JK LAKSHMIPAT UNIVERSITY
JAIPUR

Course code	Course Title	Teaching Scheme			
		L	T	P	Credits
CE507	Design of RCC Structure	3	1	0	4

Evaluation Scheme (Theory)						Evaluation Scheme (Practical)				
Mid Term Test - I	Mid Term Test - II	End Term Test	Class Participation	Additional Continuous Evaluation*	Total Marks	Mid Term Test - I	End Term Test	Class Participation	Additional Continuous Evaluation *	Total Marks
20	20	40	10	10	100	-	-	-	-	-

*Additional Continuous Evaluation: Quizzes/Assignments/Presentations/Practical Records/Mock Interviews/others

Syllabus (Theory)

Unit I

Design: strength, stiffness, stability, serviceability, Design process: Analysis, design and detailing, Design philosophy: working stress method, Ultimate load method, Limit state method, plastic method

Unit II

Flexural design: Analysis, design and detailing of rectangular & flanged beams, one-way & two way simply supported & continuous slabs, Flexural and shear design: Design and detailing of rectangular & flanged beams; Axial load design: Design and detailing of axially loaded Short columns Combined axial, shear and flexural design: Design and detailing of uniaxial & biaxial - Short & long columns; Torsion design: Design of rectangular beam section for torsion

Unit III

Combined shear and torsion: Design of rectangular beam section, Shear, flexural, punching, torsion: Design of isolated footing and combined footing, Bond and development length: Checking bond & development length for bars under tension, compression, Combined axial, shear, flexure: Design and detailing of uniaxial & biaxial – Short & long columns. Design of flat slabs

Unit IV

Axial force design: Tension member, compression member, Flexural design for beams: Restrained, unrestrained Combined axial and flexural design: Columns, Footing : slab based, gusseted base foundation, Torsion design and conncetions, Beams, columns, Combined axial, flexural and torsion: columns, Connections: Bolted – bearing type, Hsfg for seismic purpose, Welded: types of electrodes, Connection design for tension, compression, flexural, flexural + shear.

IS Codes:

1. Code of practice for plain and reinforced concrete IS : 456 (III revision) (with amendment I)

2. Code of practice for structural safety of Buildings IS : 875 Part I to V

Loading standards.(revised)(with Amendment 1)

Activities Related to Skill Development and Employability

Quizzes

Two Quizzes were taken to improve the course understanding.

J K Lakshmipat University

Department of Civil Engineering

Design of RCC and Steel Structure

Quiz 1

Q.1 : Design a footing for a column 450mm x 450mm carrying a load of 1500 KN, the SBC of soil is 100KN/sq.m. Use M20 Concrete & Fe 415 steel

Q. 2: Two plates 10mm x 60mm are connected in a lap joint with 5 no. M16 bolts of grade 4.6 & 410 plates. Calculate the design shear strength of bolt.

J K Lakshmipat University

Department of Civil Engineering

Design of RCC and Steel Structure

Quiz 2

Q. 1 Discuss the steps for calculation of design strength of tension members.

Q 2. Design a RCC slab for a room size of 3m x 7m carrying a load of 2KN/m. Use M30 Concrete & Fe 415 steel.

JK LAKSHMIPAT UNIVERSITY
JAIPUR

Course code	Course Title	Teaching Scheme			
		L	T	P	Credits
CE607	Design of Steel Structure	3	1	0	4

Evaluation Scheme (Theory)						Evaluation Scheme (Practical)				
Mid Term Test - I	Mid Term Test - II	End Term Test	Class Participation	Additional Continuous Evaluation*	Total Marks	Mid Term Test - I	End Term Test	Class Participation	Additional Continuous Evaluation *	Total Marks
20	20	40	10	10	100	-	-	-	-	-

*Additional Continuous Evaluation: Quizzes/Assignments/Presentations/Practical Records/Mock Interviews/others

Syllabus (Theory)

Unit I

Design of connections in steel structures: Riveted, and bolted and welded connections, assumptions, Different types of joints, design of various types of riveted and welded connections subjected to direct loads and moments; Design of tension members: Selection of section, I.S. specifications, design of axially loaded tension members, design of members for axial tension and bending, end connections, design of lug angles and tension splices

Unit II

Design of compression members: Theory of buckling, design of column, cross section (single and built up sections), design of angle struts, eccentrically loaded columns, column splices, lacings and battens; Design of beams: Laterally stability, design of single and built up beams, plated beams and curtailment of flange plates

Unit III

Design of column bases and column footings: Slab base, gusseted base, and column bases subjected to moment. Independent column footing, combined column Footing; Design of roof trusses: Types of trusses, roofs and side coverage, types of loadings and load combinations, design of members and connections

Unit IV

Water tanks: Design of rectangular pressed steel tanks, cylindrical tanks with hemispherical bottom, design of staging; Plastic design of steel structures: Review of plastic analysis as covered in earlier courses, Effect of normal and shear forces on plastic moments, lateral buckling and local buckling of beam. Design of beams and frames, design of connections-straight corner, beam column and plate connections

Activities Related to Skill Development and Employability

Quizzes

Quizzes were taken from each unit to improve the course understanding.

J K Lakshmipat University

Department of Civil Engineering

Design of Steel Structure

Quiz 1

Q.1 Enlist the various components of industrial building and draw the typical sketch of industrial building and explain principal rafter.

Q.2 Draw the various types of roof truss using in industrial building.

Q.3 Determine dead load, live load, and wind load per panel point for the roof truss of a workshop shed constructed at Ahmedabad for the following requirement.

- **I.** Span of truss = 15 m
- **II.** Spacing of truss = 4 m c/c
- **III.** Rise of truss = 3 m
- **IV.** Height of truss above G.L. = 20 m.
- **V.** A.C.C. sheets @ 150 N/m² are used as roof covering
- **VI.** Assume weight of purlin and other fixtures = 120 N/m² per plan area
- **VII.** Total nos. of panels = 8
- **VIII.** Opening of wall area = 10 %
- **IX.** Probable life of roof truss = 25 years Terrain category = 3 and class = A structures.
- **X.** Topography = plain horizontal ground and upwind slope less than 3°.

J K Lakshmipat University

Department of Civil Engineering

Design of Steel Structure

Quiz 2

Q 1 Design an angle section for a purlin having 3.0 m span. It carries design load (working of 2.5kN/m and supported on four supports. Angle of roof truss is 26^0 . Take Fy = 250 MPa.

Q 2 Design a steel roof truss for the following data.
Location Ahmedabad, Span of roof truss : 14 m, Spacing roof truss = 5 m, Pitch = ¼.

(A) Fix the configuration of truss (b) Compute DL, LL, WL at nodal points (c) Design Purlin (Design principle Rafter (e) Design main tie
Assume suitable data if necessary.

MTCS102 Advanced Computer Networks

ADVANCED COMPUTER NETWORKS

Course Code : MTCS 102
Course Title : Advanced Computer Networks
Course Credits : 4
Total Hours Per Week (L+T+P) : 3+0+0

Course Syllabi:

Introduction, overview of network building blocks, Network architecture with layers and protocols, Overview of data link concepts, IP addressing, forwarding, and routing, BGP and adaptive routing, Multi-Protocol Label Switching (MPLS), MPLS Architecture and related protocols, Traffic Engineering (TE) and TE with MPLS

Transport protocols and congestion control, Quality of Service (QoS) with MPLS technology, Network recovery and restoration with MPLS technology

Virtual Private Networks (L2, L3, and Hybrid), Metro Networks, Metro technologies, Ethernet over SONET, Resilient Packet Rings, Ethernet transport, Metro Ethernet services, L2 switching, L3/L2VPNs for Metro, Pseudowire (PW) concept (multisegment/redundant PW's), Ethernet over MPLS, VPLS

Optical Networks, WDM, Wavelength routing, LightPaths/Lighttrails, Wavelength conversion and rerouting, Network Survivability and Provisioning, IP over DWDM, Next generation Optical Networks, Optical Circuit Switching, Optical Burst Switching, Optical Packet Switching GMPLS (Generalized MPLS), MPL (lambda) S, GMPLS architecture

Other Topics : Sensor Networks, Mobile Internet, Home networking, TriplePlay/IPTV

Textbook:

1. Forouzan, Data Communications and Networking, 4e, McGraw Hill.

Reference Books:

1. YouluZheng, ShakilAkhtar, Networks for Computer Scientists and Engineers, Oxford University Press.
2. Andrew S. Tanenbaum, Computer Networks, Fourth Edition", Prentice Hall.
3. William Stallings, Computer Networking with Internet Protocols and Technology, Pearson Education, 2004.

Course Code : MTCS202 Computers and Network Security

Course Syllabi (Theory):

Introduction to security attacks, services and mechanism, introduction to cryptography. Conventional Encryption: Conventional encryption model, classical encryption techniques-substitution ciphers and transposition ciphers, cryptanalysis, stereography, stream and block ciphers. Modern Block Ciphers: Block ciphers principals, Shannon's theory of confusion and diffusion, fiestal structure, data encryption standard(DES),strength of DES, differential and linear crypt analysis of DES, block cipher modes of operations, triple DES, IDEA encryption and decryption, strength of IDEA, confidentiality using conventional encryption, traffic confidentiality, key distribution, random number generation.

Introduction to graph, ring and field, prime and relative prime numbers, modular arithmetic, Fermat's and Euler's theorem, primality testing, Euclid's Algorithm, Chinese Remainder theorem, discrete logarithms. Principals of public key crypto systems, RSA algorithm, security of RSA, key management, Diffle-Hellman key exchange algorithm, introductory idea of Elliptic curve cryptography, Elganel encryption.

Message Authentication and Hash Function: Authentication requirements, authentication functions, message authentication code, hash functions, birthday attacks, security of hash functions and MACS, MD5 message digest algorithm, Secure hash algorithm(SHA). Digital Signatures: Digital Signatures, authentication protocols, digital signature standards (DSS), proof of digital signature algorithm.

Authentication Applications: Kerberos and X.509, directory authentication service, electronic mail security-pretty good privacy (PGP), S/MIME.

IP Security: Architecture, Authentication header, Encapsulating security payloads, combining security associations, key management. Web Security: Secure socket layer and transport layer security, secure electronic transaction (SET). System Security: Intruders, Viruses and related threads, firewall design principals, trusted systems.

Reference Books:

1. William Stallings, "Cryptography and Network Security: Principals and Practice", Prentice Hall, New Jersy.
2. Johannes A. Buchmann, "Introduction to Cryptography", Springer-Verlag.
3. Bruce Schiener, "Applied Cryptography".

MTCS203 Distributed Computing

Course Syllabi (Theory):

Characterization of Distributed Systems: Introduction, Examples of distributedSystems, Resource sharing and the Web Challenges.
System Models: Architectural models, Fundamental Models Theoretical Foundation for Distributed System: Limitation of Distributed system, absence of global clock, shared memory, Logical clocks, Lamport's & vectors logicalclocks, Causal ordering of messages, global state, termination detection.
Distributed Mutual Exclusion: Classification of distributed mutual exclusion, requirement of mutual exclusion theorem, Token based and non token based algorithms, performance metric for distributed mutual exclusion algorithms.
Distributed Deadlock Detection: system model, resource Vs communication deadlocks, deadlock prevention, avoidance, detection & resolution, centralized dead lock detection, distributed dead lock detection, path pushing algorithms, edge chasing algorithms.
Agreement Protocols: Introduction, System models, classification of Agreement Problem, Byzantine agreement problem, Consensus problem, Interactive consistencyProblem, Solution to Byzantine Agreement problem, Application of Agreement problem,
Atomic Commit in Distributed Database system.
Distributed Objects and Remote Invocation: Communication between distributed objects, Remote procedure call, Events and notifications, Java RMI case study.
Security: Overview of security techniques, Cryptographic algorithms, Digital signaturesCryptography pragmatics, Case studies: Needham Schroeder, Kerberos, SSL & Millicent.
Distributed File Systems: File service architecture, Sun Network File System, TheAndrew File System, Recent advances.
Transactions and Concurrency Control: Transactions, Nested transactions, Locks,Optimistic Concurrency control, Timestamp ordering, Comparison of methods for concurrency control.
Distributed Transactions: Flat and nested distributed transactions, Atomic Commitp rotocols, Concurrency control in distributed transactions, Distributed deadlocks,
Transaction recovery. Replication: System model and group communication, Fault -tolerant services, highly available services, Transactions with replicated data.
Distributed Algorithms: Introduction to communication protocols, Balanced slidingwindow protocol, Routing algorithms, Destination based routing, APP problem,Deadlock free Packet switching, Introduction to Wave & traversal algorithms, Electionalgorithm.CORBA Case Study: CORBA RMI, CORBA services.

Text/Reference Books:

1. Singhal & Shivaratri, "Advanced Concept in Operating Systems", McGraw Hill

2. Coulouris, Dollimore, Kindberg, "Distributed System: Concepts and Design",

Pearson Ed.

3. Gerald Tel, "Distributed Algorithms", Cambridge University Press

JK Lakshmipat University, Jaipur
Institute of Management
BBA
Academic Year- 2015-16
Understanding Consumer Behaviour

Course Code: BBA055
Credits: 4
Semester: V

Course Description:
This course examines the strategic implications of the internal, external and decision-making factors that impact consumer purchasing patterns with emphasis on managerial applications. This course introduces the theory of consumer behavior and relates it to the practice of marketing.

Course Learning Outcomes:
Upon successful completion of the requirements for this course, students will be able to understand the three major influences on customer choice:

- the process of human decision making in a marketing context;
- the individual customers make up;
- the environment in which the customer is embedded.

Topics to be Covered:
Consumer Behaviour: An Overview: Introduction, Need for Understanding Consumer Behaviour, Consumer insights, Diversity of Indian Market, Changing Pattern of Indian Consumer Behaviour, Factors Influencing Consumer Behaviour, Understanding the Buying Decision Process.

Psychological Influences on Consumer Decision-Making : Concept of Motivation, Role of Motives in Guiding Behaviour, Elements and Dynamics of Perception, Complexities in Consumer Perception, Consumer Beliefs, Consumer Feelings, Consumer Attitudes, Learning Theories, the Elaboration Likelihood Model (ELM), Nature & Theories of Personality, Brand Personality.

Sociological Influence on Consumer Decision-Making: Effect of Life Cycle Stage, Occupation and Lifestyle on Consumer Behaviour, Social Class and their Behavioural Patterns, Role of Influence Groups, Effect of Reference Groups on Consumer Decision Making, Culture Influence on Consumer Behaviour

Consumer's Decision Making: Decision Making Process, Impulse Buying Decision, Decision Making Criteria, Factors Influencing Decision Making, Role of Family in Decision-Making, Purchase Decisions: Issue and Resolution.

Changing Indian Consumer Behaviour: Drivers of Change, Consumer Trends, Significance of the Rural Markets, Rural Consumer Behaviour, New Consumption Patterns.

Activities Related to Skill Development and Employability

Case 1: Cadbury Dairy Milk Chocolates
Case 2: Lux—The Beauty Soap
Case 3: Titan Watches
Case 4: Sprite—Soft Drink

JK Lakshmipat University, Jaipur
Institute of Management
BBA
Academic Year- 2015-16
Principles of Marketing-I

Course Code: BBA305
Credits: 4
Semester: III

Course Description:
The course is designed to provide an understanding of modern marketing concepts, tools, and techniques, and help students to develop abilities and skills required for the performance of marketing functions.

Course Learning Outcomes:
Upon completion of the course, students will be able to:

1. Understand fundamental concepts of marketing, including the basic roles, skills, and functions of marketing manager;
2. Develop analytical and conceptual abilities pertaining to marketing decisions;
3. Understand strategic and tactical issues related to marketing.

Course Syllabi:

- **Defining Marketing and Marketing Process:** Creating and Capturing Value, Company and Marketing strategy, Partnering to build Customer Relationship.
- **Understanding the market place and consumers:** Analyzing the Marketing Environment, Managing marketing information to gain customer insights, Consumer and business markets and buyer behavior.
- **Designing a customer driven strategy and mix:** customer driven marketing strategy, products, services and brands, New product development and product life cycle strategies, understanding and capturing customer value.
- **Pricing objectives and strategies:** Designing customer driven pricing strategies & pricing methods.

Activities Related to Skill Development and Employability

Case 1: Kingfisher Airlines: Flying the Good Times
Case 2: Starbucks Coffee: Where Growth is Hot- But Boiling Over?
Case 3: Hindustan Unilever Limited: A product for Every Customer
Case 4: The Tata Indica: Customer-centered New- Product Development

JK Lakshmipat University, Jaipur
Institute of Management
BBA
Academic Year- 2015-16
Principles of Marketing-II

Course Code: BBA404
Credits: 4
Semester: IV

Course Description:
The course is designed to provide an understanding of various promotional tools used in the communication mix and modern sales management concepts, tools, and techniques. The course focuses on developing advertisement and sales management skills as required in the today's competitive industry.

Course Learning Outcomes:
Upon completion of the course, students will be able to:

1. Understand fundamental and advanced concepts of marketing, including Knowledge of various functions like Channel Management, Marketing Communication etc. that a Marketing Manager performs.
2. Develop analytical and conceptual abilities pertaining to marketing decisions;
3. Understand strategic and tactical issues related to marketing and solve complex managerial problems.

Course Syllabi:

- **Integrated Marketing Communications Strategy:** The Promotion mix, Integrated Marketing Communications, steps in developing effective marketing communication, Promotion budget and mix, socially responsible marketing communication, Advertising and Public Relations, Sales Promotion, Direct and Online Marketing.
- **Sales Management:** The role of the sales force, Personal selling, designing sales force strategy and structure, recruiting and selecting sales people, Training Salespeople, sales force compensation, supervising and motivating sales people, Evaluating salespeople and sales-Force performance.
- **Marketing Channels:** Supply chains and the value delivery network, the nature and importance of marketing channels, Channel behavior and organization, channel design decisions, channel management decisions, public policy and distribution decisions, marketing logistics, Retailing and wholesaling
- **Extending Marketing:** Creating Competitive Advantage, The Global Marketplace., Sustainable Marketing, Social Responsibility and Ethics and Rural Marketing.

Activities Related to Skill Development and Employability

Case 1: Orchestrating the Retail Experience
Case 2: Are Consumer Goods Companies Too Pushy?
Case 3: The Super Bowl: The Mother of All Advertising Events- But Is it Worth It?
Case 4: Value- Selling: Value Merchants versus Value Spendthrifts
Case 5: Wal-Mart: The World's Super Eco- Nanny

JK Lakshmipat University, Jaipur
Institute of Management
Bachelor of Commerce (H)
Academic Year- 2015-16
Income Tax Law and Practice

Course Code: BCH304
Credit: 4
Semester: III

Activities Related to Skill Development and Employability

Assignment on determination of Assessment Year & Previous Year
Case-let 1 on computation of gross total income of an assessee with varied residential status for the A.Y. 2015-16.
Case-let 3 on determination of Advance Payment of Tax amount
Assignment on computation of Taxable income under the head Salary for the A.Y. 2015-16.
Assignment on computation of Taxable income under the head House property for the A.Y. 2015-16.
Assignment on computation of Taxable income under the head Business & Profession for the A.Y. 2015-16.
Assignment on computation of Taxable income under the head Capital Gains for the 2015-16..
Case Study on Determining GTI and TI of an individual with varied source of income for the A.Y. 2015-16.
In class room discussion on filing of return, TDS and PAN using Income Tax website.
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JK Lakshmipat University, Jaipur
Institute of Management
B. Com (H)
Academic Year- 2015-16
Sales & Channel Management

Course Code: BCH404
Credits: 4
Semester: IV

Course Description:
The course is designed to provide an understanding of various promotional tools used in the communication mix and modern sales management concepts, tools, and techniques. The course focuses on developing advertisement and sales management skills as required in the today's competitive industry.

Course Learning Outcomes:
Upon completion of the course, students will be able to:

1. Understand fundamental and advanced concepts of marketing, including Knowledge of various functions like Channel Management, Marketing Communication etc. that a Marketing Manager performs.
2. Develop analytical and conceptual abilities pertaining to marketing decisions;
3. Understand strategic and tactical issues related to marketing and solve complex managerial problems.

Course Syllabi:

- **Integrated Marketing Communications Strategy:** The Promotion mix, Integrated Marketing Communications, steps in developing effective marketing communication, Promotion budget and mix, socially responsible marketing communication, Advertising and Public Relations, Sales Promotion, Direct and Online Marketing.
- **Sales Management:** The role of the sales force, Personal selling, designing sales force strategy and structure, recruiting and selecting sales people, Training Salespeople, sales force compensation, supervising and motivating sales people, Evaluating salespeople and sales-Force performance.
- **Marketing Channels:** Supply chains and the value delivery network, the nature and importance of marketing channels, Channel behavior and organization, channel design decisions, channel management decisions, public policy and distribution decisions, marketing logistics, Retailing and wholesaling
- **Extending Marketing:** Creating Competitive Advantage, The Global Marketplace., Sustainable Marketing, Social Responsibility and Ethics and Rural Marketing.

Activities Related to Skill Development and Employability

Case 1: Orchestrating the Retail Experience
Case 2: Are Consumer Goods Companies Too Pushy?
Case 3: The Super Bowl: The Mother of All Advertising Events- But Is it Worth It?
Case 4: Value- Selling: Value Merchants versus Value Spendthrifts
Case 5: Wal-Mart: The World's Super Eco- Nanny

JK Lakshmipat University, Jaipur
Institute of Management
Master of Business Administration
Academic Year- 2015-16
Banking and Insurance Management

Course Code: MBAFM402
Credit: 4
Semester: IV

Activities Related to Skill Development and Employability

Case Study 1- 5 C analysis of Uplift Solution Inc.
Case study 2 – Management of NPA of Regional Rural Bank viz J&K Grammen Bank
Case Study 3- Co-operative Bank Scams in India
Case-lets on identifying insurance principles applicability
Assignment 1 on credit creation capacity of SCBs.
Assignment 2 on Basel norms and presentation on Comparative Capital Adequacy Ratio and Tier I & II capital of Public & Private Indian Banks using financial statements.
Assignment 3 on credit control through monetary policy
In class room discussion and presentation on Analyzing Bank performance using research paper titled: Determination of CAMELS model on Banks Performance.
In class room discussion on Banking Sector Reforms in India using Research Paper: Banking Sector Reforms: A critical Overview.
In class room discussion on Credit risk & Recovery using research paper titled: Assets Quality of Indian Banks, Recent Downtrends-Causes and Their Challenges.

JK Lakshmipat University, Jaipur
Institute of Management
MBA
Academic Year- 2015-16
Services Marketing

Course Code: MBAMK301
Credits: 4
Semester: III

Course Description:
This course acquaints students with the unique challenges inherent in the marketing of services, and the concepts, tools and strategies needed to address them. The course takes a multidisciplinary view of a firm's strategies to attract, satisfy and retain customers and employees in ways that increase long-term profitability and shareholder value.

Course Learning Outcomes:
Upon completion of the course, students will be able to:

- understand fundamental concepts and principles of Services Marketing;
- develop analytical and conceptual abilities pertaining to marketing decisions in services and understand role of relationship management;
- understand strategic and tactical issues related to marketing of services and solve complex managerial problems.

Course Syllabi:

Understanding Service Products. Consumers and Markets: The nature of services, how to understand services, how consumer behavior relates to services, and how to position services. Building blocks for studying services and learning how one can become an effective service marketer.

Applying the 4 Ps of Marketing to Services: The development of the service concept and its value proposition, the product, distribution, pricing, and communications strategies that are needed for developing a successful business model. Revisiting the 4 Ps of the traditional marketing mix (Product, P1ace, Price, and Promotion), and expanding them to account for the specific characteristics of services that make them different from goods marketing.

Managing the Customer Interface: Managing the interface between customers and the service organization. The additional 3 Ps (Process, Physical environment, and People) that are specific to services marketing.

Implementing Profitable Service Strategies: Four key issues in implementing and managing effective services marketing. Building customer loyalty, complaint handling and service recovery, Reproving service quality and productivity, and striving for service

Activities Related to Skill Development and Employability

Case 1: Example of an Innovative Service: ATMs
Case 2: Mumbai Dabbawalas – Amazing Service
Case 3: Vasan Eye Care
Case 4: Case Study: VLCC: Growing through a Healthy Franchiser – Franchisee Relationship
Case 5: Waiting Line Management at Tirumala Temple
Case 6: Promoting Medical and Health Tourism in Kerala

JK Lakshmipat University, Jaipur
Institute of Management
MBA
Academic Year- 2015-16
Sales and Distribution Management

Course Code: MBAMK401
Credits: 4
Semester: IV

Course Description:
This course includes the familiarization of concepts, approaches and the practical aspects of the key decision making variables in sales force and distribution channel management. This course has a process and customer orientation focus in sales and distribution management in the context of Indian business organisations.

Course Learning Outcomes:
Upon completion of the course, students will be able to:

- Understand fundamental concepts and principles of Sales and Distribution Management.
- Develop analytical and conceptual aoi1ities pertaining to Sales and Distribution Decisions.
- Understand strategic and tactical issues related to Sales and Distribution and solve complex managerial problems.

Course Syllabi:

Introduction: Selling as Part of Marketing, Sales Management Process, Role of Sales Manager, Concept of Personal Selling, Sales Management and Salesmanship, Theories of Personal Selling, Process of Personal Selling, Qualities of a Successful Salesman.

Sales Objectives and strategies: Sales Territories and Quota Goal Setting Process in Sales Management, Analyzing Market Demand and Sales Potential, Techniques of Sales Forecasting, Preparation of Sales Budget, formulating Selling Strategies.

Sales Force Management: Designing Sales Territories and Sales Quota; Organizing the Sales Force, Designing the Structure and Size of Sales Force, Recruitment and Selection of Sales Force, Leading and Motivating the Sales Force, Sales Force Training and Compensation, Sales Incentives and Review of Performance.

Introduction to Distribution Management: Introduction, Need and Scope of Distribution Management, Importance of Channel, Types of Channels and Levels of Channels.

Channel **Management Decisions:** Components of Distribution System, Distributors Selection and Appointment, Channel Conflict and Their Resolutions, Training and Motivating the Channel Partners.

Activities Related to Skill Development and Employability

Case 1: Flipkart.com: India's Most Successful Book E-Tailer
Case 2: Sales or No-Sales
Case 3: A day in the life of a Voltas Salesperson
Case 4: HUL and Salt Distribution Model
Case 5: Comparative Analysis of FMCG Distributors
Case 6: Training and Compensating the Field Force

Course Title and Code: Hydrology and Water Resources Engineering. **CE 510**	
Hours per week	**L-T-P: 3-0-0**
Credits	**3**
Students who can take	**B.Tech Semester-VI (Batch** 2013-17**civil Engg)**

Syllabus (Theory)

Hydrologic cycle - rainfall and its measurement - computation of mean rainfall over a catchment area using arithmetic mean, Theissen polygon and Isohyetal methods - Runoff -infiltration indices - Storm Hydrograph and unit hydrograph River regions and their characteristics - classification of rivers on alluvial plains - meandering of rivers - river training

Reservoir planning - Investigations - zones of storage in a reservoir - single purpose and multipurpose reservoir - determination of storage capacity and yield - reservoir sedimentation - Reservoir life - Sediment prevention - Flood estimation- Flood forecasting - Flood routing.

Ground water - types of aquifers - storage coefficient - coefficient of transmissibility - steady radial flow into a well located in an unconfined and confined aquifers - Tube wells and Open wells.yield from an open well. Water logging - causes and effects of water logging - remedial measures - land reclamation - land drainage - benefits - classification of drains - surface drains - subsurface drains - design principles and maintenance of drainage systems.

Text Book(s)/ Reference Book(s)

1. Punmia, B.C., Irrigation and Water Power Engineering, Standard Publishers, 2001.
2. Ragunath. H.M., Hydrology, Willey Eastern Limited, New Delhi, 2000.
3. Subramanya, Engineering Hydrology, Tata-McGraw Hill, 2004.

Activities Related to Skill Development and Employability

Activities Related to Skill Development and Employability

B. Tech. in Civil Engineering, Semester VI

Roll No……..

CE510 : Hydrology and Water Resource Engineering Time: 1.5 hours Max. Marks: 40

Instructions to students:

1. Do not write anything other than your roll number on question paper.
2. Assume suitable data wherever required and mention it clearly.
3. Writing appropriate units, nomenclature, and drawing neat sketches/schematics/ flow chart wherever, required are an integral part of the answer.

Q.1A	Fill in the blanks questions (5 questions @ 1 mark)	05
i.	The surface Run-off is the quantity of water……	
ii.	Unit Hydrograph theory was enunciated by ……..	
iii.	Precipitation caused by lifting of an air mass due to the pressure difference, is called……..	
iv.	The standard height of a standard rain gauge, is……..	
v.	If it rains between 2 P.M. and 3 P.M. and the entire basin area just starts contributing water at 3 P.M. to the outlet, then time of concentration will be…	
Q.1B	Short answer type questions (2 questions @ 2.5 marks)	05
i.	The rate or rainfall for the successive 30 min. period of a 3 hour storm are 17, 35, 51,27,23,09 mm/hr. The corresponding surface runoff is estimated to be 36 mm/hr. Establish the ϕ index.	
ii.	For a drainage basin of 640 km² , isohyetals based on a storm event yield the following data:	

Isohyetal interval (cm)	14 -12	12-10	10-08	08-06	06-04	04-02	02-0
Inter-Isohyetal area (km2)	90	140	125	140	85	40	20

Estimate the average depth of precipitation over a basin.

Q.2A	What is the hydrological cycle? Give a brief description of different Components	05

Table 3.1

Time (min)	0	30	60	90	120	150	180	210	240	270	300	330	360	390
Runoff(m3s-1)	0	1.2	2.8	1.7	1.4	1.2	1.1	0.91	0.74	0.61	0.5	0.28	0.17	0

Table 3.2

TIME (min)	0-30	30-60	60-90
Rainfall(cm)	3.3	2.7	1.9

Q.3B A watershed has five non- recording rain gauge ,installed in its area .the amount of rainfall recorded for one of the years is given below : 05

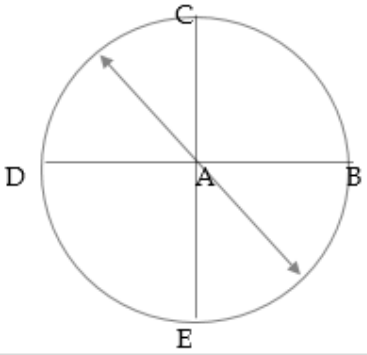
Rain gauge station	I	II	III	IV	V
Annual rainfall in cm	100	120	190	95	125

Find the required optimum number of non-recording and recording rain gauge for this watershed. Assume an error of 12% in the estimation of mean rainfall.

OR

Q.3B With a neat sketch, describe various zones of storage in a reservoir and density current. Also suggest measures to control reservoir sedimentation and how do you estimate the probable life of reservoir. 05

Q.4A Five rain gauge station namely A,B,C,D and E are located on circular shape basin of diameter 20Km as shown in figure below compute the mean areal rainfall over the basin using Thiessen Polygon method, if the rainfall at stations A,B,C,D and E are 100 cm ,90 cm ,110 cm, 120 cm,80 cm respectively. 05



Q.4B Enumerate the different type of rain gauge and describe with a neat sketch. The 05

Roll No……..

CE510 : Hydrology and Water Resource Engineering Time: 1.5 hours Max. Marks: 40

Instructions to students:
1. Do not write anything other than your roll number on question paper.
2. Assume suitable data wherever required and mention it clearly.
3. Writing appropriate units, nomenclature, and drawing neat sketches/schematics/ flow chart wherever, required are an integral part of the answer.

Q.1A	Fill in the blanks questions (5 questions @ 1 mark)	05
i.	A recording type rain gauge A. produces a mass curve of rain fall B. records the cumulative rain C. is sometimes called integrating rain gauge or continuous rain gauge D. all the above.	
ii.	The surface Run-off is the quantity of water A. absorbed by soil B. intercepted by buildings and vegetative cover C. required to fill surface depressions D. that reaches the stream channels	
iii.	Precipitation caused by lifting of an air mass due to the pressure difference, is called A. cyclonic precipitation B. convective precipitation C. orographic precipitation D. none of these.	
iv.	Pick up the correct equation from the following : A. Run off = Surface run off + Ground water flow B. Run off = Surface run off - Ground water flow C. Run off = Surface run off / Ground water flow D. Run off = Surface run off x Ground water flow.	
v.	Hydrology helps in. (a) predicting maximum flows (b) deciding the minimum reservoir capacity (c) forecasting the availability of quantity of water at reservoir site (d) All the above.	
Q.1B	Short answer type questions (2 questions @ 2.5 marks)	05
i.	What is waterlogging? What are its ill-effects?	
ii.	A precipitation station X was inoperative for some time during which a storm occurred. At three station A, B and C surrounding X the total Precipitation recorded during this storm are 75, 58 and 47 mm respectively. The normal annual precipitation amount at the station X, A, B and C are respectively 757,826,618 and 482 mm. estimate the storm precipitation for station X.	

	100	400
	50	445
	What flood discharge in this river will have a return period of 1000 years?	
Q.3A	How will you determine the areal mean rainfall over the a basin by (i)arithmetic mean method (ii)thiessen polygon method (iii)Isohyetal method .support your answer with illustrative sketches.	05
Q.3B	The normal annual rainfall depth recorded of five rain gauge station A,B,C,D and E are 910,1070,1410,810 and 590 mm respectively. Determine the optimum number of rain gauge stations to be established in the drainage basin if it is desired to limit the error in the mean value of rainfall to 10% .what is the percentage accuracy of the exciting network in the estimation of the average depth of the rainfall over the basin?	05
	OR	
Q.3B	Thiessen polygons constructed for a network of 10 rain gauges in river basin yielded thiessen weights of 0.10, 0.16, 0.12, 0.11, 0.09, 0.08, 0.07, 0.11, 0.06 and 0.10. If the rainfalls recorded at these gauges during a cyclonic storm are 132, 114,162, 138, 207, 156, 135, 158, 168 and 150 mm respectively determine the average depth of rainfall by thiessen mean and arithmetic mean methods. Also determine the volume of surface runoff at the basin outlet if 35% of the rainfall is lost as infiltration. Take the area of the basin as 5800 km2 and express your answer in million cubic meters.	05
Q.4A	The ordinate of a flood hydrograph, resulting from two successive storms each of 1 cm rainfall excess and 6 hour duration are tabulated below .find a 6 hour unit hydrograph.	05

Time (hour)	0	6	12	18	24	30	36	42	48	54	60	66	72
Ordinate of flood hydrograph (m^3/sec)	10	30	90	220	280	220	166	126	92	62	40	20	10

Q.4B	What is unit hydrograph? Explain clearly the basic postulates of unit hydrograph theory. Explain the procedure for derivation of Snyder's synthetic unit hydrograph for an ungagged catchment.	05
	OR	
Q.4B	Define Recurrence interval and return period. A hydraulic structure is sized for a 50 year recurrence interval deign discharge. What is the risk that the flow capacity will be exceeded during any future 20 year period? What is the probability that the 50 year recurrence interval peak flow rate will be exceeded in the next 50 year?	05

INSTITUTE OF ENGINEERING AND TECHNOLOGY

End Term Examination (Regular), Nov.-Dec. 2015

B. Tech in Civil Engineering, Semester V

Roll No……..

CE510 : Hydrology and Water Resource Engineering Time: 3 hours Max. Marks: 100

Instructions to students:

1. Do not write anything other than your roll number on question paper.
2. Assume suitable data wherever required and mention it clearly.
3. Writing appropriate units, nomenclature, and drawing neat sketches/schematics/ flow chart wherever, required are an integral part of the answer.

Q.1A	Objective type multiple choice questions (10 questions @ 1 mark)	10
i.	An isohyet is a line joining points of (A) equal temperature (B) equal humidity (C) equal rainfall depth (D) equal evaporation	
ii.	A watershed got transformed from rural to urban over a period of time. The effect of urbanization on storm runoff hydrograph from the watershed is to (A) decrease the volume of run-off (B) increase the time to peak discharge (C) decreases the time base (D) decrease the peak discharge	
iii.	The correct match of **Group-I** with **Group-II** is **Group-I** **Group-II** P. Evapotranspiration 1. Penman method Q. Infiltration 2. Snyder's method R. Synthetic unit hydrograph 3. Muskingum method S. Channel Routing 4.Horton's method (A) P-1, Q-3, R-4, S-2 (B) P-1, Q-4, R-2, S-3 (C) P-3, Q-4, R-1, S-2 (D) P-4, Q-2, R-1, S-3	
iv.	A flood wave with a known inflow hydrograph is routed through a large reservoir. The outflow hydrograph will have (A) attenuated peak with reduced time-base (B) attenuated peak with increased time-base (C) increased peak with increased time-base (D) increased peak with reduced time-base	
v.	An isolated 3-h rainfall event on a small catchment produces a hydrograph peak	

End Term Examination (Regular), Nov.-Dec. 2015
B. Tech in Civil Engineering, Semester V

Roll No……..

CE510 : Hydrology and Water Resource Engineering Time: 3 hours Max. Marks: 100

Instructions to students:
1. Do not write anything other than your roll number on question paper.
2. Assume suitable data wherever required and mention it clearly.
3. Writing appropriate units, nomenclature, and drawing neat sketches/schematics/ flow chart wherever, required are an integral part of the answer.

Q.1A Objective type multiple choice questions (10 questions @ 1 mark) — 10

i. An isohyet is a line joining points of
(A) equal temperature (B) equal humidity (C) equal rainfall depth (D) equal evaporation

ii. A watershed got transformed from rural to urban over a period of time. The effect of urbanization on storm runoff hydrograph from the watershed is to
(A) decrease the volume of run-off (B) increase the time to peak discharge
(C) decreases the time base (D) decrease the peak discharge

iii. The correct match of **Group-I** with **Group-II** is

Group-I	**Group-II**
P. Evapotranspiration	1. Penman method
Q. Infiltration	2. Snyder's method
R. Synthetic unit hydrograph	3. Muskingum method
S. Channel Routing	4.Horton's method

(A) P-1, Q-3, R-4, S-2 (B) P-1, Q-4, R-2, S-3
(C) P-3, Q-4, R-1, S-2 (D) P-4, Q-2, R-1, S-3

iv. A flood wave with a known inflow hydrograph is routed through a large reservoir. The outflow hydrograph will have
(A) attenuated peak with reduced time-base
(B) attenuated peak with increased time-base
(C) increased peak with increased time-base
(D) increased peak with reduced time-base

v. An isolated 3-h rainfall event on a small catchment produces a hydrograph peak and point of inflection on the falling limb of the hydrograph at 7 hours and 8.5 hours respectively, after the start of the rainfall. Assuming, no losses and no base flow contribution, the time of concentration (in hours) for this catchment is approximately
(A) 8.5 (B) 7.0 (C) 6.5 (D) 5.5

VI. Precipitation caused by lifting of an air mass due to the pressure difference, is called (A) Cyclonic precipitation (B) convective precipitation

P. Streamflow velocity 1. Anemometer
Q. Evapo-transpiration rate 2. Penman's method
R. Infiltration rate 3. Horton's method
S. Wind velocity 4. Current meter
The **CORRECT** match of **Group I** with **Group II** is
(A) P – 1, Q – 2, R – 3, S – 4 (B) P – 4, Q – 3, R – 2, S – 1
(C) P – 4, Q – 2, R – 3, S – 1 (D) P – 1, Q – 3, R – 2, S – 4

viii. The ordinates of a 3-h unit hydrograph at 1 hour intervals starting from time t = 0, are 0, 3, 8, 6, 3, 2 and 0 m3/s. Use trapezoidal rule for numerical integration, if required. What is the catchment area represented by the unit hydrograph?
(A) 1.00 Km² (B) 2.00 Km² (C) 7.92 Km² (D) 8.64 Km²

ix. A small catchment of area 150ha received a rainfall of 10.5cm in 90min. due to a storm. At the outlet of the catchment. The stream draining the catchment was dry before the storm and experienced a runoff lasting for 10hours within an average discharge of 1.5 m³/s. The stream of again dry after the runoff event. The ratio of runoff to precipitation is?
(a) 0.29 (b) 0.30 (c) 3.43 (d) 0.343

x. Two and half centimeters of rain per day over an area 200 Km² is equivalent to average rate of input of how many cubic meters per second of water to that area?
a) 57.87 b) 5.787 c) 0.57 d) 0.057

Q.2 Short answer type questions (4 questions @ 2.5 marks) — 10

a. The direct runoff hydrograph of a storm obtained from a catchment is triangular in shape and has a base period of 80 hours. The peak flow rate is 30 m³/sec and catchment area is 86.4 km² .determine the rainfall excess for the hydrograph.

b. The rainfall during three successive 2 hour periods are 0.5, 2.8 and 1.6 cm. the surface runoff resulting from this storm is 3.2 cm. find out the ϕ index value for this storm.

c. What is waterlogging? What are its ill-effects?

d. What do you understand by meandering? What are its causes?

Q.3A What is unit hydrograph? What are the basic proposition of the unit hydrograph theory? What are the limitations of the unit hydrograph theory? — 05

Q.3B What is the hydrological cycle? Give a brief description of different Components of a hydrologic cycle with neat sketch. — 05

Q.4A A well penetrate into an unconfined aquifer having a saturated depth of 100 meter. The discharge is 250 liters per minute at 12 meters drawdown. Assuming Equilibrium flow condition and a homogenous aquifer, estimate the discharge at 18 meter drawdown. The distance from the well where the drawdown influence are not appreciable may be taken to be equal for both the cases. — 05

Q.4B An Avg. rainfall of 16 cm occurs over a catchment during a period of 12 hours. Unit hydrograph of 6 hour duration rises linearly from 0 to 30 cumec in 6 hour and then falls from 30 to 0 in the next 12 hours. ϕ index of catchment is 0.5 cm/hr and base flow in the river is 5 cumecs. Find out the peak discharge of direct runoff hydrograph and area of the catchment. — 05

Q.5A Given below are the monthly rainfall & corresponding runoff value for a period of 10 months. Develop a correlation Between Runoff & rainfall (R & P). — 05

Month	I	II	III	IV	V	VI	VII	VIII	IX	X
P	04	22	28	15	12	8	4	15	10	5
R	0.2	7.1	10.9	4	3	1.3	0.4	4.1	2.0	0.3

Q.5B In a catchment, there are four rain – gauge stations, P, Q, R, and S. Normal annual precipitation values at these stations are 780 mm, 850 mm, 920 mm, and 980 mm, respectively. In the year 2013, stations Q, R, and S, were operative but P was not. Using the normal ratio method, the precipitation at station P for the year 2013 has been estimated as 860 mm. If the observed precipitation at stations Q and R for the year 2013 were 930 mm and 1010 mm, respectively, what was the observed precipitation (in mm) at station S for that year? — 05

Q.6A Tabulated below are data for a number of storm observed on a river. Compute W_{index} for all the storms. — 05

Storm No.(1)	1	2	3	4	5	6	7	8	9	10
Duration of rain in hour (2)	12	18	24	72	18	24	36	12	30	18
Average rainfall in cm (3)	2.82	2.98	4.55	14.22	2.87	3.91	8.10	4.40	5.31	6.98
Runoff in cm (4)	1.32	1.02	2.46	7.42	0.43	0.48	1.93	1.67	1.98	3.15

Q.6B Compute and draw the storm hyetograph and the intensity duration curve for the following storm (of a given frequency) on a drainage basin. — 05

Duration (minute)	0	30	60	90	120
Accumulated precipitation(cm)	0	5.0	7.5	8.5	9.0

OR

Q.6B Estimated the average depth of precipitation, from depth-area curve ,that may expected over an area of 2400 sq. km, due to the storm of 27 September 2015,lasting for 24 hours, assuming the storm center to be located at the center of the areas enclosed between different isohyets as follows : — 05

Isohyet in mm	21	20	19	18	17	16	15	14	13	12
Enclosed area in sq. km	543	1345	2030	2545	2955	3280	3535	3710	3880	3915

Hence determine the depth of rainfall due to the storm that may be expected to be recorded by rain gauge placed at the storm center.

Q.7A The intensity of rainfall and time interval are given below — 05

Time interval(minute)	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80
Rainfall intensity(mm/minute)	0.7	1.1	2.2	1.5	1.2	1.3	0.9	0.4

Find the maximum intensity of rainfall for 20 minute duration of the storm.

Q.7B Explain clearly, 'design flood' and 'time of concentration'. — 05

found to be 16 cm. determine the probability of 24 hr rainfall of magnitude equal to or greater than 16 cm occurring at JAIPUR.
(a) atleast once in 10 successive year
(b) two times in 10 successive years

OR

Q.7B An isolated 4-hour storm occurred over a catchment as follows: — 05

Time	1st hour	2nd hour	3rd hour	4th hour
Rainfall (mm)	09	28	12	07

The ϕ index for the catchment is 10 mm/h. Determine runoff depth from the catchment due to the above storm.

Q.8A The ordinates of 3 hour unit hydrograph are given below: — 10

Time in hour	0	3	6	9	12	15	18	21	24	27	30
Ordinates cum/sec	0	10	25	20	16	12	9	7	5	3	0

Find the ordinates of a 6 hour unit hydrograph for the same basin analytically. Also sketch this unit hydrograph. What is the peak value of discharge in this Unit hydrograph?

Q.9A With a neat sketch, describe various zones of storage in a reservoir and density current. Also suggest measures to control reservoir sedimentation and how do you estimate the probable life of reservoir. — 7+3
A reservoir has the following areas enclosed by contours at various elevations. Determine the capacity of the reservoir between elevations of 200.00 to 300.00.

Elevation	200.00	220.00	240.00	260.00	280.00	300.00
Area of contour (Km²)	150.00	175.00	210.00	270.00	320.00	400.00

Use (a)Trapezoidal formula (b)Prismoidal formula

Q.9B Explain the use of a non-recording rain gauge in the measurement of rainfall. — 3+7
The normal annual rainfall depths recorded at five rain gauge stations A,B,C,D,E are 910, 1070, 1410, 810 and 590 mm respectively. Determine the optimum number of rain gauge stations to be established in the drainage basin if it is desired to limit the error in the mean value of rainfall to 10%.what is the percentage accuracy of the exciting network in the estimation of the average depth of rainfall over a basin? If the location of five rain gauge stations and the areas of the different zones caused by the Isohyets are as given in the following table, indicate the distribution of the additional rain gage stations required if any.

