

**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY
HYDERABAD**

IV Year B.Tech. C.E. I –Sem

L	T/P/D	C
0	-3/-	2

(57602) ENVIRONMENTAL ENGINEERING LAB

LIST OF EXPERIMENTS

1. Determination of pH and Turbidity
2. Determination of Conductivity and Total dissolved solids (Organic and Inorganic)
3. Determination of Alkalinity/Acidity.
4. Determination of Chlorides.
5. Determination of iron.
6. Determination of Dissolved Oxygen.
7. Determination of Nitrates.
8. Determination of Optimum dose of coagulant
9. Determination of Chlorine demand
10. Determination of total Phosphorous.
11. Determination of B.O.D
12. Determination of C.O.D
13. Determination of Optimum coagulant dose.
14. Determination of Chlorine demand.
15. Presumptive coliform test.

NOTE : At least 8 of the above experiments are to be conducted.

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IV Year B.Tech. C.E. II –Sem

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**(58001) GROUND IMPROVEMENT TECHNIQUES
(ELECTIVE-IV)**

UNIT – I

Dewatering: methods of de-watering- sumps and interceptor ditches- single, multi stage well points - vacuum well points- Horizontal wells-foundation drains-blanket drains- criteria for selection of fill material around drains – Electro-osmosis.

UNIT –II

Grouting: Objectives of grouting- grouts and their properties- grouting methods- ascending, descending and stage grouting- hydraulic fracturing in soils and rocks- post grout test.

UNIT – III

In – situ densification methods in granular Soils:– Vibration at the ground surface, Impact at the Ground Surface, Vibration at depth, Impact at depth.

UNIT - IV

In – situ densification methods in Cohesive soils:– preloading or dewatering, Vertical drains – Sand Drains, Sand wick geodrains – Stone and lime columns – thermal methods.

UNIT – V

Reinforced Earth: Principles – Components of reinforced earth – factors governing design of reinforced earth walls – design principles of reinforced earth walls.

UNIT – VI

Geosynthetics : Description, properties, functions and applications of geosynthetics

UNIT – VII

Geoenvironmental application of geosynthetics : Geomembranes for landfills and ponds, Geosynthetic clay liner, Designing with GCL;s, Filtration, Erosion control, slope protection.

UNIT – VIII

Stabilization: Methods of stabilization-mechanical-cement- lime-bituminous-chemical stabilization with calcium chloride, sodium silicate and gypsum.

Expansive soils: Problems of expansive soils – tests for identification – methods of determination of swell pressure. Improvement of expansive soils – Foundation techniques in expansive soils – under reamed piles.

TEXT BOOKS:

1. Hausmann M.R. (1990), Engineering Principles of Ground Modification, McGraw-Hill International Edition.
2. Purushotham Raj. Ground Improvement Techniques, Laxmi Publications, New Delhi

REFERENCES:

1. Moseley M.P. (1993) Ground Improvement, Blackie Academic and Professional, Boca Taton, Florida, USA.
2. Xanthakos P.P, Abramson, L.W and Brucwe, D.A (1994) Ground Control and Improvement, John Wiley and Sons, New York, USA.
3. Robert M. Koerner, Designing with Geosynthetics, Prentice Hall New Jersey, USA

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**(58002) DESIGN AND DRAWING OF
IRRIGATION STRUCTURES
(ELECTIVE-IV)**

Design and drawing of the following hydraulic structures.

Group A

1. Surplus weir.
2. Syphon Well Drop
3. Trapezoidal notch fall.
4. Tank sluice with tower head

Group B

1. Sloping glacis weir.
2. Canal regulator
3. Under Tunnel.
4. Type III Syphon aqueduct

Final Examination pattern:

The Question paper is divided into two parts with two questions in each part. The student has to answer ONE question from each part. Part I should cover the designs and drawings from Group A for 45 marks and Part II should cover only designs from group B carrying 30 marks.

The duration of examination will be FOUR hours.

However, the students are supposed to practise the drawings for Group B structures also for internal evaluation.

TEXT BOOKS:

1. Water Resources Engineering – Principles and Practice by Challa · Satyanarayana Murthy, New Age International Publishers.
2. Irrigation engineering and Hydraulic structures by S.K.Garg, Standard Book House.

