wiley, 2007.
5. *ECBC 2007 Manual, Bureau Of Energy Efficiency, New Delhi*