Zone	I	II	III	IV	V	VI	Total
Area(Km²)	415	905	2855	1755	725	555	7210
Rain gauge stations	1	1	1	1	1	1	5

OR

Q.9B What are "Tile drains "and how do they help in preventing water logging? — 4+6
In a tile drainage system, the drains are laid with their center 1.5 m below the ground level. the impervious layer is 9.0 m below the ground level and the average annual rainfall in the area is 80 cm. if 1% of the annual rainfall is to be drained in 24 hours to keep the highest position of the water table to 1 meter below ground level, determine the spacing of the drain pipes .coefficient of permeability may be taken as 0.001 cm/ sec.

Assignment -01

Unit 1: INTRODUCTION & PRECIPITATION

1. Define hydrology. With a neat sketch, explain the Horton's qualitative representation of the hydrologic cycle.
2. Discuss briefly the importance of hydrology and its practical applications in civil engineering.
3. Draw the Horton's qualitative representation of hydrological cycle .Explain the cycle of all components /phases?
4. Draw a neat sketch showing the catchment Hydrological cycle. Write down the 'water budget' equation for any one of the zones.
5. Explain with neat sketch, Horton's Engineering representation of' Hydrologic cycle.
6. Hydrology is a highly inter - disciplinary science. Justify.
7. What are the seasons of India? Discuss the movement pattern of wind during monsoon and retreating monsoon seasons in the country.
8. Describe the features - type, amount and distribution of rainfall, of the three seasons of rainfall in Karnataka.
9. List out the various practical applications of hydrology?
10. Define precipitation. Explain different forms of precipitation?
11. What are the forms of precipitation? Explain any one of them?
12. Describe various types and forms of precipitation.

(km^2)										

28. The annual rainfall data being reported from a station A for 22 years are available, since 1969. In order to check the consistency of the data, six neighboring stations have been chosen and the annual rainfall values of these stations have been averaged for all the years on record since 1969. These values are given below:

Year	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Yearly Precipitation at station A in cm	177	144	178	162	194	168	196	144	160	196	141	158	145	132	95	148	142	140	130	137	130	163
Station average yearly precipitation in cm	143	132	146	147	161	155	152	117	128	193	156	164	155	143	115	135	163	135	143	130	146	161

i) Find out if any inconsistency in precipitation record of station A is indicated. And if yes, since when, a change in the precipitation regime is indicated?

ii) Adjust the recorded data at station A and determine its mean annual precipitation.

29. What are the recommendations of Indian standard institution on rain gauge network establishment? Briefly explain optimum number of rain gauge stations in a catchment.

30. Explain the method of finding optimum number of rain gauges in a catchment.

31. A catchment has five rain gauge stations, which record 66, 74, 81, 69 and 90 cm of rainfall in a year. Determine the percentage error in the arithmetic mean for the area. If the error is to be 2% less than this, determine the additional number of stations required. If you use a

Assignment sheet

Course Title and Code: Finite Element Analysis .CE 726	
Hours per week	**L-T-P: 3-0-0**
Credits	**3**
Students who can take	**B.Tech Semester-VII (Batch: 2012-16 civil Engg)**

Syllabus (Theory)

Introduction to FEM and its applicability, Review of mathematics: Matrix algebra, Gauss elimination method, Uniqueness of solution, Banded symmetric matrix and bandwidth. Structure analysis: Two-force member element, Local stiffness matrix, coordinate transformation, Assembly, Global stiffness matrix, imposition of Boundary conditions, Properties of stiffness matrix.

One-dimensional Finite Element Analysis: Basics of structural mechanics, stress and strain tensor, constitutive relation, Principle of minimum Potential, General steps of FEM, Finite element model concept /Discretization, Derivation of finite elements, equations using potential energy approach for linear and quadratic 1-D bar element, shape functions and their properties, Assembly, Boundary conditions, Computation of stress and strain.51

Two Dimensional Finite Element Analysis: Finite element formulation using three nodded triangular (CST)

element and four nodded rectangular element, Plane stress and Plain strain problems, Shape functions, node numbering and connectivity, Assembly, Boundary conditions, Isoparametric formulation of 1-D bar elements, Numerical integration using gauss quadrature formula, computation of stress and strain.

Finite Element Formulation from Governing Differential Equation: Method of Weighted Residuals, Collocation, Sub domain method, Least Square method and Galerkin's method, Application to one dimensional problems, one-dimensional heat transfer, etc. introduction to variational formulation (Ritz Method.)

Higher Order Elements: Lagrange's interpolation formula for one and two independent variable, Convergence of solution, compatibility, element continuity, static condensation, p and h methods of mesh refinement, Aspect ratio and element shape, Application of FEM, Advantages of FEM, Introduction to concept of element mass matrix in dynamic analysis.

Text books:

1. Text Book of Finite Element Analysis, Seshu P., Prentice Hall India.
2. Finite Element Procedure in Engineering Analysis, Bathe K.J., Prentice Hall India.

References:

1. An Introduction to the Finite Element Method, Reddy J.N., Tata McGraw-Hill, New Delhi.
2. Concepts & Applications of Finite Element Analysis, Cook and Plesha, Willey India New Delhi.
3. Introduction to Finite Elements in Engineering, Chandupatla and Belegundu, Prentice Hall India.

Activities Related to Skill Development and Employability

Finite Element (FE) modeling and simulation of long-time wear is an interesting topic with many fields of application, i.e. gear transmission analyses and biomechanics. The difficulties lies in the process of continuously updating and modelling the altered contact surface and contact pressure that result from unsymmetric wear over a long period of time. To do this, the geometry has to be changed due to the wear throughout the simulation. In this work, a wear-module is implemented into the FE software ANSYS, using User Programmable Features (UPF). The module is general, and can be used to perform long-time wear simulations of bodies in sliding contact. The model is automatically updated, and no re-definition of data is needed.
The wear theory used in the implementation is outlined, as well as the wear calculation procedure. To show on the capabilities of the module and to verify the implementation, two examples of long-time wear simulations are reported in the study. The implementa-tion can be used by an engineering designer in lifetime studies, investigation of structural behavior due to mechanical wear etc.

NOMENCLATURE

F_N = applied normal load (N)
V = wear volume (m^3)
H = wear depth (m)
$H_0 = H / s_{total}$ dimensionless wear depth
$s_0 = s / s_{total}$ Dimensionless sliding distance
$\bar{x}$ = A set of coordinates (x_i, y_i, z_i) (m)
x_0 = Dimensionless x-coordinate $(-1 \le x_0 \le 1)$

INTRODUCTION

Wear of materials is a factor that plays a major role in life time expectations and the long term behavior of many mechanical structures. A mechanical structure or system exposed to an unsymmetric, cyclic loading can wear in way that ruins the initial functionality of the system. A good example of this is hip replacement prostheses, where the polyethylene femoral head cup has to be replaced after some time, due to wear. To avoid or delay these situations, the phenomena has to be studied when designing the eventually worn component. Doing this, the result is a high quality, robust design at a low cost.
Today, recycling and life cycle analyses are important issues in the design process. By increasing lifetime and reliability of a product, these issues are both taken into account. This alone makes the study of long-time wear an important part of many design projects.

Traditionally, wear studies have been performed in laboratory rigs. However, these tests are both costly and time consuming. A computer tool that simulates long time wear of materials would reduce both time and money spent when evaluating the effects of wear. In order

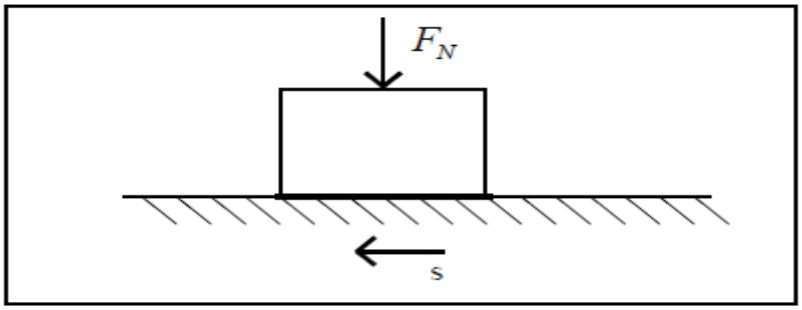
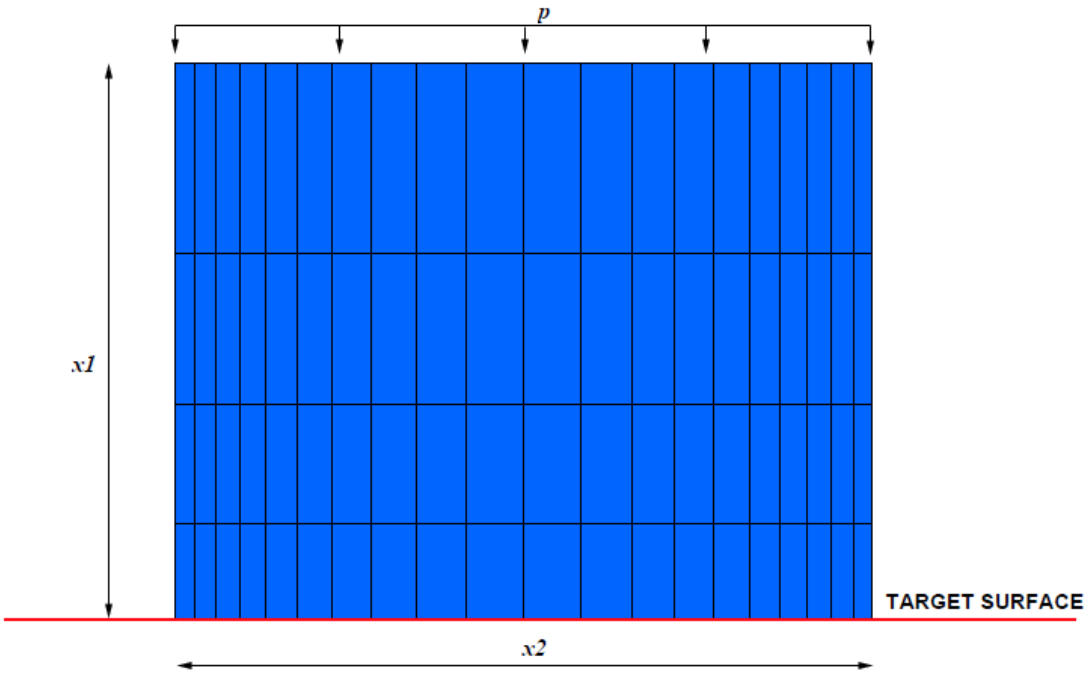


FIGURE 1. SCHEMATIC PICTURE OF BLOCK IN SLIDING CONTACT



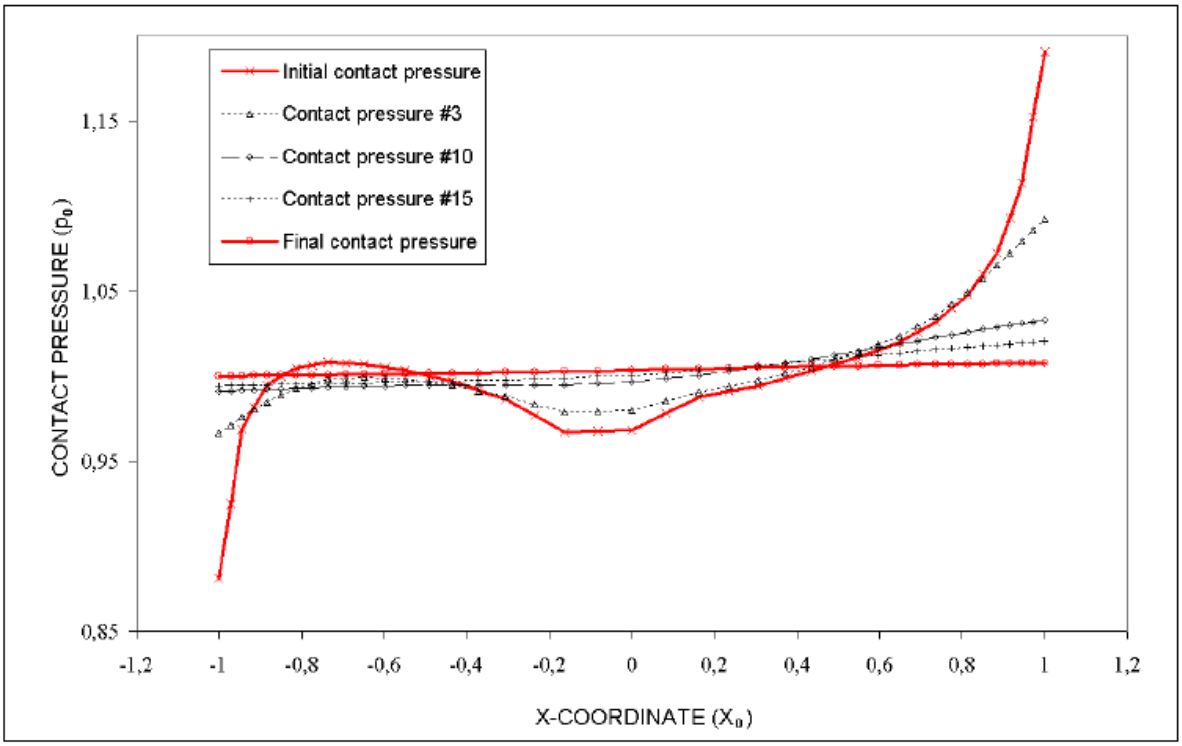


FIGURE 5. CONTACT STRESS DISTRIBUTION IN THE COPPER BLOCK AT DIFFERENT SLIDING DISTANCES

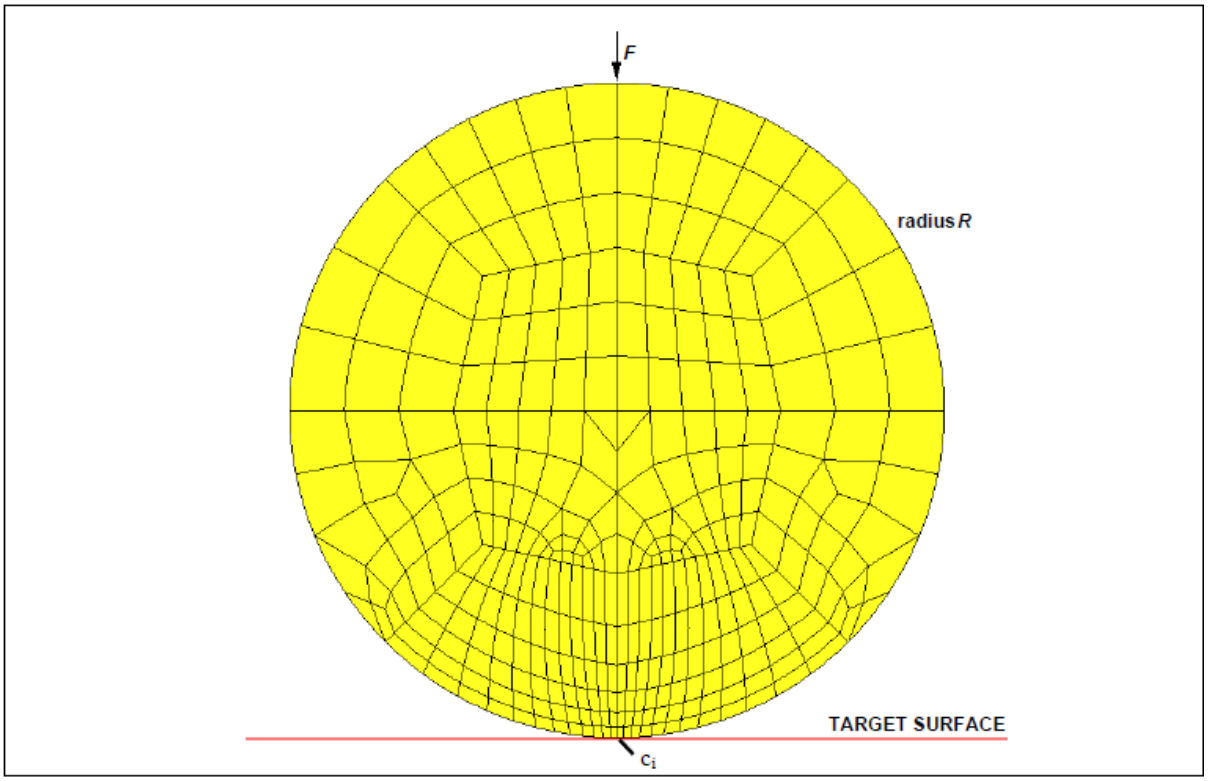


FIGURE 7. FE MODEL OF THE COPPER CYLINDER

Course Title and Code: Advanced Transportation Engineering .**CE 729**	
Hours per week	**L-T-P: 3-0-2**
Credits	**4**
Students who can take	**B.Tech Semester-VII (Batch: 2012-16 civil Engg)**

Syllabus (Theory)

Traffic Surveys: Objects, methods and data presentation of various traffic surveys such as classified traffic volume studies; spot speed studies; travel time and delay studies; origin & destination studies. Parking studies: Investigations and determination of parking demand; Accident studies: Objectives & causes of accidents; various steps involved in accident studies; 3Es measures used for the reduction of accident rate.

Statistical Methods for Traffic Engineering: Elementary concepts of probability, mean, standard deviation and variance, Binomial, Poisson & Normal distribution, sampling theory and significance testing, Linear Regression and correlation.

Traffic Control Devices: Traffic signs-classifications & general specifications, Signals-advantages and warrants of traffic signals; design of signals, Road markings: objects & classification. Road Intersections: Classifications and importance; design of rotary intersection.

Bitumen grading system: Penetration grading, viscosity grading and superpave performance grading, Modified bitumen binders such as PMB & CRMB.

Hot Mix Asphalt Mix Design: Various methods of mix design, objectives of mix design, gradation and blending of aggregates, volumetric properties of compacted specimens, analysis of compacted asphalt mix, Marshall mix design procedure.

Types of bituminous mixes based on gradation: Dense graded; semi-dense graded; open graded and gap graded. Different types of bituminous mixes used in India,

Recycled Asphalt Pavements (RAP): Benefits and methods of recycling, Hot recycling materials and mix design, Materials and mix design for cold mix asphalt recycling.

Text Books:

1. Traffic Engineering & Transport Planning by L R Kadiyali, Khanna Publishers, New Delhi.
2. Bituminous Road Construction in India by Prithvi Singh Kandhal, PHI Learning Pvt. Ltd.
3. Highway Engineering by S K Khanna, CEG Justo & Veeraragavan, Nem Chand Bros, Roorkee
4. Transportation Engineering by C. Jotin Khisty & B. Kent Lall, Pearson.

Codes :

1. IRC : 9 -1972 : Trattic Census on Non Urban Road, IRC, New Delhi.

2. IRC : 2 -1968 : Route Marker Signs for National Highways, IRC, New Delhi.

3. IRC : 30 -1968 : Standard Letters and Numerals on Different Heights for use as Highway Signs, IRC, New Delhi.

4. IRC : 35 -1970 : Code of Practice for Road Markings (with Paints), IRC, New Delhi.

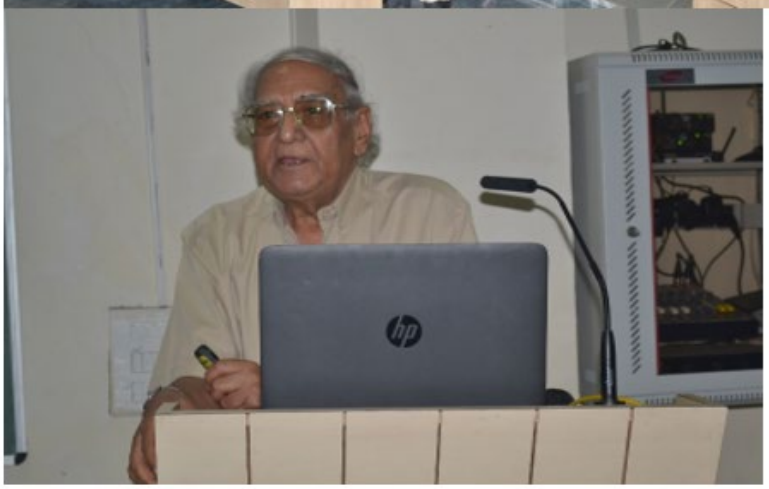
5. Specifications for Road and Bridge Works, Ministry of Surface Transport & Highways, IRC, New Delhi.

6. IRC : 73 -2013: Paving Bitumen – Specifications, Bureau of Indians Standards.

7. IS -15462 -2004 : Polymer and Rubber Modified Bitumen–Specifications, Bureau of Indian Standards

Activities Related to Skill Development and Employability

1) Calculate the absolute minimum and ruling radius of horizontal curve for design speed of 80kmph.
2) What are the tests to be carried out for good aggregates? Explain in detail impact test.
3) Calculate thickness of bituminous mat using triaxial method
   E-value of sub grade=90kg/cm²
   E value of paving material =900kg/cm²
   Wheel load =5100kg
   Tyre pressure= 7.0 kg/cm²
   Traffic coefficient= 1.25
   Saturation coefficient=0.8
4) Give classification of highways according to Nagpur road plan. Give formula of Length of NH, SH and MDR as per Nagpur road plan.
5) The following data refers for backward area calculate the length of diff. categories of Roads. As per IInd 20 year plan formula
   I) total area= 18400. km².



Prof. Kandhal delivering the lecture to audience

Faculty Co-ordinator/ **Head of Department**

Prof.Kandhal expert talk

CULTURE, ETHICS AND VALUES |BBA

Course Code	**:**	**BBA051**
Course Credits	**:**	**4**
Total Hours Per Week	**:**	**3**

COURSE CONTENTS

Ethical vision of Management: Spiritual Empiricism, Indian Culture and Vedantic Indian Ethos, Vedantic Ethics, the Ethico-moral

Business Ashram: Holistics for Human Values; Fragmentism Holistic Vedantic thought and Living; Tagore, Vivekanda, Gandhi and Aurbindo on Ethics.

Ethics for Individual Motivation or Inspiration: Moral Inspiration , Amoral Motivation, Indian Heritage, non –centralized Culture and the Productivity Ethic

LEARNING OUTCOMES

1. The student should be able to understand the importance of culture, ethics and values. in determining the personal effectiveness.
2. He/She should be able to draw ethical indicators.
3. He/She should be able to classify the ethical and unethical practices in business at the individual, group and organizational level.
4. He/She should be able to comprehend how ethics can help in solving moral dilemmas.

TEXT BOOK

- Chakraborty, S. K. (1997). ***Ethics in Management: Vedantic Perspective.*** New Delhi: Oxford.

REFERENCE BOOKS

1. Ghosh, Biswanath. (2005). ***Ethics in Management and Indian Ethos***. New Delhi: Vikas
2. Balachandran S., Raja, K.C.R. (2003). ***Ethics, Indian Ethos and Managements.*** New Delhi: Shroff

Activities Related to Skill Development and Employability

1. Activities on Value of Love
   • Use your imagination to symbolize love through words or colours.
   • Discussion on "In a loving world, what would everyone want for his or her family."
2. But This Is Not Fair! (Being Responsible)

JK Lakshmipat University, Jaipur
Institute of Management
Bachelor of Business Administration
Academic Year- 2015-16

Business Finance

Course Code: BBA052
Credit: 4
Semester: IV

Activities Related to Skill Development and Employability

Case 1- Capital Budgeting Decision for PRETEL Ltd.
Case 2- Working Capital Position Analysis of Dabur.
Assignment 1- Practical Problem on Risk Return Trade off
Assignment 2Practical Problem on Capital Budgeting in respect of TVM
Assignment 3- Practical Problem on Cost of Capital
Assignment 4- Practical Problem on Dividend Policy
Project 1- In class room exercise on Various financing decision of HUL
Project 2- In class room discussion on factors affecting Leverage and dividend decision of a Steel company.

JK Lakshmipat University, Jaipur
Institute of Management
BBA (2013-16 Batch)
Academic Year- 2015-16
E-Business Fundamentals

Course Code: BBA053
Credits: 4
Semester: V

Course Learning Outcomes:
Upon successful completion of the course, student is expected to –

1. Develop a basic understanding of E-Commerce and its enabling technologies
2. Understand various E-Business Models
3. Critically examine the issues involved in E-marketing, E-Security and E-Payments
4. Develop a business sense of IT investments
5. Analyze the security, legal and ethical issues

Course Syllabi:

- **Introduction:** Origin of E-Commerce, Business Context, Advantages and Limitations of E-Commerce, Readiness, E-Transition Challenges, IT Act 2000
- **Business Models:** E-Business Models Based on Transacting Parties (B2C, B2B, C2C, C2B) and Transaction Types
- **Enabling Technologies**: Internet Client-Server Applications, Networks and Internets, Software Agents, Internet Standards and Specifications, Broadband Technologies
- **E-Marketing:** Goals of Web Presence, Browsing Behavior Model, Online Marketing, E-Advertising, Internet Marketing Trends and Strategies
- **E-Security:** Information System Security, E-Business Risk Management Issues, Information Security Environment in India, NASSCOM Initiatives
- **E-Payment:** Digital Payment Requirements, Online Payment Categories, E-Cash, and E-Cheques, Digital Signature, Online Financial Services
- **E-CRM & E-SCM:** Customer Relationship Management, E-CRM Solutions, Supply Chain Management, E-SCM Components and Trends
- **E-Strategy and Ethical Issues:** Information and Strategy, Dimensions of E-Commerce Strategy, Ethical Issues in Digital Economy, Cyberstalking, Privacy and Cookies, Phishing, Copyright Issues, Threats to Children

Activities Related to Skill Development and Employability

- Develop an E-business model for a product/service.
- Identify channels of E-marketing for the proposed model.
- Critically evaluate the security issues in the proposed model.
- Enumerate and suggest resolution of various social and ethical issues of the proposed model.

JK Lakshmipat University
Institute of Management
Academic Year 2015-2016
BBA
Management Accounting

Course Code	**:**	**BBA054**
Course Credits	**:**	**4**
Total Hours per Week	**:**	**3**

Course Description

The large scale industrial production has resulted in widening the area of managerial supervision. The management has to depend upon accounting information for taking various strategic decisions. Management accounting, in the present day, has become an integral part of business. It helps management in planning, coordinating, communicating and controlling. The areas covered in this subject is very wide and includes the tools and techniques for analysis and interpretation of financial statements and also covers management reporting, effects of price level changes etc.

COURSE SYLLABI:

Nature and Scope of Management Accounting: Emergence of Management Accounting, Nature, Objective, Function of Management Accounting , Relationship between financial accounting and Management Accounting, Cost Accounting and Management Accounting, Need & Importance of Management Accounting.

Financial Statements: Meaning, Nature, Objective, Anatomy of Financial Statements, Form & Contents of Balance sheet & Income Statement, Characteristics of Ideal Financial Statements

Financial Statement Analysis: Types of Financial Analysis, External Analysis, Internal Analysis, Horizontal & Vertical Analysis, Comparative Statement, Common-Size Statement, Trend Analysis, Ratio Analysis, Cash flow Statement.

Cost Analysis: Cost behaviour, fixed cost, Variable Cost, Semi-Variable cost, Advantages of Classifying into Fixed and Variable, Marginal Costing and Break Even Analysis

Standard Costing & Variance Analysis: Standard Cost & Costing, Objective, Advantages, Limitation, Diff. between Standard cost and Budgetary Control, Type of standard, Setting of Standard, Direct Material variance, Labour Variances and Overhead Variances.

LEARNING OUTCOMES:

Upon completion of the course, students will be able to:

1. Understand management accounting as an information system for decision making.
2. Learn the meaning, use, Importance, forms & Contents of financial statements.
3. Learn to determine financial strengths and weakness of a firm.
4. Learn Cash flow statement analysis.
5. Understand Managerial application of Marginal Costing.
6. Learn the computation, analysis and accounting treatment of variances.

TEXT BOOK:

- Paresh Shah (2012) **Management Accounting.** New Delhi: Oxford Publication

REFERENCE BOOKS:

1. Ambrish Gupta (2009). ***Financial Accounting for Management – An Analytical Perspective.*** Pearson.
2. Anthony N. Robert, David F. Hawkins, Kenneth A. Merchant, (2010). ***Accounting Text and Cases, 12e***. Tata McGraw Hill.
3. S.K. Bhattacharyya and John Dearden (2009). ***Accounting for Management – Text & Cases***. New Delhi: Vikas Publishing.
4. Shashi K.Gupta, R.K.Sharma (2013). ***Management Accounting- Principles and Practices***. Kalyani Publishers.

Activities Related to Skill Development and Employability

Case Studies-

1. The Right Data (Variance reporting)
2. Browning's Budget (Budgeting/forecasting/standard setting)
3. Recycling Equipment (ROI/residual income)
   Budgetary Slack (Budgeting/standards setting)
   Antiock Hardware (An Inventory Case Study)
4. Omega Tech Case (Putting it all together)
5. Integrating a New Business into the Financial Planning Process at Unilever

Assignments

1. On Analysis and Interpretation of Financial Statements
2. On Common Size, Comparative, Trend Analysis

3. On Ratio Analysis
4. On Cash flow statement
5. On Standard Costing and Variance Analysis

JK Lakshmipat University
Institute of Management
Indian Financial System
BBA 2015-16

Course Code	**:**	**BBA062**
Course Credits	**:**	**4**
Total Hours per Week	**:**	**3**

Course Desciption:

The financial system consists of many institutions, instruments, markets & services. Financial institutions range from moneylenders to banks, pension funds, insurance companies, brokerage houses, investment trusts and stock exchanges. Financial instruments ranges from the common –coins, currency notes, mortgages, bonds, stocks to more exotic future and swap of high finance. Markets of these instruments may be organized formally or informally. The Indian financial system is passing through a period of reforms, structural adjustments and consolidation in the wake of economic liberalization. In this process, the financial system will not be widened but also be strategically planned to meet the growing needs of the economy. In view of the overwhelming significance of financial system, it is of indeed need to impart insights into the principles, operational policies and practices of the prominent financial pillars to the management students. This course is expected to give the students an opportunity to apply their knowledge of financial system to the practical world of financial institutions and services.

COURSE SYLLABI:

The Financial System: An Introduction : Components of Formal Financial System, Functions, Key Elements and Designs of Financial System, Nature and Role of Financial Intermediaries and Financial Markets, Reforms in the financial system

Financial Market: History of the Indian Capital Market, Capital Market Scams, Reforms, Primary Market: Free pricing Regime, Book-building, Green-shoe Option, On-line IPOs, and The Secondary Market: Organisation, Management and Membership of Stock Exchanges, Listing of Securities, Trading Arrangement, Trading Settlements, Stock Market Index, Stock Exchanges in India.

Banking & Non-Banking Institutions: Development of Financial Institutions, IDBI, SIDBI, Exim Bank, NABARD, ICICI,

Financial Instruments: Capital Market Instruments, ADR, GDR, IDR, ECB etc.

Mutual Funds : Types, Risks, NAV, SEBI Guidelines relating to Mutual Fund, AMFI, UTI, Growth and Performance of Mutual Funds in India.

Financial Regulation: Regulations in the Capital Market, SEBI, RBI

LEARNING OUTCOMES:

Upon completion of the course, students will be able to:

1. Understand Components and Functions of Financial System
2. Understand History, Functions of Capital Market, Primary market and Secondary Market.
3. Understand Changing Role of Development financial institutions
4. Understand Development, Reforms, Management of Banking and Non-banking financial sector

TEXT BOOK:

- Khan M Y. ***Indian Financial System***,(2012), New Delhi: Mc Graw Hill Publication

REFERENCE BOOKS:

1. Machiraju H,(2011) ***Indian Financial System***. New Delhi: Vikash Publication.
2. Pathak V.Bharati,(2013) ***The Indian Financial System***. New Delhi : Pearson Education
3. Bhole L M, Mahakud Jitendra,(2012) ***Financial Institutions & Markets***. New Delhi: Mc Graw Hill
4. Guruswamy S,(2010) ***Financial Service & System***. New Delhi: Tata Mc Graw Hill

Activities Related to Employability Enhancement Skills

Case Studies:

1. **The ITC Classic Story**
2. **Co-operative Bank Scams in India**
3. **The CRB Scam**
4. **Buy back of shares and MNCs**
5. **Financial Risk management at Toyota**
6. **Financial Risk management at UBS**
7. **Credit Risk management at JP Morgan Chase**

BBA063|Organizational Culture and Change| Credit -4|2013-16

Organizational Culture and Change

Course Code	**:**	**BBA063**
Course Credits	**:**	**4**
Total Hours per Week	**:**	**3**

COURSE SYLLABI:

Organisational Change: Introduction to organizational change**,** Concept, forces and types of organizational change - External and Internal, Recognizing the need for change, problem diagnosis, Organizational Change process, Change through organizational effectiveness and excellence.

Resistance to Change: Managing resistance to change, the process of organizational change, Incremental Change Vs Disruptive Change.

Managing Change: Managing Change, Planning, Creating the support system, Power leadership and organizational change, Technology and culture in organization, attitude and its measurement for organizational change, organization culture and organizational change.

Change interventions: Models and intervention tools of organization development, Globalisation and Organizational change & development, Knowledge Management and Learning Organization Issues change Management strategies, Organizational Change and Development Research

Text Book:

- Bhattacharyya, D.K. (2011). ***Organizational Change and Development***, 2nd ed Oxford University Press, New Delhi.

Suggested Readings

1. Singh, K. (2009). ***Organizational Change and Development*****,** 2nd ed. Excel Books, New Delhi.

2. Grieves, Jim. (2010). ***Organizational Change-Themes & Issues*****,** Oxford, New York.

3. Ghanekar, A**.** ***Essentials of Organizational Development***, Everest Publishing House.

4. Joan V. Gallos, Jossey Bass. ***Organizational Development,*** Wiley Imprint.

5. Huse, F E. and Cummings, T G (1985) ***Organizations, Development and Change.*** 3rd ed. New York, West, 1985.

*Note: the latest edition of all the mentioned books will be used.

Activities Related to Employability

1. Prashant Chemicals- Case Study

The personnel office of Prasant Chemicals limited informed the middle managers through a circular that a group of consultants would be calling on them later in the week to provide training on team building. The consultants would be emphasizing on how to develop team work and to build inter group relationships throughout the Company. The information also contained the approach to be adopted by the consultants and explained the five-step process of team building: problem sensing, examining differences, giving and receiving feedback, developing interactive skills, and follow up actions. The circular also included a note on the utility of team building in organisational effectiveness. On receiving the circular, middle managers, felt tensed as they though team building as an exercise involving a lot of hocus-pocus as they experienced in sensitivity training exercises in which participants used to attack each other and let out their aggression by heaping abuse on those disliked. Therefore, the managers felt that the consultants were not needed for team building. One of the managers commented, 'now that as we understand what is involved in team building, we can go ahead and conduct session ourselves. All we have to do is to choose a manager who is liked by everyone and put him in the role of change agent/ consultant. After all, you really do not need high priced consultants to do team building stuff. You just have a good feel for human factor'. The other managers generally agreed. However, the corporate personal director turned down their suggestion and proceeded with his original programme of hiring consultants.

Questions

1. Why did middle managers show resistance to team building approach of organisation development?
2. Do you think the managers had accurate view of team building concept and role of external consultant in that?
3. Did corporate personnel office sell the concept of team building and its usefulness properly to middle managers? What actions should the department have taken?

2. CASE Scenarios

Episode 1 We were observing the work of one of the industrial engineers and a production operator who had been assigned to work together to assemble and test a product that the engineer was developing. The engineer and the operator were in daily contact with each other. It was common for the engineer to suggest some modification in the product, discuss it with the operator and then ask her to try it out to see how it worked. It was also common for the operator to get an idea as she worked and to pass it on to the engineer, who would then consider it and at times ask the operator to try it and see if it proved useful.

Episode 2 One day we noticed another engineer approaching the same production operator. We knew that this particular engineer had no previous contact with the production operator. He had been asked to take a look at one specific problem of the new product because of his special technical qualifications. He had decided to make a change in one of

the parts of the product to eliminate the problem, and he had prepared some of these parts using his new method. Here is what happened. 34 He walked up to the production operator with the new parts in his hand and indicated to her by a gesture that he wanted her to try assembling some units using his new part. The operator picked up one of the parts and proceeded to assemble it. We noticed that she did not handle the part with her usual care. After she had assembled the product, she turned to the new engineer and with a triumphant air, said, 'It does not work'. The new engineer indicated that she should try another part. She did so, and again it did not work. She then proceeded to assemble units using all of the new parts that were available. She handled each of them in an unusually rough manner. None of them worked. Again she turned to the engineer and said that the new product did not work. The engineer left and later the operator, with evident satisfaction commented to the original engineer that new engineer's idea was just no good.

Questions

1. What does these two episodes indicate? 2. Discuss the above case in the lights of Change management and HRM

BACHELOR OF COMMERCE HONS
BCH301
COMPANY & OTHER LAWS
COURSE OUTLINE
SEMESTER V 2015-2016

INSTRUCTOR DETAILS
NAME: DR.LOKANATH MISHRA
EMAIL: lokanathmishra@jklu.edu.in
OFFICE: ROOM NO. 206 (IM BLOCK, 2nd FLOOR)
OFFICE TEL: 0141- 7107535
MOB: 9999558286

L-T-P: 3-0-0
COURSE CREDITS: 3
SESSION DURATION: 60 MINUTES

COURSE DESCRIPTION:

The course introduces the concepts, requirements and procedures of company law to participants, with particular emphasis on the application and operation of the law. With increasing complications in business, the managers must have basic knowledge of law being applied on the industry as well as awareness of different laws to deal any type of stakeholders and situation. This course is broadly covers Company Act 2013: Types of Companies and Its Characteristics: Definition of a Company, Characteristics, Lifting of Corporate Veil, Illegal Association, Different types of Companies, Public Companies, Private Companies, Foreign Company, Government Company, Limited, Unlimited, Holding and Subsidiary Companies, Memorandum of Association, Articles of Association and Prospectus its clauses, contents and procedure of Issues, Alterations etc, Share Capital, Company Meetings, management of the Companies, Composition of Board of Directors their appointment, duties, responsibilities and remunerations.

COURSE OBJECTIVES:

To gain an expert knowledge of corporate functions in the context of Companies Act and related corporate Laws. To be able to assess whether strategies and the organization is in compliance with established regulatory framework and corporate governance.

The other objectives are:

1. To familiarize the students with company and other related laws to business environment.
2. To equip them with drafting company documents, statutory records and compliance with various Government agencies.
3. To strengthen the analytical and critical thinking skills of students and provide skills to predict the disputes, which may arise in business in context of law and thereafter shaping real world business decisions.

COURSE LEARNING OUTCOMES:
Upon completion of the course, students will be able to:

- Comprehend the principles of corporate laws relevant for compliance and decision making
- Acquaint with company registration process, forms and procedures.
- Analyze and interpret the impact of Listing agreement and SEBI Laws and regulations.

COURSE OUTLINE:

Company Formation and Conversion: Incorporation private companies, public companies, companies limited by guarantee and unlimited companies, Nidhi companies, OPC, Producer Companies and other companies, Formation of Not for profit making companies, procedure related to foreign companies carrying on Business in India.

Board of Directors and Managerial Personnel: Directors and managerial personnel-appointment, Reappointment, resignation and removal, payment of remuneration fo Directors and Managerial personnel and disclosure, Powers and Board of Directors and Restrictions on the Power of Directors, Obtaining DIN, Compensation for Loss of office

Board Meeting and Procedures: Board meeting, minutes, Registers, Power of the Board, Corporate Governance and Audit Committee, Nomination and Remuneration Committee, Stakeholders Relationship Committee, CSR Committee, Duties and Liabilities of Directors

Compromise, Arrangement and Amalgamations: Power to compromise or make arrangements with creditors and members, power of tribunal, merger and amalgamation of companies, prevention of oppression and mismanagement, Majority rules but minority protection

Corporate Winding up and Dissolution: Modes of winding up, winding up by the Tribunal, voluntary winding up, provisions applicable to every mode of winding up, official Liquidators.

Insolvency & Bankruptcy Code, 2016: Introduction, purpose and vision of the code, power of IBBI, Insolvency professional agencies, Insolvency professionals, information utility Adjudicating authorities and process.

EVALUATION MATRIX:

Component	Weightage
Mid Term I	20%
Mid Term II	20%
End Term	40%
Continuous Evaluation (Internal Marks) Assignment, Case Study, Project Work, Class test	20%

SESSION PLAN:

Session No.	Topic coverage and action plan
1	Introducing Companies Act 2013 vs. Companies Act 1956 major changes in the newly constituted Companies law and an overview of contents, its use and applicability for a Business students.
2-3	Incorporation of private companies, public companies, companies limited by guarantee and unlimited companies, Nidhi companies, OPC,
4-5	Producer Companies and other companies, Formation of Not for profit making companies, procedure related to foreign companies carrying on Business in India.
6	Review and Recap: Through case lets and MCQ and class discussion and presentations.
6-8	Directors and managerial personnel- appointment, Reappointment, resignation and removal, payment of remuneration for Directors and Managerial personnel and disclosure
8-9	Powers and Board of Directors and Restrictions on the Power of Directors, Obtaining DIN, Compensation for Loss of office
10	Review and Recap: Through case lets and MCQ and class discussion and presentations.
11-13	Board meeting, minutes, Registers, Power of the Board,
14-15	Corporate Governance and Audit Committee, Nomination and Remuneration Committee, Stakeholders Relationship Committee, CSR Committee, Duties and Liabilities of Directors

16	Review and Recap: Through case lets and MCQ and class discussion and presentations.
17-19	Power to compromise or make arrangements with creditors and members, power of tribunal, merger and amalgamation of companies
20-21	prevention of oppression and mismanagement, Majority rules but minority protection
22-23	Modes of winding up, winding up by the Tribunal, voluntary winding up, provisions applicable to every mode of winding up, official Liquidators.
24-26	Introduction, purpose and vision of the code, power of IBBI, Insolvency professional agencies,
27-28	Insolvency professionals, information utility Adjudicating authorities and process.
29	Review and Recap: Through case lets and MCQ and class discussion and presentations.
30	Revise and review of the subject with learning outcomes

ACTIVITIES RELATED TO EMPLOYABILITY ENHANCEMENT SKILLS

1. Workshop on Formation of OPC and other companies.
2. Visit of MCA websites
3. Case study on Masons Pvt ltd on Acquisition of Shares
4. Case study on Smart Ltd on validity of COI issued by ROC
5. Case Study on Good Homes Ltd on Number of Membership
6. Case Study -ITC Ltd on Accounts and Audit
7. Case Study- Jaypee Industries on Corporate Deposits
8. Case Study-Wipro Ltd on Appointment of Directors
9. Case Study- RIL and Bharat Electronics on Disqualification of Directors
10. Case Study- Infosys Ltd on Related party transaction
11. Case Study- Pioneer Fisheries Pvt Ltd on Board meetings
12. Case Study- Reliance Industries Ltd on XBRL

Institute of Management
Advanced Cost Accounting
Academic Year- 15-16

Course Code	**:**	**BCH302**
Course Credits	**:**	**4**
Total Hours per Week	**:**	**3**

COURSE DESCRIPTION:

The course advanced cost accounting is an development over the basic cost accounting students read in the previous semester. The advanced costing is necessary for the understanding costing process in various forms of industries for the cost control and reduction. It deals with specific costing related to job, batch, process, contract, unit, output costing . It also deals with activity based costing and target costing techniques for cost control.

COURSE SYLLABI:

Costing: Control of Materials, Control of Labor, and Control of Manufacturing Overheads.

Types Job-order, Batch and Contract Costing: Introduction, Job/Order Costing, Batch Costing, Contract Costing.

Process, Joint and By-product Costing: Introduction, Nature and suitability, Cost Accumulation in process costing, joint products, By-products, Sell now or process further.

Unit/Single/Output and Operating Costing: Introduction, Unit/Single/Output costing, Operation costing.

Uniform Costing and Inter-firm Comparison: Introduction, Uniform Costing, Inter-firm Comparison

Reconciliation and Integration: Introduction, Reconciliation of Financial and Cost Accounts, Integrated Accounts.

Kaizen Costing, Activity Based Costing and Cost Control and Tool and Techniques of Cost Reduction.

LEARNING OUTCOMES:

1. It will be enable student to understand the application of various method of costing i.e Batch, Contract, Job, Output, Unit, Operation and Unit Costing.
2. Students will be able to prepare the reconciliation of financial statement and cost accounts.
3. Students will be well equipped with various tools and techniques of Cost control.

TEXT BOOKS:

- Khan M Y & Jain P K.(2013), ***Cost Accounting.*** Tata Mc Graw Hill , New Delhi.

REFERNCE BOOKS:

1. Arora, M.N. (2009). ***A Text Book of Cost and Management Accounting***. Eighth Edition. New Delhi: Vikas Publication.
2. Jain, S.P. and Narang, K.L. (2009). ***Cost Accounting***. New Delhi: Kalyani Publishers.
3. Pillai, R.S.N. and Bagavathi, V. (2006). ***Cost Accounting***. New Delhi : S. Chand and Company Ltd.
4. Banerjee, Bhabtosh (2009). ***Cost Accounting -Theory and Practice***. Twelfth Edition. New Delhi: PHI Learning Pvt. Ltd.

ACTIVITES RELATED TO EMPLOYABILITY ENHANCEMENT SKILLS

Case Studies

1. Dr. Raman and his Practice (Labor and Material management)
2. Keshkala Beauty Parlour (Manterial Costing)
3. Rajesh Xerox and Print(overhead Costing)
4. Denims tailoring (Process Costing)
5. Tribhuban Society (Cost Control)
6. Barbie Company (Job Costing)
7. Iscon Construction Company (Batch Costing)
8. Tasty Bread Manufacturing (Operation Costing)
9. Dental Practice (Operation Costing)
10. Sahara Sporting Goods- Reworked Units
11. Hiramani- Change in Output Measure
12. Pavapuri Company- Physical Unit Method by products, and decision Making
13. Padmaprabhu Company- relative Sales Value Method
14. Sunny Trailers Nursery- Joint Cost allocation

Assignments

1. On Classification of cost and cost behavior
2. On preparation of cost sheet
3. On material control and pricing
4. On labour costing
5. On overhead costing
6. On batch and operating costing
7. On Process costing
8. On cost management and decision making

JK Lakshmipat University
Institute of Management
Academic Year 2015-16
Corporate Accounting

Course Code : BCH402
Course Credits : 4
Total Hours per Week: 3

Course Description:

Topics include like final accounts and statements of companies, strategic and legal issues in mergers and acquisitions; accounting for inter-corporate investments; takeovers through asset purchases and share purchases; consolidation; foreign currency transactions and translation; disclosure and financial analysis issues (including segment reporting and related party disclosure) of banking companies, Insurance Companies.