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**(58003) AIRPORT PLANNING AND DESIGN
(ELECTIVE - IV)**

UNIT - I The Air Transportation Systems

1. Introduction and history
2. Air transport and the national economy
3. Growth of air transport and future trends
4. Aviation organizations and their functions

UNIT - II Components of Air Transportation

1. Airports and airways
2. Airlines and air passengers
3. Operating environment

UNIT - III Airport Planning

1. Types of airport planning studies
2. Forecasting in aviation and airport planning

UNIT - IV Airport Configuration

1. Runway configurations
2. Taxiway configurations

UNIT - V

1. Introduction of Airport configurations
2. Analysis of wind
3. Site selection approach

UNIT - VI Planning and Design of the Terminal Area

1. The passenger terminal system
2. The terminal planning process
3. The apron-gate system

UNIT - VII Airport Space Traffic Control

1. Airways
2. Navigation aids

UNIT - VIII

1. Air Traffic Control
2. Air traffic control facilities
3. Air safety & Regulation issues

TEXT BOOK

1 Khanna S K, Arora M G and Jain S S, Airport Planning and Design, Nemchand and Brothers, Roorkee, 1994.

REFERENCES

1. Rangwala, Airport Engineering, Charotar Publishing House, 1996.
2. Air Transportation Planning & design - Virendhra Kumar & Statish Chandhra - Gal Gotia Publishers (1999).

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**(58004) PRESTRESSED CONCRETE STRUCTURES
(ELECTIVE-IV)**

UNIT - I

INTRODUCTION: Historic development - General principles of prestressing pretensioning and post tensioning - Advantages and limitations of prestressed concrete - Materials - High strength concrete and high tensile steel their characteristics.

UNIT - II

I.S.Code provisions, Methods and Systems of Prestressing; Pre-tensioning and post tensioning methods - Analysis of post tensioning - Different systems of prestressing like Hoyer System, Magnel System Freyssinet system and Gifford - Udall System.

UNIT - III

LOSSES OF PRESTRESS: Loss of prestress in pre-tensioned and post-tensioned members due to various causes like elastic shortage of concrete, shrinkage of concrete, creep of concrete, Relaxation of steel, slip in anchorage bending of member and frictional losses.

UNIT - IV

Analysis of sections for flexure; Elastic analysis of concrete beams prestressed with straight, concentric, eccentric, bent and parabolic tendons.

UNIT - V

DESIGN OF SECTIONS FOR FLEXURE AND SHEAR: Allowable stress, Design criteria as per I.S.Code - Elastic design of simple rectangular and I-section for flexure, shear, and principal stresses - design for shear in beams - Kern - lines, cable profile.

UNIT - VI

ANALYSIS OF END BLOCKS: by Guyon's method and Mugnel method, Anchorage zone strusses - Approximate method of design - Anchorage zone reinforcement - Transfer of prestress pre-tensioned members.

UNIT – VII

Composite section: Introduction – Analysis of stress – Differential shrinkage – General designs considerations.

UNIT – VIII

DEFLECTIONS OF PRESTRESSED CONCRETE BEAMS: Importance of control of deflections – factors influencing deflections – short term deflections of uncracked members prediction of long term deflections.

TEXT BOOKS:

1. Prestressed Concrete by Krishna Raju; - Tata Mc.Graw Hill Publications.
2. Prestressed Concrete by N.Rajasekharan; - Narosa publications.

REFERENCE:

1. Prestressed Concrete by Ramamrutham; Dhanpatrai Publications.
2. Design of Prestressed concrete structures (Third Edition) by T.Y. Lin & Ned H.Burns, John Wiley & Sons.

Codes: BIS code on prestressed concrete, IS 1343.

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**(58005) DATA BASE MANAGEMENT SYSTEMS
(ELECTIVE - IV)**

UNIT I :

Data base System Applications, data base System VS file System – View of Data – Data Abstraction – Instances and Schemas – data Models – the ER Model – Relational Model – Other Models – Database Languages – DDL – DML – database Access for applications Programs – data base Users and Administrator – Transaction Management – data base System Structure – Storage Manager – the Query Processor

UNIT II :

History of Data base Systems. Data base design and ER diagrams – Beyond ER Design Entities, Attributes and Entity sets – Relationships and Relationship sets – Additional features of ER Model – Concept Design with the ER Model – Conceptual Design for Large enterprises.

UNIT III :

Introduction to the Relational Model – Integrity Constraint Over relations – Enforcing Integrity constraints – Querying relational data – Logical data base Design – Introduction to Views – Destroying /altering Tables and Views.