COURSE SYLLABI:

Joint Stock Company Accounts: Final Account and Statements.

Issue, Forfeiture and Reissue of forfeited shares, Issue and Redemption of Debentures, Redemption of Preference Shares, Issue of Bonus Shares, Profit Prior to Incorporation.

Valuation of Goodwill, Valuation of shares, Alteration of Share Capital, Amalgamation, Absorption and Reconstruction.

Liquidation: Preparation of Statement of Affairs, Deficiency Account, and Liquidator's Final Statement of Accounts.

Consolidation of Financial Statement

Account of Insurance Companies including computation of Insurance Claims

Account of Banking Companies.

Investment Accounting.

LEARNING OUTCOMES:

1. Student will be able to understand corporate accounting practices and preparation of company final accounts.
2. Understand the procedure adopted for recording of Fresh issues of shares, redemption of preference share and debenture.
3. Understand the process of capital restructuring.

4. Understand the process of preparing account for various service companies like banking, insurance, electricity and voyage companies.

TEXT BOOKS:

Goel DK and Goel Shally,(2012). ***Corporate Accounting***, New Delhi: Arya Publication,

REFERENCE BOOKS:

1. Jain S.P. and Narang K.L,(2010). ***Company Accounts***, Kalyani Publishers, New Delhi.
2. Limaye Shirish, Thadhatil Tessy, Chiplunkar Yogini,(2009). ***Corporate Accounting***, Vision Publication, Pune.
3. Verma K.K,(2010). ***Corporate Accounting***, Excel India Publication, New Delhi.
4. Tulsian P.C.,(2012). ***Financial Accouting***, S.Chand Publcation , New Delhi.

ACTIVITIES RELATED EMPLOYABILITY ENHANCEMENT SKILLS

Case Studies-

1. Apel Manufacturing (Accounting for Leases)
2. Independence (Confidentiality of information)
3. Ignore the Error? (Auditing/materiality)
4. Survive the Year (Asset valuation/write-downs)
5. Irrevocable Election (Client services)
6. Rusty and Dusty Slow Movers (Asset valuation/write downs)
7. ZZ Cinema (Internal control--Segregation of duties)

Assignments:

1. On Financial Statement of Companies
2. On Issue of share capital, Preference Shares, Debentures
3. On Amalgamation and Reconstructions
4. On Dissolution of Companies
5. On Final Accounts of Insurance, Banking Companies
6. On Internal Reconstruction

Institute of Management
Specialized Accounting
Academic Year 2015-16

Course Code : BCH405
Course Credits : 4
Total Hours per Week: 3

COURSE SYLLABI:

Accounts for Non Trading Concerns

Royalty Accounts

Accounts for Leasing, Hire purchase and Instalment Purchase System

Branch Accounting and Departmental Accounting

Accounting for Goods Sent on Sale or Return Basis

Average due Date and Current Accounts

Accounting for Voyage

Accounting for Package and Containers

Accounting for Agriculture firms and hotels.

LEARNING OUTCOMES:

1. Students will be able to understand the accounting practices in various forms of service and manufacturing organizations, includes Non- profit institutions, branch business system, Accounting related to mines, quarries, publication, package and containers etc.

2. Students will get specialized knowledge of accounting in different business perspectives.

TEXT BOOKS:

- Shukla, M.C., Grewal, T.S. & Gupta, S.C. (2013). ***Advanced Accounts Vol.2,*** S.Chand and company: New Delhi.

REFERENCE BOOKS:

1. S.P Jain & K.L.Narang,(2014) ***Advanced Accountancy***, Kalian Publishers, New Delhi.
2. Ambrish Gupta (2009). ***Financial Accounting for Management – An Analytical Perspective.*** Pearson.
3. Anthony N. Robert, David F. Hawkins, Kenneth A. Merchant (2010). ***Accounting Text and Cases, 12e***. Tata McGraw Hill.
4. S.K. Bhattacharyya and John Dearden (2009). ***Accounting for Management – Text & Cases***. New Delhi: Vikas Publishing.
5. Tulsian P.C. (2006). ***Financial Accounting.*** Pearson.
6. R. Narayanaswamy (2009). ***Financial Accounting – A Managerial Perspective.*** PHI.

Activities Related to Employability Enhancement Skills

Assignment/Practical Problems on:

1. **Income and Expenditure and Receipt and payment account of Non Trading organizations.**
2. **Royalty Accounts- lessor and lessee**
3. **Accounting for lease**
4. **Accounting for hire purchase**
5. **Branch and Departmental Accounting**
6. **Voyage accounting**
7. **Package and container business accounting**
8. **Accounting for goods sent on sale or return basis**
9. **Current Account and Average due date.**

JK Lakshmipat University, Jaipur
Institute of Management
B. Com (H) (2014-17 Batch)
Academic Year- 2015-16
Information System Fundamentals

Course Code: BCH406
Credits: 4
Semester: IV

Course Description:
The present course responds to this need among budding managers in understanding what information systems are and how they fit in the current organizational setup. The present course is aimed at providing the participants with a firm foundation in the field of information systems. Information systems are imperative for modern day organizations, irrespective of their nature of operations.

Course Learning Outcomes:
After successful completion of the course, the student should be able to:

1. Understand the framework of information systems,
2. Develop systems orientation towards business organizations,
3. Understand the strategic role of information systems, and
4. Develop a basic understanding of the generic system development approach.

Course Syllabi:

- **Framework of Information Systems:** Concept of IS, Nature and Scope
- **Structure and Types of Information Systems:** Structure of Information Systems, Types of Information Systems (TPS, MIS, DSS, ESS, Enterprise Applications)
- **System Concept:** Information Concept, Types of Information, Dimensions of Information, System Concept, Elements and Characteristics of System, Types of Systems
- **Information Systems for Competitive Advantage:** Competitive Advantage, Porter's Competitive Forces Model, IS strategies for dealing with competitive forces, Strategic Information Systems
- **Information Technology for Information Systems:** Hardware, Software, Programming Languages, Database Management, Telecommunications and Computer Networks
- **Analysis and Design of Systems:** IS Planning, System Development Stages and Approaches, Structured System Analysis and Design

Activities Related to Skill Development and Employability

- Develop IS requirements for a Transaction Processing System
- Prepare a feasibility plan for the proposed system
- Identify hardware, software and networking requirements for the proposed system
- Prepare a plan for designing and implementing the proposed system

JK LAKSHMIPAT UNIVERSITY JAIPUR

Course code	Course Title	Teaching Scheme			
		L	T	P	Credits
CE508	Geotechnical Engineering -I	3	1	2	5

Syllabus (Theory)

Fundamental definitions, origin and formation of soil. Phase Diagram, Voids ratio, porosity, percentage air voids, Air content, Degree of saturation, Water content, Specific Gravity of soil solids and soil mass, Densities and Unit weights - Bulk, Dry, Saturated & Submerged and their relationships

Index properties of soil- Water content, Specific Gravity, Particle size distribution, Relative Density, Consistency limits and indices, in-situ density, Activity of clay, Laboratory methods of determination of index properties of soils.

Permeability, Darcy's law- assumption and validity, coefficient of permeability and its determination, factors affecting permeability, permeability of stratified soils, Seepage velocity, Superficial velocity and coefficient of percolation, quicksand phenomena, Capillary phenomena

Concept of shear strength, Mohr-coulomb theory, conventional and modified failure envelops, Effective stress concept total stress, effective stress and Neutral stress, Concept of pore pressure, Total and effective shear strength parameters, factors affecting shear strength of soils compaction, Standard and Modified proctor's compaction tests, factor affecting compaction, effect of compaction on soil properties, Field compaction control – compactive effort and method, lift thickness and number of passes, Proctor's needle, Compacting equipment

Consolidation: Definition, Terzaghi's one dimensional consolidation theory-assumption and limitations, Normally consolidated, under consolidated and over consolidated soils, pre-consolidation pressure and its determination, Consolidation characteristics of soil.

Syllabus (Practical)

List of Experiments:

1. Determination of moisture content
2. Determination of specific gravity
3. Field density test
4. Determination of Relative Density
5. Determination of sieve analysis
6. Determination of consistency limits
7. Standard proctor compaction test
8. Permeability test
9. Unconfined Compression Test
10. Vane Shear Test

Employability Related Activities:

- Laboratory Experiments

Figure 1. Students performing laboratory tests to investigate soil properties

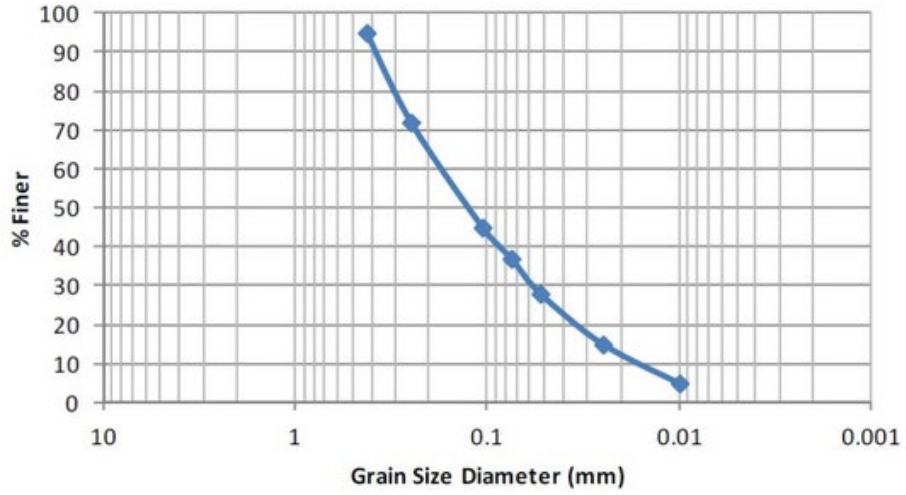
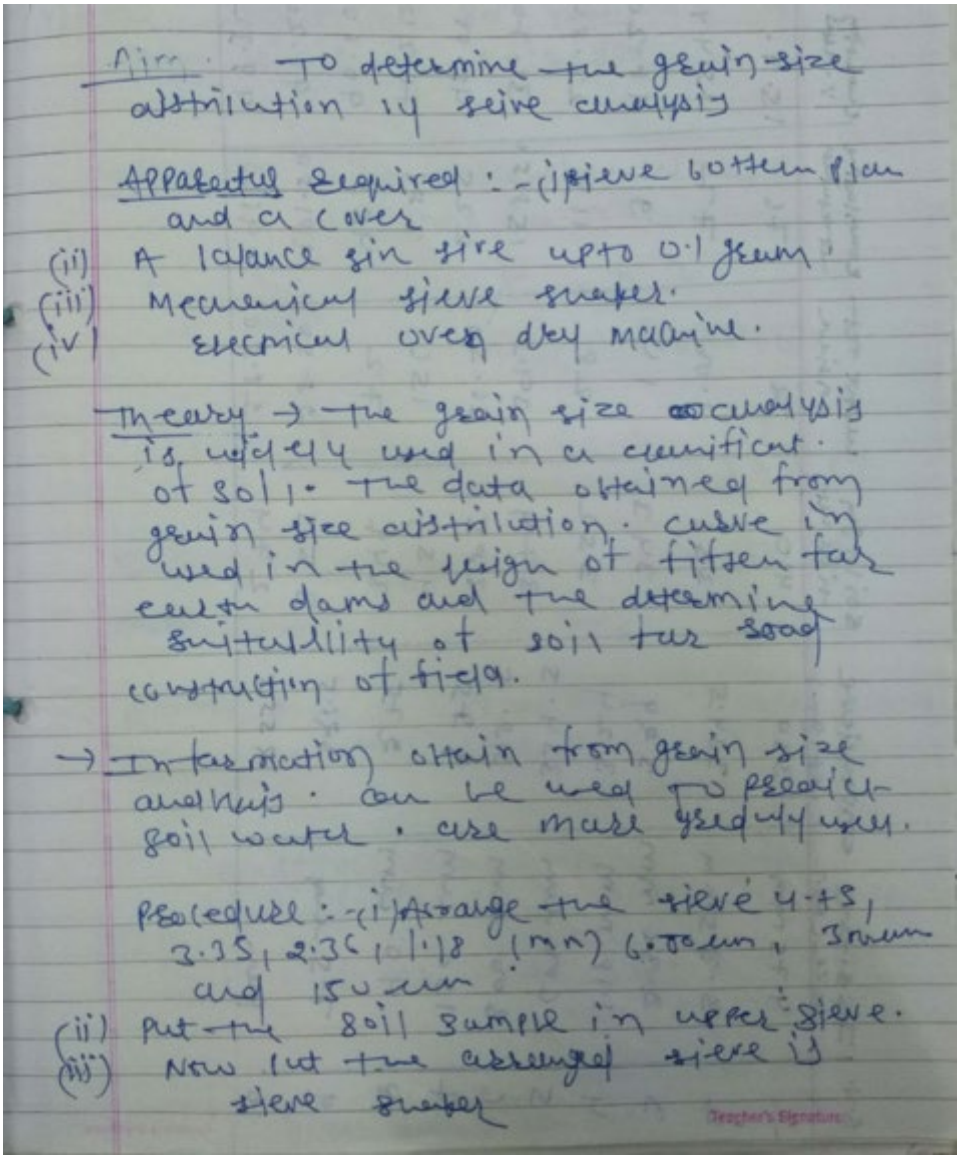


Figure 2. Determination of soil properties from laboratory tests



Aim :- To determine the grain-size distribution by sieve analysis

Apparatus Required :- (i) Sieve bottom pan and a cover
(ii) A balance sin sive upto 0.1 gram.
(iii) Mechanical sieve shaker.
(iv) Electrical oven dry machine.

Theory → The grain size analysis is widely used in a quantificat. of soil. The data obtained from grain size distribution curve is used in the design of fitter for earth dams and the determine suitability of soil for road construction of field.

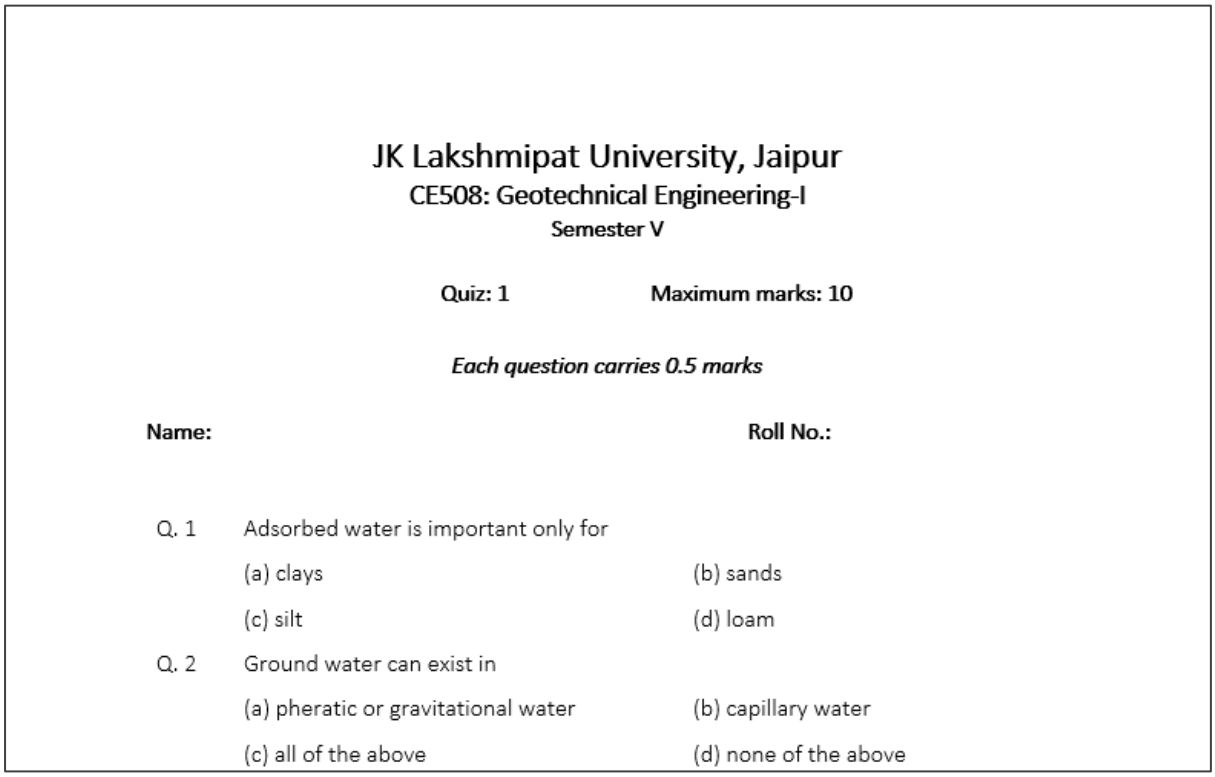
→ Information obtain from grain size analysis can be used to classify soil water. use most frequently used.

Procedure :- (i) Arrange the sieve 4.75, 3.35, 2.36, 1.18 (mm) 600 um, 300um and 150 um
(ii) Put the soil sample in upper sieve.
(iii) Now put the arranged sieve in sieve shaker

Teacher's Signature

Figure 3. Laboratory test report submitted by student

- **Quiz Exams**



JK Lakshmipat University, Jaipur
CE508: Geotechnical Engineering-I
Semester V

Quiz: 1 Maximum marks: 10

Each question carries 0.5 marks

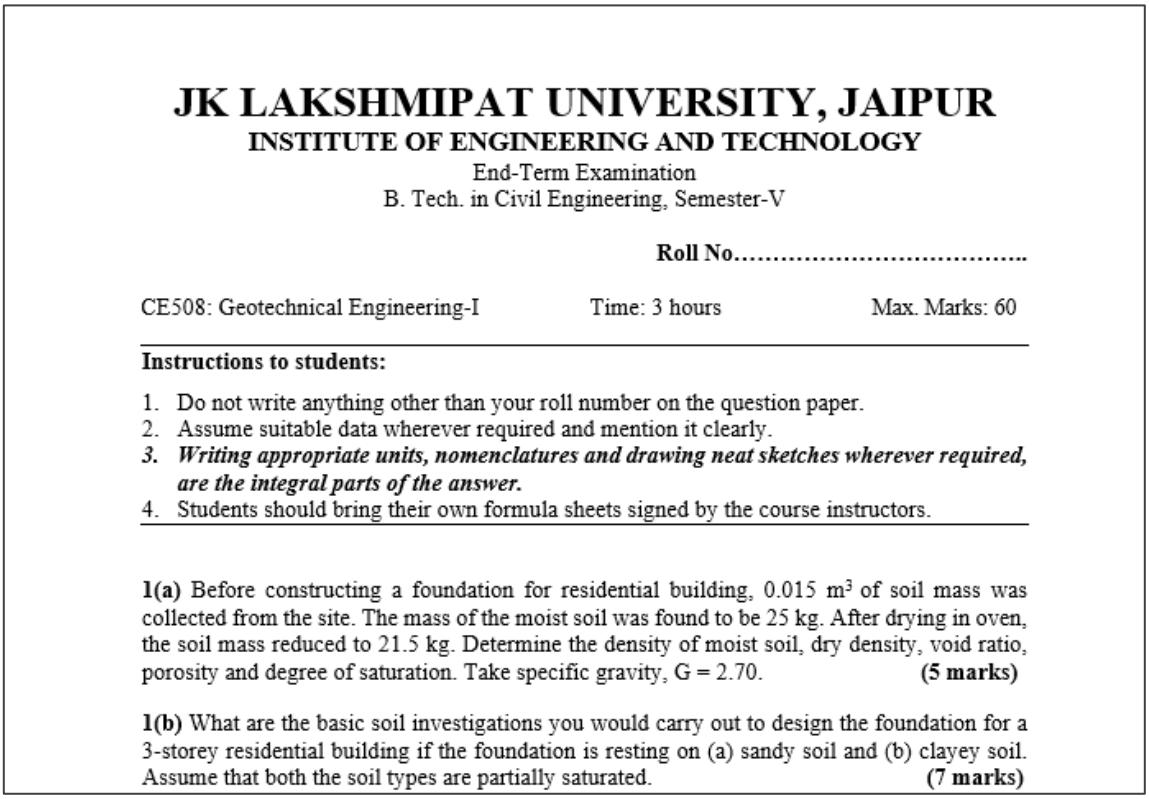
Name: Roll No.:

Q. 1 Adsorbed water is important only for
(a) clays (b) sands
(c) silt (d) loam

Q. 2 Ground water can exist in
(a) pheratic or gravitational water (b) capillary water
(c) all of the above (d) none of the above

Figure 4. Quiz conducted to assess the understanding of student in this course

- **End-Term Theory Exam**



JK LAKSHMIPAT UNIVERSITY, JAIPUR
INSTITUTE OF ENGINEERING AND TECHNOLOGY
End-Term Examination
B. Tech. in Civil Engineering, Semester-V

Roll No……..

CE508: Geotechnical Engineering-I Time: 3 hours Max. Marks: 60

Instructions to students:

1. Do not write anything other than your roll number on the question paper.
2. Assume suitable data wherever required and mention it clearly.
3. ***Writing appropriate units, nomenclatures and drawing neat sketches wherever required, are the integral parts of the answer.***
4. Students should bring their own formula sheets signed by the course instructors.

1(a) Before constructing a foundation for residential building, 0.015 m^3 of soil mass was collected from the site. The mass of the moist soil was found to be 25 kg. After drying in oven, the soil mass reduced to 21.5 kg. Determine the density of moist soil, dry density, void ratio, porosity and degree of saturation. Take specific gravity, G = 2.70. **(5 marks)**

1(b) What are the basic soil investigations you would carry out to design the foundation for a 3-storey residential building if the foundation is resting on (a) sandy soil and (b) clayey soil. Assume that both the soil types are partially saturated. **(7 marks)**

Figure 5. End-semester examination conducted to assess the understanding of student in this course

JK LAKSHMIPAT UNIVERSITY JAIPUR

Course code	Course Title	Teaching Scheme			
		L	T	P	Credits
CE608	Geotechnical Engineering II	3	1	2	5

Syllabus (Theory)

SUBSURFACE EXPLORATION: Importance of exploration program, Methods of exploration: Boring, Seismic refraction method of geophysical exploration, Types of samples – undisturbed, disturbed and representative samples, Samplers, sample disturbance, area ratio, Recovery ratio, clearance, Stabilization of boreholes – Typical bore log. Number and depth of borings for various civil engineering structures, soil exploration report.

DRAINAGE AND DEWATERING: Determination of ground water level by Hvorselev's method, Control of ground water during excavation: Dewatering – Ditches and Sumps, well point system, Vacuum method, Electro-Osmosis method.

STRESS IN SOILS: Bosissinesq's and Westergaard's theories for concentrated, circular and rectangular loads. Comparison of Boussinesq's and Westergaard's analysis. Pressure distribution diagrams, Contact pressure, Newmark's chart.

FLOWNETS: Laplace equation (no derivation) assumptions and limitations only, characteristics and uses of flownets, Methods of drawing flownets for Dams and sheet piles. Estimating quality of seepage and Exit gradient. Determination of pheratic line in earth dams with and without filter. Piping and protective filter.

LATERAL EARTH PRESSURE: Active and Passive earth pressures, Earth pressure at rest. Ranking's sand. Coulomb's Earth pressure theories – assumptions and limitations, Graphical solutions for active earth pressure (cohesion less soil only) – Culmann's and Rebhann's methods, Lateral earth pressure in cohesive and cohesionless soils, Earth pressure distribution.

STABILITY OF EARTH SLOPES: Types of slopes, causes and type of failure of slopes. Definition of factor of safety, Stability of infinite slopes, Stability of finite slopes by Method of slices and Friction Circle method, Taylor's stability number, Fellineous method.

BEARING CAPACITY: Definitions of ultimate, net and safe bearing capacities, Allowable bearing pressure. Terzaghi's and Brinch Hansen's bearing capacity equations – assumptions and limitations, Bearing capacity of footing subjected to eccentric loading – Plate load test, Standard penetration test and cone penetration test.

FOUNDATION SETTLEMENT: Importance and Concept of Settlement Analysis, Immediate, Consolidation and Secondary settlements (no derivations, but, computation using relevant formula for normally Consolidated soils), Tolerance. BIS specifications for total and differential settlements of footings and rafts.

PROPORTIONING SHALLOW AND PILE FOUNDATIONS: ALLOWABLE: Bearing Pressure, Factors influencing the selection of depth of foundation, Factors influencing Allowable Bearing Pressure, Factors influencing the choice of foundation, Proportioning isolated, combined, strip

and mat foundations, Classification of pile foundation, Pile load capacity, Proportioning pile foundations.

Syllabus (Practical)

1. Determination of Free Swell Index and Swelling Pressure
2. California Bearing Ratio Test
3. Consolidation Test
4. Direct Shear Test
5. Triaxial Shear Test
6. Standard Penetration Test

Employability Related Activities:

- Laboratory Experiments

Figure 1. Students performing laboratory tests to investigate soil properties

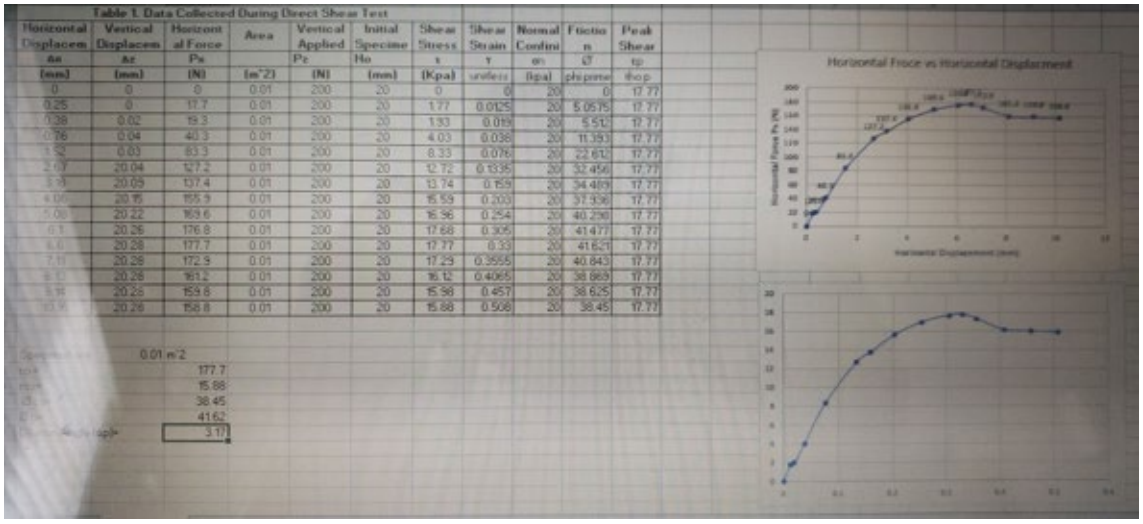
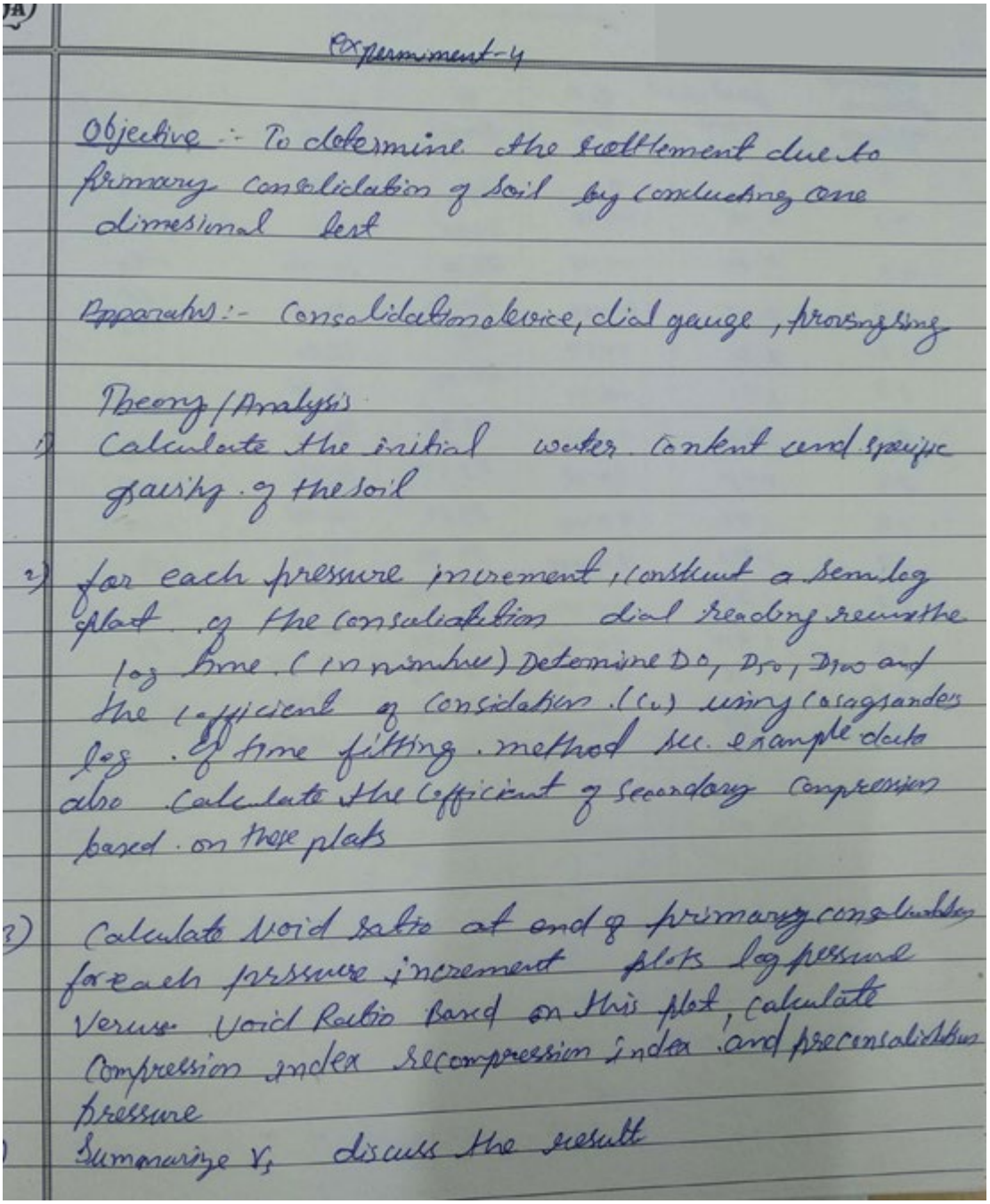


Figure 2. Students interpreting data obtained from the lab test



Experiment-4

Objective :- To determine the settlement due to primary consolidation of soil by conducting one dimensional test

Apparatus :- Consolidation device, dial gauge, proving ring

Theory / Analysis

1) Calculate the initial water content and specific gravity of the soil

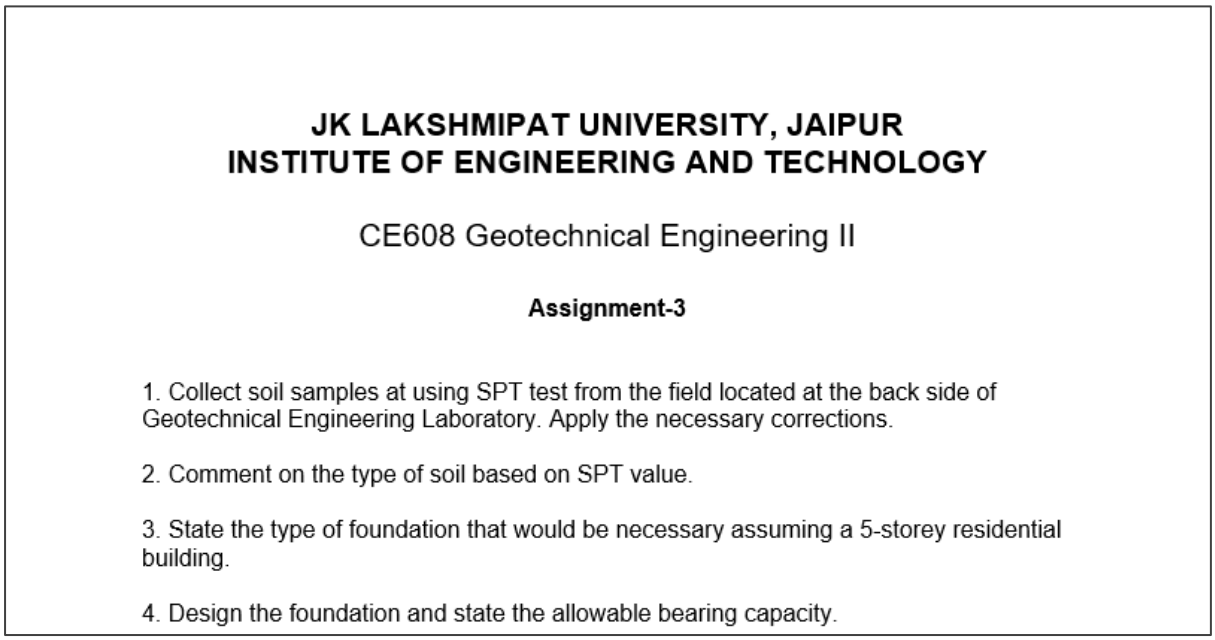
2) for each pressure increment, construct a Semi log plot of the consolidation dial reading versus the log time. (in minutes) Determine D_0, D_{50}, D_{100} and the coefficient of consolidation. (c_v) using Casagrande's log of time fitting method see example data also calculate the coefficient of secondary compression based on these plots

3) Calculate void ratio at end of primary consolidation for each pressure increment plots log pressure versus void Ratio based on this plot, calculate Compression index recompression index and preconsolidation pressure

Summarize & discuss the result

Figure 3. Report submitted by student based on laboratory test

- Assignments to Enhance Analytical Skills



JK LAKSHMIPAT UNIVERSITY, JAIPUR
INSTITUTE OF ENGINEERING AND TECHNOLOGY

CE608 Geotechnical Engineering II

Assignment-3

1. Collect soil samples at using SPT test from the field located at the back side of Geotechnical Engineering Laboratory. Apply the necessary corrections.

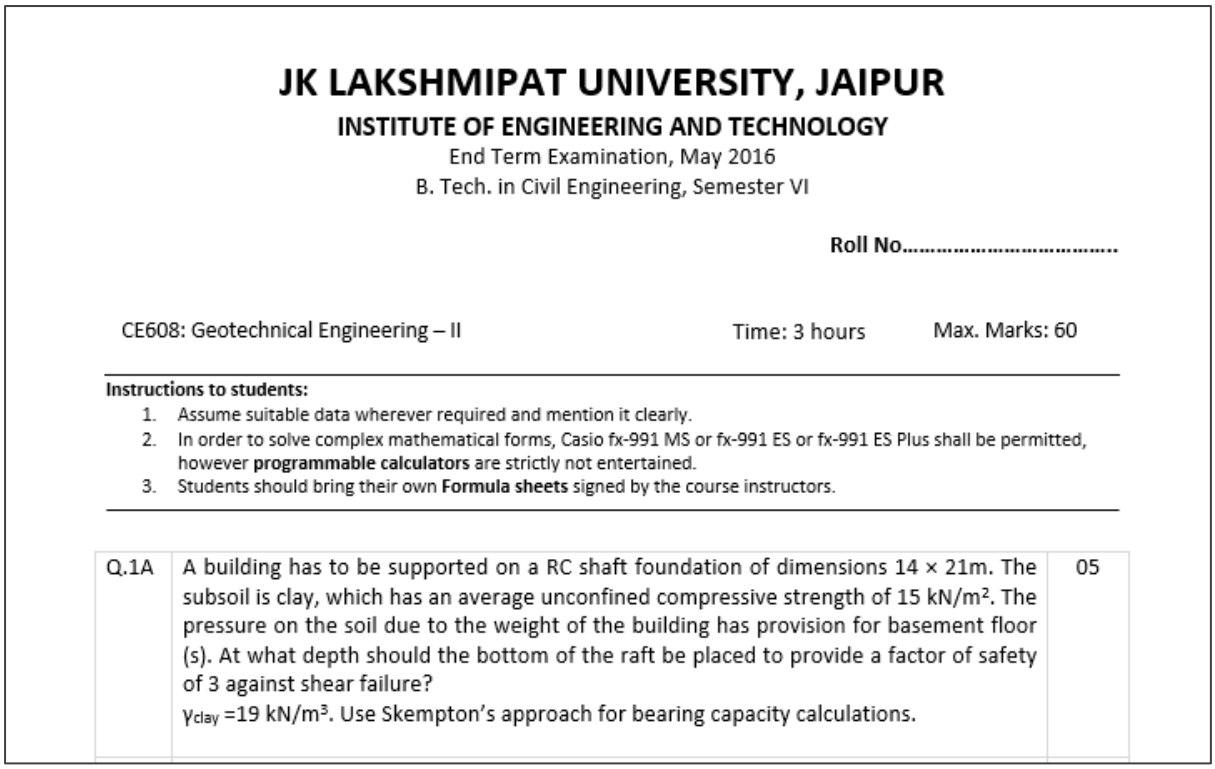
2. Comment on the type of soil based on SPT value.

3. State the type of foundation that would be necessary assuming a 5-storey residential building.

4. Design the foundation and state the allowable bearing capacity.

Figure 4. Assessment of skills developed by students in terms of practical problems

- **End-Term Theory Exam**



JK LAKSHMIPAT UNIVERSITY, JAIPUR
INSTITUTE OF ENGINEERING AND TECHNOLOGY
End Term Examination, May 2016
B. Tech. in Civil Engineering, Semester VI

Roll No.....

CE608: Geotechnical Engineering – II Time: 3 hours Max. Marks: 60

Instructions to students:
1. Assume suitable data wherever required and mention it clearly.
2. In order to solve complex mathematical forms, Casio fx-991 MS or fx-991 ES or fx-991 ES Plus shall be permitted, however **programmable calculators** are strictly not entertained.
3. Students should bring their own **Formula sheets** signed by the course instructors.

Q.1A	A building has to be supported on a RC shaft foundation of dimensions 14 × 21m. The subsoil is clay, which has an average unconfined compressive strength of 15 kN/m². The pressure on the soil due to the weight of the building has provision for basement floor (s). At what depth should the bottom of the raft be placed to provide a factor of safety of 3 against shear failure? γ_{clay} =19 kN/m³. Use Skempton's approach for bearing capacity calculations.	05

Figure 5. End-Term exam to evaluate skill developed in this course

DESIGN OF BRIDGE STRUCTURES

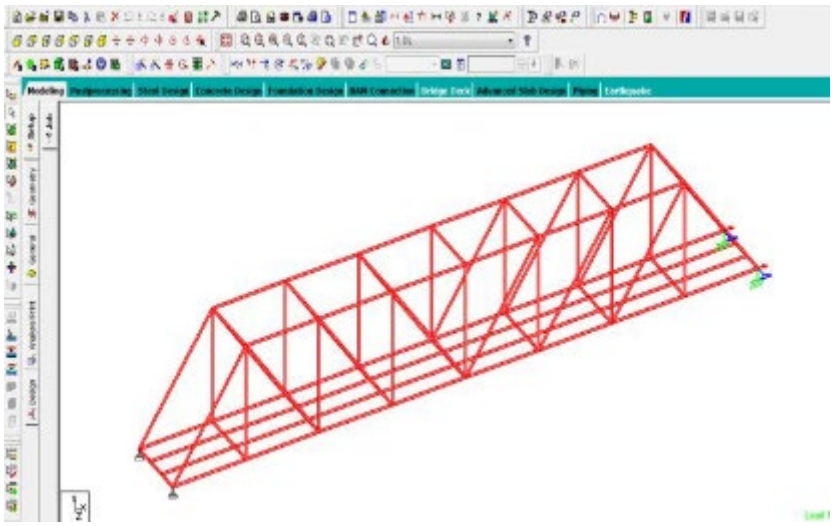
Course Code	:	**CE 731 (Elective-I/II/III/IV/V)**
Course Title	:	**Design of Bridge Structures**
Course Credits	:	**4**
Total Hours per Week (L+T+P)	:	**3+0+0**

Course Syllabi (Theory):

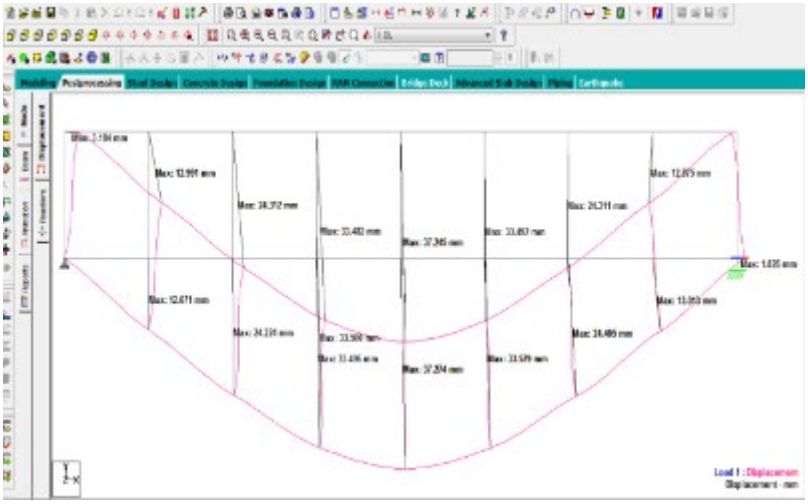
- ***Components of bridges*-** Classification, importance of bridges, Investigation for Bridges.
- ***Standard specification for Road Bridges***. I.R.C. bridge code, width of carriage way, clearances, loads to be considered i.e. D.L., L.L., Impact load, wind load, Earthquake load, Longitudinal force, Centrifugal force, buoyance, Earth pressure, water current force, thermal force etc.
- ***General design considerations for R.C.C. & P.S.C. Bridges*** Traffic aspects for highway bridges. Asthetics of bridge design, relative costs of bridge components. Design of reinforced concrete deck slab, Pigeaud's theory, beam and slab and T-beam, Coubon's theory.
- ***Construction techniques*** – Construction of sub surface footing, piles, caissons, construction of reinforced earth retaining wall and reinforced earth abutments, superstructure – erection method for bridge deck construction by cantilever method, Inspectiion maintenance and repair of bridges.
- ***Design of sub structure*** – abutments, Piers, approach slab.
- ***Bearing and expansion joints*** – foces on bearings – Types of bearings, design of reinforced elastometic bearing joints.

Employability Related Activities:

- **Bridge Analysis Using STAAD.PRO**



(a)



(b)

Figure 1 (a) and (b). Students analysing bridge in STAAD.Pro

- **Quiz**

JK Lakshmipat University Jaipur

May 2016, Semester VII

Quiz – 1

CE 731 DESIGN OF BRIDGE STRUCTURES

Each question carries 0.5 marks

Total marks: 15 **Total time: 10 minutes**

1. What are the steel wires used to suspend the main supports called?
(a) Span (b) Abutment
(c) Pier (d) Cable

2. What are some of the forces that affect bridges?
(a) Compression, Tension, Thrust, Lift
(b) Compression, Tension, Load, Torsion
(c) Compression, Tension, Shear, Torsion
(d) Compression, Tension, Shear, Piers

3. What are the two ends of a bridge that support its weight?
(a) Span (b) Pier
(c) Abutment (d) Cable

Figure 2. Quiz to evaluate the skills developed in the course

- **End-Term Theory Exam**

JK LAKSHMIPAT UNIVERSITY, JAIPUR

INSTITUTE OF ENGINEERING AND TECHNOLOGY

End Term Examination May 2016

B. Tech. in Civil Engineering, Semester VII

CE731: Design of Bridge Structures | Time: 3 hours | Max. Marks: 60

Instructions to students:

1. Do not write anything other than your roll number on question paper.
2. Assume suitable data wherever required and mention it clearly.
3. Writing appropriate units, nomenclature, and drawing neat sketches/schematics/ flow chart wherever, required are an integral part of the answer.
4. In order to solve complex mathematical forms, Casio fx-991 MS or fx-991 ES or fx-991 ES Plus shall be permitted, however **programmable calculators** are strictly not entertained.
5. Students should bring their own **Formula sheets** signed by the course instructors.

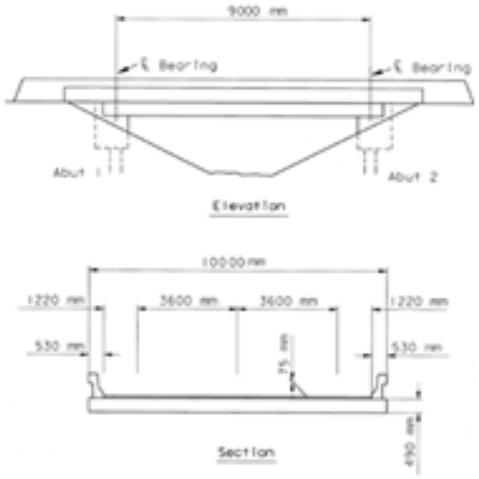
Q.1A	A simple span concrete slab bridge with clear span length (S) of 9000 mm is shown in Figure 1 .The total width (W) is 10,000 mm, and the roadway is 9640 wide (WR) with 75 mm (dW) of future wearing surface. The material properties are as follows: Density of wearing surface ρ_w = 2250 kg/m^3; concrete density ρ_c = 2400 kg/m^3; concrete strength = 28 MPa, f'_c = 26 750 MPa; reinforcement f_y = 420 MPa, Es = 200,000 MPa; n = 8. 	15

Figure 3. End-Term examination conducted to assess the skill developed by the students in this course

BUSINESS ETHICS, CORPORATE GOVERNANCE & CSR

Course Code	MBA402
Course **Credits**	4
Total flours per Week	3

COURSE SYLLABI:

Business Ethics: Introduction , the Changing Environment.

Framing Business Ethics: Corporate Responsibility, Stake holders and Citizenship.

Evaluating Business Ethics: Normative Ethical theories.

Making Decisions in Business **Ethics:** Descriptive ethical theories.

Managing Business **Ethics:** Tools and Techniques, Code of ethics, Global code of ethics, social accounting, business ethics and leadership

Stakeholders and Business **Ethics:** understanding corporate governance, ethical issues in corporate governance, shareholders and globalization, shareholder democracy, shareholding for sustainability.

Employees **and** Business **Ethics:** Firm —employee relations, ethical challenges of globalization, corporate citizen and employee relations, sustainable employment

Consumers and Business Ethics: Limits of caveat emptor, ethical issues, marketing and the consumer, the ethical challenges of the global marketplace, consumer sovereignty, ethical consumption

Suppliers, Competitors. Civil Society **and** Business **Ethics:** Misuse of power, loyalty, conflicts of interest, aggressive competition, impacts on indigenous businesses, CSO tactics, Boycotts

Government. regulations and Business Ethics: Basic roles of government as a stakeholder, legitimacy, lobbying, party financing, government as regulators.

LEARNING OUTCOMES:

Upon completion of the course, students are expected to be able to:

1. Understand the importance of Business Ethics and corporate governance in determining the organizational effectiveness.
2. Draw business ethics indicators.
3. Classify the ethical and unethical practices in business at the individual, group and organizational level.
4. Comprehend how ethics can help in solving moral dilemmas.

TEXT BOOK:

- Crane, Andrew and Matten Dirk (2012). *Business Ethics.* New Delhi: Oxford.

REFERENCE BOOKS:

1. Kline, J.M.(2005). *Ethics for International Business.* London: Routledge.
2. Weiss, Joseph W.(2009). *Business Ethics: Concepts and Cases.* New Delhi: CENGAGE

Activities Related to Employability:

1. In Class ACTIVITY

Watch: WikiLeaks' Julian Assange, CBS: 60 Minutes (January 30, 2011) [VIDEO]

Discuss the following questions:

- WikiLeaks' release of confidential US State Department documents was celebrated by many across the world for making American operations and international relations more transparent to the public. The US government, however, warned that the mass of release of such sensitive information could compromise informants, lead to the death of soldiers, undermine its progress, and further destabilize regions. Given such concerns, how would you decide what information to release to the public?
- We usually consider transparency in government to be a very good thing – reducing waste and corruption, and exposing wrongdoing. What would you consider to be the type of information that governments should not make available to the public?
- What would you release if you were running an organization like WikiLeaks that saw itself as serving an cosmopolitan (concerned with the welfare of humanity in general), rather than patriotic, cause bound by the same principles?
- Social network sites like Facebook allow users to post information and pictures of friends and strangers alike without their consent. In response, many of us have adjusted our privacy expectations to acknowledge the existence of a public presence we cannot fully control. That said, how do we exercise good judgment on what information about others we should make public on social network sites?

- Is there any information that should not be published on the web about others because it provides us too much information (as teenagers would say T.M.I.) about someone's private life – things that should remain out of the public eye?

2. Workplace Ethics Activity: Making Informed Ethical Decisions

INSTITUT OF MANAGEMENT

INTERNATIONAL FINANCIAL MANAGEMENT

MBA/ B.TECH+MBA2015-16

Course Code	**:**	**MBAFM401**
Course Credits	**:**	**4**
Total Hours Per Week	**:**	**3**

COURSE CONTENTS

International Trade: Overview and Importance, Theories of International Trade, Theory of Comparative Costs, Classical Theory, Absolute Advantage, Hecksher-Ohlin Theory, Free Trade versus Protectionism, Barriers To Foreign Trade, Tariff and Non-Tariff Barriers, Financing Foreign Trade, Payment Terms, Documents, Export Credit Insurance, Financing Techniques in International Trade.

Balance of Payment: Meaning Of BOP, Components Of BOP, Importance Of BOP, Meaning Of Deficit And Surplus, Equilibrium, Disequilibrium And Adjustments, Methods Of Correcting Disequilibrium, Accounting Principles In BOP.

International Financial System: Overview of International Monetary System, Bretton Wood twins – IMF and World Bank, Gold Standard, Economic and Monetary Union, International Banking, World Financial Crisises, Global Financial Markets, Domestic and Offshore Markets, Euromarkets, Interest Rates in the Global Money Markets, Overview of Money Market Instruments, Sovereign Wealth Funds.

Foreign Exchange Markets: Structure of Foreign Exchange Market, Transactions and Settlement, Exchange Rate Quotation and Arbitrage, Spot and Forward Rates, Premium And Discount In Forward Market, Cross Rates, Inverse Rates, Exchange Rate Regimes and Foreign Exchange Market in India, Foreign Exchange Futures, Options and Swaps.

Exchange Rate Determination: Determination under Gold Standard and Paper Standard, Factors affecting Exchange Rates, Purchasing Power Parity Theory, Demand and Supply Theory, Equilibrium Rate of Exchange, Interest Rate Parity Theory, Fluctuating versus Fixed Exchange Rates, Exchange Control, Objectives of Exchange Control, Exchange Rate Exposure & Risk Management**.**

Multinational Working Capital Management: Concept and Techniques, International Cash Management, Accounts Receivable Management, Inventory Management.

International Financial Instruments: ADR, GDR, IDR, Euro Currencies, Euro Bond, Foreign Bond, International Commercial Papers, Types of foreign currency borrowings in India, viz., ECB, FCCB.

COURSE OVERVIEW

This course is intended to provide the participants an introduction to the field of International Finance and make them aware about the working of the International Finance Institutions, Money Markets, Exchange Transactions and Capital Markets.

STRUCTURE, REQUIREMENT AND PROCEDURES

The method of training would be through lectures, power point presentations, case studies, presentations by the students, practical exercises, assignments and class tests.

LEARNING OUTCOMES

This course will provide a conceptual understanding of :

- Basic Knowledge of International Trade and Balance of Payments
- Overview of International Financial System
- Global Financial Markets, especially, the Foreign Exchange Market
- Exchange Rate determination and Risk Management
- Multinational Working Capital Management
- International Financial Instruments

TEXT BOOK

- Apte, P.G. (2009). **International Financial Management.** 5/e. New Delhi: Tata McGraw-Hill Publishing Company Ltd.

REFERENCE BOOKS

- Avadhani, V.A. (2011). **International Finance.** 2/e. Mumbai**:** Himalaya Publication.
- Shapiro, A. (2009). **Multinational Financial Management. 9/e.** New Delhi: Wiley.
- Kevin, S. (2009). **Fundamentals of International Financial Management.** New Delhi: PHI Learning.
- Levi, M.D. (2009). **International Finance.** 5/e. London: Routledge.
- Agarwal, O.P. (2009). **International Financial Management.** Mumbai: Himalaya Publications.

SESSION PLAN

Session No.	Topic	Session Details
1-4	**International Trade:** Overview and Importance, Theories of International Trade, Theory of Comparative Costs, Classical Theory, Absolute Advantage, Hecksher-Ohlin Theory, Free Trade	Slides/Blackboard

	versus Protectionism, Barriers To Foreign Trade, Tariff and Non-Tariff Barriers.	
5-6	Financing Foreign Trade, Payment Terms, Documents, Export Credit Insurance, Financing Techniques in International Trade.	Slides/Blackboard
7-10	**Balance of Payment:** Meaning Of BOP, Components Of BOP, Importance Of BOP, Meaning Of Deficit And Surplus.	Slides/Blackboard
11-12	Equilibrium, Disequilibrium And Adjustments, Methods Of Correcting Disequilibrium, Accounting Principles In BOP.	Slides/Blackboard
13-15	**International Financial System:** Overview of International Monetary System, Bretton Wood twins – IMF and World Bank, Gold Standard, Economic and Monetary Union, International Banking, World Financial Crisises.	Slides/Blackboard
16-18	Global Financial Markets, Domestic and Offshore Markets, Euromarkets, Interest Rates in the Global Money Markets, Overview of Money Market Instruments, Sovereign Wealth Funds.	Slides/Blackboard
19-24	**Foreign Exchange Markets:** Structure of Foreign Exchange Market, Transactions and Settlement, Exchange Rate Quotation and Arbitrage, Spot and Forward Rates, Premium And Discount In Forward Market, Cross Rates, Inverse Rates.	Slides/Blackboard
25-28	Exchange Rate Regimes and Foreign Exchange Market in India, Foreign Exchange Futures, Options and Swaps.	Slides/Blackboard
29-30	**Exchange Rate Determination:** Determination under Gold Standard and Paper Standard, Factors affecting Exchange Rates, Purchasing Power Parity Theory, Demand and Supply Theory.	Slides/Blackboard
31-34	Equilibrium Rate of Exchange, Interest Rate Parity Theory, Fluctuating versus Fixed Exchange Rates, Exchange Control, Objectives of Exchange Control, Exchange Rate Exposure & Risk Management**.**	Slides/Blackboard
35-37	**Multinational Working Capital Management:** Concept and Techniques, International Cash Management, Accounts Receivable Management, Inventory Management.	Slides/Blackboard
38-40	**International Financial Instruments:** ADR, GDR, IDR, Euro Currencies, Euro Bond, Foreign Bond, International Commercial Papers, Types of foreign currency borrowings in India, viz., ECB, FCCB.	Slides/Blackboard

ACTIVITIES RELATED TO EMPLOYABILITY ENHANCEMENT SKILLS

CASE STUDIES ON:

1. **A Note on Currency Index and Futures**
2. **Currency Risk management – Automobile Industry**
3. **Welcome to Lufthansa**
4. **Case studies on Porsche the great Car marker of Germany**

5. **BMW & Exchange Risk**

JK Lakshmipat University, Jaipur
Institute of Management
MBA
Academic Year- 2015-16
Case Analysis & Presentation

Course Code : MBA210
Course Credits : 1

Course Description:
This single credit course has been introduced with the objective to make students undergo a Comprehensive Case covering most of the functional areas in management. This develops managerial decision making keeping all the aspects in mind. The faculty can select the Case for this purpose. This may be conducted as a two day exercise or appropriately spread over few weeks.

Activities Related to Skill Development and Employability

Case Analysis on 'Essar Steel – Implications of CEO Decision on Corporate Strategy'.

2015-16 MBA301 Logistics & Supply Chain Management

Activities Related to Skill Development and Employability

Case #	Case Title
1.	Strategic Performance Measurement of Suppliers at HTC

JK Lakshmipat University, Jaipur
Institute of Management
MBA
Academic Year- 2015-16
Summer Training Project Report

Course Code : MBA304
Course Credits : 4

Course Description:
As part of the MBA Programme, the 1st Year students undergo an eight weeks training at an industry of their choice or one allocated by the University placement cell after the Second Semester. This is mostly scheduled during the months of May and June.
Upon their return from STP, they undergo the process of evaluation where they need to submit the STP Report and make presentations.

Activities Related to Skill Development and Employability

Live project at Industry

JK Lakshmipat University, Jaipur
Institute of Management
MBA
Academic Year- 2015-16
Major Research Project-I

Course Code : MBA305
Course Credits : 2

Course Description:
As part of the MBA Programme, the first year students may take up a Research Project under the faculty mentor / guide. They would need to submit the MRP Report and make presentation on the same in the third semester.

Activities Related to Skill Development and Employability

Collection of Primary/ Secondary Data for a research problem and preparing a report and making presentation for the same.

JK Lakshmipat University, Jaipur
Institute of Management
MBA
Academic Year- 2015-16
Simulation Exercise

Course Code : MBA306
Course Credits : 1

Course Description:
This single credit course has been introduced with the objective to make students undergo a Business Simulation training exercise and get evaluated on their performance during the process.

Activities Related to Skill Development and Employability

Case Analysis on Citibank's value addition strategy

JK Lakshmipat University, Jaipur
Institute of Management
MBA
Academic Year- 2015-16
Strategic Management

Course Code : MBA401
Course Credits : 4

Course Syllabus:

- **Introduction to** Strategy : what is strategy, why strategic management, strategic decision making processes.
- **Strategic** Analysis: The General Environment why environmental analysis and diagnosis, analyzing the environment.
- **The Competitive Environment:** Porter's Five Forces Frame work, Hyper-competition
- **Internal Analysis and Diagnosis**: the internal factors, analysis of strengths and weaknesses, diagnosis. Value Chain Analysis, Resource based view of strategy, Sustainable competitive advantage
- **Assessing Organizational Performance:** Maximizing shareholder's value, Balanced Scorecard, Benchmarking
- **Strategy Formulation:** Business level strategy, Generic Competitive Strategies: stability strategies, expansion strategies, retrenchment strategies, combination strategies
- **Corporate level strategy :** Growth Strategies, Related Diversification, Portfolio Analysis, Business level strategists, mission and objectives
- **International stratee› and q•loba1ization:** Globalization or Localization, international Strategy, types of international strategy, Entry mode strategies
- **Strategy Implementation:** organizational systems and strategic change, organizational structures, organizational processes, strategic control systems.
- **Strategic Leadership**: Leadership and Management, Emotional Intelligence, Narcissistic Leaders, Leading Strategic Change.

Course Learning Outcomes:
Upon completion of the course, students are expected to be able to:

- Evaluate alternative paradigms of strategy and their influence on strategic decision making.
- Understand the difference in the concepts of strategy, strategic thinking, strategic planning and strategic Management.
- Understand the functions of strategic management.
- Use the generic tools.

Activities Related to Skill Development and Employability

Case 1: GE's Two-Decade Transformation: Jack Welch's Leadership
Case 2: Fogdog
Case 3: Sara Lee
Case 4: NTT DoCoMo

JK Lakshmipat University, Jaipur
Institute of Management
MBA
Academic Year- 2015-16
Major Research Project-II

Course Code : MBA403
Course Credits : 2

Course Description:
As part of the MBA Programme, the final year students may take up a Research Project under the faculty mentor / guide. They would need to submit the MRP Report and make presentation on the same in the final semester.

Activities Related to Skill Development and Employability

Collection of Primary/ Secondary Data for a research problem and preparing a report and making presentation for the same.

JK Lakshmipat University

Institute of Management

2015-16

MBA/B.Tech+MBA

MANAGEMENT OF FINANCIAL INSTITUTIONS AND SERVICES

Course Code	**:**	**MBAFM302**
Course Credits	**:**	**4**
Total Hours per Week	**:**	**3**

COURSE SYLLABI:

Overview Of Financial Institutions : Structure of Financial Systems, Financial development, Pre and Post Liberalization Scenario, Role of financial assets and institutions in economic development.

Indian Financial Systems : Banking, Insurance, Bond Market, Public Deposits, Government Securities, Stock Market, Treasury Bills, Venture Capital Fund., microfinance, Mutual Funds, IPO and procedure of issue., Regulation for Secondary Market operation.

Commercial Banks : Organization and Functions - Nationalized and Private Banks, Liquidity management – Theories, Central Bank –Regulatory Framework of RBI, Management of loans Investment and Asset Liabilities Management : .Evaluation of Performance and deposits, interest rates, Non-Performing Assets(NPA), Bank capital -Adequacy norms, Profitability of Commercial Banks.

Role of Development Banks in India: Overview, Operational policies and practices – IDBI, IFCI, ICICI, SFCs, SIDCs, SIDBI, NABARD etc.

Management Of Other Financial Institutions : Investment institutions, Venture Capital, Merchant Banking.

LEARNING OUTCOMES:

Upon completion of the course, students will be able to:

1. understand the basic economic principles and the role of savings and investments in the economy;
2. learn the function of banks and other financial intermediaries in lending and borrowing;
3. know the types of banks and banking activities.

4. know about the financial markets, the types of traded securities and the faction of the various parties involved.
5. be aware of the function and role of central banks and the governments and the regal and regulatory framework

TEXT BOOK:

- Bhole, L.M. & Mahakud, J. (2009). ***Financial Institutions and Markets, 5e.*** TMH ,

EFERENCE BOOKS:

1. H.R Machiraju (2011) ,***Indian Financial Systems*****,** 4th Edition Vikas Publishing House Pvt. Ltd.
2. Meir Kohn(2003), ***Financial Institutions and Markets***,McGraw-Hill, 2nd Edition
3. Bharati & V. Pathak(2011), ***Indian Financial System: Markets, Institutions and Services*****, 3rd Edition** Pearson Education
4. Thummuluri Siddaiah(2011), ***Financial Services***, 2nd Edition Pearson Education

ACTIVITIES RELATED TO EMPLOYABILITY ENHANCEMENT SKILLS

Assignment on:

1. **Review of Indian Banking Industry**
2. **Economic policies of RBI**
3. **Book Building process- Issue of IPO**
4. **Histrory and operation of stock exchanges in India**
5. **Evaluation of mutual fund sector performance in India**
6. **Credit Rating Agencies In India**
7. **Housing finance**
8. **Leasing**

CASE STUDIES ON:

1. **Bandhan: Commercializing a Social Cause**
2. **Credit Ease: Enabling Financial Inclusion through Fintech**
3. **A note on Financial Evaluation of Projects**
4. **Takeover of Raasi Cement by India Cements**
5. **Lehman Brothers: Managing a Global Investment Bank**
6. **ICICI Bank: Innovations in Microfinance**
7. **The ITC Classic Story**
8. **Co-operative Bank Scams in India**
9. **The CRB Scam**

10. **Buy back of shares and MNCs**
11. **Financial Risk management at Toyota**
12. **Financial Risk management at UBS**
13. **Credit Risk management at JP Morgan Chase**

JK Lakshmipat University, Jaipur
Institute of Management
BBA

Academic Year- 2015-16

Entrepreneurship

Course Code: BBA061

Course Credits: 4

Semester: VI

Activities Related to Skill Development and Employability

Case 1: Luck and Persistence

Case 2: How I make my first million

Case 3: SEWA for Women Empowerment

Case 4: Jaipur Foot: Excellent Example of Creativity

In-class exercises 1: Meet Entrepreneurs and Identify their characteristics and competencies

In-class exercises 2: : Idea Generation Activity

In-class exercises 3: Back up envelope Exercise

In-class exercises 4: One dollar activity

In class exercise5: Story Telling

Campus company project: Work on an idea of Campus Company or any start up

JK Lakshmipat University, Jaipur
Institute of Management
B Com H

2015-16

Indian Economic Enviornment

Course Code	**BCH403**
Course Credits	4
Semester	IV

COURSE SYLLABI:

Economic Growth, Development and Underdevelopment: Concept of Economic Growth, Economic Development, Growth and Development, Concept of Underdevelopment, Concept and Measurement of HDI

Nature of Indian Economy: India as an Underdeveloped Economy, a Developed Economy and a Mixed Economy

Population and Economic Development: Population size, Growth Trends, Causes, Population and Economic Development, Demographic Dividend

Workforce Participation and Chances in Occupational Structure in India: Labour Force in India, Occupational Structure and Economic Development, Occupational Distribution of Labour Force in India

Employment and Unemployment: Trends, Structure, Nature and Causes

Problems in Indian Economy. Poverty, Inequality, Parallel Economy, Unemployment, Concentration of Economic Power, Balanced Regional Development, Low Capital Formation and Industrial Sickness

Public and Private sector in Indian Economy: Meaning, Role, Benefits, Problems, Privatisation and Disinvestment

Impact of New Economic Policy on Indian Industm

Indian Economy & Foreign Trade: Value, Composition and Direction

Foreign Capital and Aid: Components, Need, Policy and Foreign Aid in India

ForeignExchange **Reserve:** Exchange Rate, Policy, Reserves, Issue of Capital Account Convertibility, FERA and FEMA

Globalization and its impact on Indian Economvi Meaning, Policy and Effects

Economic Planning and Economic Development: Rationale, Features and Objective of Economic Planning in India, Strategy of Planning, 12'" Five Year Plan.

Activities Related to Skill Development and Employability

Project: Prepare on any current/ emerging economic issue with facts/data

Assignment: Write up on any issue concerned with Indian Economy

JK Lakshmipat University, Jaipur
Institute of Management
MBA
2014-16
Entrepreneurship Development

Course Code: MBA302
Credits: 3
Semester: III

Activities Related to Skill Development and Employability

Case 1: Earth Moving Industry
Case 2: It is all about Money, Honey
Case 3: The Market Demand of a Health Club
Case 4: Subhiksha
Case 5: Chula
Campus company project: Work on an idea of Campus Company or any start up
In-class exercises 1: Idea Generation Activity
In-class exercises 2: Back up envelope Exercise
In-class exercises 3: One dollar activity
In-class exercises 4: One Day venture

Course Title and Code: Ground Water Hydrology .CE 522	
Hours per week	**L-T-P: 3-1-0**
Credits	**4**
Students who can take	**B.Tech Semester-VI (Batch** 2013-17**civil Engg)**

Course Objective:

 To study occurrence movement and distribution of water that is a prime resource for development of a civilization..

 To know diverse methods of collecting the hydrological information, which is essential, to understand surface and ground water hydrology.

 To know the basic principles and movement of ground water and properties of ground water flow.

Syllabus (Theory)

Groundwater occurrence – distribution – aquifer – types - Surface investigation - Geophysical - electrical resistivity - Seismic refraction - Gravity and magnetic - Geologic - Air photo interpretation - Dowsing.

Subsurface investigation - test drilling - resistivity logging- potential logging - temperature and caliper logging.

Steady unidirectional flow - well in a uniform flow - steady flow with uniform recharge - unsteady radial flow to a well - well flow near aquifer boundaries - Multiple well systems - partially penetrating wells - characteristic well losses.

Secular and seasonal variations - Fluctuations due to evapo-transpiration, Meteorological phenomena, tides, external loads and earthquakes - control by drains and wells. Recharge through sewage pits, shafts and wells.

Occurrence of sea water intrusion - Ghypon-Heizberg relation between fresh and saline waters - shape length and structure of the fresh salt water interface - prevention and control of seawater intrusion - role of sea water in ground water - coastal zoning.

Sand models - Electrical models - Viscous fluid models - membrane models - numerical analysis methods

Text Book(s) /Reference Book(s)

1.Garg S.K., Hydrology and Water Resources Engineering

2. Subramanya, K., Engineering Hydrology, Tata McGraw Hill, New Delhi.

3. Raghunath, H.M., Groundwater, 1987, Wiley Eastern Ltd., New Delhi.

4. Modi, P.N., Irrigation Water Resources and Water Power Engineering, Standard Book House, New Delhi.

5. Todd, D.K., Groundwater Hydrology, 1993 John Wiley & Sons..

6. Raghunath, H.M., Hydrology – Principles, Analysis and Design, 1986, Wiley

7. Dr. P.Jaya Rami Reddy, A Textbook of Hydrology, University Science Press.

Activities Related to Skill Development and Employability

Roll No……..

CE522 : Ground water hydrology Time: 1.5 hours Max. Marks: 40

Instructions to students:

1. Do not write anything other than your roll number on question paper.
2. Assume suitable data wherever required and mention it clearly.
3. Writing appropriate units, nomenclature, and drawing neat sketches/schematics/ flow chart wherever, required are an integral part of the answer.

Q.1A	Objective type multiple choice questions (5 questions @ 1 mark)	05
i.	The best groundwater reservoirs have _____.? (a) low permeability and low porosity (b) low permeability and high porosity (c) high permeability and low porosity (d) high permeability and high porosity	
ii.	The boundary between the saturated zone and the unsaturated zone is called the_____. (a) porosity (b) aquiclude (c) aquifer (d) water table	
iii.	How much of the Earth's water is stored in underground aquifers? (a) about 20% (b) about 5% (c) about 10% (d) less than 1%	
iv.	What is the term for a type of rock with low hydraulic conductivity? (a) aquifer (b) aquitude (c) aquiclude (d) aquitard	
v.	All of the following make good aquifers except: (a) sandstone (b) gravel (c) sand (d) shale	
Q.1B	Short answer type questions (2 questions @ 2.5 marks)	05
i.	State and discuss assumption and limitation of Dupuit's theory.	
ii.	Explain Darcy's law. Discuss its validity.	

Q.2A	Define ground water hydrology and explain with a neat sketch, the ground water distribution with respect to Ground.	05
Q.2B	Derive a formula for discharge of well in a homogenous artesian aquifer, assuming equilibrium flow conditions	05

Q.3A	A gravity well has a diameter of 60 cm. the depth of water in the well is 40 meter before pumping is started .when pumping is being done at the rate of 2000 liter per minute, the drawdown in a well 10 meter away if 4 meter and in another well 20 meter away is 2 meter. Determine (a) Radius of zero drawdown (b) coefficient of permeability (c) drawdown in the well (d) specific capacity	05
Q.3B	Write a short notes any three (i) Electrical resistivity (ii) Seismic refraction (iii) Caliper logging (iv) Resistivity logging	05
	OR	
Q.3B	Define the terms : (i) Aquifer (ii) specific field (iii) specific retention (iv) porosity (v) Aquifuge	05

Q.4A	An R.C. network analog has to be constructed to simulate a confined aquifer of 40 × 60 km with an average thickness of 30 m, permeability of 25 m/day, and storage coefficient 4×10^{-4}. The maximum head is 40 m. the model can be represented by 40 × 60 nodes. Resistors of 3000 Ω and capacitor of 0.01 μF are available .model voltage = 8V .work out the scale factor. If the calibrating resistor of 2500 Ω is used for simulating pumping rate, determine the current pulse and excitation voltage to simulate a pumping rate of 1000 m^3/day at a particular node.	05
Q.4B	Design a tube well for the following data : (i) yield required = 0.08 cumec (ii)Thickness of confined aquifer = 30 m (iii)Radius of circle of influence = 300m (iv) Permeability coefficient = 60 m/day (v) Drawdown = 5 m.	05
	OR	
Q.4B	During a recuperation test ,the water in an open well was depressed by pumping By 2.1 m and it recuperated 1.6 m in 90 minute .find the diameter of well to yield 10 liter/sec under a depression head of 2 m.	05

Roll No……..

CE522 : Ground water hydrology Time: 1.5 hours Max. Marks: 40

Instructions to students:

1. Do not write anything other than your roll number on question paper.
2. Assume suitable data wherever required and mention it clearly.
3. Writing appropriate units, nomenclature, and drawing neat sketches/schematics/ flow chart wherever, required are an integral part of the answer.

Q.1A	Objective type multiple choice questions (5 questions @ 1 mark)	05
i.	The lowering effect on the water table about the base of the well stem is called a: (a) aquiclude (b) artesian surface (c) speleothem (d) cone of depression	
ii.	Discharge per unit drawdown of a well is known as the (a) specific yield (b) specific retention (c) specific capacity (d) specific storage	
iii.	Saturated zone and the unsaturated zone is called the_____. (a) porosity (b) aquiclude (c) aquifer (d) water table	
iv.	Rate of flow of water through the ground strata , can be estimated by (a) Manning' formula (b) striker formula (c) Darcy's formula (d) Dupuit's formula	
v.	An aquifer , confined at the bottom but open at top ,is known as (a) aquiclude (b) unconfined aquifer (c) semiconfined aquifer (d) none of the above	
Q.1B	Short answer type questions (2 questions @ 2.5 marks) Define the terms :	05
i.	(a) Electrical resistivity (b) Caliper logging.	

Q.3A	Explain with a neat sketch, the sea water intrusion & shape of interface and what are the method used in abatement of seawater intrusion .	05
Q.3B	By conductivity measurement in a well in a coastal aquifer extending 4 km along the shore, the interface was located at a depth of 20 m below msl and has a permeability of 50 m/day. What is the rate of fresh water flow into the sea and the width of gap at the shore bottom through which it escapes into the sea? Use Glover's method.	05
	OR	
Q.3B	An R.C. network analog has to be constructed to simulate a confined aquifer of 6 km × 4 km extent having a uniform saturated thickness of 50 m, permeability of 3 m/day , and storage coefficient of 10-3 .the aquifer may be divided into girds of 1 km × 1 km .1 sec in the analog should represent 1000 days for the aquifer . Resistor of 1 mega ohm are available and 1 m head of water should represent 1 volt in the analog .workout the scale factor for resistance and discharge. What capacitance is required for each block?	05

Q.4A	What do you understand by recuperation test? Derive the equation used in the test.	05
Q.4B	In order to determine the field permeability of a free aquifer ,pumping out test was performed and the following observation were made: 1) Diameter of well = 20 cm 2) Discharge form the well = 240 m^3/hour 3) R.L of original water surface ,before pumping started = 240.5 m 4) R.L of water in the well at constant pumping = 235.6 m 5) R.L of the impervious layer = 210 m 6) R.L of water in observation well =2 39.8 m 7) Radial distance of observation well from the tube well = 50 m **Calculate** i. K ii. Error in K if observation are not taken in the observation well, and radius of influence is assumed to be 300m. iii. Actual radius of influence based on the observation of observation well.	05
	OR	
Q.4B	A 30 cm well completely penetrate an unconfined aquifer of depth 40 m. after a long period of pumping at a steady rate of 1500 lpm, the drawdown in two observation wells 25 m and 75 m from the pumping well were found to be 3.5 m and 2.0 m respectively. Determine the transmissibility of the aquifer .what is the drawdown at the pumping well?	05

Roll No……..

CE522 : Ground Water Hydrology Time: 3 hours Max. Marks: 100

Instructions to students:

1. Do not write anything other than your roll number on question paper.
2. Assume suitable data wherever required and mention it clearly.
3. Writing appropriate units, nomenclature, and drawing neat sketches/schematics/ flow chart wherever, required are an integral part of the answer.

Q.1A	Objective type multiple choice questions (10 questions @ 1 mark)	10
i.	The dimension of coefficient of Transmissibility T are (a)L^2/T (b)L^3T^2 (c) L/T^2 (d) dimensionless	
ii.	An artesian aquifer is the one where (a)water surface under the ground is at atmospheric pressure (b)water is under pressure between two impervious strata (c)water table serves as upper surface of zone of saturation (d) none of the above	
iii.	Saturated zone and the unsaturated zone is called the_____. (a) porosity (b) aquiclude (c) aquifer (d) water table	
iv.	The best groundwater reservoirs have _____.? (a) low permeability and low porosity (b) low permeability and high porosity (c) high permeability and low porosity (d) high permeability and high porosity	
v.	A stratified unconfined aquifer has three horizontal layers as below	

Layer	Coefficient of permeability (m/day)	Depth (m)
1.	6	2.0
2.	16	4.0
3.	24	3.0

The effective vertical coefficient or permeability of this aquifer ,in m/day , is about

Q.2	Short answer type questions (4 questions @ 2.5 marks)	10
	Write a short notes on :	
a.	Electrical resistivity	
b.	Seismic refraction	
c.	Resistivity logging	
d.	State and discuss assumption and limitation of Dupuit's theory.	

Q.3A	Explain with a neat sketch, the sea water intrusion & shape of interface and what are the method used in abatement of seawater intrusion .	05
Q.3B	A 30 cm diameter well penetrate 25 m below the static water table. After 24 hours of pumping @ 5400 liter/minute ,the water level in a test well at 90 m is lowered by 0.53 m, and in well 30 m away the drawdown is 1.11 m (a) What is transmissibility of the aquifer? (b)Also determine the drawdown in the main well.	05

Q.4A	From the collection and interpretation of hydrologic, geologic and geochemical data, the following information was obtained. Width of aquifer: 2.8 Km Thickness of Aquifer: 30 m Porosity of aquifer material: 10% Difference of specific gravity: 0.03 Permeability of the aquifer: 48.9 m/day From conductivity measurement in two observations wells located at 150 and 225 m from the shore (landward side) the 1500 ppm lines was found to be located at 15 and 22.5 m , respectively, below the top of the aquifer. Determine the fresh water- sea water interface.	05
Q.4B	Two identical tube wells penetrating fully a 12 m thick aquifer are located at 180 m apart. The tube wells have diameter of 30 cm , radius of influence of 300 m,and the coefficient of permeability of aquifer is 10^{-3} m/sec. Compute (i) Discharge of tube well when only one is working with a drawdown of 5m. (ii) Percentage decrease in discharge of the well, if both are working with drawdown of 5m.	05

Q.9A	Give an account of the causes for fluctuation of water levels in aquifers due to pressure changes, tides, nearness to rivers and application of load.	10

Q.9B	What do you understand by recuperation test? Derive the equation used in the test. During a Recuperation test of a 4.0 m open well a recuperation of the depression head from 2.5 m to 1.25 m was found to take place in 90 minute. Determine the (i)specific capacity per unit well area and (ii)yield of the well for a safe drawdown of 2.5 m (iii) What would be the yield from a well of 5.0 m diameter for a drawdown of 2.25 m?	10
	OR	
Q.9B	In order to determine the field permeability of a free aquifer ,pumping out test was performed and the following observation were made: 1) Diameter of well = 20 cm 2) Discharge form the well = 240 m^3/hour 3) R.L of original water surface ,before pumping started = 240.5 m 4) R.L of water in the well at constant pumping = 235.6 m 5) R.L of the impervious layer = 210 m 6) R.L of water in observation well =2 39.8 m 7) Radial distance of observation well from the tube well = 50 m **Calculate** i. K ii. Error in K if observation are not taken in the observation well, and radius of influence is assumed to be 300m. Actual radius of influence based on the observation of observation well.	10

1.72 Groundwater Hydrology
Problem Set #2

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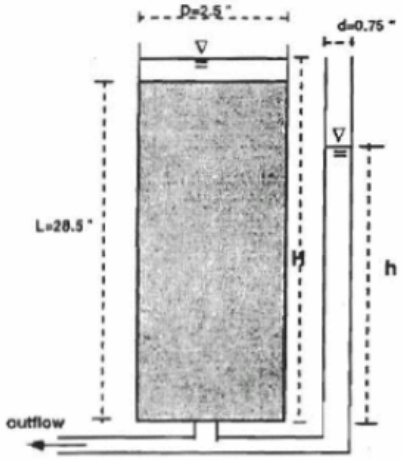
1. **Falling head permeameter.** The system begins at equilibrium. Water is removed from the bottom of the system, causing the manometer head (h) and the column head (H) to fall. Just after the valve is closed, the initial head in the column (H_o) and in the manometer (h_o) are recorded. The manometer water elevation h(t) is measured over time as the system return to equilibrium.



   a.) Use Darcy's Law to describe flow through the porous media in the permeameter column.

   b.) Show how mass is conserved in the closed system of the permeameter (after the water has been removed). Hint: relate head change in the manometer to head change in the column.

   c.) Combine the equations in part a) and b) to construct an equation describing the head in the manometer (i.e., the little tube) as a function of time. Prove that the head in the manometer is:

$$h(t) = \frac{H_o + (d/D)^2 h_o - (H_o - h_o)\exp\left(-t\left(1+(D/d)^2\right)(k/L)\right)}{1+(d/D)^2}$$

Assignment sheet

Course Title and Code: Estimating costing and evaluation engineering .CE 609	
Hours per week	**L-T-P: 3-1-0**
Credits	**4**
Students who can take	**B.Tech Semester-VI (Batch** 2013-17**civil Engg)**

Course Objective: To provide the student with the ability to estimate the quantities of item of works involved in buildings, water supply and sanitary works, road works and irrigation works, and also to equip the student with the ability to do rate analysis, valuation of properties and preparation of reports for estimation of various items.

Course Outcomes (COs):

1. Prepare quantity estimates for Buildings, roads & rails and canal structures as per specifications.
2. Draft detailed specifications and work out Rate Analysis for all works related to civil engineering projects.
3. Ascertain the quantity of materials required for Civil engineering works as per specifications.
4. Prepare cost estimate and valuation of civil engineering works.
5. Prepare tenders & contract documents. Evaluate contracts and tenders in construction practice.

Syllabus (Theory)

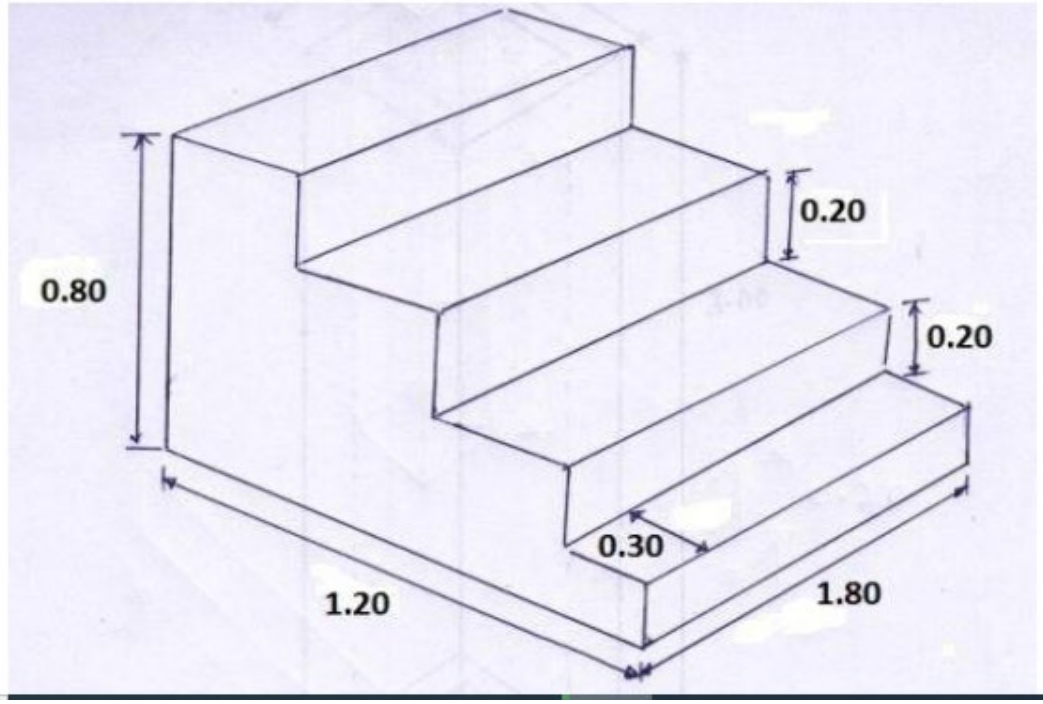
Estimation for quantities for various types of construction, like building construction, road construction, railways etc. Preparation of bill of quantities, Rate Analysis. Detailed specifications of various items. Preparation of Tender & contract documents Layout of Civil engineering structures. Techniques of construction (including field visits). Various types of brick masonry bonds.

Text Book(s)

1. Estimating & Costing by B.N. Dutta

Activities Related to Skill Development and Employability

3. **Calculate the quantity of concrete shown in the figure**

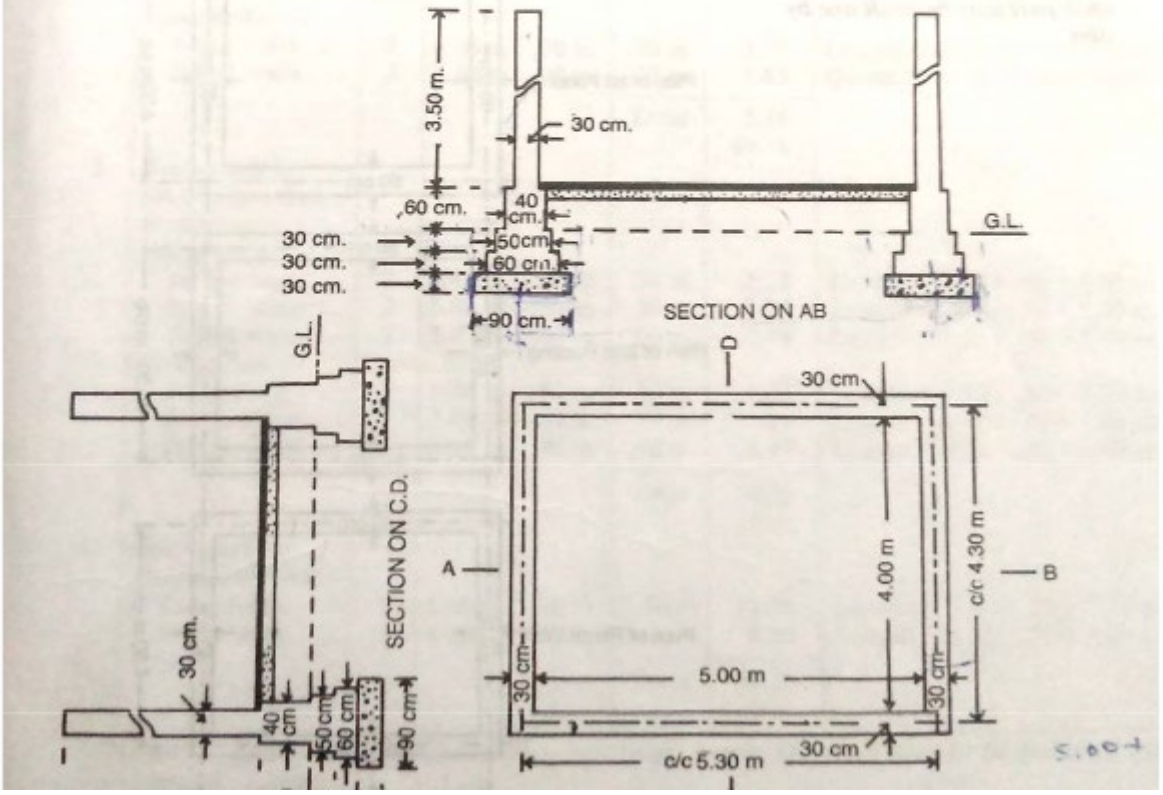


Quantity of concrete practice problem

Example 3(a). — Fig. 2-3, the plan represents the plan of superstructure wall of a single room building of 5 m × 4 m, and Sections represent the cross-sections of the walls with foundation. Estimate the quantities of —

(1) Earthwork in excavation in foundation, (2) Concrete in foundation, (3) Brickwork in foundation and plinth and (4) Brickwork in superstructure.

The length of long wall centre to centre = 5.00 + ½ × .30 + ½ × .30 = 5.30 m. The length of short wall centre to centre = 4.00 + ½ × .30 + ½ × .30 = 4.30 m.



Assignment (CE609) Last date of submission:19 April 2018

1) Write detailed specification for paining to wood work and iron work.
2) Write detailed specification for a first class building.

3) Define estimate and explain the factors affecting rate analysis?

4) Discuss different categories of contract in detail and differentiate them with respect to their important characteristics.

5) Estimate the quantity of earth work for an embankment, 120 m long, 8 m wide at crest and whose side slopes are 2 to 1. The central height from 0 to at every 30 m intervals are 0.60 m, 1.2 m, 1.6 m, 2.0 m and 1.3 m calculate the earth work using mid-section formula and trapezoidal formula.

6) How do you calculate: (a) Earth work with vertical fall of the ground surface for fully in banking, fully in cutting and partly in banking cutting?

End Term Examination (Regular), April-May 2018

B. Tech in Civil Engineering, Semester VI

Roll No……..

CE609 : Estimation, Costing and Evaluation Engineering Time: 3 hours Max. Marks: 100

Instructions to students:

1. Do not write anything other than your roll number on question paper.
2. Assume suitable data wherever required and mention it clearly.
3. Writing appropriate units, nomenclature, and drawing neat sketches/schematics/ flow chart wherever, required are an integral part of the answer.

Q.1A	Objective type multiple choice questions (10 questions @ 1 mark)	10
i.	The most reliable estimate is; (a) Detailed (b) Supplementary (c) plinth area (d) all of the above.	
ii.	Pick up the incorrect statement from the following: (a) Dimensions are measured to the nearest 0.01 m (b) Areas are measured to the nearest 0.01 sq.m (c) Cubic contents are measured to the nearest 0.1 cum (d) Weights are measured to the nearest 0.001 tonnes	
iii.	The correct prismoidal formula for volume is (a) D [first area + last area + $\sum$ Even area + 2 $\sum$ odd areas] (b) $\frac{D}{3}$[first area + last area + 4 $\sum$ Even area + 2 $\sum$ odd areas] (c) $\frac{D}{3}$ [first area + last area + 2 $\sum$ Even area + 4 $\sum$ odd areas] (d) $\frac{D}{6}$ [first area + last area + 2 $\sum$ Even area + 4 $\sum$ odd areas].	
iv.	The order of booking dimensions is (a) Length, breadth, height (b) Breadth, length, height (c) Height, breadth, length (d) None of these	
v.	Due to change in price level a revised estimate is prepared if the sanctioned estimate exceeds (a) 2.0% (b) 2.5% (c) 4.0% (d) 5.0%	
vi	The rate of payment is made for 100 cu m (per %cu m) in case of (a)Earth work in excavation (b) Rock cutting (c) excavation in trenches for foundation (d) Earth work in filling the plinth (e) All the above	
vii	The various methods of calculating depreciations are	

Q.2	Short answer type questions (4 questions @ 2.5 marks)	10
i.	An arch of 2.50 m span subtends an angle of 80^0 at the centre. The thickness of arch is 30 cm and the breadth of wall is 40 cm. Calculate the quantity of arch masonry work.	
ii.	What are the different methods to calculate quantity of earthwork for roads?	
iii	What is overhead cost?	
iv	Write down the different type of masonry bond with neat sketch.	

Q.3 A	Prepare a detailed estimate for earthwork for a portion of a road from the following data :	08

Distance in m	0	100	200	300	400	500	600	700	800	900	1000	1100	1200
R.L. of ground	114.5	114.75	115.25	115.20	116.10	116.85	118.00	118.25	118.10	117.80	117.75	117.90	119.50

R.L. of formation 115 Upward gradient 1 in 200 up to 600 m → ← downward gradient 1 in 400.

Formation width of Road is 10 meter side slope 2:1 in banking and 1.5:1 in cutting.

Adopt suitable rates.