Relational Algebra – Selection and projection set operations – renaming – Joins – Division – Examples of Algebra overviews – Relational calculus – Tuple relational Calculus – Domain relational calculus – Expressive Power of Algebra and calculus.

UNIT IV :

Form of Basic SQL Query – Examples of Basic SQL Queries – Introduction to Nested Queries – Correlated Nested Queries Set – Comparison Operators – Aggregative Operators – NULL values – Comparison using Null values – Logical connectivity's – AND, OR and NOT – Impact on SQL Constructs – Outer Joins – Disallowing NULL values – Complex Integrity Constraints in SQL Triggers and Active Data bases.

UNIT V :

Schema refinement – Problems Caused by redundancy – Decompositions – Problem related to decomposition – reasoning about FDS – FIRST, SECOND, THIRD Normal forms – BCNF – Lossless join Decomposition – Dependency preserving Decomposition – Schema refinement in Data base Design – Multi valued Dependencies – FORTH Normal Form.

UNIT VI :

Transaction Concept- Transaction State- Implementation of Atomicity and Durability – Concurrent – Executions – Serializability- Recoverability – Implementation of Isolation – Testing for serializability- Lock –Based Protocols – Timestamp Based Protocols- Validation- Based Protocols – Multiple Granularity.

UNIT VII :

Recovery and Atomicity – Log – Based Recovery – Recovery with Concurrent Transactions – Buffer Management – Failure with loss of nonvolatile storage-Advance Recovery systems- Remote Backup systems.

UNIT VIII :

Data on External Storage – File Organization and Indexing – Cluster Indexes, Primary and Secondary Indexes – Index data Structures – Hash Based Indexing – Tree base Indexing – Comparison of File Organizations – Indexes and Performance Tuning- Intuitions for tree Indexes – Indexed Sequential Access Methods (ISAM) – B+ Trees: A Dynamic Index Structure.

TEXT BOOKS :

1. Data base Management Systems, Raghurama Krishnan, Johannes Gehrke, TATA McGrawHill 3rd Edition
2. Data base System Concepts, Silberschatz, Korth, McGraw hill, V edition.

REFERENCES :

1. Data base Systems design, Implementation, and Management, Peter Rob & Carlos Coronel 7th Edition.
2. Fundamentals of Database Systems, Elmasri Navrate Pearson Education
3. Introduction to Database Systems, C.J.Date Pearson Education
4. Oracle for Professionals, The X Team, S. Shah and V. Shah, SPD.
5. Database Systems Using Oracle: A Simplified guide to SQL and PL/SQL, Shah, PHI.
6. Fundamentals of Database Management Systems, M.L. Gillenson, Wiley Student Edition.

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**(58006) REHABILITATION AND RETROFITING OF
STRUCTURES**

UNIT – I Introduction – Deterioration of Structures – Distress in Structures – Causes and Prevention.

UNIT – II Mechanism of Damage – Types of Damage.

UNIT – III Corrosion of Steel Reinforcement – Causes – Mechanism and Prevention.

UNIT – IV Damage of Structures due to Fire – Fire Rating of Structures – Phenomena of Desiccation.

UNIT – V Inspection and Testing – Symptoms and Diagnosis of Distress - Damage assessment – NDT.

UNIT – VI Repair of Structure – Common Types of Repairs – Repair in Concrete Structures – Repairs in Under Water Structures – Guniting – Shot Create – Underpinning.

UNIT – VII Strengthening of Structures – Strengthening Methods – Retrofitting – Jacketing.

UNIT – VIII Health Monitoring of Structures – Use of Sensors – Building Instrumentation.

TEXT BOOKS:

1. Concrete Repair and Maintenance Illustrated, RS Means Company Inc W. H. Ranso, (1981)
2. Building Failures : Diagnosis and Avoidance, EF & N Spon, London, B. A. Richardson, (1991).

REFERENCE

1. Concrete Technology by A.R. Shantakumar, Oxford University press
2. Defects and Deterioration in Buildings, E F & N Spon, London
3. Non-Destructive Evaluation of Concrete Structures by Bungey
4. Maintenance and Repair of Civil Structures, B.L. Gupta and Amit Gupta, Standard Publications.

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(58007) MANAGEMENT SCIENCE

Unit I

Introduction to Management: Entrepreneurship and organization - Nature and Importance of Management, Functions of Management, Taylor's Scientific Management Theory, Fayol's Principles of Management, Maslow's Theory of Human Needs, Douglas McGregor's Theory X and Theory Y, Herzberg's Two-Factor Theory of Motivation, Systems Approach to Management, Leadership Styles, Social responsibilities of Management.