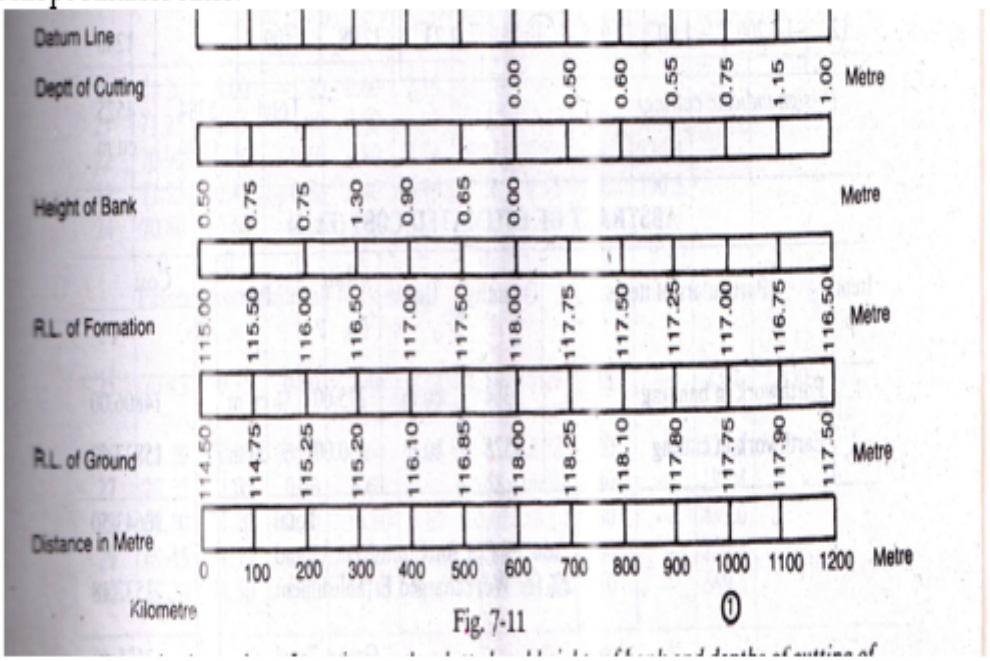


Fig. 7-11

Q.3B	Calculate the quantity of brickwork in a 60^0 arch over a door of 1.20 m width. The arch is 20 cm thick and the thickness of the wall is 30 cm	02

Q.4A	What is Analysis of Rates? What is the Purpose of Rate Analysis and factors affecting the rate analysis?	05
Q.4B	Explain the following (a) Market rate. (b) Work-charged establishment. (c) Lump-sum.	05

Q.5A	Estimate the quantities of the following items of a Two roomed building (Using long wall-short wall method)from the given plan and section (**Fig. A**) (1)Earthwork in excavation in foundation , (2) lime concrete in foundation (3) 1 class brickwork in cement mortar 1:6 in foundation and plinth	05
Q.5B	For the same building (**Fig. A**) estimate the quantities of the following items Using center line method. (1)2.5 cm cc damp proof course and (2) 1 class brick work in lime mortar in super structure.	05

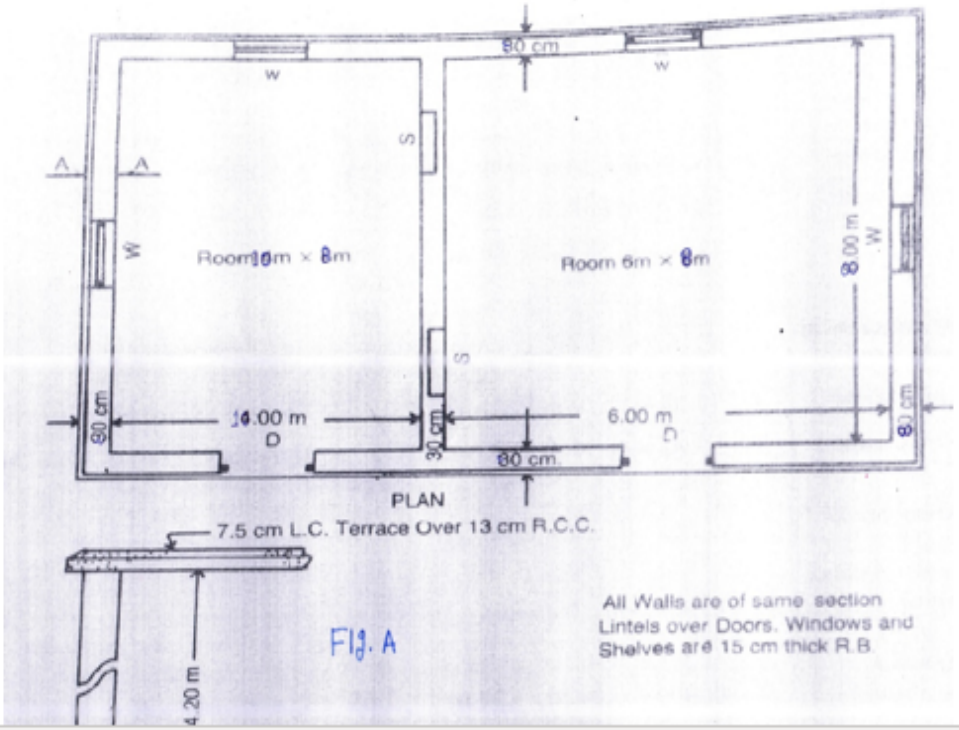
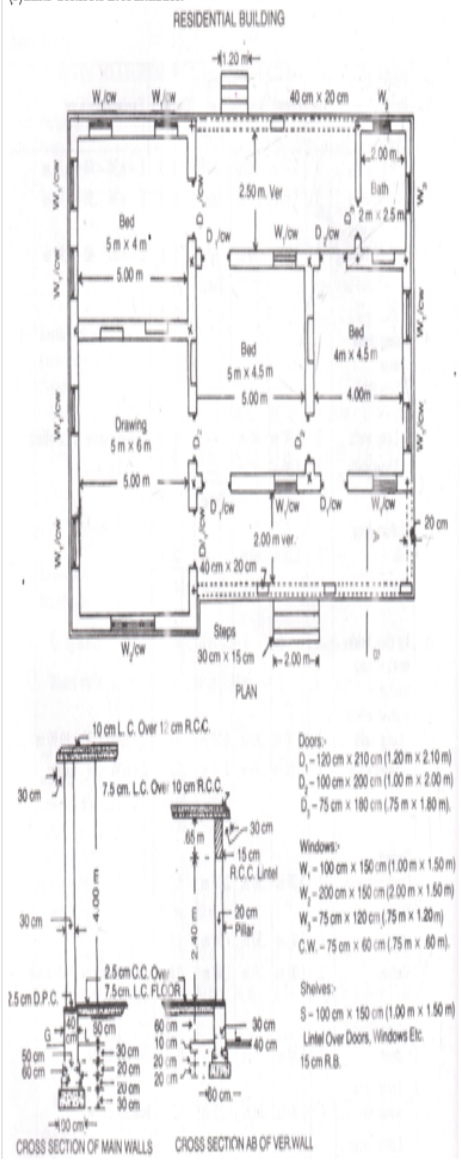


Fig. A

	not have any cross slope. Calculate the volume of earthwork by (a) Trapezoidal method (b) Prismoidal method	

Q.8A	Estimate by center line method the quantities of following items of a residential building (Fig. B) (1) earthwork in excavation in foundation (2) First class brickwork in 1:6 cement sand mortar in foundation and plinth. (3)Lime Concrete in foundation	10



Q.9A	Prepare a detailed estimate for earthwork for a portion of a road from the following data.	10

Distance in m	RL of ground	RL of formation
0	114.50	115
100	114.75	Upward gradient 1 in 200 up to 600 m
200	115.25	
300	115.20	
400	116.10	
500	116.85	Downward gradient 1 in 400
600	118.00	
700	118.25	
800	118.10	
900	117.80	
1000	117.75	
1100	117.90	
1200	117.50	

Formation width of road is 8m, side slopes are 2:1 in banking and $1\frac{1}{2}$: 1 in cutting. Draw L section and cross sections.

Q.9B	Explain the following general items of work involved in the estimation for a building along with the process of calculations. (a) Earthwork in excavation. (b) Earthwork in filling. (c) Cement concrete in foundation. (d) Damp proof course. (e) Masonry work in foundation. (f) 10 cm thick brickwork.	10
	OR	
Q.9B	Explain in detail about the preparation of tender notice and documents.	10

INSTITUTE OF ENGINEERING AND TECHNOLOGY

Mid Term Examination-I, Jan-Feb, 2018

B. Tech. in Civil Engineering, Semester VI

Roll No……..

CE609 : Estimation, Costing and Evaluation Engineering Time: 1.5 hours Max. Marks: 40

Instructions to students:

1. Do not write anything other than your roll number on question paper.
2. Assume suitable data wherever required and mention it clearly.
3. Writing appropriate units, nomenclature, and drawing neat sketches/schematics/ flow chart wherever, required are an integral part of the answer.

Q.1A	Objective type multiple choice questions (5 questions @ 1 mark)	05
i.	The order of booking dimensions is (a) Length, breadth, height (b) Breadth, length, height (c) Height, breadth, length (d) None of these	
ii.	The brick work is measured in sq. metre, in case of (a) Honey comb brick work (b) Brick flat soling (c) Half brick walls or the partition (d) all the above	
iii.	While preparing a detailed estimate (a) Dimension should be measured correct to 0.01 m (b) Area should be measured correct to 0.01 sq.m (c) Volume should be measured correct to O.O1 cum (d) all the above	
iv.	The concrete work for the following part of the building of specified thickness is measured in square meters (a) Root slabs (b) floors (c) D.P.C. (d) all the above	
v.	Pick up the incorrect statement from the following: (a) Dimensions are measured to the nearest 0.01 m (b) Areas are measured to the nearest 0.01 sq.m	

INSTITUTE OF ENGINEERING AND TECHNOLOGY

Mid Term Examination-II, March, 2018

B. Tech. in Civil Engineering, Semester VI

Roll No.....

CE609 : Estimation, Costing and Evaluation Engineering Time: 1.5 hours Max. Marks: 40

Instructions to students:

1. Do not write anything other than your roll number on question paper.
2. Assume suitable data wherever required and mention it clearly.
3. Writing appropriate units, nomenclature, and drawing neat sketches/schematics/ flow chart wherever, required are an integral part of the answer.

Q.1A	Objective type multiple choice questions (5 questions @ 1 mark)	05
i.	The main factor to be considered while preparing a detailed estimate is; (a)Quantity of the materials (b) Availability of materials (c)Transportation of materials (d) Location of site and local labour charges. (e) All of the above.	
ii.	Concreting work is measured in (a) Meters (b) Sq m (c) Cub.m (d) None of the above.	
iii.	Thickness of slab is measured in (a) mm (b) Inch (c) Meters (d) All of the above.	
iv.	The most reliable estimate is; (a) Detailed (b) Supplementary (c) plinth area (d) all of the above.	
v.	The correct prismoidal formula for volume is (a) D [first area + last area + $\sum$ Even area + 2 $\sum$ odd areas] (b) $\frac{D}{3}$[first area + last area + 4 $\sum$ Even area + 2 $\sum$ odd areas] (c) $\frac{D}{3}$ [first area + last area + 2 $\sum$ Even area + 4 $\sum$ odd areas] (d) $\frac{D}{6}$ [first area + last area + 2 $\sum$ Even area + 4 $\sum$ odd areas].	
Q.1B	Short answer type questions (2 questions @ 2.5 marks)	05

Q.2 A	Prepare a detailed estimate for earthwork for a portion of a road from the following data :	08

Distance in m	0	100	200	300	400	500	600	700	800	900	1000	1100	1200
R.L. of ground	114.5	114.75	115.25	115.20	116.10	116.85	118.00	118.25	118.10	117.80	117.75	117.90	119.50

R.L. of formation 115 Upward gradient 1 in 200 up to 600 m → ← downward gradient 1 in 400.

Formation width of Road is 10 meter side slope 2:1 in banking and 1.5:1 in cutting.

Adopt suitable rates.

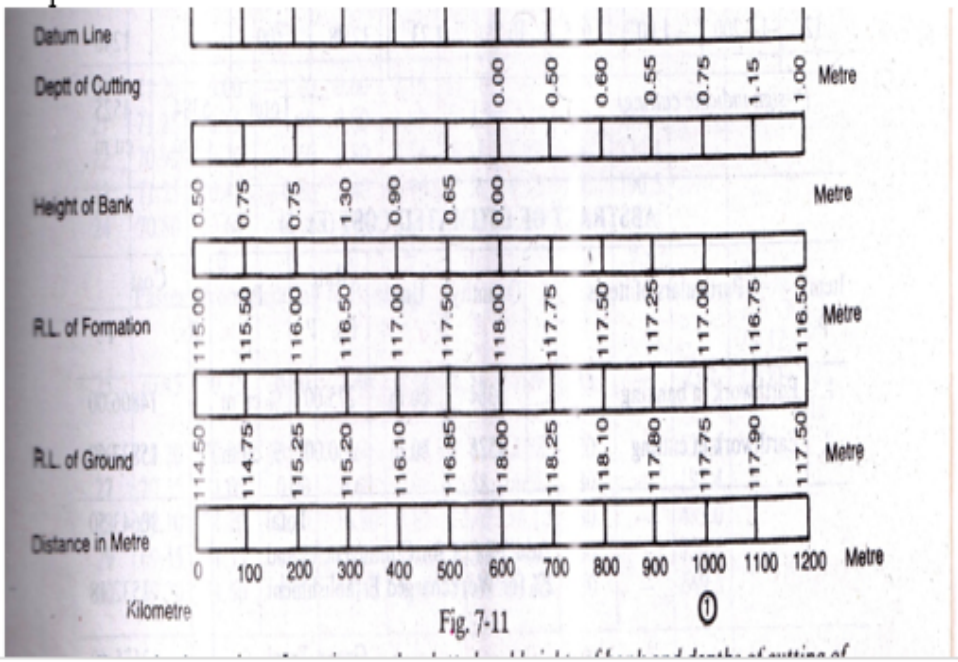


Fig. 7-11

Q.2 B	Calculate the area of the side slopes of portion of a bank for a length of 200 meter the heights of bank at the two ends being 2.50 m and 3.50 m and the ratio of the side slopes 2:1.	02

	OR	
Q.4B	Estimate the quantities of the following items of a residential building using long wall-short wall method (**Fig. A**) (1) earthwork in excavation in foundation (2) lime concrete in foundation (3) First class brickwork in 1:6 cement sand mortar in foundation and plinth. (4) First class brickwork in lime mortar in super structure.	10

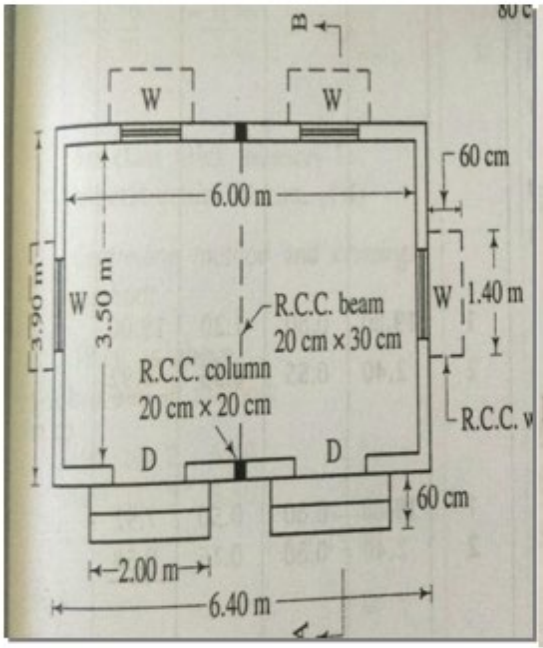


Figure 1. Plan

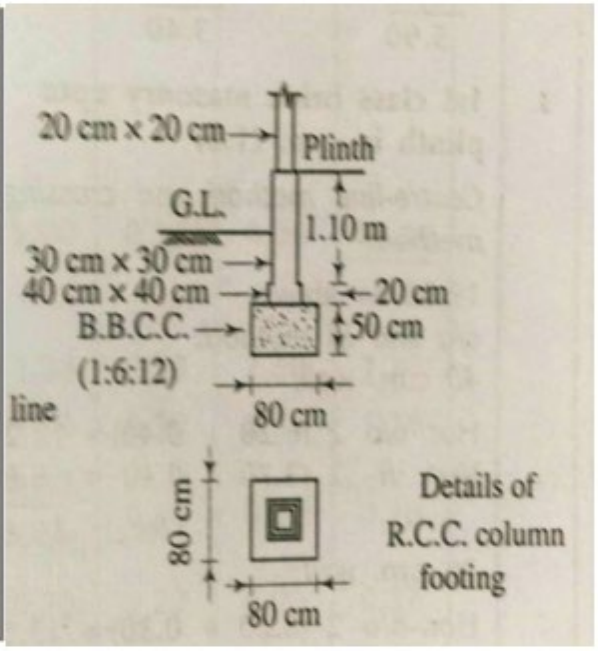


Figure 2. Foundation Plan

Term Paper

Course code	Course Title	Teaching Scheme			
		L	T	P	Credits
CE509	ENVIRONMENTAL ENGINEERING II	3	0	2	4

Evaluation Scheme (Theory)						Evaluation Scheme (Practical)				
Mid Term Test - I	Mid Term Test - II	End Term Test	Class Participation	Additional Continuous Evaluation*	Total Marks**	Mid Term Test - I	End Term Test	Class Participation	Additional Continuous Evaluation *	Total Marks**
20	20	40	10	10	100	20	40	15	25	100

*Additional Continuous Evaluation: Quizzes/Assignments/Presentations/Practical Records/Mock Interviews/others

**The ratio of weightage between Theory and Practical content will be 60%: 40%

Syllabus (Theory)

Waste water treatment, sewage and effluent, sources of wastewater, classification of wastewater, pollutions, characteristics and testing of sewage, composition, sampling, physical and chemical analysis

Industrial waste treatment: objectives, significance of treatment, classification of treatment processes, wastewater treatment, operations, screenings, skimming, sedimentation, biological treatment, aerobic and anaerobic treatment, trickling filters and design, LRTF & HRTF, types and modifications, activated sludge process, modes of waste water disposal membranes

Sewage treatment, principles, ETP design, Energy recovery from waste, sludge digesters and bio gas plants

Syllabus (Practical)

1.Determination of DO, COD and BOD
2.Analysis of water quality, quantity parameters in a wastewater
3.Designing a wastewater distribution systems
4.Designing a filtration system.

Text Book(s)

1. Environmental engineering, HS Paevy, DR Rowe, G Tchobanoglous, McGraw Hill
2. Environmental engineering: Wastewater engineering, SK Garg, Khanna Publishers
3. Water supply and sanitation engineering, GS Birdie, JS Birdie, Galgotia Publishing Ltd.

Reference Book(s)

1. Water and wastewater engineering, Metcalf and Eddy, McGraw Hill

Employability skill activities

Students of V Semester batch 2013-17 at Sewage Treatment Plant, Delawas Jaipur with Prof. Vinod Kumar Vishwakarma, Dr. Neha Sharma and Staff of Treatment Plant.

JK LAKSHMIPAT UNIVERSITY
ज्ञानम् अमृतम्

Lecture Series Institute of Engineering and Technology

Institute lecture on the topic "**Current State of Art & Future Threats- Nitrate Pollution Management"**

By: Dr. Ram Karan Singh
Professor
Department of Civil Engineering
King Khalid University
Abha City
Kingdom of Saudi Arabia

JK LAKSHMIPAT UNIVERSITY, JAIPUR

INSTITUTE OF ENGINEERING AND TECHNOLOGY

End Term Examination (Regular), Nov.-Dec.2015

B. Tech in Civil Engineering, Semester V

Roll No.....

CE509: ENVIRONMENTAL ENGINEERING II Time: 3 hours Max. Marks: 100

Instructions to students:

1. Do not write anything other than your roll number on question paper.
2. Assume suitable data wherever required and mention it clearly.
3. Writing appropriate units, nomenclature, and drawing neat sketches/schematics/ flow chart wherever, required are an integral part of the answer.

Q.1A	Objective type multiple choice questions (10 questions @ 1 mark)	10
i.	COD/BOD ratio for the sewage is around: (a) 2.7 (b) 3.8 (c) 5.9 (d) 1.7	
ii.	Water containing feces, urine and flush water from flush toilets is known as: (a) Black water (b) Grey water (c) Storm water (d) Toxic water	
iii.	The kinetics of BOD reaction can be formulated in accordance with (a) Second order reaction kinetics (b) Firstorder reaction kinetics (c) Zeroorder reaction kinetics (d) Pseudo order reaction kinetics	
iv.	The correlation between BOD and COD for readily biodegradable waste, such as dairy waste: (a) COD= BODu/0.56 (b) COD= BODu/0.65 (c) COD= BODu/0.92 (d) COD= BODu/0.29	
v.	The sludge volume Index in Activated Sludge Process (ASP) varies from : (a) 50 to 150 mL/g of Suspended Solids (SS) (b)) 150 to 250 mL/g of Suspended Solids (SS (c)) 250 to 350 mL/g of Suspended Solids (SS	
vii	Attached- culture system of waste water treatment consist of : (a) Trickling filters (b) Rotating Biological Contactors (c) Both a & b are correct (d) Both a & b are incorrect	
viii	In a WWT plant, the submerged area of the surface of the screen, including bars and opening should be about : (a) 300% of the cross sectional area of the incoming sewer for separate system (b) 200% of the cross sectional area of the incoming sewer for combine system (c) 200% of the cross sectional area of the incoming sewer for separate system (d) 100% of the cross sectional area of the incoming sewer for combine system	
ix	The settling of grit particles in a chamber is assumed as : (a) Type –I settling (b)Type –II settling (c)Type –III settling (d)Type –IV settling	
x.	In a STP the appropriate location of Equalization basin is : (a) Before primary treatment (b) After primary treatment and before biological treatment (c) After Secondary treatment and before tertiary treatment (d) After tertiary treatment	

Q.2	Short answer type questions (4 questions @ 2.5 marks)	10
	i. Write short note on the following terms w.r.t. ASP: a. Solid Retention Time (SRT) or Mean Cell Residence Time (MCRT) b. Sludge Volume Index ii. Write the design features of : a. LRTF b. HRTF	
Q.3A	The treated waste water is being discharged in to a river of 15 °C. The BOD rate constant determined in the laboratory for this mixed water is 0.12 per day. What fraction of maximum oxygen consumption will occur in first four days?	05
Q.3B	Determine the 1 day BOD and ultimate first stage BOD for a waste water whose 5 day 20°C BOD is 200 mg/L. The reaction rate constant k (base e) = 0.23 per day.	05
Q.4A	Write down the factors on which the efficiency of biogas generation depends, in a biogas plant.	05
Q.4B	Write brief note on the following types of Anaerobic digesters : a. Low rate digesters	05

INSTITUTE OF ENGINEERING AND TECHNOLOGY

QUIZ 01

B. Tech. in Civil Engineering, Semester V

Roll No.....

CE509 : ENVIRONMENTAL ENGINEERING-II Time: 0.5 hours Max. Marks: 10

Instructions to students:

1. Do not write anything other than your roll number on question paper.
2. Assume suitable data wherever required and mention it clearly.
3. Writing appropriate units, nomenclature, and drawing neat sketches/schematics/ flow chart wherever, required are an integral part of the answer.

Q.1A	Objective type multiple choice questions (10 questions @ 1 mark)	05
i.	Grade of Water sample classified based on presumptive coliform count of 1-3/100 ml (MPN) is: (a) Excellent (b) Satisfactory (c) Suspicious (d) Unsatisfactory	
ii.	The organic matter present in water body can be analyzed in laboratory by determining: (a) BOD (b) COD (c) TOC (d) All of above (e) Two of above	
iii.	The correlation between BOD and COD for readily biodegradable waste, such as dairy waste: (a) COD= BODu/0.56 (b) COD= BODu/0.65	

Course code	Course Title	Teaching Scheme			
		L	T	P	Credits
CE511	Transportation Engineering I	3	0	2	4

Evaluation Scheme (Theory)						Evaluation Scheme (Practical)				
Mid Term Test - I	Mid Term Test - II	End Term Test	Class Participation	Additional Continuous Evaluation*	Total Marks**	Mid Term Test - I	End Term Test	Class Participation	Additional Continuous Evaluation *	Total Marks**
20	20	40	10	10	100	20	40	15	25	100

*Additional Continuous Evaluation: Quizzes/Assignments/Presentations/Practical Records/Mock Interviews/others

**The ratio of weightage between Theory and Practical content will be 60%: 40%

Course Syllabi (Theory):

PRINCIPLES OF TRANSPORTATION ENGINEERING: Importance of transportation, Different modes of transportation and comparison, Characteristics of road transport, Road types and classification, road patterns, planning surveys, Indian Roads Congress Guidelines

HIGHWAY GEOMETRIC DESIGN: Ideal Alignment, Factors affecting the alignment, Terrain classification, Design speed, Factors affecting geometric design, Cross sectional elements-Camber- width of pavement-Shoulders-, Width of formation- Right of way, Typical cross sections; Sight Distance-Restrictions to sight distance- Stopping sight distance- Overtaking sight distance- overtaking zones- Examples on SSD and OSD-Sight distance at intersections, Horizontal alignment-Radius of Curve- Super elevation – Extra widening-Transition curve and its length, setback distance – Examples, Vertical alignment-Gradient-summit and valley curves

PAVEMENT MATERIALS: Sub grade soil – desirable properties-HRB soil classification-determination of CBR and modulus of sub grade reaction-Examples, Aggregates- Desirable properties and list of tests, Explanation on Tar, bitumen, cutback and emulsion-List of tests on bituminous materials; PAVEMENT DESIGN: Pavement types, component parts of flexible and rigid pavements and their functions, design factors, ESWL and its determination, Flexible pavement- Design of flexible pavements as per IRC;37-2001, Rigid pavement-Westergaard's equations for load and temperature stresses- Design of slab thickness only as per IRC:58-2002

PAVEMENT CONSTRUCTION: Earthwork –cutting-Filling, Preparation of sub grade, Specification and construction of i) Granular Sub base, ii) WBM Base, iii) WMM base, iv) Bituminous Macadam, v) Dense Bituminous Macadam vi) Bituminous Concrete, vii) Dry Lean Concrete sub base and PQC viii) concrete roads; HIGHWAY DRAINAGE: Significance and requirements, Surface drainage system and design-Examples, sub surface drainage system, design of filter materials; HIGHWAY ECONOMICS: Highway user benefits, VOC using charts only-Examples, Economic analysis – annual cost method-Benefit Cost Ratio method-NPV-IRR methods- Examples, Highway financing-BOT-BOOT concepts.

Syllabus (Practical)

1. To determine the elongation and flakiness index for an aggregate sample
2. To determine the Crushing value for an aggregate sample
3. To determine the Impact value for an aggregate sample

4. To determine the Abrasion value for an aggregate sample

Activity: Assignment

V Semester, B. Tech. (Civil Engg.), JKLU, Jaipur
Assignment-1, TE-I

1. **What are various desirable properties of Soil, discuss in brief about them.**
2. **Enumerate and discuss about various desirable properties of road aggregates. Also mention the name of test conducted to evaluate that property.**
3. **Enumerate and discuss about various desirable properties of bitumen. Also mention the name of test conducted to evaluate that property.**
4. **Compare Bitumen and Tar in tabular form.**
5. **Discuss the step wise procedure for construction of earthen road / Soil Sub grade layer. Also describe the permissible test values needed for the above construction.**
6. **Describe about material requirement and steps of construction for Water Bound Macadam (WBM) road.**

Activity: Quiz

Question Paper Format For Online Examination

Class Code	B.TECH.
Branch Code	CIVIL
Semester	5th SEM
Subject Code	
Subject Name	Transportation Engineering - I
Unit No	
Unit Name	Geometric Design of Highways

Question No.	Question	Option-A	Option-B	Option-C	Option-D
1	Mechanical Widening of Pavements at horizontal curv	$nl^2/2R$	nl^2/R	nl^2/gR	$l^2/2R$
2	The traffic manoeuvre means	diverging	merging	crossing	all the above.
3	The width formation of a road means the width of	carriageway	pavement and shoulders	embankment at ground leve	embankment at the top level.
4	Design of flexible pavement is govern by	IRC: 37	IRC : 58	IRC : 52	None of these.
5	For a poorly graded sub-grade soil, thickness of sub-l	10 cm	15cm	20 cm	30 cm
6	The distance travelled by a moving vehicle during perc	sight distance	stopping distance	lag distance	None of these.
7	Following type of pavement is generally known as flex	water-bound macadam roads	stabilised soil roads	road constructed with vario	all the above.
8	Less G.I. value indicates, Soil is	Good	Poor	Average	None of the above
9	Maximum limit of percentage grade compensation sho	60/R	70/R	80/R	75/R

Activity: Expert Talk

JK LAKSHMIPAT UNIVERSITY ज्ञानम् अमृतम्	**JK Lakshmipat University, Jaipur** **Institute of Engineering & Technology**
Guest Lecture/Invited Talk/Expert Lecture	
Department – Civil Engineering	

TOPIC / SUBJECT	Paving bitumen and bitumen mixes in India
BRANCH& No. of PARTICIPANT	Civil Engineering (III, V and VII Semester) 31(Students)+5(Faculty+Staff)= 36
DATE& TIME	23rd September 2015 10AM to 12.30PM
VENUE	EB1009 (IET Amphitheater).

EXPERT DETAILS:

Name **:Prof. P.S. Kandhal**

Designation **:** Associate Director Emeritus NCAT

Affiliation **:** National Center for Asphalt Technology (NCAT) Auburn

University, Alabama, U.S.A.

Activity: Workshop

TOPIC	Mix design of Concrete(Conceptual and Practical training in laboratory)
PARTICIPANTS	31 B. tech 7th and 5th sem
DATE& TIME	1st October 2015 10.00AM to 5.30PM
VENUE	EB1009 (IET Amphitheater).

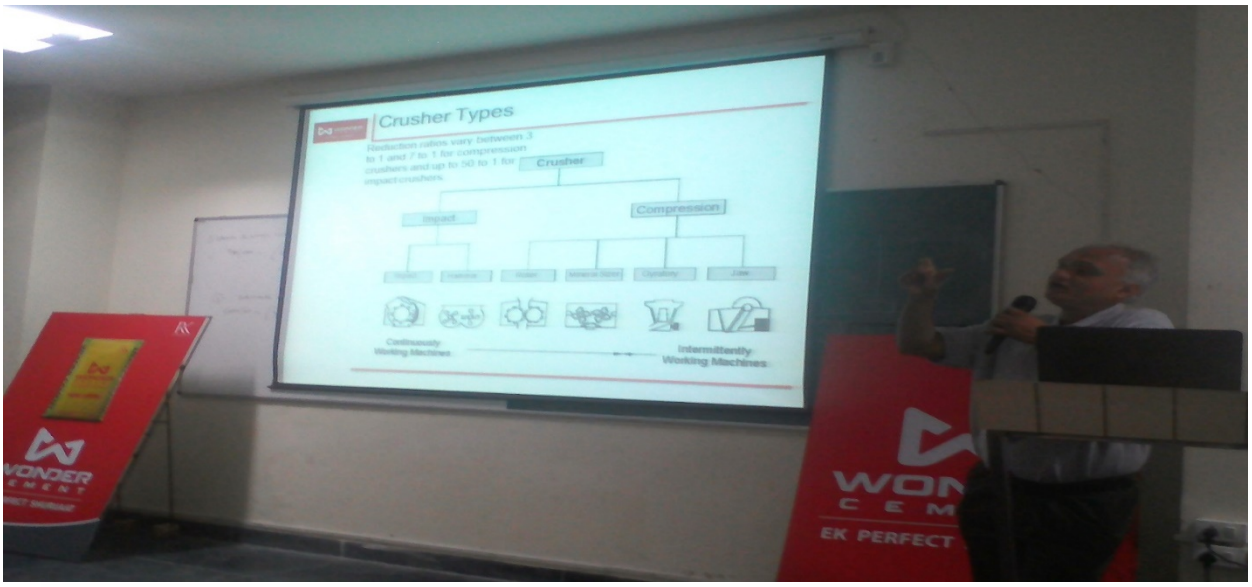
ABOUT THE EXPERT (Name/Designation/Company/Institute/Contact Details):

Er Prakash Sharma Wonder Cement Ltd Mobile 917726007100

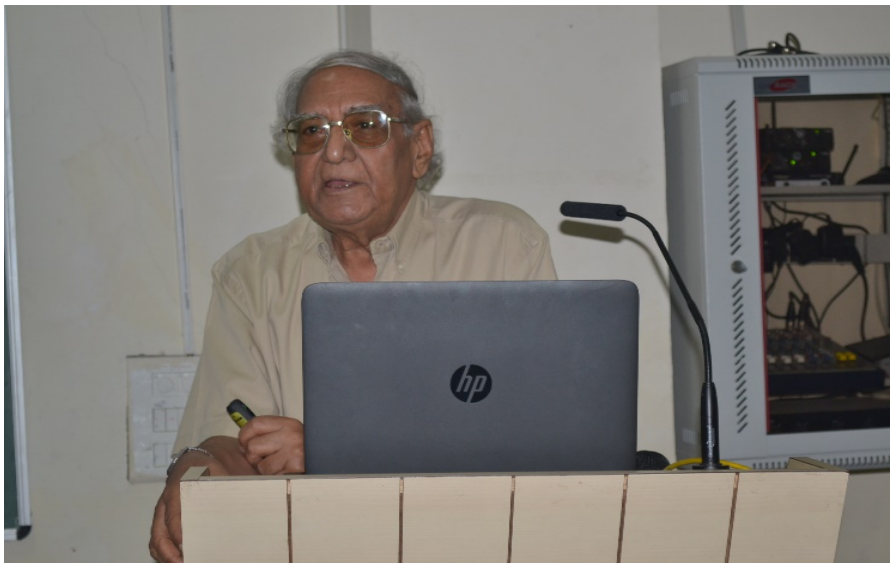
Er Manish Garg

ErAmit Mathur

Er Atul Sharma


Crusher Types
Crusher
Impact
Compression
Continuously Working Machines
Intermittently Working Machines
EK PERFECT

Picture of the Event



Prof. Kandhal delivering the lecture to audience

Course code	Course Title	Teaching Scheme			
		L	T	P	Credits
CE512	Urban and Regional Planning	3	0	0	3

Evaluation Scheme (Theory)						Evaluation Scheme (Practical)				
Mid Term Test - I	Mid Term Test - II	End Term Test	Class Participation	Additional Continuous Evaluation*	Total Marks**	Mid Term Test - I	End Term Test	Class Participation	Additional Continuous Evaluation *	Total Marks**
20	20	40	10	10	100	-	-	-	-	-

*Additional Continuous Evaluation: Quizzes/Assignments/Presentations/Practical Records/Mock Interviews/others

Syllabus (Theory)

Introduction to Planning Discipline Defining planning as a discipline, multidisciplinary nature, role of a planner, fields of planning- Urban, regional, environmental, transport and infrastructure.

Evolution of Settlement The City in History. Settlement size, pattern and structure as a function of socio-cultural, economic, military andreligious factors. Variations in civilizations- Egyptian, Mesopotamian, Greek, Roman. Town planning in medieval timesand in Renaissance Europe. Origin and evolution of civic planning; Impacts of Industrial Revolution on town and regional planning.

Planning in Post Industrial Revolution Era Concepts of garden City, City beautiful, linear city etc., contributions of all leading masters in planning.Socio-economic impacts of growth of urban areas; Rural-urban migration. Impact of technology on urban forms. Urban structure and form- land use distribution.

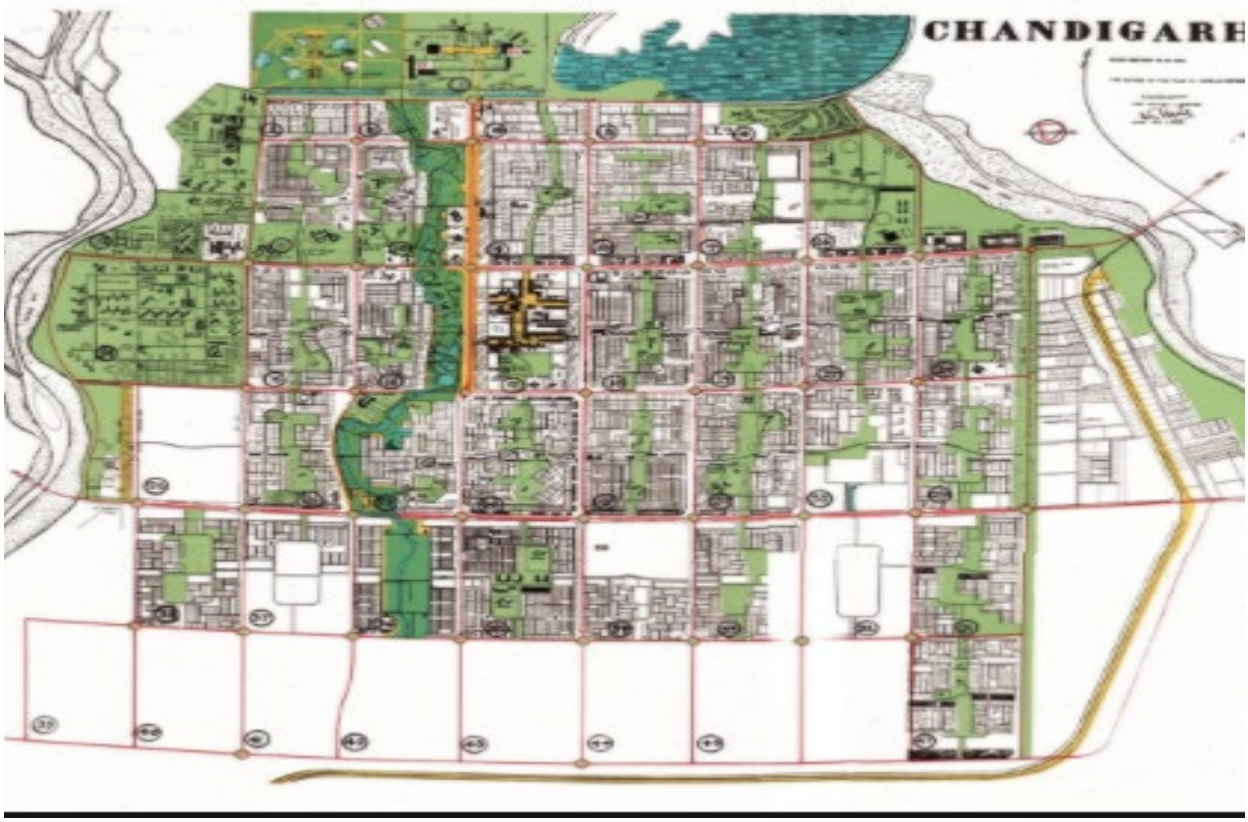
Definitions and Bases of Planning Various definitions of town and country planning; Goals and objectives of planning; Components of planning; Benefits of planning; Arguments for and against planning. Economics and social planning as bases of physical planning. Planning Process.Levels of planning in India.

Types of Plans Definition of development plan; Types of development plans: Master plan, City development plan,

Structure plan, District plan, Action area plan, Subject plan, Comprehensive planning, Zonal plans etc.

Regional planning Regional planning process, 73rd and 74th constitutional amendment act, special area development plan e.g. SEZ(special economic zones),SIR(special investment regions),DMIC(delhi-mumbai industrial corridor)

Employability skill activities



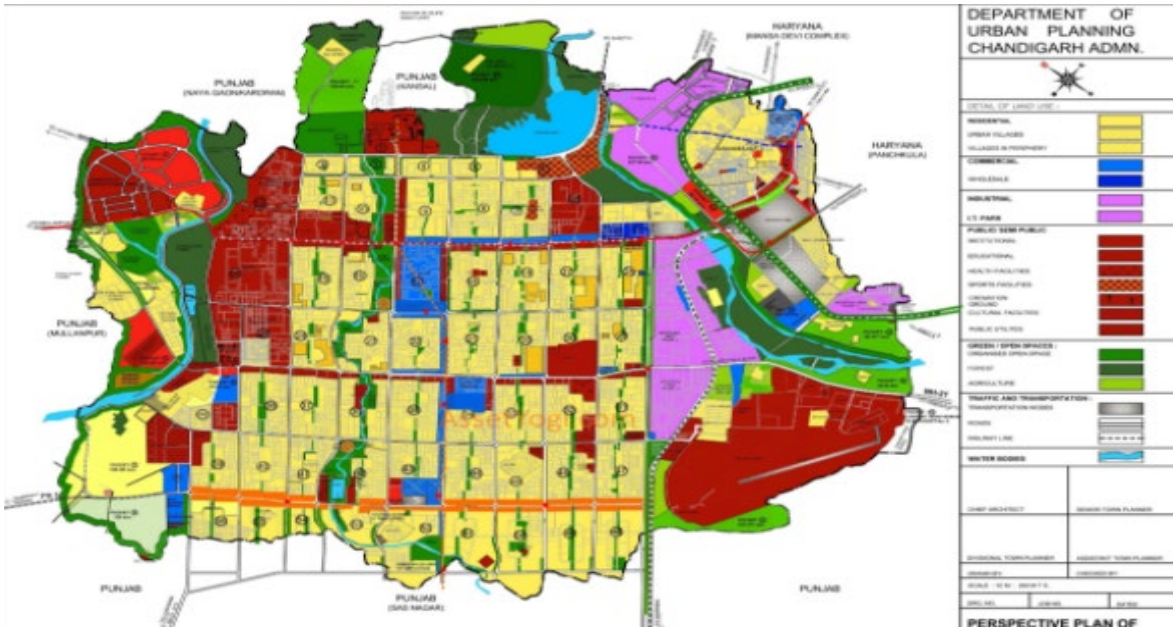
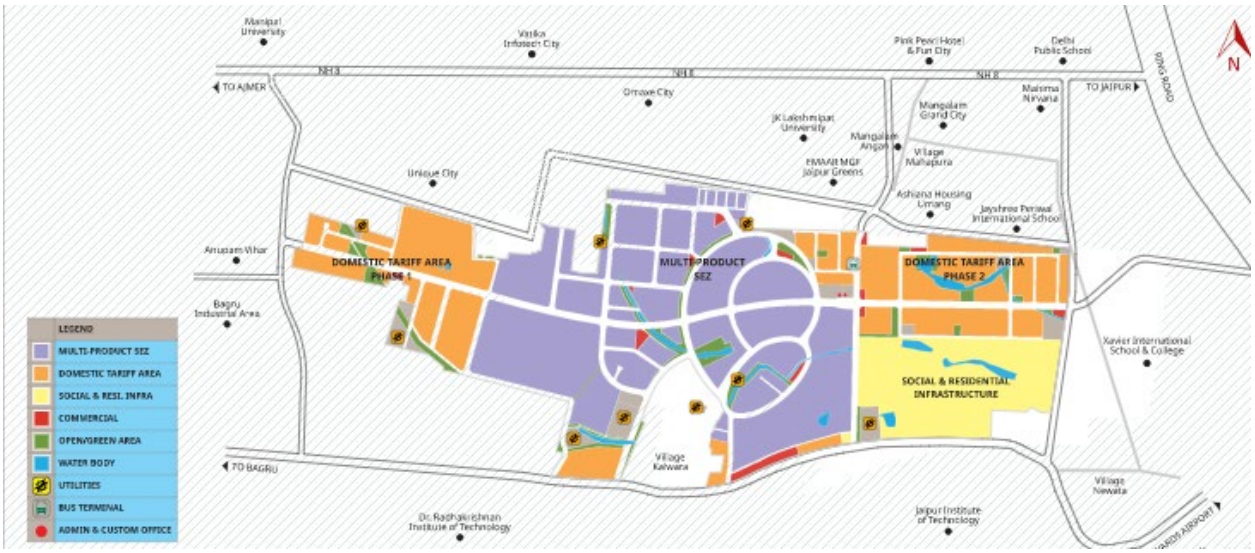


Fig: Study of master plan of Chandigarh



Study of Mater Plan of Mahindra SEZ Jaipur

JK LAKSHMIPAT UNIVERSITY, JAIPUR
INSTITUTE OF ENGINEERING AND TECHNOLOGY
EndTerm Examination (Regular), Nov. 2016
B. Tech in Civil Engineering, Semester V

Roll No.....

CE512: Urban and Regional Planning — Time: 3 hours — Max. Marks: 100

Instructions to students:
1. Do not write anything other than your roll number on question paper.
2. Assume suitable data wherever required and mention it clearly.
3. Writing appropriate units, nomenclature, and drawing neat sketches/schematics/ flow chart wherever, required are an integral part of the answer.

Q.1A	Objective type multiple choice questions (10 questions @ 1 mark)	10
i.	The movement of people from central cities to smaller communities in the surrounding area is known as... (a) Reverse migration (b) Under urbanization (c) Suburbanization (d) Over- urbanization	
ii.	_____ refers the refurbishing or replacement of old buildings & new use of previously developed land in urban areas. (a) urban planning (b) Urban recycling (c) urbanism (d) None of these	
iii.	Who was the chief architect and city planner of Jaipur? (a) Samuel Swinton Jacob (b) Vidyadhar Bhattacharya (c) Sir Edwin Lutyens (d) Sir Herbert Baker	
iv.	The concept of Garden City was floated by: (a) Samuel Swinton Jacob (b) Ebenezer Howard (c) Sir Edwin Lutyens (d) Sir Herbert Baker	
v.	Early modernists like Le Corbusier advocated city planning based upon (a) Isolated and standardised components (b) Differentiated components	
	(c) It raises property values (d) It promotes quality of life and sustainability	
vii	The fundamental element of the sustainable neighborhood is the (a) Pedestrian shed (b) Transit stop (c) Wildlife corridor (d) District energy plant	
viii	Metropolis city is one having the population: (a) 50000 to 100000 (b) 100000 to 300000 (c) 1000000 and above (d) more than 300000	
ix	Mark the earliest Indian civilization: (a) Rg- vedic phase (b) Banwali (c) Indus valley (d) None of the above	
x	The popularization of the "City Beautiful" occurred during the: (a) Louisiana Purchase Exposition (b) World's Columbian Exposition (c) Palos Verdes Estates (d) None of these	

Q.2	Short answer type questions (4 questions @ 2.5 marks)	10
	i. Differentiate between the following w.r.t. origin of towns: a. Topographical aspects and b. functional aspects i. Differentiate between the following w.r.t. Rural settlement: a. Fragmented settlement and b. Dispersed or isolated settlement	
Q.3A	Explain the essential objects or ideals of any town planning scheme.	05
Q.3B	Discuss the growth of town with respected to the direction.	05
Q.4A	Write the brief note on the following: a. Linear City b. Features of satellite town	05
Q.4B	Explain in details the various types of natural growth of the town according to origin.	05
Q.5A	Explain the various causes of Urbanization and also discuss the various positive	05

JK Lakshmipat University Jaipur
INSTITUTE OF ENGINEERING AND TECHNOLOGY

Mid Term Examination-II, Sep-Oct. 2016

B. Tech. in Civil Engineering, Semester V

Roll No.....

CE512: Urban and Regional Planning Time: 1.5 hours Max. Marks: 40

Instructions to students:

1. Do not write anything other than your roll number on question paper.
2. Assume suitable data wherever required and mention it clearly.
3. Writing appropriate units, nomenclature, and drawing neat sketches/schematics/ flow chart wherever required are an integral part of the answer.

Q.1A	Objective type multiple choice questions (5 questions @ 1 mark)	05
i.	City Beautiful Movement was a reform philosophy of: (a) North American architecture and urban planning (b) south American architecture and urban planning (c) British architecture and urban planning (d) South African architecture and urban planning	
ii.	Which one of the following is NOT the part of the definition of a town as per the census of India? (a) Population density of 400 persons per sq. km. (b) Presence of municipality, corporation, etc. (c) More than 75% of the population engaged in primary sector. (d) Population size of more than 5,000 persons	
iii.	Which one of the following towns is NOT located on a river bank? (a) Agra (b) Patna (c) Bhopal (d) Kolkata	
iv.	Chandigarh, the dream city of India's first Prime Minister, Sh. Jawahar Lal Nehru, was planned by the: (a) Polish architect Maciej Nowicki (b) American planner Albert Mayer (c) Swiss-French architect Le Corbusier (d) None of these	
v.	The idea of Garden City was initiated in 1898 in: (a) India (b) USA (c) Australia (d) United Kingdom	
Q.1B	Short answer type questions (2 questions @ 2.5 marks)	05
	Write short note on the following:	

Q.2A	Explain the Concept of "Garden City" in detail.	05
Q.2B	Write a descriptive note on the "City Beautiful Movement".	05

Q.3A	Discuss the adverse and beneficial consequences of "Urbanization".	05
Q.3B	Explain briefly the Concept of "Linear City" and also analyze possible causes of developing existing linear cities.	05
	OR	
Q.3B	i. Write short note on the following: ii. Greek civilisation iii. Roman civilization	05

Q.4A	Discuss the features of different types of rural settlements. What are the factors responsible for the settlement patterns in different physical environments?	05
Q.4B	Classify and explain briefly the Indian towns on the basis of their evolution in different periods.	05
	OR	
Q.4B	Broadly classify and explain the Indian cities and towns on the basis of dominant or specialized functions.	05

Course Title and Code: Irrigation engineering **CE 610**	
Hours per week	**L-T-P: 3-0-0**
Credits	**3**
Students who can take	**B.Tech Semester-VI (Batch** 2013-17 **civil Engg)**

Syllabus (Theory)

Necessity of Irrigation in India, Advantages and disadvantages, techniques of irrigation water, Quality irrigation water, Crop water requirements, crops and crop season, Consumptive use, Irrigation requirement Estimation of consumptive use of water by climatic approaches, Irrigation efficiencies, Soil moisture-irrigatio relationship

Canal Irrigation: Classification of canals, Canal losses, alignment of canals, Design of Irrigation Canals: Desig of stable channels using Kennedy's and Lacey's theory, Garret's diagram, Cross section of irrigation cana Lining of Irrigation Canals: Advantages and economics of lining, Various types of lining, Design of lined canal

Types of Cross-Drainage Works: Types of CD works, Selection of a suitable type to suite a particular conditio Design consideration for CD works, Canal Falls: Necessity, Proper location, Types, Design and detailing of o type of fall; Weirs and Barrages: Weirs and Barrages, Types of weirs and barrages, Layout of a diversion hea work, Introduction of different components of a diversion head works, Design of weirs and barrages: Bligh creep theory, Design of weir using Bligh's theory, Lane's weighted creep theory, Khosla's theory, Khosla method of independent variables, Exit gradient

Dams: Typical cross section, Various forces acting on gravity dam, Combination of forces for design, modes failure and criteria for structural stability, High and low gravity dam, Design of high dam, Typical section of lo gravity dam, Earth and Rock fill Dams: Types, Causes of failure, Preliminary section of an earth dam, Prelimina section of an earth dam, Seepage control in earth dams, Spillways: Descriptive study of various types spillways

Reclamation of Water Logged and Saline Soils: Causes and control of water logging. Reclamation of saline a alkaline land, Surface and Sub-surface drainage

Text Book(s)/ Reference Book(s)

1. Irrigation engineering and hydraulic structures, SK Garg, Khanna Publishers
2. Irrigation and water power engineering, BC Punamia, Pandey BB Lal, Standard Publishers
3. Principles and practice of irrigation engineering, SK Sharma, S Chand and Company

Assignment

Course	Irrigation engineering (CE610)
Last date of Submission	

1. With a neat sketch, explain any one type in each of cross drainage work.
2. With a neat sketch, explain the cross drainage works constructed for bypassing canal over drainage.
3. Design an irrigation channel to carry a discharge of 45 cumecs. Assume N = 0.0225 and m = 1. The channel has a bed slope of 0.16 meter per kilometer. Use Kennedy's theory. Assume a trial depth for D as 1.8m.

4. An irrigation engineer has designed an irrigation canal using Kennedy's theory, for the Following details. He had concluded that full supply depth of 1.8 m is sufficient for the canal. Check whether his design can be adopted.

Discharge = 45 cumecs ,Manning's Rugosity coefficient = 0.0225 Bed slope of channel =0.16 m/km Critical velocity ratio =1

5. "Lacey's conception of design of canal on an alluvial soil is superior to Kennedy's concept". Justify the statement.

6. Design an irrigation channel in alluvial soil according to Lacey's silt theory for the following data: Fully supply discharge =15 m/sec; Lacey's silt factor = 1.0; Side slope of channel =2 H: 1V

7. Define 'flow duty' and 'quantity duty'. Obtain the relationship between Duty, Delta and Base period.

8. A water course commands an irrigation area of 800 ha. The intensity of irrigation for rice in this area is 50%. The transplantation of rice crop takes 15 days and the total depth of water required by the crop is 60 cm. Determine i) Duty on the field during transplantation ii) Duty at the head of distributory assuming losses of water to be 20% in the water courses. iii) Calculate the discharge required in the water course.

1) Define different kind of irrigation efficiencies and their practical Significance.

2) Describe with the help of diagram various forms of a soil moisture .what do you understand by the available moisture.

3) Write notes on the following: a) Saturation capacity, b) field capacity, c) wilting point, d) optimum water.

4) Define the following: G.C.A., C.C.A, Kor depth, kor period, outlet factor, capacity factor, nominal duty, open discharge.

5) explain the term 'DUTY' and 'DELTA'. Establish the relation between duty and delta.

6) An area of 10 hectares is to be irrigated by a pump working for 12 hours a day. The available moisture holding capacity of the soil is 16 cm/m and the depth of root zone is lm. Irrigation is to be done when 50 per cent of available moisture in the root zone is depleted. Water application efficiency is 70 per cent. Peak rate of moisture use by the crop is 4 mm (weighted average). Losses in water conveyance are negligible. Determine the irrigation period, net depth of water application, depth of water pumped per application, and the require capacity of the irrigation system in hectarecm/ day and litres per second.

7) A stream of 135 litres per second was delivered from a canal and 100 litres Per second were delivered to the field. An area of 1.6 hectares was irrigated In 8 hours. The effective depth of root zone was 1.8 m. The runoff loss in the field was 432 cu m. the depth of water penetration varied linearly from 1 .am at the head end of the field to the 1.2 m at the end of the tail end. Available moisture holding capacity of the soil is 20 cm per meter depth of soil. Determine the water conveyance efficiency, water application efficiency, water storage efficiency and water distribution efficiency; irrigation was started at a moisture extraction level of 50 per cent of the available moisture.

8) If the rice requires about 12 cm depth of water at an interval of 10 days and base period for rice is 120 days, find out the delta for rice.

9) Find out the capacity of the reservoir if its culturable area is 65000 ha, from the following data :

S1. No.	Type of crop	Sugarcane	Wheat	Rice
1.	B in days	330	120	120
2.	D in ha/cumec	2200	1800	800
3.	Intensity of irrigation as percentage	15	20	10

10) Define consumptive use of water. And measurement method of consumptive use.

Assignment sheet

Roll No. .....

CE 610: Irrigation Engineering Time: 3 hours Max. Marks: 100

Instructions to students:

1. Do not write anything other than your roll number on question paper.
2. Assume suitable data wherever required and mention it clearly.
3. Writing appropriate units, nomenclature, and drawing neat sketches/schematics/ flow chart wherever, required are an integral part of the answer.
4. Answer should be precise and to the point only.

Q.1A	Objective type multiple choice questions & Fill the blanks (10 questions @ 1 mark)	10
i.	The Sodium Absorption Ratio (SAR) of an irrigation water is 8. This water will be Called	
ii.	Crops grown during Winter months and harvested in March-April are called ..... Crops.	
iii.	When the total horizontal forces acting on a dam is grater then the total vertical forces, then the dam may fail.....	
iv.	The forces, which are considered for the analysis of an elementary profile of a gravity dam under empty reservoir condition, are **i)** Water pressure ii) Self weight **iii**) Uplift **iv)** Pressure due to earthquake The correct answer is (a) Only (ii) (b) (i), (ii) and (iii) (c) (i), (ii) and (iv) (d) (i), (ii), (iii) and (iv)	
v.	Base period is ..... then the crop period.	
vi.	A channel is designed by Lacey's theory has mean velocity of one m/s. The slit factor is unity. The hydraulic mean radius will be	
vii.	Horizontal acceleration due to earthquake results in (a) hydrodynamic pressure (b) inertia force into the body of the dam (c) both (a) and (b) (d) none of the above	

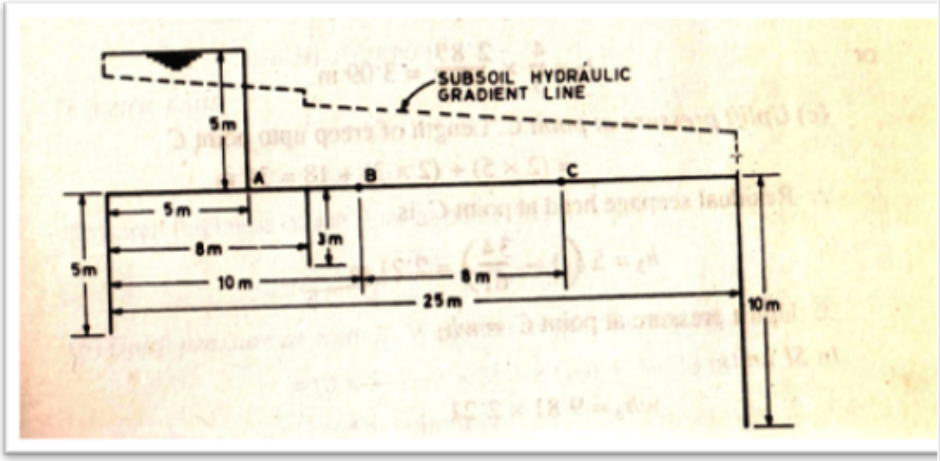
Q.2	Short answer type questions (4 questions @ 2.5 marks)	10
i.	Explain the economics of canal lining.	
ii.	Sketch the plot of moisture content of soil Vs. stage of crop growth, which is helpful in understanding the irrigation needs of crops.	
iii.	Draw uplift pressure diagram for dam with the following data (i) depth of water =90 m (ii)top width =20m (iii)bottom width = 35 m Uplift may be considered to be acting on 45 % of the area of section .tail water depth is 8 m.	
iv.	Explain the method to be adopted to check the failure of barrage or weir.	

Q.3A	Define base period, duty and delta. Establish a relation between them. A channel is to be designed for irrigating 5000 hectares in Kharif crop and 4000 hectare in rabi crop. The water requirement for kharif and rabi are 60 cm and 25 cm respectively .The Kor period for Kharif is 3 weeks and for Rabi is 4 weeks. Determine the discharge of the channel for which is to be designed.	05
Q.3B	Draw a neat sketch of the layout of the diversion headwork works, indicating –the components and their functions of each.	05

Q.4A	Explain the necessity of cross drainage works and also explain the super passage and syphon super passage, aqueduct and siphon aqueduct with sketches.	05
Q.4B	Name the methods of distribution of water adopted for the following crops and describe the methods with sketch. (a) potato (b)orchard (c) paddy (in plain terrain)	05

Q.5A	A farmer wishes to have his own pump set for the following cropping pattern to be followed in five hectares of his land. Calculate the right size of the centrifugal pump he should have, litres/sec.	05

Season	Crop	Area to be irrigated	Intensity of irrigation cm	Rotation period days

Q.6B	The accompanying figure show the section of a hydraulic structure on permeable foundation. Calculate the average hydraulic gradient according to (i)Bligh's Creep theory (ii) Lane's weighted creep theory. Also find the uplift pressure at points A, B, C as shown in the figure and the floor thickness required at these points.  	05
	OR	
Q.6B	What is a canal fall? Enumerate types of canal fall and explain any Two types of Fall in detail with neat sketch.	05

Q.7A	What is Evapotranspiration? Determine the discharge of distributary at the tail end from the following data : Gross command Area (GCA) = 20000 ha Cultivated command Area(CCA) =70% Losses beyond the tail end = 1 $\mathbf{m^3 s^{-1}}$	05

Crop Season	Crop	Irrigation intensity	Kor depth	Kor period
Kharif	Rice	15 %	19 cm	2.5 weeks

Activities Related to Skill Development and Employability

Course code	Course Title	Teaching Scheme			
		L	T	P	Credits
CE611	Transportation Engineering II	3	0	2	4

Evaluation Scheme (Theory)						Evaluation Scheme (Practical)				
Mid Term Test – I	Mid Term Test - II	End Term Test	Class Participation	Additional Continuous Evaluation*	Total Marks**	Mid Term Test - I	End Term Test	Class Participation	Additional Continuous Evaluation *	Total Marks**
20	20	40	10	10	100	20	40	15	25	100

*Additional Continuous Evaluation: Quizzes/Assignments/Presentations/Practical Records/Mock Interviews/others

**The ratio of weightage between Theory and Practical content will be 60%: 40%

Course Syllabi (Theory):

RAILWAY ENGINEERING

INTRODUCTION: Role of railways in transportation, Indian Railways, Selection of Routes, Permanent way and its requirements, Gauges and types, Typical cross sections-single and double line B G track in cutting, embankment and electrified tracks, Coning of wheels and tilting of rails, Rails-Functions-requirements—types and sections length-defects-wear-creep-welding-joints, creep of rails

SLEEPERS AND BALLAST: Functions, requirements, Types, Track fitting and fasteners-Dog spike, screw spike and Pandrol clip,-Fish plates-bearing plates, Calculation of quantity of materials required for laying a track-Examples, Tractate resistances and hauling capacity

GEOMETRIC DESIGN: Necessity, Safe speed on curves, Cant-cant deficiency-negetivecant-safe speed based on various criteria,(both for normal and high speed tracks) Transition curve, Gradient and types, grade compensation, Examples on above.

POINTS AND CROSSING: Components of a turnout, Details of Points and Crossing, Design of turnouts with examples (No derivations) types of switches, crossings, track junctions Stations and Types, Types of yards, Signalling-Objects and types of signals, station and yard Equipment-Turn table, Fouling mark, buffer stop, level crossing, track defects, and maintenance.

AIRPORT ENGINEERING INTRODUCTION: Layout of an airport with component parts and functions, Site selection for airport, Aircraft characteristics affecting the design and planning of airport, Airport classification, Runway orientation using wind rose with examples.

RUNWAY- Basic runway length-Corrections and examples, Runway geometrics, Taxiway-Factors affecting the layout - geometrics of taxiway-Design of exit taxiway with examples, Visual aids- Airport marking – lighting-Instrumental Landing System.

DOCKS AND HARBOURS: Harbour classifications, Layout with components Natural phenomenon affecting the design of harbours - wind, wave and tide, currents, Breakwater-Types Wharf and Quays, Jetties and Piers, Dry dock and wet docks, Slipways, Navigational aids, warehouse and transit-shed

Syllabus (Practical)

1. To determine the Softening point for a bitumen sample
2. To determine the Penetration value for a bitumen sample
3. To determine the Ductility value for a bitumen sample
4. Introduction to design a bitumen mix using Marshall Method

Activity: Assignment

Assignment-1, TE-II

Q.1 (a) A meter gauge track has a sleeper density of (n+5), if the track is laid with rails of 11.89 m length find the number of sleepers per one rail length.

(b) Enlist different materials used as ballast. Also, explain the functions and requirements of good quality ballast to be used for railways.

Q.2 (a) Write Short Notes on:

(i) Fish Plate and bearing Plates

(ii) Chairs and keys

Q.3 (a) Describe the different types and shapes of switches.

(b) Calculate various leads for a B.G. turnout of crossing number I in 9 ½ with heel divergence as 114.30 mm.

Q.4 (a) Explain the merits and demerits of Elevated Railway System.

(b) Calculate the elements of a turnout, when it is given G= 1.676m, N=12, d=13.3 cm and angle of switch, i.e., $\beta = 1^0 8' 0''$.

Q.5 Write Short Notes on (Any Three)

a) Hangers

Course code	Course Title	Teaching Scheme			
		L	T	P	Credits
CE 621	Hazardous Solid Waste Management	3	1	0	4

Evaluation Scheme (Theory)					Evaluation Scheme (practical)			
Mid Term Test - I	Mid Term Test - II	End Term Test	Class Participation & Additional Continuous Evaluation*	Total Marks**	Mid Term Test - I	End Term Test	Class Participation & Additional Continuous Evaluation*	Total Marks**
20	20	40	20	100				

*Additional Continuous Evaluation: Quizzes/Assignments/Presentations/Practical Records/Mock Interviews/others
**The ratio of weightage between Theory and Practical content will be 60%: 40%

Course Syllabi (Theory):

Introduction to Environment: Introduction of ecosystems biosphere, structure of ecosystem types of ecosystem; Food chain & Food web of ecosystem ; Energy flow in ecosystem, Different types of Biogeochemical cycles.

Municipal Solid Waste : Definition- source and types of solid waste –composition and its determination of solid waste ; factor influencing generation quantityassessment of quantity of solid waste s ; methods of sampling and characterization.

Collection: Collection of solid wastes- collection services- collection systems, equipment's; time of frequency of collection; labor requirements; factor affection collection; analysis of collection systems; collection route; preparation of master schedule.

Transfer and Transport: Need for transfer operation- transfer station; types and transport methods; location of transport stations; manpower requirements; collection routes; selection of locations; types and design requirements; operation & maintenances.

Processing techniques:purpose mechanical volume reduction; Specific equipment's; chemical volume reduction; Incinerators, mechanical size reduction,; components separation; selection of equipment's; components separation methods; dry and dewatering; recovery of resources; energy recovery; processing and recovery system; incineration with heat recovery.

Refuse disposal: various methods and incineration; principal of incinerators; site selection and plant lay out of incinerator; sanitary landfill; method of operations; advantage and disadvantage of sanitary landfill; reaction occurring in complete landfill; gas and leachate movement and control; equipment necessary .

Text Books :

1- PERT & CPM by B.C Punia, GerogeTochobanoglous et al. Integrated solid waste Management ; Mc Graw Hill 1993

2- G. Tochobanoglous, ThiesenEllasen : Solid waste Engineering Principles and management. Mc Graw Hill 1997

3- R. E. Landreth and P. A. Rebers – Municipal Solid wastes- problems & solutions , Lewis 1997.

References Books :

1- Manual on Municipal Solid Waste Management CPHEEO, Ministry of Urban Development Got of India , New Delhi 2000.

2-Blide , A.D. &Sundaresan, B. B , Solid Waste in Developing Countries . INSDOC, 1993.

3. Principal of Ecology , P. S. Verma and V. K Agarwal ; S Chand & Company (Pvt) Ltd . 1990.

4- George TchobanoglousFrankKreith; Handbook of Solid Waste Management, Second Edition

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Activities Related to Skill Development and Employability

JK LAKSHMIPAT UNIVERSITY, JAIPUR

INSTITUTE OF ENGINEERING AND TECHNOLOGY

End Term Examination (Regular/Backlog), November 2016

B. Tech in *Civil* Engineering, Semester VI

Roll No……

COURSE CODE: (CE-621) Time: 3 hours Max. Marks: 100

COURSE TITLE: Hazardous and Solid Waste Management

Instructions to students:

1. Do not write anything other than your roll number on question paper.
2. Assume suitable data wherever required and mention it clearly.
3. Writing appropriate units, nomenclature, and drawing neat sketches/schematics/ flow chart wherever, required are an integral part of the answer.

Q.1A	Objective type multiple choice questions (10 questions @ 1 mark)	10
I.	Which is an biotic condition (a) soil (b) water (c) temperature (d) bacteria	
II.	The greenhouse effect A) related to global warming b) UV & IR radiation play important role c) carbon dioxide increase the greenhouse effect d) All of the above	

Q.2	Short answer type questions (4 questions @ 2.5 marks)	10
1	Explain the all 1. EIA 2. Biomass pyramid	
2	A) Food chain B) Food web	
3	A) Ecosystem B) Decomposer	
4	Flow chart of hydrological cycle	

Q.3A	Explain the phosphorous cycle in detail give the flow diagram of cycle.	05
Q.3B	Give the systematic collection and transportation system of solid waste in your city .	05
Q.4A	Give the flow chart for yard wastes.	05
Q.4B	Discuss the structure and function of ecosystem	05
Q.5A	Submit your suggestion how you can reduce the solid waste.	05

JK Lakshmipat University Jaipur

INSTITUTE OF ENGINEERING AND TECHNOLOGY

Mid Term Examination-I, August 2016

B. Tech. in Civil .Engineering, Semester VI

Roll No.....

Course Code: 621 Course Name: Hazardous solid waste Time: 1.5 hours Max. Marks: 40

Instructions to students:

1. Do not write anything other than your roll number on question paper.
2. Assume suitable data wherever required and mention it clearly.
3. Writing appropriate units, nomenclature, and drawing neat sketches/ schematics/ flow chart wherever, required are an integral part of the answer.

Q.1A	Objective type multiple choice questions (5 questions @ 1 mark)	05
i.	Which of the following is biotic 1. Human 2. Organic substances 3. Consumers 4. None	
ii.	Ecosystem is define as 1. interaction of living and nonliving organism 2. interaction between living and living organism 3. both a & b 4. None	
iii.	Which of the following is characteristic of hazardous waste? 1. corrosivity 2. More reactive 3. Hazardous impact on environment . 4. All of the above	
iv.	Food chain and food web are define as 1. the relation between producer and consumer 2. the relation between producer and sun 3. the relation between primary consumer and producer 4. All of the above.	
v.	Define the ECOLOGY term with suitable example	
Q.1B	Short answer type questions (2 questions @ 2.5 marks)	05
i.	Draw the flow chart of food web with suitable example	
ii.	Write the important five characteristic of hazardous solid waste.	
Q.2A	Discuss the Sulphur cycle of ecosystem.	05
Q.2B	Explain the mechanism of the bacterial transformation of MSW.	05
Q.3A	Draw and discuss the energy and bio mass pyramid of ecosystem	05
Q.3B	What is biogeochemical cycle and discuss the oxygen role in ecosystem with important chemical reaction. OR	05
Q.3B	Explain the structure and function of any ecosystem	05

Course code	Course Title	Teaching Scheme			
		L	T	P	Credits
CE 622 (Elective II)	EIA and Environmental Auditing	3	1	0	4

Evaluation Scheme (Theory)						Evaluation Scheme (Practical)				
Mid Term Test - I	Mid Term Test - II	End Term Test	Class Participation	Additional Continuous Evaluation*	Total Marks	Mid Term Test - I	End Term Test	Class Participation	Additional Continuous Evaluation *	Total Marks
20	20	40	10	10	100	-	-	-	-	-

*Additional Continuous Evaluation: Quizzes/Assignments/Presentations/Practical Records/Mock Interviews/others

Course Syllabi (Theory):

Introduction: Environmental Assessment process, objectives of EIA, Terminology, Hierarchy in EIA, Historical Review of EIA, Concepts related to EIA, Basic data collection for EIA

Legislation and Procedures: National Environmental Policy Act and Implementation, EIA legislative requirements and administrative procedures in India/Indian States, EIA notification 2006

Techniques and Methodology: Description of the environmental setting, Methods of Impact Analysis, Environmental risk assessment, baseline data collection for EIA

Public Participation in environmental decision making, regulatory requirement, techniques, advantages and disadvantages of public participation

Preparation and writing of EIA report

Prediction and Assessment of Impacts on Air, Water, Noise, Biological, Cultural and socio-economic Environment, Mining, blasting

Case studies of EIA for Industries like Oil, Petrochemical, iron and steel, fertilizer, sugar and distillery, projects of road/dams and housing etc.

Environment Management Plan: Planning, selection of appropriate procedures, Introduction to Environmental budget, to minimize environmental Impacts

Environmental Audit: Definition of Environment Audit and its importance for industries. Types of audits, General audit methodology and basic structure of audit. Elements of an audit process and its importance. Concept of 1SO14000

Requirements of Rule 14 for Environmental Audit under Environmental protection Act 1986, Definitions of a.Signatory, b. Consumption Audit, c. Pollution audit, d. Hazardous audit, d. Solid waste audit, e. Disposal audit, f. Cost audit, g. Investment audit, h. Voluntary.

Text Book(s)/ Reference Book(s)

1. Larry W. Canter," Environment Impact Assessment", McGraw-Hill Book Company, New York

2. G.J. Rau and C.D. Weeten, "Environmental Impact Analysis Hand book, McGraw Hill, 1980.

3. Vijay Kulkarni and T V Ramchandra. “Environmental management” Capital Publishing Co

4. Mhaskar A.K., “Environmental Audit" Enviro Media Publications.

5. S.K. Dhameja, "Environmental Engineering and Management" S.K. Kalaria and Sons Publishers.

Employability skill activities

Environmental Impact Assessment Format for Irrigation Projects

Name of Enumerator_____Tel._____signiture_____

I. House Hold Interview

A. General

1. Project Name_____
2. Project Tittle_____
3. Project Year_____
4. Name of the River_____
5. Project Location_____

Region___
Zone____
PA _____
Coordinate N_____
E_____

Some physical data of the irrigation site

Temperature Min_____Max_____
Altitude_____
Annual Rain Fall_____
Major soil type_____
Land Capability_____
Land Suitably_____

B. Household Status

1. Respondent's ID and Family Size

Sex	Age	Family Size			ID Number
		M	F	T	

2. Land Use Status in Hectare

Cultivable	None Cultivable	Forest Land	Marginal	Irrigable	Non Irrigable	Pasture	Total

3. Socio Economic Indications

Number of Livestock? _____
Type of Grazing you are using? _____
For how many months in a year you are using open grazing? _____
What are your most income sources? _____
Percent of your income covered from the irrigation site? _____
Percent of communal land you are using for grazing? _____

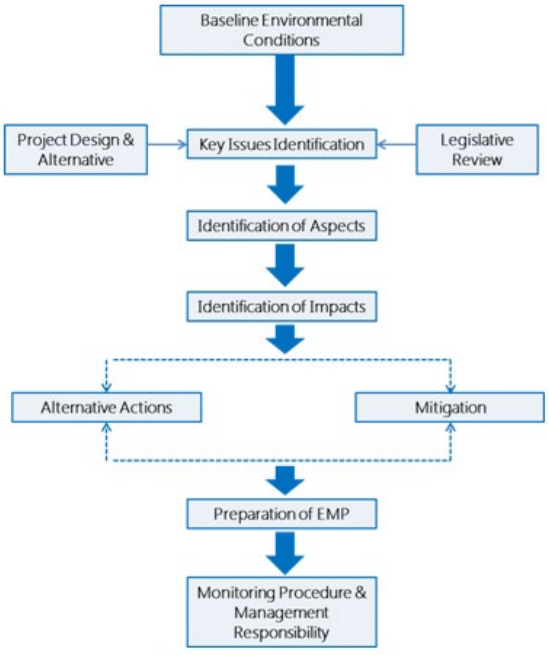

Figure 2: Approach adapted to EIA Study

Phase 2 of the EIA process:

The Full EIA study

With a few additions, the basic outline of the preliminary assessment is the template for the steps involved in a full EIA study:

1. Background (Development objective, list of activities)
2. Description of the baseline situation
3. Evaluation of potential environmental impacts
4. Mitigation & monitoring
5. Recommended Findings

Basic steps of the full EIA study

- Scope
- Evaluate baseline situation
- Identify & choose alternatives
- Identify and characterize potential impacts of proposed activity and each alternative
- Compare alternatives
- Develop mitigation and monitoring

Communicate & Document throughout

1. ENVIRONMENTAL AUDITING MODULE

1.1 Definition

Environmental auditing is an important management tool comprising a systematic, documented, periodic and objective evaluation/assessment of how well the management systems are performing with the aim of Prevention of over uses of resources and reduction in generation of wastes; ƒ Assessment of compliance of regulatory requirements . Revealing the areas of deviation from management's environment policy; and Identification of areas where improvement is required.

1.2 Objective

End-to-end environmental survey to observe the performance of the following facilities:

- Storage of feedstock/raw material and chemicals used in the process of manufacture
- Supply, storage, treatment and consumption of water by the industry
- Mass balance of water and wastewater
- Process of manufacture

DATA MINING &DATA WAREHOUSING

Course Code	**:**	**CSE 727 (Elective III/IV/V/VI/VII)**
Course Title	**:**	**Data Mining &Data Warehousing**
Course Credits	**:**	**4**
Total Hours Per Week (L+T+P)	**:**	**3 + 0 + 0**

Course Syllabi (Theory):

- Overview, Motivation(for Data Mining),Data Mining-Definition & Functionalities, Data Processing, Form of Data Preprocessing, Data Cleaning: Missing Values, Noisy Data,(Binning, Clustering, Regression, Computer and Human inspection),Inconsistent Data, Data Integration and Transformation. **Data Reduction**:-Data Cube Aggregation, Dimensionality reduction, Data Compression, Numerosity Reduction, Clustering, Discretization and Concept hierarchy generation.
- **Concept Description**:- Definition, Data Generalization, Analytical Characterization, Analysis of attribute relevance, Mining Class comparisions, Statistical measures in large Databases. Measuring Central Tendency, Measuring Dispersion of Data, Graph Displays of Basic Statistical class Description, Mining Association Rules in Large Databases, Association rule mining, mining Single-Dimensional Boolean Association rules from Transactional Databases– Apriori Algorithm, Mining Multilevel Association rules from Transaction Databases and Mining Multi-Dimensional Association rules from Relational Databases.
- **Classification and Predictions**:
  What is Classification & Prediction, Issues regarding Classification and prediction, Decision tree, Bayesian Classification, Classification by Back propagation, Multilayer feed-forward Neural Network, Back propagation Algorithm, Classification methods Knearest neighbor classifiers, Genetic Algorithm.

- **Cluster Analysis**:
  Data types in cluster analysis, Categories of clustering methods, Partitioning methods. Hierarchical Clustering- CURE and Chameleon, Density Based Methods-DBSCAN, OPTICS, Grid Based Methods- STING, CLIQUE, Model Based Method –Statistical Approach, Neural Network approach, Outlier Analysis

- **Data Warehousing**: Overview, Definition, Delivery Process, Difference between Database System and Data Warehouse, Multi Dimensional Data Model, Data Cubes, Stars, Snow Flakes, Fact Constellations, Concept hierarchy, Process Architecture, 3 Tier Architecture, Data Marting.

- Aggregation, Historical information, Query Facility, OLAP function and Tools. OLAP Servers, ROLAP, MOLAP, HOLAP, Data Mining interface, Security, Backup and Recovery, Tuning Data Warehouse, Testing Data Warehouse.

Evaluation Scheme (Theory):

EC No.	Evaluation Component	Duration	Marks (100) (Weightage %)*
1.	Mid Term Test-I	1 hour	20
2.	Mid Term Test-II	1 hour	20
3.	End Term Test	3 hour	40
4.	Class Participation	Day to day	10
5.	Additional continuous Evaluation (Quizzes, Assignments, Presentations, and others)	30 min.	10

Text Books & Reference:

1. M.H.Dunham,"DataMining:Introductory and Advanced Topics" Pearson Education
2. Jiawei Han, MichelineKamber, "Data Mining Concepts & Techniques" Elsevier
3. Sam Anahory, Dennis Murray, "Data Warehousing in the Real World : A Practical Guide for Building Decision Support Systems, 1/e " Pearson Education
4. Mallach,"Data Warehousing System",McGraw –Hill

Course Code	**:**	**CSE735(Elective III/IV/V/VI/VII)**
Course Title	**:**	**Computer Project**
Course Credits	**:**	**4**
Total Hours Per Week (L+T+P)	**:**	**3 + 0 + 0**

Course Syllabi

The objective of the project is to enable the students to work in a project of latest topic / research area / industrial applications. Each project student shall have a guide who is a faculty member.During the semester the students are expected to do literature survey, formulate the problem and form a methodology of arriving at the solution of the problem. The students are expected to complete the project and submit a full-fledged report comprising of the complete system developed along with implementation and test results. The departmental committee shall examine the students and award credits.

Evaluation Scheme (Theory):

EC No.	Evaluation Component	Duration	Marks (100) (Weightage %)*
1.	Mid Term Test-I	1 hour	20
2.	Mid Term Test-II	1 hour	20
3.	End Term Test	3 hour	40
4.	Class Participation	Day to day	10
5.	Additional continuous Evaluation (Quizzes, Assignments, Presentations, and others)	30 min.	10

Session 2015-16

Department of Mechanical Engineering

Course : Dynamics of Machines

Code: ME 507

Course code	Course Title	Teaching Scheme			
		L	T	P	Credits
ME 507	Dynamics of machines	3	0	2	4

Evaluation Scheme (Theory)					Evaluation Scheme (Practical)			
Mid Term Test - I	Mid Term Test - II	End Term Test	Class Participation/ Additional Continuous Evaluation*	Total Marks**	Mid Term Test - I	End Term Test	Class Participation/ Additional Continuous Evaluation*	Total Marks**
20	20	50	10	100	20	50	30	100

*Additional Continuous Evaluation: Quizzes/Assignments/Presentations/Practical Records/Mock Interviews/others

**The ratio of weightage between Theory and Practical content will be 60%: 40%

Course Syllabi (Theory):

- Types of cams and followers, various motions of the follower, Construction of cam profiles, Analysis for velocities and accelerations of tangent and circular arc cams with roller and flat –faced followers.
- Open and crossed belt drives, velocity ratio, slip, material for belts, crowning of pulleys, law of belting, types of pulleys, length of belts, ratio of tensions, centrifugal tension, power transmitted by belts and ropes, initial tension, creep, chain drive, chain length, classification of chains.
- Gyroscope, Gyroscopic couple and its effect on craft, naval ships during steering, pinching and rolling, Stability of an automobile (2-wheeers), Introduction, open and closed loop control, terms related to automatic control, error detector, actuator, amplification, transducers, lag in responses, damping, block diagrams, system with viscous damped output, transfer functions, relationship between open –loop and closed loop transfer function.
- Types of gears, terminology, condition for correct gearing, cyclical and involutes profiles of gear teeth, pressure angle, path of contact, arc of contact, Interference, undercutting, minimum number of teeth, number of pairs of teeth in contact, helical, spiral, worm and worm gear, bevel gear. Gear trains; simple, compound, reverted, and epicyclical, Solution of gear trains, sun and planet gear, bevel epicyclical gear, compound epicyclical gear, preselective gear box, differential of automobile, torque in gear taints.
- Types of brakes, friction brakes, external shoe brakes, band brakes, band and block brakes, internal expanding shoe brake, dynamometers; absorption, and tensional. Types of governors; watt, Porter, Proell, spring loaded centrifugal, Inertia,, Sensitiveness, Stability, Isochronism's, Hunting, Effort and power of governor, controlling force, Static and dynamic balancing of rotating parts, balancing of I. C. Engines, balancing of multi-cylinder engine; V-engines and radial engines, balancing of machines.

List of Experiments:

Expt. No.	Name of the Experiment	Area of Application
1.	Spring Mass System	• *It is used as vibration absorber*
2.	Spring Mass Damper System	• *This application calculates the optimum spring and damping constant of a tuned-mass damper that minimizes the vibration of the system.*
3.	Critical Speed of Shaft or Whirling of Shaft	• *The Whirling vibration application is able to check the shaft line for vibrations due to the rotation of the shaft line and the hydrodynamic effects of the propeller*
4.	Spring Controlled Governor	• *It is a device used to measure and regulate the speed of a machine, such as an engine*
5.	Balancing Of Rotating Masses	• *It is important to avoid vibration in heavy industrial machines such as gas turbines and electric generators*
6.	Journal Bearing Test Rig	• *Used where the bearing speed is tending to 3000rpm and above* • *Internal Combustion Engines, centrifugal pumps, Turbine shafts of most jet engines*
7.	Gyroscope	• *Used in in the Hubble Telescope* • *inside the steel hull of a submerged submarine*
8.	I. To study the various types of link, and pair mechanism. II. To study the inversions of four bar mechanism.	• *Coupling rod of a locomotive* • *Crank and slotted lever quick return motion mechanism* • *Whitworth quick return motion mechanism, etc..*
9.	To study various types of cam and follower arrangements	• *used for operating inlet and exhaust valve of I C engine* • *used in feed mechanism of automatic lathe Machine*

List of students session 2013-2017		
Sr. No	**Roll No**	**Name**
1	2012BTechME037	Yugesh Sah
2	2013BTechME002	Ajay Singh
3	2013BTechME004	Ashwani Kumar
4	2013BTechME005	Chitransh Mewara
5	2013BTechME006	Devansh Lalwani
6	2013BTechME007	Dharmendra Kumar Chawda
7	2013BTechME008	Diptanshu Keshote
8	2013BTechME009	Gaurav Champawat
9	2013BTechME010	Hardik Gehlot
10	2013BTechME011	Hardik Sharma

11	2013BTechME012	Harsh Vardhan Singh
12	2013BTechME013	Harshal Taneja
13	2013BTechME015	Kartike Sharma
14	2013BTechME016	Kshitiz Sharma
15	2013BTechME017	Maaz Ali Khan
16	2013BTechME018	Maheshwar Singh Solanki
17	2013BTechME019	Manish Lour
18	2013BTechME021	Naorem Devendrajit Singh
19	2013BTechME022	Nihal Gupta
20	2013BTechME023	Nikhil Maharshi
21	2013BTechME025	Parth Vijay
22	2013BTechME026	Peeyush Kumawat
23	2013BTechME027	Pramit Kumar Munshi
24	2013BTechME028	Pranjal Gupta
25	2013BTechME029	Prasant
26	2013BTechME030	Prashant Dixit
27	2013BTechME033	Rajesh Kumar Sah
28	2013BTechME035	Sandeep Kumar Khatik
29	2013BTechME036	Sanyam Kumar Jain
30	2013BTechME038	Shilp Kakra
31	2013BTechME039	Shubham Gupta
32	2013BTechME041	Sourabh Tailor
33	2013BTechME042	Swapnil Badgaiyan
34	2013BTechME045	Vaibhav Vinod Karwa
35	2013BTechME046	Vikram Choudhary
36	2013BTechME050	Brajesh Rohilla
37	2013BTechME051	Akshay Lath
38	2014BTechME151	Abhijeet Singh Shekhawat
39	2012BTechME028	Sandeep Chawara

ECE 604 Electronic Circuit Design

Course code	Course Title	Teaching Scheme				
		L	T	P	S	Credits
ECE 604	Electronic Circuit Design	3	0	2	0	4
Batch : 2013-17						

Course Objectives: The course has objective to impart skills on designing electronic circuits and models for practical applications using the domain knowledge gained in previous semesters.

Learning Outcomes:

On successful completion of this course, the students should be able to:

1. Design and implement a complete project using monolithic chips.
2. Use programming/simulation tools to develop model for projects.
3. Analyze of techno commercial benefits of the project.

Syllabus:

Several objectives are implicit to an engineering analysis of an integrated circuit proposed for design and ultimate monolithic fabrication.

- First, the analysis must be analytically insightful; that is, it must inspire a fundamental understanding of the electrical dynamics implicit to the network undergoing investigation.
- Second, the understanding that accrues from engineering analysis must forge innovative new network topologies or, at a minimum, optimization guidelines for existent networks that reinforce circuit attributes and circumvent serious circuit performance limitations.
- Third, analysis must reveal parametric sensitivities that impact circuit reliability and manufacturing reproducibility.
- An analysis that achieves the foregoing objectives invariably mandates the use of approximate models of devices embedded in the network undergoing study. But the understanding that accrues from computationally efficient, albeit approximate, manual analyses pave the way toward efficient and meaningful computer-aided investigations of the actual circuits proposed for design.
- Such understanding, complemented by the technical illumination afforded by high order network simulations, is a prerequisite to the reliable, reproducible, and cost effective design of high performance integrated circuits.

Course Syllabi (Practical):

Activities Related to Skill Development and Employability:

Workshops on Mentor Graphics Tools and setup of lab with purchase of Mentor Graphics Software for use of students.

Course code	Course Title	Teaching Scheme			
		L	T	P	Credits
ECE701	Antenna & Wave Propagation	3	0	2	4

Evaluation Scheme (Theory)						Evaluation Scheme (Practical)				
Mid Term Test - I	Mid Term Test - II	End Term Test	Class Participation	Additional Continuous Evaluation*	Total Marks**	Mid Term Test - I	End Term Test	Class Participation	Additional Continuous Evaluation *	Total Marks**
20	20	40	10	10	100	20	40	15	25	100

*Additional Continuous Evaluation: Quizzes/Assignments/Presentations/Practical Records/Mock Interviews/others

**The ratio of weightage between Theory and Practical content will be 60%: 40%

Course Syllabi (Theory):

- **Electromagnetic Radiation:** Radiation from a current element in free space, Quarter and half wave antenna.
- **Fundamentals of Antennas:** Patterns, Beam area, Radiation intensity, Gain, Beam width & Directivity, Efficiency, Polarization, Effective length & aperture, Antenna temperature, Bandwidth, Impedance, Reciprocity Theorem
- **Linear wire antennas and other basic Radiators:** Effect of ground on antennas**,** Resonant & non-resonant antennas, Long wire, Loop, Helical, Horn, Slot, Patch(Microstrip), Surface wave & Leaky wave-antennas
- **Antenna Arrays:** Two-element array, N-element linear arrays, Broadside, end fire, collinear & combinational arrays, multiplication of patterns, binomial arrays, Long-wire arrays, Horn and slot arrays, Phased arrays
- **Reflector antennas and Lens antennas:** Focusing and collimation, Feed radiators, Plane, Corner, Parabolic and Cassegrain-reflectors, Real dielectric and artificial dielectric lenses, Delay lens, E-plane & H-plane Metal plate lens, Luneberg lens
- **Broadband and Frequency independent Antennas:** Broadband principle, Biconical antennas, Folded dipoles, Superturnstile antenna, Frequency independent(log periodic) antenna
- **Radio Wave propagation:** Mechanism, Reflection, refraction, interference and diffraction of radio waves, Ground, Space and Sky wave propagation

- **Antenna Measurements:** Basic concepts, Sources of errors, measurement ranges, measurement of different antenna parameters.

Course Syllabi (Practical):

1. Measurement of antenna characteristics: Radiation Pattern on polar plots, Beam width and Gain of main lobe for the following types of antennas.
    - Half wave and quarter wave dipole
    - Folded dipole
    - Yagi Uda
    - Hertz Antenna
    - End fire array and broad side array
    - Helix antenna
    - Paraboloid reflector antenna
    - Loop antenna
    - Ground plane antenna
    - Log periodic antenna
    - Rhombus antenna
    - Slot antenna
2. Demonstration of modeling of wire antenna using appropriate design software.
3. Simulation of antenna arrays using appropriate software.
4. Design and testing of microstrip rectangular patch antenna using appropriate software.
5. Investigate the transmission characteristics of the link and measure the gain of the microstrip patch antennas. Draw the antenna radiation diagram.
6. Radar Trainer: Working of Doppler radar, velocity of moving object, time and frequency measurement and other applications.
7. To establish analog/digital communication link and transmit & receive three signals (audio, video, tone) simultaneously using Satellite Communication Trainer.
8. Antenna characteristics using anechoic chamber.

Text Book(s)

1. Kraus & Mahefka, “Antenna and Wave Propagation”, WILEY India.
2. C. A. Balanis, “Antenna and Wave Propagation”, WILEY India.

Reference Book(s)

1. GSN Raju, “Antenna and Wave Propagation”, Pearson India.
2. R L Yadava, “Antenna and Wave Propagation”, PHI.

3. Collin R., “Antennas and Radiowave Propagation”, McGraw Hill.

Activities Related to Skill Development and Employability

1. Quizzes/Assignments/Presentations/Practical Records/Mock Interviews/others were given to students.
2. Characterization of Linear wire antennas were analyzed in the Lab.
3. Design simulations were performed on CST Microwave Studio.
4. Assignments were given on topics such as Reflection, refraction, interference and diffraction of radio waves, Ground, Space and Sky wave propagation etc.
5. Students implemented projects on antennas using CST Microwave Studio

Course code	Course Title	Teaching Scheme			
		L	T	P	Credits
ECE721	**Wireless Communication**	**3**	**0**	**0**	**3**

Evaluation Scheme (Theory)					
Mid Term Test - I	**Mid Term Test - II**	**End Term Test**	**Class Participation**	**Additional Continuous Evaluation***	**Total Marks***
20	20	40	10	10	100

*Additional Continuous Evaluation: Quizzes/Assignments/Presentations/Practical Records/Mock Interviews/others

Syllabus (Theory)

- Overview, history and evolution of Wireless communication systems, 2G cellular networks, 2.5G, 3G systems, WLANS /PANS.
- Frequency reuse, Channel assignment, handoff, interference and system capacity, Large Scale propagation & models, Small scale fading and multipath.
- Overview of modulation techniques and their performance in fading and multipath channels, Review of Spread Spectrum techniques and performance in fading channels, Survey of equalization techniques and Equalizers, Polarization frequency, time and space diversity.
- FDMA, TDMA, CDMA and Packet Radio, RF system design and link analysis, Overview of the GSM and CDMA cellular systems.
- Wireless LAN: 802.11x standards and Hyper-LANs, DECT & PACS, Bluetooth, Multicarrier modulations, OFDMA and security issues.