Unit II

Designing Organisational Structures: Departmentation and Decentralisation, Types of Organisation structures - Line organization, Line and staff organization, functional organization, Committee organization, matrix organization, Virtual Organisation, Cellular Organisation, team structure, boundaryless organization, inverted pyramid structure, lean and flat organization structure and their merits, demerits and suitability.

Unit III

Operations Management: Principles and Types of Plant Layout- Methods of production (Job, batch and Mass Production), Work Study - Basic procedure involved in Method Study and Work Measurement- Statistical Quality Control: \bar{X} chart, R chart, c chart, p chart, (simple Problems), Acceptance Sampling, Deming's contribution to quality.

Unit IV

A) Materials Management: Objectives, Need for Inventory control, EOQ, ABC Analysis, Purchase Procedure, Stores Management and Stores Records - Supply Chain Management

B) Marketing: Functions of Marketing, Marketing Mix, Marketing Strategies based on Product Life Cycle., Channels of distribution.

Unit V

Human Resources Management (HRM): Evolution of HRM, Concepts of HRM, Basic functions of HR Manager: Manpower planning, Recruitment, Selection, Training and Development, Placement, Wage and Salary Administration, Promotion, Transfer, Separation, Performance Appraisal, Grievance Handling and Welfare Administration, Job Evaluation and Merit Rating.

Unit VI

Project Management (PERT/CPM): Network Analysis, Programme Evaluation and Review Technique (PERT), Critical Path Method (CPM), Identifying critical path, Probability of Completing the project within given

time, Project Cost Analysis, Project Crashing. (simple problems)

Unit VII

Strategic Management: Mission, Goals, Objectives, Policy, Strategy, Programmes, Elements of Corporate Planning Process, Environmental Scanning, SWOT Analysis, Steps in Strategy Formulation and Implementation, Generic Strategy alternatives.

Unit VIII

Contemporary Management Practices: Basic concepts of Just-In-Time (JIT) System, Total Quality Management (TQM), Six sigma and Capability Maturity Model (CMM) Levels, Value Chain Analysis, Enterprise Resource Planning (ERP), Performance Management, Business Process outsourcing (BPO), Business Process Re-engineering 5S Model, Deming's PDCA, Kaizen, Poka-Yoke, Muda, Benchmarking, Balanced Score Card.

TEXT BOOK:

1. Aryasri: *Management Science*, TMH, New Delhi, 2009

REFERENCE BOOKS:

1. Stoner, Management, Pearson, 2009
2. Kotler Philip & Keller Kevin Lane: *Marketing Management* PHI, 2009.
3. Koontz, Weihrich, & Aryasri: *Principles of Management*, TMH, 2009.
4. Thomas N. Duening & John M. Ivancevich *Management—Principles and Guidelines*, Cengage, 2009.
5. Kanishka Bedi, *Production and Operations Management*, Oxford University Press, 2009.
6. Memoria & S.V.Ganker, *Personnel Management*, Himalaya, 2009
7. Schermerhorn: *Management*, Wiley, 2009.
8. Parnell: *Strategic Management*, Biztantra, 2009.
9. L.S.Srinath: *PERT/CPM*, Affiliated East-West Press, 2009.
10. William J. Stevenson & Ceyhun Ozgur: *Introduction to Management Science*, TMH, 2007.

Pre-requisites: Managerial Economics

Objective : To familiarize with the process of management and to provide basic insights into select contemporary management practices.

Codes/Tables : Normal Distribution Function Table need to be permitted into the examination Hall.

Question Paper Pattern: 5 Questions to be answered out of 8 questions. The question paper should contain atleast 2 practical problems, one each from units –III & VI Each question should not have more than 3 bits.

Unit VIII will have only short questions, not essay questions.

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IV Year B.Tech. C.E. II-Sem	L	T/P/D	C
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(58601) INDUSTRIAL TRAINING

**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY
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IV Year B.Tech. C.E. II-Sem	L	T/P/D	C
	0	-/6/-	2

(58602) SEMINAR

**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY
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IV Year B.Tech. C.E. II-Sem	L	T/P/D	C
	0	-/15/-	10

(58603) PROJECT

**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY
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IV Year B.Tech. C.E. II-Sem	L	T/P/D	C
	0	-/-	2

(58604) COMPREHENSIVE VIVA