Text Book(s)

1. Wireless Communication Principles and Practice, Theodore S. Rappaport, Second Edition, Pearson Education, 2002.
2. Mobile Communication, Jochen H. Schiller, Pearson Education., 2000.

Reference Book(s)

1. Digital Communications, Bernard Sklar, 2nd Edition, Pearson Education, 2001
2. Mobile Cellular Telecommunications, Lee, 2nd Edition, McGraw Hill, 1995.

Activities Related to Skill Development and Employability

1. AWGN and Faded Channel models were understood and analyzed through Lab simulations on MATLAB.
2. Frequency reuse, Channel assignment, handoff problems were solved.
3. Lab simulations were conducted on NS2.
4. Assignments were given on topics like Frequency reuse, Channel assignment, handoff, interference and system capacity, Large Scale propagation & models, Small scale fading and multipath.
5. Students implemented projects.

Course code	Course Title	Teaching Scheme			
		L	T	P	Credits
ECE723	Optical Fiber Communication	3	0	0	3

Evaluation Scheme (Theory)					
Mid Term Test - I	Mid Term Test - II	End Term Test	Class Participation	Additional Continuous Evaluation*	Total Marks*
20	20	40	10	10	100

*Additional Continuous Evaluation: Quizzes/Assignments/Presentations/Practical Records/Mock Interviews/others

Syllabus (Theory)

- Introduction to Optical Communication- Basic optical laws and definitions, Principles of light propagation in fibers, Ray theory, Optical fiber modes and configurations, Step index and graded index fibers, Monomode and multimode fibers, Fiber materials, fiber fabrication, Fiber optic cables. Attenuation, signal distortion in optical fibers, Dispersion-intra modal & inter modal, Dispersion shifted and flattened fiber.
- Optical Sources- LED's- Structure, Materials, Characteristics, Modulation, Power & efficiency, Laser Diodes - Basic concept, Hetro Structure, properties and modulation.
- Optical Detectors - PIN and Avalanche photo diodes, photo detector noise, detector response time, Avalanche multiplication noise. Photo diode materials. Fundamental of Optical Receiver Operation.
- Optical Fiber Communication Systems- Source to fiber coupling, fiber to fiber joints, fiber splicing, fiber connectors. Principal components. Link design calculation, Applications, Wavelength division multiplexing.
- Optical Fiber Measurements- Measurements of Fiber attenuation, Dispersion, refractive index profile, NA & diameter

Text Book(s)

1. Keiser Gerd, "Optical Fiber Communications", Tata McGraw-Hill, Fourth edition 2008.
2. John M. Senior, "Optical Fiber Communication: Principle and Practice", Pearson.

Reference Book(s)

1. Ghatak A.K. and Thyagarajan, "Optical electronics", Cambridge University Press 1991.
2. Gowar J.,"Optical Communication Systems', PHI, second edition, 1993.
3. Khare R.P, "Fiber Optics and Optoelectronics", Oxford University Press 2004.

Activities Related to Skill Development and Employability

1. Characterization of optical fibre step index and graded index fibres, fibre classification, sources, photodetectors, splices, etc., were analyzed using CAD/OptiSim.
2. Design simulations were performed on CAD/OptiSim.
3. Assignments were given on topics such as Measurements of Fiber attenuation, Dispersion, refractive index profile, NA and V number.
4. Students implemented projects using CAD/OptiSim.

ECE 726 Verilog Hardware Description Language

Course code	Course Title	Teaching Scheme			
		L	T	P	Credits
ECE726	Verilog Hardware Description Language	3	0	0	4
Batch	**2012-2016** **ECE**				

Course Objectives: The course aims to help students to design Digital Systems using VHDL programs and implement these designs on FPGA boards.

Learning Outcomes: After successful completion of the course the students will be able to

(1) Write VHDL codes for logic building blocks and design combinational circuits using structural or data flow models.
(2) Design Counters and Shift registers using flipflops.
(3) Model sequential circuits using state machines (Mealy and Moore)
(4) Design digital systems using Multiplexers, Memory bLocks and Registers.
(5) Case study of real-life applications of Digital Systems and propose new project ideas.

Syllabus:

- Introduction: Fundamental & history of various hardware description languages, Design flow of ASICs and standard logic circuits using software.
- Combinational Circuits Building Blocks: Multiplexer, Decoders, encoders, Code Converters, VHDL Code for Combinational Circuits.
- Sequential Circuits: VHDL code for Flip-Flops, shift registers, counters.
- Synchronous / Asynchronous Sequential Circuits: Mealy & Moore type FSMs, VHDL Code for Mealy & Moore Machines, VHDL Codes for Serial Adder, Vending Machine.
- Digital System Design: Building Block circuits, Memory organization, SRAM, Design examples of divider, Multiplier, Shifting & Sorting Operations, Clock Synchronization, CPU organization and design concepts.

Activities Related to Skill Development and Employability

Interactions with Scientist for ASIC design from CSIR-CEERI Pilani.

Course code	Course Title	Teaching Scheme			
		L	T	P	Credits
EE604	Non-Conventional Energy Sources	3	1	0	4

Evaluation Scheme (Theory)						Evaluation Scheme (Practical)				
Mid Term Test - I	Mid Term Test - II	End Term Test	Class Participation	Additional Continuous Evaluation*	Total Marks	Mid Term Test - I	End Term Test	Class Participation	Additional Continuous Evaluation *	Total Marks
20	20	40	10	10	100	-	-	-	-	-

*Additional Continuous Evaluation: Quizzes/Assignments/Presentations/Practical Records/Mock Interviews/others

Syllabus (Theory)

UNIT I

INTRODUCTION: Various non-conventional energy resources- Introduction, availability, classification, relative merits and demerits.

SOLAR CELLS: Theory of solar cells, solar cell materials, solar cell array, solar cell power plant, limitations.

UNIT-II

SOLAR THERMAL ENERGY: Solar radiation, flat plate collectors and their materials, applications and performance, focusing of collectors and their materials, applications and performance; solar thermal power plants, thermal energy storage for solar heating and cooling, limitations.

UNIT-III

Geothermal Energy: Resources of geothermal energy, thermodynamics of geo-thermal energy conversion-electrical conversion, non-electrical conversion, environmental considerations.

Magneto-hydrodynamics (MHD): Principle of working of MHD Power plant, performance and limitations.

Fuel Cells: Principle of working of various types of fuel cells and their working, performance and limitations.

UNIT-IV

THERMO-ELECTRICAL AND THERMIONIC CONVERSIONS: Principle of working, performance and limitations.

WIND ENERGY: Wind power and its sources, site selection, criterion, momentum theory, classification of rotors, concentrations and augments, wind characteristics, Performance and limitations of energy conversion systems

UNIT-V

BIO-MASS: Availability of bio-mass and its conversion theory.

OCEAN THERMAL ENERGY CONVERSION (OTEC): Availability, theory and working principle, performance and limitations.

WAVE AND TIDAL WAVE: Principle of working, performance and limitations. Waste Recycling Plants.

Text/References Books:

1. Raja et al, “Introduction to Non-Conventional Energy Resources” Scitech Publications.

2. John Twideu and Tony Weir, “Renewal Energy Resources” BSP Publications, 2006.

3. M.V.R. Koteswara Rao, “Energy Resources: Conventional & Non-Conventional “, BSP Publications,2006.

4. D.S. Chauhan, “Non-conventional Energy Resources” New Age International.

5. C.S. Solanki, “Renewal Energy Technologies: A Practical Guide for Beginners” PHI Learning.

Activities Related to Skill Development and Employability

Site Visit:

- Visit of 400 kW solar power plant of JK Lakshmipat University.

Projects:

- Design of single-axis solar tracking for efficiency improvement of solar panel.
- Simulation of effect on efficiency in partial shading and low solar irradiance.

Course code	Course Title	Teaching Scheme			
		L	T	P	Credits
EE621(Elective-II)	Power System Transients	3	0	0	4

Evaluation Scheme (Theory)						Evaluation Scheme (Practical)				
Mid Term Test - I	Mid Term Test - II	End Term Test	Class Participation	Additional Continuous Evaluation*	Total Marks**	Mid Term Test - I	End Term Test	Class Participation	Additional Continuous Evaluation *	Total Marks**
20	20	40	10	10	100	-	-	-	-	-

*Additional Continuous Evaluation: Quizzes/Assignments/Presentations/Practical Records/Mock Interviews/others

**The ratio of weightage between Theory and Practical content will be 60%: 40%

Syllabus (Theory)

UNIT I

SWITCHING TRANSIENTS: Wave terminology, Development of wave quotations, Terminal problems, Lattice diagrams, Origin and Nature of power system transients and surges, Surge parameters of plants, Equivalent Circuit representations. Lumped and distributed circuit transients.

UNIT II

LOAD SWITCHING: Line energization and de -energization transients-Earth and earth wire effects. Current chopping in circuit breakers. Short line fault condition and its relation to circuit breaker duty. Trapped charge effects. Effect of source and source representation in short line fault studies.

UNIT III

LIGHTNING TRANSIENTS AND TRAVELLING WAVES: Lightening phenomenon ,Mechanism of Lightning Discharge Types of Lightning strokes, Harmful effects of lighting, protections against lightning, overhead Ground wires, influence of tower footing resistance and earth resistance, Traveling waves in distributed parameters multiconductor lines, parameters as a function of frequency.

UNIT IV

LIGHTENING ARRESTERS: Types of lightening arresters, Surge absorber, surge diverters, Fourier integral and z transform methods in power system transient.

Text Book(s)

1. M.S.Naidu and V.Kamraju – High Voltage Engineering, Tata McGraw Hill Publishing,Company, New Delhi
2. C.L.Wadhwa,"Electrical Power System", New age international publisher.
3. V.K.Mehta, Rohit Mehta" Principles of Power System", S.Chand Publications
4. Sunil S. Rao – "Switchgear and Protection" Khanna Publications New Delhi

Reference Book(s)

1. B. Ram, D.N. Vishwakarma- Power system protection and switchgear-TMH
2. Juan A. Martinez-Velasco,"Power System Transients: Parameter Determination", CRC Press,2009
3. Rokosh Das Begamudre- EHV AC. Transmission Engineering, Wiley Easter Ltd. New Delhi.

Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development

- **Content with direct bearing on Employability/ Entrepreneurship/ Skill development:** It will equip students with the skills to recognize and solve transient problems in power networks and components. A key jobs area is to isolation coordination and protection, reflecting the revolution that metal oxide surge arresters have caused in the power industry.

Course code	Course Title	Teaching Scheme			
		L	T	P	Credits
EE721 (Elective-III)	Power Quality & Utilization of Electrical Power	3	1	0	4

Evaluation Scheme (Theory)						Evaluation Scheme (Practical)				
Mid Term Test - I	Mid Term Test - II	End Term Test	Class Participation	Additional Continuous Evaluation*	Total Marks	Mid Term Test - I	End Term Test	Class Participation	Additional Continuous Evaluation*	Total Marks
20	20	40	10	10	100	-	-	-	-	-

*Additional Continuous Evaluation: Quizzes/Assignments/Presentations/Practical Records/Mock Interviews/others

Syllabus (Theory)

UNIT I

INTRODUCTION OF POWER QUALITY: Power Quality Definition, Need for Power Quality, Sensitive Loads, Nonlinear Loads, Interconnected Power System, Deregulation, Utilities, End Users, Lawyers. Power Quality.

UNIT II

CHARACTERISTICS & POWER QUALITY STANDARDS: Power Quality Theory, Types of power Quality Problems, Voltage Swells, Long-Duration Over voltages, Under voltages, Interruptions, Transients, Voltage Unbalance, Voltage Fluctuations, Harmonics, Electrical Noise, Sources of Power Quality Problems, Utility Side of the meter, End-User Side of the meter, Effects of Power Quality Problems, Power Quality Problem-Solving Procedures, Power Quality Solutions, Power Quality Standards Organizations, Institute of Electrical & Electronics Engineers (IEEE), American National Standards Institute(ANSI), International Electro technical Commission (IEC), Other International Standards Organizations.

POWER QUALITY SOLUTIONS: Reduce Effects on Sensitive Equipment, Reduce or Eliminate Cause, Reduce or Eliminate Transfer Medium, Install Power Conditioning Equipments, Surge Suppressors, Noise Filters, Isolation Transformers, Line-Voltage Regulators, Motor-Generator Sets, Magnetic Synthesizers, Static VAR Compensators (SVCs), Uninterruptible Power Supply (UPS), Solid-State Switches, Harmonics Solutions, Selection of Appropriate Power Conditioning Equipment, Grounding and Wiring Solutions.

UNIT III

UTILIZATION OF ELECTRICAL POWER

- **Electric Heating:** Advantages of electrical heating, principle of core type and coreless induction furnace, Electric arc heating; direct and indirect arc heating, construction, working and applications of arc furnace, Dielectric heating, applications in various industrial fields,

Infra-red heating and its applications, Microwave heating, Simple design problems of resistance heating element

- **Electric Welding:** Advantages of electric welding, Principle of arc production, electric arc welding, characteristics of arc; carbon arc, metal arc, hydrogen arc welding method of and their applications, comparison between AC and DC arc welding, welding control circuits, welding of aluminum and copper, Introduction to TIG, MIG Welding.
- **Refrigeration and Air Conditioning and Water Coolers:** Principle of air conditioning, vapour pressure, refrigeration cycle, eco-friendly Refrigerants, Description of Electrical circuit used in a) refrigerator, b) air-conditioner, and c) water cooler.

UNIT IV

ELECTRIC TRACTION: Advantages of electric traction, Different systems of electric traction, DC and AC systems, diesel electric system, types of services, urban, sub-urban, and main lines and their speed-time curves Different accessories for track electrification such as overhead capacitor wire, conductor rail system, current collector-pantograph, Factors affecting scheduled speed. Electrical block diagram of an electric locomotive with description of various, equipment and accessories. Types of motors used for electric traction, starting and braking of traction motors, Introduction to EMU and metro railways.

Text Book(s)

1. Barry W. Kennedy: Power Quality Primer, McGraw-Hill
2. G.T. Heydt: Power Quality Stars in a circle Publication, Indiana, 1991.
3. Wadha C L: Generation, Distribution and Utilization of electrical energy - New Age International Ltd.

Reference Book(s)

1. Soni, Gupta, Bhatnagar: Electrical Power System – Dhanpat Rai & Sons.
2. Partab H: Art and Science of Utilization of Electrical Energy, Dhanpat Rai & Sons.
3. E. Openshaw Taylor – Utilisation of Electric Energy – Orient Longman, Pitman Publications.

Activities Related to Skill Development and Employability

Projects:

- Distribution system harmonics reduction as per IEEE-519 standard using passive filters: Simulation study using MATLAB.
- Distribution system harmonics reduction as per IEEE-519 standard using active filters: Simulation study using MATLAB.

- Distribution system voltage regulation using active filters: Simulation study using MATLAB.

ELECTRICAL INSTALLATION, COMMISSIONING & MAINTENANCE

Course Code	**:**	**EE722 (Elective-III/IV/V/VI/VII/VII)**
Course Title	**:**	**Electrical Installation, Commissioning & Maintenance**
Course Credits	**:**	**4**
Total Hours per Week (L+T+P)	**:**	**3+0+0**

Course Syllabi (Theory):

Installation: Study and use of theodolite. Types of heavy electrical equipment, unloading accessories precautions for unloading, installation of small and large machines of both static and rotating type, Installation transformer.

Commissioning: Commissioning procedure, test required before commission of electrical equipment in respect of: Mechanical fixture and alignment, Electrical tests, Initial precautions for starting. Electrical accidents, safety regulation, treatment of shock, fire extinguishers

Earthing: Reasons for earthing, earthing system earth lead and its size, permissible earth resistance for different installation, improvement of earth resistance, double earthing, earth resistance measurement, rules for earthing.

Preventing Maintenance and Environmental Pollution Prevention: Concepts of preventive maintenance, advantages, preventive maintenance schedule for transformer induction motor, transmission line, circuit breaker and underground cable, preventive measures to control environmental pollution results due to production of: smoke gases, flow of waste material and atomic reactions in research stations, plants, elect. & electronic equipment's and accessories.

Testing And Maintenance of Relay And Circuit Breakers: Testing of relays, factory test, commissioning test and preventive periodic maintenance test, testing of circuit breakers, voltage

test, type test, preventive maintenance of circuit breaker. Insulation testing. Electrical accidents, safety regulation, treatment of shock,fire extinguishers

Evaluation Scheme (Theory):

EC No.	Evaluation Component	Duration	Marks (100) (Weightage %)*
1.	Mid Term Test-I	1 hour	20
2.	Mid Term Test-II	1 hour	20
3.	End Term Test	3 hour	40
4.	Class Participation	Day to day	10
5.	Additional continuous Evaluation (Quizzes, Assignments, Presentations, and others)	30 min.	10

Text /Reference Books :

1. Electrical Installation Work(Vth Metric Edition) T.G.Francist E.L.B.S
2. Electrical Installation Maintenance & Fault Location Workbook., T.T.T.I.(W.R) Bhopal
3. A Text Book of Electrical Installation Work Vol.2, R.A.Mee., Macdonald London.
4. Electrical Maintenance & Repairs, P.P. Gupta, DhanpatRai& Sons Pub.
5. Estimating Commissioning And Maintenance of Electrical Equipment, S.Rao, Khanna Pub.
6. Fundamentals of Maintenance of Electrical Equipments, Bhatia, Khanna Pub.

Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development

- **Content with direct bearing on Employability:** Installs and repairs electrical systems, diagnoses malfunctioning apparatus, such as transformers, motors, and lighting fixtures and preventive Maintenance with updated Check sheet.
- **Activities:** How to make preventative maintenance chart for substation, Visit of University Substation.

Journal Publication: Varun Sharma and J.P. Sharma, "Ladder Logic Algorithm for Automatic VendingMachine and Automatic Car Parking System", Journal of Basic and Applied Engineering Research, Volume 1, Number 11, October-December 2014 pp. 70-73. Available on http://www. krishi sanskriti.org/ijbab.php?Id=175.

EHV AC & DC TRANSMISSION

Course Code	**:**	**EE723 (Elective-III/IV/V/VI/VII/VII)**
Course Title	**:**	**EHV AC & DC Transmission**
Course Credits	**:**	**3**
Total Hours per Week (L+T+P)	**:**	**3+0+0**

Course Syllabi (Theory):

Introduction: Constitution of EHV A.C. and d.c. links, kind of d.c. links, limitation and Advantages of a.c. and d.c. transmission, principal application of a.c. and d.c. transmission, trends in EHV a.c. and d.c. transmission power handling capacity.

EHV Components: Extra-long distance lines, voltage profile of loaded and unloaded line along the line, compensation of lines, series and shunt compensation, shunt reactors, tuned power lines. Traveling waves on transmission systems, their shape, attenuation and distortion, effect of junction and termination on propagation of traveling waves. Over-voltages in transmission system: lightning, switching and temporary over-voltages: control of lighting and switching over-voltages. Converter theory and performance equations – Value characteristics, converter circuits, abnormal operation of converter circuits, harmonics and filters.

Control of HVDC systems: Basic principles of control, control implementation, converter firing control system, valve blocking and bypassing, starting, stopping and power flow reversal.

FACTS: Introduction to FACTS controllers, types of FACTS controllers, Brief description of STATCOM, Thyristor controlled series capacitors and unified power flow controller.

Evaluation Scheme (Theory):

EC No.	Evaluation Component	Duration	Marks (100) (Weightage %)*

1.	Mid Term Test-I	1 hour	20
2.	Mid Term Test-II	1 hour	20
3.	End Term Test	3 hour	40
4.	Class Participation	Day to day	10
5.	Additional continuous Evaluation (Quizzes, Assignments, Presentations, and others)	30 min.	10

Text / Reference Books:

1. EHV AC & DC Transmission - Begamudre
2. EHV AC & DC Transmission - S. Rao
3. H.V.D.C. Transmission – P.Kundur, McGraw Hill Pub.
4. I. J. Nagrath & D. P. Kothari – "Modern Power System Analysis",TMH.

Activities Related to Skill Development and Employability

Student has developed projects, related to power system design and analysis. Students has also participated in Industrial visit, Mock interview and power point presentation.

1. **Sample List of Projects.**

S.N.	Title of Projects
1	Production of electricity by the method of road power generation
2	Modeling of 33/11 KV Line & Substation
3	Planning for laying of 33 KV line from 132 KV substation to Educational Building

2. **Industrial Visit**

Industrial Visit on March 14, 2015, 220 KV Grid Sub Station, Mahindra SEZ, Jaipur and students have submitted the case study report.

3. **Mock Interview and Presentation**

Course code	Course Title	Teaching Scheme			
		L	T	P	Credits
EE725 (Elective-III)	Flexible AC Transmission System	3	1	0	4

Evaluation Scheme (Theory)						Evaluation Scheme (Practical)				
Mid Term Test - I	Mid Term Test - II	End Term Test	Class Participation	Additional Continuous Evaluation*	Total Marks**	Mid Term Test - I	End Term Test	Class Participation	Additional Continuous Evaluation*	Total Marks**
20	20	40	10	10	100	-	-	-	-	-

*Additional Continuous Evaluation: Quizzes/Assignments/Presentations/Practical Records/Mock Interviews/others

Syllabus (Theory)

UNIT I

INTRODUCTION TO FACTS: Introduction Problems of AC transmission systems, power flow in parallel paths and meshed system, factors limiting loading capability, stability consideration, Power flow control of an ac transmission line, Basic types of facts controllers. Advantages of FACTS technology, Introduction to power factor control. Transformer connections for 12- pulse, 24 pulse and 48 pulse operations.

UNIT II

STATIC SHUNT COMPENSATORS: Midpoint and end point voltage regulation of transmission line, and stability improvement. Basic operating principle of Static Synchronous Compensators (STATCOM), Comparison between STATCOM and SVC, Static Series Compensators, Concept of series capacitive compensation, voltage and transient stabilities, power oscillation and sub synchronous oscillation damping. Introduction to thyristor switched series capacitor (TSSC), thyristor controlled series capacitor (TCSC), and static synchronous series compensator-operation, characteristics and applications.

UNIT III

STATIC VOLTAGE AND PHASE ANGLE REGULATORS: Voltage and phase angle regulation. Power flow control and improvement of stability by phase angle regulator. Introduction to thyristor controlled voltage and phase angle regulators (TCVR and TCPAR).

UNIT IV

UPFC and IPFC: Unified Power Flow Controller (UPFC), basic operating principles, conventional transmission control capabilities, Comparison of UPFC to series compensators and phase angle regulator, Applications of UPFC, Interline Power Flow Controller (IPFC), basic operating principles and characteristics, Applications of IPFC.

Text Book(s)

1. Flexible ac transmission systems (FACTS) by Y.H. Song, and Allan T. Johns Institution of Electrical Engineers Press, London, 1999.
2. Thyristor - based FACTS controllers for Electrical transmission systems by R .Mohan Mathur and Rajiv K.Varma IEEE press, Wiley Inter science, ISBN no. 0-471-20643-1, 2002.
3. FACTS controllers for transmission and Distribution systems by K.R.Padiyar New Age international Publishers.

Reference Book(s)

1. Concepts and Technology of flexible ac transmission system Hingorani , L.Gyugyi IEEE Press New York, 2000 ISBN –078033 4588.

Activities Related to Skill Development and Employability

Projects:

- Design and simulation of TCVR on MATLAB.
- Design and simulation of TCSC on MATLAB.
- Design and simulation of TCPAR on MATLAB.

Course Name: Advanced PID Control (EE726)	
Hours per Week	**L-T-P: 3-1-0**
Credits	**4**
Students who can take	
Course Objective: This course aims to provide a thorough grounding in the theoretical concepts, technologies and standards related to PID controllers.	
Learning Outcomes: On successful completion of this course, the students should be able to: 1. Select, specify, simulate and design advanced PID control loops. 2. Assess, troubleshoot, improve and document advanced PID control loops. 3. Apply relevant engineering standards to meet technical, safety, regulatory, societal and market needs.	

Syllabus

UNIT I

Introduction: Feedback fundamentals, PID controller, two-degree freedom controller, Issues related to implementation- integral windup, Stability, sensitivity functions, robustness to process variations, requirements and specifications.

UNIT II

PID Stabilization & Controller Design: I, PID stabilization — characterization and computation, ZN & related methods, rule based empirical tuning, pole placement, lambda tuning, algebraic design, optimization methods, robust loop shaping, and frequency response methods. IMC based PID tuning. Design for disturbance rejection.

UNIT III

Robust Performance and Performance Assessment: Modeling uncertainty, performance in the presence of uncertainty, robust pole placement, design for robust performance, PID controller performance assessment.

UNIT IV

Adaptive PID Control: Auto tuning, Adaptive Technique-model based methods-rule based methods, Multimodal based PID Controller design, nonlinear PID Controller design.

Activities Related to Skill Development and Employability

Students work in practical applications like:

1) Sensor specification, calibration and test
2) Control loop design and maintenance
3) Motion control and robotics

Certificates

Preparation for ISA Certified Automation Professional® (CAP®) Certification Program

ISA CAP certification provides a non-biased, third-party, objective assessment and confirmation of an automation professional's skills – specifically, the CAP exam is focused on direction, definition, design, development/application, deployment, documentation, and support of systems, software, and equipment used in control systems, manufacturing information systems, systems integration, and operational consulting. The CAP certification exam reflects the documented knowledge, skills, and abilities needed for competent job performance.

Session 2015-16

Department of Mechanical Engineering

Course : Machining, Machine Tools & Metrology
Code: ME508

Course code	Course Title	Teaching Scheme			
		L	T	P	Credits
ME 508	Machining, Machine Tools and Metrology	3	0	2	4

Evaluation Scheme (Theory)						Evaluation Scheme (Practical)				
Mid Term Test - I	Mid Term Test - II	End Term Test	Class Participation	Additional Continuous Evaluation*	Total Marks	Mid Term Test - I	End Term Test	Class Participation	Additional Continuous Evaluation *	Total Marks
20	20	40	10	10	100	20	40	15	25	100

*Additional Continuous Evaluation: Quizzes/Assignments/Presentations/Practical Records/Mock Interviews/others

**The ratio of weightage between Theory and Practical content will be 60%: 40%

Course Syllabi (Theory):

- **Design of Cutting Tools:** Geometry & design of single point tool, geometry & design of milling cutters, geometry of drills, broachers, Essential steps in design of machine tools, design of machine tool drives, tool structures, slide ways, Guide-ways and automatic lubrications etc.
- **Design of Jigs & Fixtures:** Definition and importance of jigs and fixtures in production, principles of location and clamping, essential requirements of jigs/fixtures, types of jigs and fixtures, drill jigs, jig bushes and their materials, milling, grinding & broaching fixtures.
- **Design of Press Tool:** Design of Press Tool with full details.
- **Metal Cutting & Tool Life:** Basic tool geometry, single point tool nomenclature, chips-various types and their characteristics, mechanism of chip formation, orthogonal and oblique metal cutting, metal cutting theories, relationship of velocities, forces and power consumption. Tailor equation of tool life, tool material and mechanism. Economics of Metal Machining: elements of machining cost, tooling economics, machining, economics and optimization, geometry of twist, drills and power calculation in drills.
- **Multi edged tools:** Broach tools –types, materials and applications, geometry of twist drills, thrust torque and power calculation in drills, form tools-application.
- **Machine tools:** Introduction, constructional features, specialization, operations and devices of basic machine tools such as lathe, shaper, planner, drilling machining, and milling machine, indexing in milling operation, working principles of capstan and turret lathes.
- **Metrology:** Measurement, linear and angular simple measuring instruments, various clampers, screw gauge, sine bar, auto-collimator, comparator- mechanical, electrical, optical, surface finish and its measurements, micro and macro deviation, factors influencing surface finish and evaluation of surface finish.

List of experiments:

Expt. No.	Name of the Experiment	Area of Application
1.	Study of single point cutting tool geometry & grind the tool as per given tool geometry.	• *It is used in manufacturing Industries*
2.	To prepare a job using lathe machine.	• *Exposure to working with machines* • *Hand-on experience*
3.	To prepare a gear using Milling Machine.	• *Exposure to working with machines* • *Hand-on experience*
4.	Study the milling machine, milling cutters, indexing heads and indexing methods.	• *It is used in manufacturing Industries* • *Hand on experience.*
5.	Prepare a hexagonal / octagonal nut using indexing head on milling machine.	• *Students are ready to fabricate fasteners.*
6.	To cut external metric threads & to meet it with the nut	• *Students are ready to fabricate fasteners.*
7.	To prepare the job by eccentric turning on lathe machine.	• *Hand-on experience*
8	To prepare a job on shaper from given MS rod.	• *Hand-on experience*

List of students session 2013-2017		
Sr. No	**Roll No**	**Name**
1	2012BTechME037	Yugesh Sah
2	2013BTechME002	Ajay Singh
3	2013BTechME004	Ashwani Kumar
4	2013BTechME005	Chitransh Mewara
5	2013BTechME006	Devansh Lalwani
6	2013BTechME007	Dharmendra Kumar Chawda
7	2013BTechME008	Diptanshu Keshote
8	2013BTechME009	Gaurav Champawat
9	2013BTechME010	Hardik Gehlot
10	2013BTechME011	Hardik Sharma
11	2013BTechME012	Harsh Vardhan Singh
12	2013BTechME013	Harshal Taneja
13	2013BTechME015	Kartike Sharma
14	2013BTechME016	Kshitiz Sharma
15	2013BTechME017	Maaz Ali Khan
16	2013BTechME018	Maheshwar Singh Solanki
17	2013BTechME019	Manish Lour
18	2013BTechME021	Naorem Devendrajit Singh
19	2013BTechME022	Nihal Gupta
20	2013BTechME023	Nikhil Maharshi
21	2013BTechME025	Parth Vijay
22	2013BTechME026	Peeyush Kumawat
23	2013BTechME027	Pramit Kumar Munshi
24	2013BTechME028	Pranjal Gupta
25	2013BTechME029	Prasant
26	2013BTechME030	Prashant Dixit
27	2013BTechME033	Rajesh Kumar Sah
28	2013BTechME035	Sandeep Kumar Khatik
29	2013BTechME036	Sanyam Kumar Jain
30	2013BTechME038	Shilp Kakra
31	2013BTechME039	Shubham Gupta
32	2013BTechME041	Sourabh Tailor
33	2013BTechME042	Swapnil Badgaiyan
34	2013BTechME045	Vaibhav Vinod Karwa
35	2013BTechME046	Vikram Choudhary
36	2013BTechME050	Brajesh Rohilla
37	2013BTechME051	Akshay Lath
38	2014BTechME151	Abhijeet Singh Shekhawat
39	2012BTechME028	Sandeep Chawara

TOTAL QUALITY MANAGEMENT

Course Code	**:**	**ME724 (Elective-IV/V/VI/VII)**
Course Title	**:**	**Total Quality Management**
Course Credits	**:**	**04**
Total Hours per Week (L+T+P)	**:**	**3+0+0**

Course Syllabi (Theory):

- The meaning of Quality and quality improvement, dimensions of quality, history of quality methodology, quality control, Quality of design and quality of conformance, Quality policy and objectives, Economics of quality. Modeling process quality: Describing variation, frequency distribution, continuous and discrete, probability distributions, pattern of variation, Inferences about process quality: sampling distributions and estimation of process parameters. Analysis of variance, statistical aids in limits and tolerances.
- Statistical Quality Control: Concept of SQC, Chance and assignable causes of variation, statistical basis of control chart, basic principles, choice of control limits, sample size and sampling frequency, analysis of patterns on control charts. The magnificent seven. Control chart for variables,: X-bar and R charts, x-bar and S charts, control chart for individual measurement. Application of variable control charts.
- Control chart for attributes: control chart for fraction non-conforming P-chart, np-chart, c-chart and u-chart. Demerit systems, choice between attribute and variable control chart. SPC for short production runs. Process capability analysis using histogram and probability plot, capability ratios and concept of six sigma.
- Quality Assurance: Concept, advantages, field complaints, quality rating, quality audit, vendor quality rating (VQR), vendor rating (VR), manufacturing planning for quality, Quality function deployment (QFD).
- Acceptance Sampling: Fundamental concepts in acceptance sampling, operating characteristics curve. Acceptance sampling plans, single, double and multiple sampling plans, LTPD, AOQL, AOQ. Introduction to Quality systems like ISO 9000 and ISO 14000

- Design of experiments: Strategy of experimentation; Basic principles, Guidelines for designing experiments. Simple Comparative Experiments: Basic statistical concepts, Sampling and sampling Distribution, Inferences about the Differences in means, randomized designs, Paired comparison
- Designs, Inferences about the Variances of Normal Distributions. Introduction to Taguchi Method of Design of Experiments, Quality loss function, Signal-to- Noise ratio, Orthogonal array experiments.

Evaluation Scheme (Theory):

EC No.	Evaluation Component	Duration	Marks (100) (Weightage %)*
1.	Mid Term Test-I	1 hour	20
2.	Mid Term Test-II	1 hour	20
3.	End Term Test	3 hour	40
4.	Class Participation	Day to day	10
5.	Additional continuous Evaluation (Quizzes, Assignments, Presentations, and others)	30 min.	10

Text Books:

1. Fundamentals of Quality Control and Improvement, Amitava Mitra, 2 Edition, Prentice Hall, 1998
2. Introduction to Statistical Quality Control, Douglas C. Montgomery, 2 Edition, Wiley, 1991.

Reference Books:

1. Quality Planning and Analysis, J.M.Juran and F.M. Gryna, McGraw Hill
2. Quality Control, Dale H. Besterfield, 8 Edition, Pearson/Prentice Hall, 2008.
3. Statistical Quality Control, E. L. Grant and Richard S. Leavenworth, Tata McGraw-Hill, 2000.
4. Design and Analysis of Experiments, 5 Edition, Douglas C. Montgomery, Wiley-India, 2007.

Heat and Mass Transfer

Course Code	**:**	**ME729**
Course Title	**:**	**Heat and Mass Transfer**
Course Credits	**:**	**04**
Total Hours per Week (L+T+P)	**:**	**3+0+0**

Introduction to Heat Transfer Processes: Conduction and radiation, Fourier's law of heat conduction, thermal conductivity, thermal conductivity of solids, liquids and gases, effect of temperature on thermal conductivity, Newton's law of cooling, definition of overall heat transfer coefficient, general parameters influence the value of heat transfer coefficient. Conduction: General 3-Dimensoinal conduction equation in Cartesian, cylindrical and spherical coordinates, different kinds of boundary conditions, nature of differential equations, one dimensional heat conduction with and without heat generation, electrical analogy, heat conduction through composite walls, critical thickness of insulation.

Heat Transfer from Finned Surfaces: fin efficiency and effectiveness, two dimensional steady state heat conduction using analytical and numerical methods, periodic heat conduction. Convection: Review of Navier–Stokes and energy equation, hydrodynamic and thermal boundary layers, laminar boundary layer equations, forced convection appropriate non dimensional members, effect of prandtl number, empirical relations for flow over a flat plate and flow through pipes.

Natural Convection: Dimensional analysis, grashoff number, boundary layers in external flows (flow over a flat plate only), boundary layer equations and their solutions, heat transfer correlations. Heat Transfer with Change of Phase: Nature of vaporization phenomena, different regimes of boiling heat transfer, correlations for saturated liquid vaporization, condensation on flat plates, correlation of experimental results, drop wise condensation.

Heat Exchanger: Different types of heat exchangers, arithmetic and logarithmic mean temperature differences, heat transfer coefficient for parallel, counter and cross flow type heat exchanger, effectiveness of heat exchanger, N.T.U. method, fouling factor, constructional and manufacturing aspects of Heat Exchangers.

Thermal Radiation: Plank distribution law, Kirchhoff's law, radiation properties, diffuse radiations, Lambert's law, radiation intensity, heat exchange between two black bodies heat exchanger between gray bodies, shape factor, electrical analogy, reradiating surfaces heat transfer in presence of reradiating surfaces.

Sl. No.	Roll No.	Name
1	2012BTechME001	Abhishek Chakravarty
2	2012BTechME002	Akash Kumar
3	2012BTechME003	Amit Goyal
4	2012BTechME004	Amit Khushal Gandhi
5	2012BTechME005	Anand Ojha
6	2012BTechME008	Bharat Sharma
7	2012BTechME010	Brijesh Kumar Pandey
8	2012BTechME011	Chandra Prakash Shukla
9	2012BTechME012	Chirag H. Deora
10	2012BTechME013	Deepak Khandelwal
11	2012BTechME014	Deepak Sharma

12	2012BTechME015	Devendra Nath Yadav
13	2012BTechME016	Jatin Manghnani
14	2012BTechME017	Manjot Singh
15	2012BTechME018	Mayank Verma
16	2012BTechME020	Mohit Gupta
17	2012BTechME022	Nirbhay Raj
18	2012BTechME023	Prateek Kataria
19	2012BTechME026	Rahul Kumar Singh
20	2012BTechME027	Rahul Ranjan
21	2012BTechME029	Satyam
22	2012BTechME030	Shivam Dixit
23	2012BTechME031	Shivam Kant
24	2012BTechME032	Shubham Khuntamar
25	2012BTechME033	Siva Sambhav Mandava
26	2012BTechME034	Sumit
27	2012BTechME035	Ujjwal Prakash

Assignment 1, January, 2016

Heat Transfer

B. Tech. in Mechanical Engineering

JK Lakshmipat University Jaipur

Institute of Engineering and Technology

1. A thin electrical heater dissipating 4000 W/m^2 is sandwiched between two 25-mm-thick plates whose exposed surfaces experience convection with a fluid for which T_∞= 20°C and h =400 W/m^2 K . The thermo-physical properties of the plate material are ρ = 2500 kg/m3, c= 700 J/kg and k= 5 W/m K.
    a. On T- x coordinates, sketch the steady-state temperature distribution for $-L \le x \le +L$. Calculate values of the temperatures at the surfaces, x= ± L, and the midpoint, x=0. Label this distribution as Case 1, and explain its salient features.
    b. Consider conditions for which there is a loss of coolant and existence of a nearly adiabatic condition on the x=+L surface. On the T- x coordinates used for part (a), sketch the corresponding steady-state temperature distribution and indicate the temperatures at x= 0, ± L. Label the distribution as Case 2, and explain its key features.

2. The roof of an electrically heated home is 6 m long, 8 m wide, and 0.25 m thick, and is made of a flat layer of concrete whose thermal conductivity is k=0.8 W/m· °C (Fig. 1). The temperatures of the inner and the outer surfaces of the roof one night are measured to be 15°C and 4°C, respectively, for a period of 10 hours. Determine (a) the rate of heat loss through the roof that night and (b) the cost of that heat loss to the home owner if the cost of electricity is Rs. 5 /kWh.

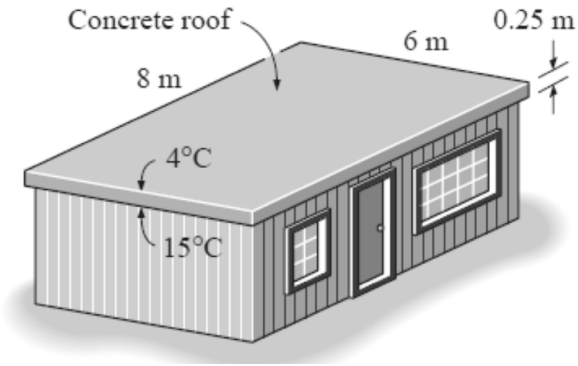

Figure 1

3. Consider the plane wall of Figure 2, separating hot and cold fluids at temperatures $T_{\infty 1}$ and $T_{\infty 2}$, respectively. Using surface energy balances as boundary conditions at x= 0 and x= L, obtain the temperature distribution within the wall and the heat flux in terms of $T_{\infty 1}$, $T_{\infty 2}$, h1, h2, k, and L.

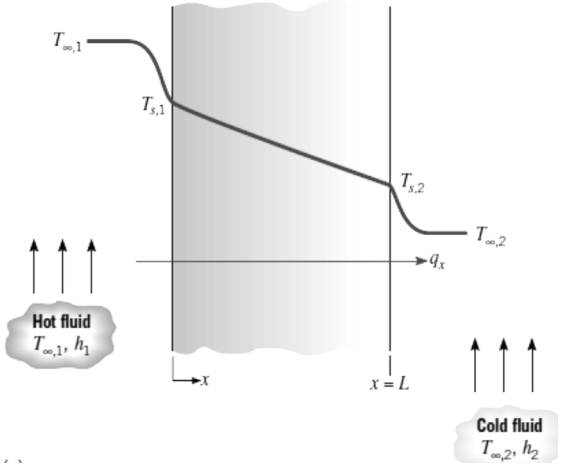

Figure 2

4. Consider steady one-dimensional heat transfer through a multilayer medium. If the rate of heat transfer Q is known, explain how you would determine the temperature drop across each layer.

5. Consider a 1.2-m-high and 2-m-wide glass window whose thickness is 6 mm and thermal conductivity is 0.78 W/m · °C. Determine the steady rate of heat transfers through this glass window and the temperature of its inner surface for a day during which the room is maintained at 24°C while the temperature of the outdoors is -5°C. Take the convection heat transfer coefficients on the inner and outer surfaces of the window to be h1 = 10 W/m2 · °C and h2 = 25 W/m2 · °C, and disregard any heat transfer by radiation.

6. Consider a house whose walls are 12 m high and 40 m long. Two of the walls of the house have no windows, while each of the other two walls has four windows made of 4 cm thick glass (k = 0.78 W/m · °C), 3 m×5 m in size. The brick walls having conductivity 0.15 W/m · °C. Disregarding any direct radiation gain or loss through the windows and taking the heat transfer

coefficients at the inner and outer surfaces of the house to be 20 and 40 W/m2 · °C, respectively, determine the ratio of the heat transfer through the walls with and without windows.

7. Consider a 5-m-high, 8-m-long, and 0.22-m-thick wall whose representative cross section is as given in the fig. 3. The thermal conductivities of various materials used, in W/m · °C, are $k_A = k_F = 2$, $k_B = 8$, $k_C = 20$, $k_D = 15$, and $k_E = 35$. The left and right surfaces of the wall are maintained at uniform temperatures of 300°C and 100°C, respectively. Assuming heat transfer through the wall to be one-dimensional, determine (a) the rate of heat transfer through the wall; (b) the temperature at the point where the sections B, D, and E meet; and (c) the temperature drop across the section F. Disregard any contact resistances at the interfaces.

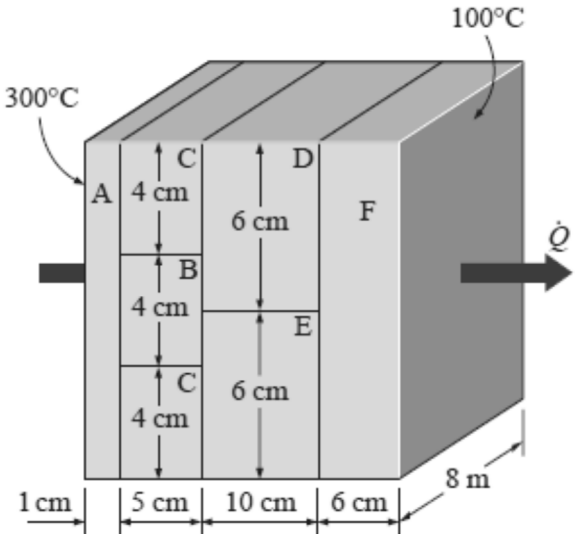

Figure 3

Course and Code: Mechanical Vibrations & Control (ME701)

Academic year: 2012-16

MECHANICAL VIBRATIONS & CONTROL

Course Code	:	**ME701**
Course Title	:	**Mechanical Vibrations & Control**
Course Credits	:	**7**
Total Hours per Week (L+T+P)	:	**3+1+2**

Course code	Course Title	Teaching Scheme			
		L	T	P	Credits
ME 605	Mechanical Vibrations and Control	3	0	2	4

Evaluation Scheme (Theory)					Evaluation Scheme (Practical)			
Mid Term Test - I	Mid Term Test - II	End Term Test	Class Participation/ Additional Continuous Evaluation*	Total Marks**	Mid Term Test - I	End Term Test	Class Participation/ Additional Continuous Evaluation*	Total Marks**
20	20	50	10	100	20	50	30	100

*Additional Continuous Evaluation: Quizzes/Assignments/Presentations/Practical Records/Mock Interviews/others

**The ratio of weightage between Theory and Practical content will be 60%: 40%

Syllabus (Theory)

UNIT I

Fundamentals: Importance of Study of Vibrations, Classifications of Vibrations, Free and Forced, Undamped and Damped, Linear and Non-linear, Deterministic and Random, Harmonic Motion, Vector and Complex Number Representations, Definitions and Terminology, Periodic Functions, Harmonic Analysis, Fourier Series Expansion.

UNIT II

Free and Damped Vibrations: Single Degree of Freedom system, D'Alemberts Principal, Energy Methods, Rayleighs Method, Application of these Methods, Damped Free Vibrations, Logarithmic Decrement, Under Damping, Critical and Over Damping, Coulomb Damping.

UNIT III

Harmonically Excited Vibrations: Forced Damped Harmonic Vibration of Single Degree of Freedom Systems, Rotating Unbalance, Rotor Unbalance, Critical Speeds and Whirling of Rotating Shafts, Support Motion, Vibration Isolation, Energy Dissipated by Damping, Equivalent, Viscous Camping, Structural Damping Sharpness of Resonance, Vibration Measuring Instruments.

Transient Vibrations: Impulse Excitation, Arbitrary Excitation, Response to Step Excitions, Base Excitation Solution by Laplace Transforms, Response Spectrum, Runge-Kutta Method.

UNIT IV

Two Degrees of Freedom Systems: Introduction to Multi-Degree of Freedom Systems, Normal Mode Vibrations, Coordinate Coupling, Principal Coordinates, Free Vibrations in Terms of Initial Conditions, Forced Harmonic Vibrations, Vibration Absorber, Centrifugal Vibration Absorber, Vibration Damper.

Multi degrees of Freedom Systems and Numerical Methods: Introduction, Influence Coefficients, Stiffness Matrix, Flexibility Matrix, Natural Frequencies and Normal Modes, Orthogonality of Normal Modes, Dunkerley's Equation, Method of Matrix Iteration, The Holzer Type Problem, Geared and Branched Systems, Beams.

UNIT V

Measurements Techniques and condition monitoring: Vibration Monitoring, Vibration parameters, Vibration Instrumentation for its Measurement. Introduction to condition monitoring of machinery, Condition monitoring technique.

Normal Mode Vibration of Continuous System: Vibrating String, Longitudinal Vibrations of Rod, Torsional Vibrations of Rod, Lateral Vibrations of Beam.

Course Syllabi (Practical):

1. To study undamped free vibrations of equivalent spring mass system and determine the natural frequency of vibrations.
2. To study the free vibration of system for different damper settings. Draw decay curve and determine the log decrement and damping factor. Find also the natural frequency.
3. To study the torsional vibration of a single rotor shaft system and to determine the natural frequency.

4. To determine the radius of gyration of given bar using bifilar suspension.
5. To verify the dunker ley's rule.
6. To study the forced vibration of system with damping. Load magnification factor vs. Frequency and phase angle vs frequency curves. Also determine the damping factor.
7. To study the pressure distribution of a journal bearing using a journal bearing apparatus.
8. To determine the rate of wear of a metallic pin from the plot of displacement vs time curves by using friction and wear monitor apparatus.
9. To determine abrasion index of a material with the help of dry abrasion test rig.
10. To evaluate the load wear index and the weld point of a lubricant with the help of a four ball stream pressure tester.
11. To determine the two frequencies of torsional spring type double pendulum & compare them with theoretical values.
12. To determine the radius of gyration of a compound pendulum.
13. To determine the radius of gyration of disc using trifilar suspension.

List of students:

Sl. No.	Roll No.	Name
1	2012BTechME001	Abhishek Chakravarty
2	2012BTechME002	Akash Kumar
3	2012BTechME003	Amit Goyal
4	2012BTechME004	Amit Khushal Gandhi
5	2012BTechME005	Anand Ojha
6	2012BTechME008	Bharat Sharma
7	2012BTechME010	Brijesh Kumar Pandey
8	2012BTechME011	Chandra Prakash Shukla
9	2012BTechME012	Chirag H. Deora
10	2012BTechME013	Deepak Khandelwal
11	2012BTechME014	Deepak Sharma
12	2012BTechME015	Devendra Nath Yadav
13	2012BTechME016	Jatin Manghnani
14	2012BTechME017	Manjot Singh
15	2012BTechME018	Mayank Verma
16	2012BTechME020	Mohit Gupta
17	2012BTechME022	Nirbhay Raj
18	2012BTechME023	Prateek Kataria

19	2012BTechME026	Rahul Kumar Singh
20	2012BTechME027	Rahul Ranjan
21	2012BTechME029	Satyam
22	2012BTechME030	Shivam Dixit
23	2012BTechME031	Shivam Kant
24	2012BTechME032	Shubham Khuntamar
25	2012BTechME033	Siva Sambhav Mandava
26	2012BTechME034	Sumit
27	2012BTechME035	Ujjwal Prakash

POWER PLANT ENGINEERING

Course Code	**:**	**ME728 (Elective-IV/V/VI/VII)**
Course Title	**:**	**Power Plant Engineering**
Course Credits	**:**	**04**
Total Hours per Week (L+T+P)	**:**	**3+0+0**

Course Syllabi (Theory):

- Introduction to power plants & boilers:

  Layout of Steam, Hydel, Diesel, MHD, Nuclear and Gas Turbine Power Plants - Combined Power Cycles - Comparison and Selection, Load Duration Curves. Steam Boilers and Cycles - High Pressure and Super Critical Boilers - Fluidized Bed Boilers.

- Steam power plant:

  Fuel and Ash Handling, Combustion Equipment for burning coal, Mechanical Stokers, Pulveriser, Electrostatic Precipitator, Draught - different types, Surface Condenser Types, Cooling Towers.

- Nuclear and hydel power plants:

  Nuclear Energy - Fission, Fusion Reaction, Types of Reactors, pressurized water reactor, Boiling Water Reactor, Waste Disposal and safety. Hydel Power Plant - Essential Elements, Selection of Turbines, Governing of Turbines- Micro Hydel developments.

- Diesel and gas turbine power plant:

  Types of Diesel Plants, Components, Selection of Engine Type, Applications Gas Turbine Power Plant - Fuels - Gas Turbine Material - Open and Closed Cycles - Reheating - Regeneration and Intercooling - Combined Cycle.

- Other power plants and economics of power plants

  Geo thermal -OTEC - Tidel - Pumped storage - Solar thermal central receiver system. Cost of Electric Energy - Fixed and operating Costs - Energy Rates - Types of Tariffs - Economics of load sharing, comparison of economics of various power plants.

List of Students

Sl. No.	Roll No.	Name
1	2012BTechME001	Abhishek Chakravarty
2	2012BTechME002	Akash Kumar
3	2012BTechME003	Amit Goyal
4	2012BTechME004	Amit Khushal Gandhi
5	2012BTechME005	Anand Ojha
6	2012BTechME008	Bharat Sharma
7	2012BTechME010	Brijesh Kumar Pandey
8	2012BTechME011	Chandra Prakash Shukla
9	2012BTechME012	Chirag H. Deora
10	2012BTechME013	Deepak Khandelwal
11	2012BTechME014	Deepak Sharma
12	2012BTechME015	Devendra Nath Yadav
13	2012BTechME016	Jatin Manghnani
14	2012BTechME017	Manjot Singh
15	2012BTechME018	Mayank Verma
16	2012BTechME020	Mohit Gupta
17	2012BTechME022	Nirbhay Raj
18	2012BTechME023	Prateek Kataria
19	2012BTechME026	Rahul Kumar Singh
20	2012BTechME027	Rahul Ranjan
21	2012BTechME029	Satyam
22	2012BTechME030	Shivam Dixit
23	2012BTechME031	Shivam Kant
24	2012BTechME032	Shubham Khuntamar
25	2012BTechME033	Siva Sambhav Mandava
26	2012BTechME034	Sumit
27	2012BTechME035	Ujjwal Prakash

Assignment-1

1. State different type of fuels available that can be used as source of fuel for combustion chamber for generation of heat energy.
2. What do you mean by stokers? Explain different type of stokers and their advantages and disadvantages.
3. Explain the term Draught. Derive an expression for calculating the pressure difference in a natural draught.

PRACTICE SCHOOL – II

Course Code	**:**	**PS801**
Course Title	**:**	**Practice School – II**
Course Credits	**:**	**16**
Duration	**:**	**Five and Half Months**

Course Syllabi:

This course is for five and half months (summer and one semester) in VII or VIII Semester. The objective of this programme is to provide the students, an opportunity to work on live projects of corporate world in various fields. During this programme, they will work on real world applications of their curricula through organizational function of their choice. The students are expected to be involved directly in problem solving efforts of specific interest to the host organization. The learning of PS-I will help them in completing PS-II successfully.

Evaluation Scheme:

S. No.	Evaluation Component	Marks (100) (Weightage %)
1	Quiz-I	4
2	Quiz-II	4
3	Group Discussion-I	4
4	Group Discussion-II	4
5	Seminar-I	4
6	Seminar-II	4
7	Diary-I	4
8	Diary-II	4
9	Observation-I	4
10	Observation- II	4
11	Mid Term Evaluation (Project Report and Presentation/Viva)	20
12	Final Evaluation (Project Report and Presentation/Viva)	40

Activities/Content with direct bearing on Employability/ Entrepreneurship/ Skill development

Content with direct bearing on Employability/ Entrepreneurship/ Skill development: All three stakeholders' students, industry and university befitted by this course.

- **Benefits to the Students**: Learning by doing and have an experience of professional working conditions, real and all round development with Smooth transition from campus to company
- **Benefits to the Industry:** Steady stream of skilled manpower provides easy adaption, provides value addition and increased productivity.
- **Benefits to the University:** Direct inputs to to quickly adapt curriculum to match the needs of industry.

In addition to above the details of students benefited in getting job avaible with Training and placement cell.

RENEWABLE ENERGY RESOURCES

Course Code	**:**	**ME733 (Elective-IV/V/VI/VII)**
Session	**:**	**2015-16**
Course Title	**:**	**Renewable Energy Resources**
Course Credits	**:**	**04**
Total Hours per Week (L+T+P)	**:**	**3+0+0**

Course Syllabi (Theory):

- Global and National scenarios, Form and characteristics of renewable energy sources.
- Solar Energy: Solar radiation, its measurements and prediction, Solar thermal collectors, flat plate collectors, concentrating collectors, Basic theory of flat plate collectors, solar heating of buildings, solar still, solar water heaters, solar driers, conversion of heat energy in to mechanical energy, solar thermal power generation systems.
- Solar Photovoltaic: Principle of photovoltaic conversion of solar energy, types of solar cells and fabrication, Photovoltaic applications: battery charger, domestic lighting, street lighting, water pumping, power generation schemes.
- Wind Energy: Atmospheric circulations, classification, factors influencing wind, wind shear, turbulence, wind speed monitoring, Betz limit, WECS-classification, characteristics, applications.
- Ocean Energy: Ocean energy resources, ocean energy routes, Principles of ocean thermal energy conversion systems, ocean thermal power plants, Principles of ocean wave energy conversion and tidal energy conversion.
- Other Sources: Nuclear fission and fusion, Geothermal energy- Origin, types of geothermal energy sites, site selection, geothermal power plants, Magneto-hydro-dynamic (MHD) energy conversion, Formation of biomass, photosynthesis, Biomass resources and their classification, Chemical constituents and physicochemical characteristics of biomass, Biomass conversion processes.
- Fuel Cells: Thermodynamics and electrochemical principles, Basic design, types, applications. Hydrogen Energy: Economics of hydrogen, Production methods.

List of Students

2015BTechME001	Abhishek Sankhla
2015BTechME002	Aman Medatwal
2015BTechME003	Amar Singh Rathore
2015BTechME006	Bijay Yadav
2015BTechME007	Chetan Pratap Singh Rathore
2015BTechME009	Krishna Verma
2015BTechME010	Kunal Sharma
2015BTechME012	Nadeem Khan
2015BTechME013	Naman Tyagi
2015BTechME014	Nikhil Shah
2015BTechME015	Rachit Singodia
2015BTechME016	Rohan Singh
2015BTechME018	Urvija Tiwari
2015BTechME019	Vishnu Kant
2015BTechME020	Devanshu Singh
2015BTechME021	Vivek Vishwakarma
2015BTechME022	Rahul Agnihotri
2015BTechME024	Prakhar Prakash
2015BTechME025	Nirmal Yadav
2016BTechME151	Aayush Arora

Course code	Course Title	Teaching Scheme			
		L	T	P	Credits
ME 606	Solar Energy Technology	3	0	2	4

Evaluation Scheme (Theory)						Evaluation Scheme (Practical)				
Mid Term Test - I	Mid Term Test - II	End Term Test	Class Participation	Additional Continuous Evaluation*	Total Marks**	Mid Term Test - I	End Term Test	Class Participation	Additional Continuous Evaluation *	Total Marks**
20	20	40	10	10	100	20	40	15	25	100

Syllabus (Theory)

Introduction: Man and Energy, world production and reserve of conventional energy sources, Indian production and reserves, Energy alternatives (Renewable). Form and characteristics of renewable energy sources.

Solar radiation: Solar radiation, its measurement and prediction. Origin, nature and availability of solar radiation, estimation of solar radiation date. Effects of receiving surface location and orientation.

Solar energy collectors: Characteristics of materials and surfaces used in solar energy absorption. Devices for thermal collection and storage.

Flat plate collectors: liquid and air type. Design consideration and performance of different types of solar thermal collectors. Basic theory of flat plate collectors, concentrating collectors, advanced collectors, optical design of concentrators, selective coatings,

Solar energy storage: Energy storage devices such as water storage systems, packed Bed storage systems, phase change storage systems. Active and passive solar heating of buildings, solar still, solar water heaters, solar driers;

Thermal storage: conversion of heat energy into mechanical energy, solar thermal power generation systems. Application: systems for space heating, solar water pumps, solar pond, Solar Thermal
solar distillation, Solar Refrigeration and solar air conditioning. Solar PV systems.

List of Students

S.No	Registration No	Name
1	2014BTechME001	Abhishek Jain
2	2014BTechME002	Arihant Jain
3	2014BTechME003	Chetan Dhyani
4	2014BTechME004	Divyanshu Suthar
5	2014BTechME005	Gaurav Mishra
6	2014BTechME006	Harshit Gaur
7	2014BTechME007	Hitesh Bhati
8	2014BTechME008	Karan Gupta
9	2014BTechME009	Kshitij Singh
10	2014BTechME010	Kumar Aditya
11	2014BTechME013	Robin Singh
12	2014BTechME014	Sameer Gupta
13	2014BTechME015	Saumyarup Roy
14	2014BTechME016	Sushant Sharma
15	2014BTechME018	Vikram Singh Shekhawat
16	2014BTechME019	Shivam Sharma
17	2014BTechME020	Kapil Yadav
18	2014BTechME021	Rishabh Mishra
19	2013BTechME001	Abhishek Sharma

Assignments

1. A crystalline silicon solar cell generates a photo-current density of Jph = 35 mA/cm2 . The wafer is doped with 1017 acceptor atoms per cubic centimetre and the emitter layer is formed with a uniform concentration of 1019 donors per cubic centimetre. The minority-carrier diffusion length in the p-type region and n-type region is $500 \cdot 10{-}6$ m and $10 \cdot 10{-}6$ m , respectively. Further, the intrinsic carrier concentration in silicon at 300 K is $1.5 \cdot 1010$ cm−3 , the mobility of electrons in the p-type region is μn = 1000 cm2V −1 s −1 and holes in the n-type region is μp = 100 cm2V −1 s −1 . Assume that the solar cell behaves as an ideal diode. Calculate the built-in voltage, the open-circuit voltage and the conversion efficiency of the cell.
2. A PV system should be installed on a flat roof in Naples (Italy). The area of the roof that can be utilized for installing the PV system is 10×10 m2 . The roof is oriented such that the sides are parallel to the East-West and North-South directions, respectively. The owner of the roof decides to use Yingli PANDA 60 modules with dimensions of 1650×990×40 mm3 . The modules are installed facing south with a tilt of 30◦ . He wants to install as many modules as possible under the condition that on the shortest day of the year no mutual shading must occur for the duration of 6 hours. Should the modules be mounted with the long or short side touching the ground? How many modules can be mounted in this case?

JK Lakshmipat University, Jaipur

Institute of Management

BBA (2013-16)

Academic Year- 2015-16

Soft Skills Development

Course Code: BBA064

Credit: 4

Semester: VI

Activities Related to Skill Development and Employability

Class activity 1.: Analysing the TED talk speaker and assess the important skills of effective communication reflected by the speaker.

Class activity 2: students need to preparing a brief I minute introduction about themselves and record it. They need to watch it and identify the positive and negative aspect of their communication

Exercise 1 : Writing email to professor requesting his additional support and guidance in upcoming CAT entrance test.

Exercise 2: Group discussion on “Terrorism a global menance”

Assignment1. : Practice worksheet of common error in English

Assignment 2: Listening an audio

JK Lakshmipat University, Jaipur

Institute of Management

B.Com (Hons)

Academic Year- 2015-16

Business Organization and Management

Course Code: BCH103

Credit: 4

Semester: I

Activities Related to Skill Development and Employability

Case Study 1: Gillet Strategy for India

Case Study 2: Continuous adaptation: The story of HUL

Case Study 3: Knee –deep into project X: Difficulties in decision making

Case Study 4: Toyota: Planning with accuracy

Case Study 5: Subhiksha retail stores

JK Lakshmipat University, Jaipur

Institute of Management

MBA

Academic Year- 2015-16

SOFT SKILL - III

Course Code: MBA307

Credit: 1

Semester: III

Course Syllabi:

Written Communication: Writing effective emails, preparing powerful presentations and writing Business Reports.

English Grammar Capsule: Noun, Preposition, Conjunction, Pronoun, Verb, Tenses, Modifiers and Prepositional Phrases and their implementation.

Enhancing Conversational Skills: Improving Verbal English through practice exercises comprising of day to day conversational situations. Practice exercises to strengthen lexical / structural knowledge of English.

Course Learning Outcomes:

Upon completion of the course, the student is expected to:

- Identify and react accordingly on one-way and two-way communication scenarios.
- Define the communication style followed by him / her.
- Demonstrate active-listening skills
- Deal with challenging emotion
- O Recognize filters in himself / herself and others.
- Express the Anger constructively.
- Use grammatically correct language.
- Speak impromptu on any business topic / current affairs.
- Work effectively in diverse teams (As a part of Course activities and role plays).

Reference Books:

- Simon Sweeney. ***English for Business Communication***, Cambridge University Press.
- Grant Taylor, ***English Conversation Practice*** (TMH Edition), TMH.

Activities Related to Skill Development and Employability

Activity1.: Writing monologue and writing dialogue

Activity2: Replacement of complex words with simple words

Presentation: Students will give 5-10 minutes' presentation and note the key communication strengths and weaknesses of their peers

Assignment: Identifying top 3 most desired soft skills for the following functions

- An HR Professionals
- A regional sales manager
- A research scientist working on a break through project

Exercise:1 Worksheets on grammar \
Exercise 2: trimming sentences in complex paragraphs

JK Lakshmipat University, Jaipur

Institute of Management

MBA

Academic Year- 2015-16

SOFT SKILLS-IV

Course Code: MBA405

Credit: 1

Semester: IV

Course Syllabi:

Achieving Genuine Communication: Creating openness, matching body language to message, working constructively with emotions, dealing with anger and managing emotionally charged situations. Managing Cross Cultural Communication and working with filters and assumptions.

Business Etiquette: Art of effective networking and Introductions. Power of handshake, Business Card Protocol, Telephone, cell phone and email etiquette. Pre-meeting strategies. Corporate Dressing, Effective usage of gestures during communication in a formal environment and balancing between Speaking and Listening to arrive at an equilibrium, Negotiations and conflict management.

Course Learning Outcomes:

Upon completion of the course, the student is expected to:

- Identify and react accordingly on one-way and two-way communication scenarios.
- Define the communication style followed by him / her.
- Demonstrate active-listening skills
- Deal with challenging emotions
- Overcome cross-cultural barriers
- Recognize filters in himself / herself and others.
- Express the Anger constructively.
- Use grammatically correct language.
- Speak impromptu on any business topic / current affairs.
- Work effectively in diverse teams (As a part of Course activities and role plays).

Reference Books:

- Simon Sweeney. ***English for Business Communication***, Cambridge University Press.
- Grant Taylor, ***English Conversation Practice*** (TMH Edition), TMH.

Activities Related to Skill Development and Employability

Presentation: etiquette is essence of communication

Assignment 1: Interview five executives who travel frequently outside India. Identify the problems the experience in communication during these visits. Make a checklist of strategies or tactics to overcome such difficulty

Activity 2: Student needs to analyse the recent conflict he/she had and how communication was influenced by their emotions

Exercise: Students needs to observe their fellow mates for 5 days and make not on their general ettiquettes. Make a detail feedback note of what they should change or improve with supporting reasons

SECURITIES ANALYSIS AND PORTFOLIO MANAGEMENT

MBA Academic Year 2015-2016

Course Code	**:**	MBAFM301
Course Credits	**:**	**4**
Total Hours per Week	**:**	**3**

COURSE SYLLABI:

Introduction to Investment Management: Investment versus Speculation, Financial Markets, Approaches to Investment Decision Making, Common errors in Investment Management, Qualities for successful investing, Investment Alternatives and their evaluation.

Securities Market: Participants in Securities Market, Legal framework, Securities Market Regulation, Primary market and Secondary Market, Government Securities Market, Corporate Debt Market, Money Market.

Risk and return: Concept of Return, Risk, Measuring Historical Risk and Return, Time Value of Money.

Securities Valuation : Bond Concepts, Price, Yield, Yield Curve, Determinants of Interest Rates, Bond Strategies, Equity Valuation, Various Approaches to Equity Valuation.

Security Analysis – Fundamentals: Macroeconomic and Industry analysis, Company Analysis, Strategy Analysis, Accounting Analysis, Financial Analysis, Intrinsic Value, Undervaluation versus Overvaluation, Equity Research in India.

Security Analysis – Technicals: Concept of Technical Analysis, Charting Techniques, Technical Indicators, Testing Technical Trading Rules, Evaluation of Technical Analysis.

Modern Portfolio Theory: Diversification and Portfolio Risk, Portfolio Return and Risk, Efficient Frontier, Optimal portfolio, The Single Index Model, Capital Asset pricing Model, Efficient Market Hypothesis, Behavioural finance.

Portfolio Management: Concept of Portfolio Management, Portfolio Management Process, Selection of Asset Mix, Formulation of Portfolio Strategy, Selection of Securities, Portfolio Execution, Portfolio Revision, Performance Evaluation.

Strategies of the Master Investors: Learnings from acclaimed investors – Benjamin Graham, Philip Fisher, Warren Buffett, John Templeton, Peter Lynch, George Soros, David Dreman, Charles Ellis, John Bogle, The Zurich Axioms, India's Money Monarchs.

International Investing: Benefits and Risks of Global Investing, Measuring the Return and Risk of Foreign Investments, International Capital Markets, Factors affecting Global Markets, Tracking Global Markets.

Practical exposure to the Analysis Software and Portfolio Management

LEARNING OUTCOMES:

Upon completion of the course, students are expected to be able to:

1. Get insight into the process of Investment and know about various Investment Alternatives.
2. Acquire insight about the relationship of the risk and return.
3. Understand the process of Securities Analysis.
4. Understand Portfolio Management concepts and practices in India.
5. Learn from the great investors in the market.

TEXT BOOK:

- Chandra, Prasanna (2009). ***Investment Analysis and Portfolio management***. 3/e. New Delhi: Tata McGrawHill.

REFERENCE BOOKS:

1. Fischer, D.E. and Jordan, R.J. (2011). ***Security Analysis & Portfolio Management***. 6/e. New Delhi: Pearson.
2. Pandian, Punithavathy (2010). ***Security Analysis and Portfolio Management***. New Delhi: Vikas Publication Pvt. Ltd.
3. Ranganatham, M. and Madhumathi, R. (2012). ***Security Analysis and Portfolio Management***, 2/e. New Delhi: pearson.
4. Elton, E.J., Gruber, M.J., Brown, S.J., and Goetzmann, W.N. (2012). ***Modern portfolio theory and Investment Analysis***, 8/e. New Delhi: Wiley India (P.) Ltd.
5. Bhat, S. (2009). ***Security Analysis & Portfolio Management***. New Delhi: Excel Books.
6. Kevin, S. (2008). ***Portfolio Management***. New Delhi: Prentice Hall India.
7. Avadhani, V.A. (2008). ***Securities Analysis & Portfolio Management***. Mumbai: Himalaya Publications.
8. Alexander, G.J., Sharpe, W.F., and Bailley, J.V. (2001). ***Fundamentals of Investment***. New Delhi: Pearson.

ACTIVITIES RELATD TO EMPLOYABILITY ENHANCEMENT SKILLS

CASE STUDIES ON:

1. MRPL and RPL- Analyzing Risk and Returns
2. Derivatives Trading in India
3. A Note on Investment Strategies Involving Options
4. A note on Interest Rate Futures
5. The Google IPO
6. The US-64 Controversy
7. Hedging Dilemma in Volatile Market
8. Bandhan banks Valuation and Sustainability: Beyond the IPO

DESIGN OF PRE-STRESSED CONCRETE STURCTURES

Course Code	**:**	**CE 728 (Elective-I/II/III/IV/V)**
Course Title	**:**	**Design of Pre-stressed Concrete Structures**
Course Credits	**:**	**4**
Total Hours per Week (L+T+P)	**:**	**3+0+0**

Course Syllabi (Theory):

- **Introduction:** Systems of pre-stressing in detail, pre-stressing techniques, transfer of pre-stress, types of commercially available jacks, computation of losses of pre-stress.
- **Anchorage Zone:** end block stresses, design
- **Cable profiles:** Concordant and non-concordant cable profile and associated factors in continuous members. Modern cable laying: materials & practices, precautions etc. Computation of deflection in pre-stressed concrete members.
- **Design of Pre-stressed concrete Sections**: Flexural, shear and torsion resistance of members, preliminary and final design of sections, design of pre and post tensioned flexural members; simply supported and continuous members.
- **Pre-stressed Slab:** Design of slabs, tendon layout, precast slab, production and their applications.
- **Partial Prestressing:** Principles and advantages, methods, practices and design. Design of circular piles and circular water retaining structures etc. Case study of one bridge girder with design and construction features.

Employability Related Activities:

- Classroom Presentation by Students

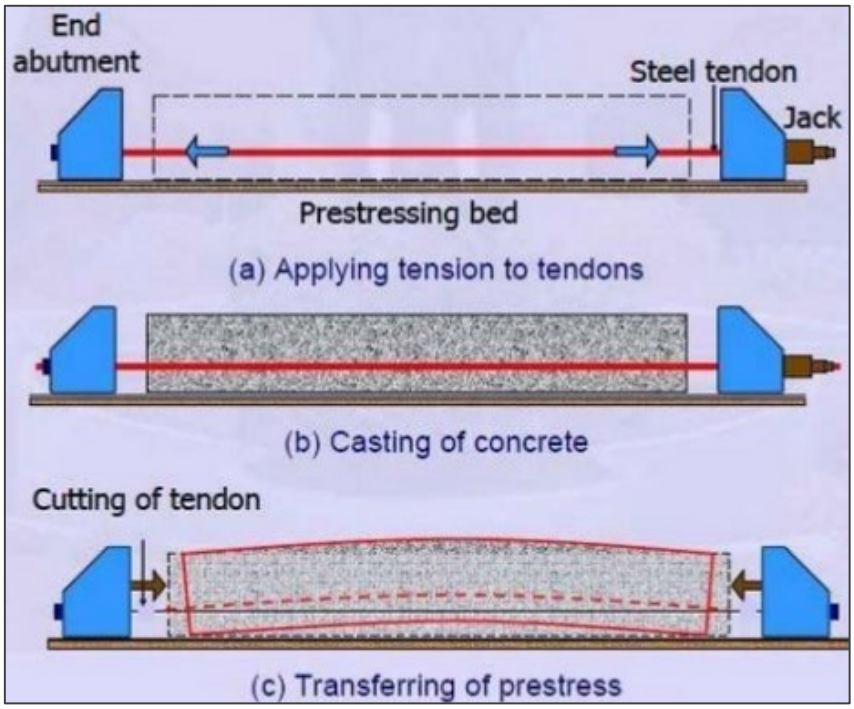

Figure 1. Students demonstrating PCC process in the class at the end of the course

- **Site Visit by Students**

Figure 2(a). Site visit to practically demonstrate the pre-stressing technique to students

Figure 2(b). Site visit to show equipment used for pre-stressing of concrete

- **End-Term Theory Exam**

JK LAKSHMIPAT UNIVERSITY, JAIPUR

INSTITUTE OF ENGINEERING AND TECHNOLOGY

End-Term Examination

B. Tech. in Civil Engineering, Semester VII

CE728: DESIGN OF PRE-STRESSED CONCRETE STURCTURES — Time: 3 hours — Max. Marks: 60

Instructions to students:

1. Do not write anything other than your roll number on question paper.
2. Assume suitable data wherever required and mention it clearly.
3. Writing appropriate units, nomenclature, and drawing neat sketches/schematics/ flow chart wherever, required are an integral part of the answer.
4. In order to solve complex mathematical forms, Casio fx-991 MS or fx-991 ES or fx-991 ES Plus shall be permitted, however **programmable calculators** are strictly not entertained.
5. Students should bring their own **Formula sheets** signed by the course instructors.

1	A rectangular concrete beam of cross-section 20 cm deep and 20 cm wide is prestressed by means of 15 wires of 5 mm diameter located 6.5 cm from the bottom of the beam and 3 wires of diameter of 5 mm, 2.5 cm from the top. Assuming the prestress in the steel as 840 N/mm^2, calculate the stresses at the extreme fibers of the mid-span section when the beam is supporting its own weight over a span of 6 m. If a uniformly distributed live load of 6kN/m is imposed, evaluate the maximum working stress in concrete. The density of concrete is $24kN/m^3$.	10

Figure 3. End-Term examination conducted to assess the skill developed by the students in this course

PROCESS PLANT SAFETY

Course Code : CHE723 (Elective IV/V/VI/VII/VIII)
Course Title : Process Plant Safety

Course Credits : 4

Total Hours per Week (L+T+P) : 3 + 0 + 0

Evaluation Scheme (Theory):

EC No.	Evaluation Component	Duration	Marks (100) (Weightage %)*
1.	Mid Term Test-I	1 hour	20
2.	Mid Term Test-II	1 hour	20
3.	End Term Test	3 hour	40
4.	Class Participation	Day to day	10
5.	Additional continuous Evaluation (Quizzes, Assignments, Presentations, and others)	30 min.	10

Course Syllabi (Theory):

- Role of safety, Accident and loss statistics, Chemical Hazards and worker safety, Identification evaluation and control of occupational conditions, Personal protective devices, Safety aspects of site selection, plant layout and unit plot planning
- Flow of liquids through a hole, a hole in a tank, pipes, Flow of vapors through holes, pipes, Flashing liquids, Environmental monitoring, Flammability characteristics, MOC, Detonation and deflagration, Confined explosions, VCE, BLEVE, Blast damage due to overpressure, Energy of mechanical and Chemical explosions
- Purging, Static electricity, explosion-proof equipments, Sprinkler systems, Relief concepts, Relief types, Relief systems, Checklists, F & EI, HAZOP, Safety reviews, Probability theory, Event and Fault trees, Heat, mass and momentum transfer, Simultaneous heat and mass transfer, Size reduction, Material Handling.
- On-site and off-site emergency plans, safety audit, Accident investigation, Static electricity, Chemical reactivity, System designs, procedures, List of Major accidents (1970-1998)

Text Books:

T1: Fulekar M.H., "Industrial Hygiene and Chemical Safety", I.K. International, New Delhi, 2006.

T2: Crowl D.A., and J.F. Louvar, "Chemical Process Safety: Fundamentals with Applications", Prentice Hall PTR, Englewood Cliffs, New Jersey, 1st ed., 1990.

Reference Books:

R1: Fawcett H.H. and W.S. Wood, "Safety and Accident Prevention in Chemical Operations", John Wiley & Sons, Inc., New York, 1965.

R2: Sanders R.E., "Chemical Process Safety: Learning from case Histories", Butterworth-Heinemann, Boston, 1999.

Activity for Skill Development and Employability

FERTILIZER TECHNOLOGY

Course Code	**:**	**CHE724 (Elective IV/V/VI/VII/VIII)**
Course Title	**:**	**Fertilizer Technology**
Course Credits	**:**	**4**
Total Hours Per Week (L+T+P)	**:**	**3 + 0 + 0**

Course Syllabi (Theory):

Introduction

- Fertilizer industry in India
- Feed stock and raw materials

Phosphatic fertilizers

- Ground rock phosphate
- Single Super-phosphate

Technology/ Production of Fertilizer Products

- Phosphoric acid
- Nitric acid
- Sulphuric acid
- Ammonia

Modernization of Older Plants (Revamping)

Urea

Potassic Fertilizers

Complex fertilizers

Evaluation Scheme (Theory):

EC No.	Evaluation Component	Duration	Marks (100) (Weightage %)*
1.	Mid Term Test-I	1 hour	20
2.	Mid Term Test-II	1 hour	20
3.	End Term Test	3 hour	40
4.	Class Participation	Day to day	10
5.	Additional continuous Evaluation (Quizzes, Assignments, Presentations, and others)	30 min.	10

Text Books

T1 "Handbook on Fertilizer Technology", Fertilizer Association of India, Sixth Edition, 2001.

Reference Books

R1 G. F. Austin, "Shreve's Chemical Process Industries", 5th Edition, McGraw Hill Publication.

R2 "Ammonia: Principles and Industrial Practice", Max Appl, Wiley-Vch, 1999.

R3 "Fertilizer Manual", United nations, New York, 1967.

R4 "Synthetic Nitrogen Products", Gary_Maxwell, Springer Science, 2005.

Activity for Skill Development and Employability

Expert lecture on Recent advances in Fertilizer Industry by Dr. N. K. Krishnakumar, Deputy Director General, ICAR

INDUSTRIAL VISITS:

1. Chambal Fertilizers Kota Rajasthan, to observe the manufacturing of urea and related fertilizers

Kribhco Fertilizers, Gujarat, to observe research and development activities in the fertilizer technology

FLUIDIZATION ENGINEERING

Course Code	**:**	**CHE731 (Elective IV/V/VI/VII/VIII)**
Course Title	**:**	**Fluidization Engineering**
Course Credits	**:**	**4**
Total Hours Per Week (L+T+P)	**:**	**3 + 0 + 0**

Course Syllabi (Theory):

- Types of adsorption; type of isotherm; adsorption kinetics; adsorbent, Basic modeling approach with suitable boundary condition, Upcoming adsorption techniques and their modeling approach; application of adsorption in different areas
- Introduction to cryogenic systems; low temperature properties and phenomena; application as separation and purification technique, Gas liquefaction, different air liquefaction cycles
- Cryogenic distillation; refrigeration systems, techniques for storage and transportation, Classification of membrane based on structures, flow, fabrication *etc.* Gas and liquid phase separation; pervaporation; liquid membrane; membrane reactor, Modeling approach; design considerations and applications
- Introduction to bio-kinetics, Types of bio-reactors and different techniques for bio-separation, Modeling approach, design considerations and applications, Concept of reactive distillation; supercritical fluid extraction, Modeling approach, design considerations and applications

Evaluation Scheme (Theory):

EC No.	Evaluation Component	Duration	Marks (100) (Weightage %)*
1.	Mid Term Test-I	1 hour	20
2.	Mid Term Test-II	1 hour	20
3.	End Term Test	3 hour	40
4.	Class Participation	Day to day	10
5.	Additional continuous Evaluation (Quizzes, Assignments, Presentations, and others)	30 min.	10

Text Book (TB)

1. Gupta, R. K. and A. K, Ghoshal "Advanced Separation Technology", *EDD Notes**, BITS, Pilani, 2000.

Reference Books (RB)

1 Seader, J. D. and E. J. Henley, " Separation Process Principles", *John Wiley & Sons, Inc. (Wiley India (P) Ltd.,* New Delhi), 2nd Ed., 2006.

2. Ruthven, D. M., S. Farooq and K. S. Knaebel, "Pressure Swing Adsorption", *VCH Publishers*, NY, 1994.
3. Barron, R., "Cryogenic Systems", *Oxford University Press*, NY, 2nd Ed. 1985.
4. Bailey, J. E. and D. V. Ollis, "Biochemical Engineering Fundamentals", *Mc-Graw Hill*, 1986.
5. Ruthven, D. M. "Principles of Adsorption and Adsorption Processes", John Wiley and Sons, 1984.
6. Mukhopadhyay M., "Natural Extracts using Supercritical Carbon Dioxide", *CRC Press*, LLC, Boca Raton, Florida, USA, 2000.
7. Research Papers from Refereed Journals / Resources.
8. Dynamic addition of reference material will be shared.

Activity for Skill development and Employability
Assignment: 04
Quiz: 03
Expert Lectures: 01
Industrial Visit: 01
Midterm and End term Examinations

SUGAR TECHNOLOGY

Course Code	**:**	**CHE733 (Elective-IV/V/VI/VII)**
Course Title	**:**	**Sugar Technology**
Course Credits	**:**	**4**
Total Hours per Week (L+T+P)	**:**	**3+0+0**

Course Syllabi (Theory):

Composition of cane and cane juice, Aim of clarification , clarification efficiency; Carbonation process, Double sulphitation process, Phosphitation Process; Various juice heaters, Various clarifiers , Vacuum Filters. Milk of lime preparation, Sulphur burner and preparation of SO_2 Gas; Juice Sulphitation , Syrup Sulphitation , Use of different chemicals; Aim of evaporation, Different types of evaporators, Different types of vapour bleeding System , Steam economy , DEVC cum Quad System, Quintuple System; Scale formation, De scaling, Cleaning procedure. Different types of condensers, Condensates, Ammonia gas, Entrainment; Syrup / Melt Clarification, Filtrate Clarification.

Evaluation Scheme (Theory):

EC No.	Evaluation Component	Duration	Marks (100) (Weightage %)*
1.	Mid Term Test-I	1 hour	20
2.	Mid Term Test-II	1 hour	20
3.	End Term Test	3 hour	40
4.	Class Participation	Day to day	10
5.	Additional continuous Evaluation (Quizzes, Assignments, Presentations, and others)	30 min.	10

Text Books

1. Introduction To Cane Sugar Technology by G.H. Jenkin
2. Principles of Sugar Technology by P. Honig.

References:

1. Hand Book of Sugar Technology by R.B.L. Mathur.
2. Hand Book of Cane Sugar Engineering by E. Hugot.
3. Cane Sugar Hand Book by Meade And Chen.

Activity for Skill Development and Employability

Expert lecture on Challenges in sugar production industries by Dr Pavin Pandey National Sugar Institute Kanpur

Industry Visit

1. National Sugar Institute, Kanpur visited to observe the various research and development projects in sugar manufacturing industries.

2. Ganganagar State Sugar Mills Ltd, Ganganagar, Rajasthan visited to observe various sugar processing steps in cane sugar process

Course code	Course Title	Teaching Scheme			
		L	T	P	Credits
CSE609	Information Security	3	0	0	3

Evaluation Scheme (Theory)						Evaluation Scheme (Practical)				
Mid Term Test - I	Mid Term Test - II	End Term Test	Class Participation	Additional Continuous Evaluation*	Total Marks**	Mid Term Test - I	End Term Test	Class Participation	Additional Continuous Evaluation *	Total Marks**
20	20	40	10	10	100	-	-	-	-	-

*Additional Continuous Evaluation: Quizzes/Assignments/Presentations/Practical Records/Mock Interviews/others

Course Objectives:

1. Understand security concepts, Ethics in Network Security.
2. Understand security threats, and the security services and mechanisms to counter them
3. Comprehend and apply relevant cryptographic techniques
4. Comprehend security services and mechanisms in the network protocol stack
5. Comprehend and apply authentication services and mechanisms
6. Compare and contrast symmetric and asymmetric encryption systems and their vulnerability to attack,
7. Explain the characteristics of hybrid systems. Compare and contrast symmetric and asymmetric encryption systems and their vulnerability to attack
8. Describe methods of providing assurances about data integrity. Describe methods of providing assurances about data integrity.
9. Describe the use of hash functions and explain the characteristics of one-way and collision-free functions

Course outcomes

1. Should be able to identify network security threats and determine efforts to counter them
2. Should be able to write code for relevant cryptographic algorithms.
3. Should be able to write a secure access client for access to a server
4. Should be able to send and receive secure mails
5. Should be able to determine firewall requirements and configure a firewall.
6. Apply knowledge of computing and mathematics appropriate to the discipline.
7. Analyze a problem and identify and define the computing requirements appropriate to its solution.
8. Design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs

Course Syllabi (Theory):

- **UNIT I:** Introduction to security attacks, services and mechanism, Classical encryption techniques substitution Ciphers and transposition ciphers, cryptanalysis, steganography, Stream and block ciphers. Modern Block Ciphers: Block ciphers principles, Shannon's theory of confusion and diffusion, Fiestal structure, Data encryption standard(DES), Strength of DES, Idea of differential cryptanalysis, block cipher modes of operations, Triple DES
- **UNIT II:** Introduction to group, field, finite field of the form GF(p), modular arithmetic,

prime and relative prime numbers, Extended Euclidean Algorithm, Advanced Encryption Standard (AES) encryption and decryption Fermat's and Euler's theorem, Primality testing, Chinese Remainder theorem, Discrete Logarithmic Problem, Principals of public key crypto systems, RSA algorithm, security of RSA

- **UNIT III:** Message Authentication Codes: Authentication requirements, authentication functions, message authentication code, hash functions, birthday attacks, security of hash functions, Secure hash algorithm (SHA), Digital Signatures: Digital Signatures, Elgamal Digital Signature Techniques, Digital signature standards (DSS), proof of digital signature algorithm,
- **UNIT IV:** Key Management and distribution: Symmetric key distribution, Diffie-Hellman Key Exchange, Public key distribution, X.509 Certificates, Public key Infrastructure. Authentication Applications: Kerberos, Electronic mail security: pretty good privacy (PGP), S/MIME.
- **UNIT V:** IP Security: Architecture, Authentication header, Encapsulating security payloads, combining security associations, key management. Introduction to Secure Socket Layer, Secure electronic, Transaction (SET). System Security: Introductory idea of Intrusion, Intrusion detection, Viruses and related threats, Firewalls

Text Books & References:

1. William Stallings, "Cryptography and Network Security: Principals and Practice", Pearson Education.

2. Behrouz A. Frouzan: Cryptography and Network Security, TMH

3. Bruce Schiener, "Applied Cryptography". John Wiley & Sons

4. Bernard Menezes," Network Security and Cryptography", Cengage Learning.

5. Atul Kahate, "Cryptography and Network Security", TMH

Activities Related to Skill Development and Employability

Each Student has Submitted Assignment, given quizzes and performed simulation of Wireshark Packet Analyzer related to Information Security.

Presentation Schedule-

Information Security(CSE609)
Presentation topics and schedule

Group	Members	Topic	Date
Group 1	Abhay Saraf Aniruddha Shandilya Ramjilal Prajapat	X.509 Certificates, Public key Infrastructure	15-03-2016
Group 2	R. Vignesh Ankit Rao Shivank Singh	Authentication Applications: Kerberos	17-03-2016
Group 3	Hardik Pratap Shubham Sharma Yashdeep Singh	Digital Signatures, Elgamal Digital Signature Techniques, Digital signature standards (DSS), proof of digital signature algorithm	31-03-2016
Group 4	Ayush Pratap Avneesh jha Raman Sharma	IP Security: Architecture, Authentication header	4/4/2016
Group 5	Ayush Somani Shivangi Garg Ankit Nahata	Introduction to Secure Socket Layer, Secure electronic Transaction (SET).	5/4/2016
Group 6	Nikita Bothra VinitaKhatod Runjhun Agrawal	System Security: Introductory idea of Intrusion, Intrusion detection	7/4/2016
Group 7	Sarita Kumari Ranita Sharma Jasmine	security of hash functions, Secure hash algorithm (SHA)	21-03-2016
Group 8	Aman Agrawal Balraj Arpit	Advanced Encryption Standard (AES) encryption and decryption	22-03-2016
Group 9	Ankit Sharma Daksh Baga	Viruses and related threats, Firewalls	11/4/2016
Group 10	Manish Kumar Nitesh Pandey Munish Sharma	Message Authentication Codes: Authentication requirements	12/4/2016
Group 11	Sarang Sambharia Ridhima Shekhawat Deboshree Das	Electronic mail security: pretty good privacy (PGP), S/MIME	12/4/2016

Note:- Attendance is compulsory for all the presentations.

Instructor
Er. Devendra Bhavsar

Assignment-

Assignment 1
Information Security (CS609)

Instructions

1. Deadline to submit assignment is 05:00 PM, 05-03-2016.
2. Solution should in Hard Copy Handwritten.
Q1. Give the steps of Diffie-Hellman key exchange algorithm.

User A and B exchange the key using Diffie-Hellman algorithm. Assume p=5 q=11 XA=2 XB=3. Find the value of YA, YB and k.
Q2. Use Play fair cipher with key 'firstamend' to decrypt the cipher text "gixqiupeelqs"?

Q3. Users A and B use the Diffie Hellman key exchange technique, a common prime q=11 and a primitive root alpha=7.

(i) If user A has private key XA=3.What is A's public key YA?
(ii) If user B has private key XB=6 What is B's public key YB?
(iii) What is the shared secret key?
Q4. Bob has public RSA key (n = 65, e = 5) Show that Bob's private key is (d = 29)?

Alice wants to send the message m = 11 to Bob. She encrypts the message using Bob's public key. What is the value of the cipher text that Alice sends to Bob?
Q5. Give the steps of Diffie-Hellman key exchange algorithm.

user A and B exchange the key using Diffie-Hellman algorithm. Assume p=5 q=11 XA=2 XB=3. Find the value of YA, YB and k.
Q6. The input to S-box 1 (DES) is 100110. What is the output?

Q7. From the given plaintext and cipher text and you have to construct a Playfair square from it.

Plaintext: THISISATESTTHISISONLYATESTACTUALLYITSBITUTSTGEFINALEXAM
Ciphertext: ROAQA QLSBP QCROA QAQHL AZLSB PSLOZ YFICA ZLQRA TZLQT PDMIN ALFCB IBM
Q8. Users A and B want to establish a secret key using Diffie-Hellman key exchange protocol using a common prime q= 353, a primitive root α= 3, A's secret key XA=97 and B's secret key XB=233. Compute

i. A's public key, Y
ii. B's public key, Y

iii. A's and B's common secret key, K

Q9. You are using RSA. Given are the prime numbers p=17 and q=19. For encryption, it is chosen e=43. Explain the main steps for the following subtasks:

a) Determine the public <e,n> and the private key <d,n>
b) Encrypt the message m=219 using RSA and the keys from part a)
c) Decrypt the cipher text c=123 using RSA and the keys from part a)

Q10. For the DES algorithm, find the output of the initial permutation box when the input to the box in hexadecimal is given as: 0x 00A0 C080 040F 5002.

Q11. In a public-key system using RSA, you intercept the ciphertext C = 58 sent to a user whose public key is e = 43, n = 221. What is the plaintext M?

Q12. The following was encrypted with a Playfair Cipher with keyword "Digital Library". Decrypt the Cipher Text to original message.

"GLMDFCGTDSTUDILHIQMIDB"

Q13. The input into S-box 5 in DES is 101011. What is the output, expressed in decimal (a single value in between 0 and 15, inclusive)?

Q14. Users A and B use the Diffie–Hellman key exchange technique with a common prime q=71 and a primitive root α=7. If user A has private key XA=5, what is A's public key YA? If user B has private key XB=12, what is B's public key YB? What is the shared secret key?

Q15. Bob has public RSA key (n = 77, e = 13) Alice wants to send the message m = 7 to Bob. She encrypts the message using Bob's public key. What is the value of the cipher text that Alice sends to Bob? Also find out Bob's private key?

Q16. For the DES algorithm, find the output of the final permutation box when the input to the box in hexadecimal is given as: 0x 0810 A4D0 320E 9B00

Wireshark Simulations-