



Scheme of Studies & Examinations Department: Civil Engineering – 7th Semester

Sr. No	Course No.	Course Title	Teaching Schedule			Marks of class work	Examination Marks		Total	Credit	Duration of Exam
			L	T	P		Theory	practical			
1	CE 401 B	PROJECT PLANNING AND MANAGEMENT	3	1	-	25	75	-	100	4	3
2	CE 403 B	DESIGN OF STEEL STRUCTURES – II	3	2	-	25	75	-	100	5	4
3	CE 405 B	IRRIGATION ENGINEERING - I	3	0	-	25	75	-	100	3	3
4	CE 407 B	ESTIMATING AND COSTING	3	1	-	25	75	-	100	4	3
5		DEPARTMENTAL ELECTIVE – I*	3	1	-	25	75	-	100	4	3
6		OPEN ELECTIVE#	4	0	-	25	75	-	100	4	3
7	CE 409 B	IRRIGATION ENGINEERING – I LAB	-	-	2	20	-	30	50	1	3
8	CE 411 B	PROJECT	-	-	4	100	-	-	100	4	-
9	CE 413 B	COLLOQUIUM	-	-	2	50	-	-	50	2	3
10	CE 415 B	PROFESSIONAL TRAINING	-	-	2	50	-	-	50	2	-
Total			20	5	10	370	450	30	850	33	

* List of Departmental Elective – I

1	CE 453	PRESTRESSED CONCRETES	5	CE 461	ROCK MECHANICS
2	CE 455	CONSTRUCTION METHODS AND EQUIPMENTS	6	CE 463	INDUSTRIAL WASTE MANAGEMENT
3	CE 457	SOIL EXPLORATION AND TESTING	7	CE 465	GROUND WATER ENGINEERING
4	CE 459	ADVANCED DESIGN OF CONCRETE STRUCTURES	8	CE 467	SYSTEM DESIGN TECHNIQUES
			9	CE 469	TRAFFIC ENGINEERING

* List of Open Electives

1	MEI 623 B	ENTREPRENEURSHIP	6	BT 401 B	BIO-INFORMATICS
2	BME 451 B	MEDICAL INSTRUMENTATION	7	AE 417 B	MODERN VEHICLE TECHNOLOGY
3	ECE 305 B	CONSUMER ELECTRONICS	8	CE 451 B	POLLUTION & CONTROL
4	EE 451 B	ENERGY AUDIT	9	CSE 411 B	MANAGEMENT INFORMATION SYSTEM
5	EEE 457 B	ENERGY RESOURCES AND TECHNOLOGY	10	CSE 451 B	CYBER SECURITY

Note:

1. Every student has to participate in the sports activities. Minimum one hour is fixed for sports activities either in the morning or evening. Weightage of Sports given in General Proficiency Syllabus.
2. Students will be permitted to opt for any one elective run by the other department. However, the department shall offer those elective for which they have expertise. The choice of the students for any elective shall not be binding for the department to offer, if the department does not have expertise. The minimum strength of the students should be 20 to run an elective.
3. Assessment of Professional Training, undergone at the end of VI semester, will be based on seminar, viva-voce, report and certificate of Professional Training obtained by the student from the industry, institute, research lab, training center etc
4. The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
5. Electronics gadgets including Cellular phones are not allowed in the examination



SYLLABUS: B Tech (CE)

Department: Civil Engineering – 7th Semester

Subject: Project Planning And Management (Theory)

Subject Code: CE-401B

Detailed Content

Unit No.1 Introduction, Network Techniques (PERT):

- Topic No.1 : Definitions, Functions, characteristics of project
- Topic No.2 : Planning and principles of Planning and Management
- Topic No.3 : Bar milestone charts.
- Topic No.4 : Planning and scheduling of PERT, Probability concepts
- Topic No.5 : Allocation of resources and resource leveling
- Topic No.6 : Updating, controlling and monitoring.

Unit No.2 Network Techniques (CPM), Material Management:

- Topic No.7 : Planning and scheduling of CPM, Time cost optimization
- Topic No.8 : Allocation of resources and resource leveling
- Topic No.9 : Updating, controlling and monitoring
- Topic No.10: Importance, scope, objectives and functions
- Topic No.11: Identification of source and vendor analysis, purchase procedure
- Topic No.12: Inventory control, EOQ analysis, ABC Analysis, layout and storage of stores
- Topic No.13: Safety in handling and precautionary measures, wastage and analysis of wastages

Unit No.3 Construction Equipments, Financial Management

- Topic No.14: Importance, need, functions and principles, types of equipment and their uses
- Topic No.15: Selection planning and matching of construction plant and equipment
- Topic No.16: Concept of cost, profit, price, budgeting, cash flow, cost control methods
- Topic No.17: Sources of funds, balance sheet, profit and loss statement. Valuation and, its types
- Topic No.18: Determination of value of a property, Calculation of standard rent.

Unit No.4 Account Procedure of PWD Works, Safety in Construction

- Topic No.19: Classification of Works, Master Roll, and Deposit works
- Topic No.20: Cash Book, Imprest, temporary Advance
- Topic No.21: MAS Account, Stores, Indent, Tools and Plants
- Topic No.22: Hazards in construction projects, causes of accidents
- Topic No.23: Classification and costs of accidents, measurement of losses
- Topic No.24: Protective equipments, general safety programme for construction.

Study Scheme				Evaluation Scheme			Total Marks
Lectures per week				Internal Assessment	External Assessment (Examination)		
L	T	P	Credits	Max. Marks	Max. Marks	Exam Duration	
3	1	-	4	25	75	3 hours	100

TEXT BOOKS:

1. PERT and CPM Principle and application by L.S. Srinath.
2. Project Planning and Control with PERT and CPM by B.C. Punima and Khandelwal, Laxmi Publication New Delhi.

REFERENCE BOOKS:

1. Construction Engineering and management by S.Seetharaman, Umesh Publication Delhi.
2. Construction Project Management by Chitakara, Tata McGraw hill Publication , New Delhi
3. Construction Management & Planning by B. Sengupta and Guha, Tata Mcgraw hill Publication New Delhi
4. Construction Planning, Equipment and Methods by Robert L. Peurifoy Tata Mcgraw Hill Publication New Delhi



SYLLABUS: B Tech (CE)

Department: Civil Engineering – 7th Semester

Subject: Design Of Steel Structures II (Theory)

Subject Code: CE-403B

Detailed Content

Unit No.1 Elementary Plastic Analysis and Design, Industrial Buildings

Topic No.1 : Introduction, Scope of plastic analysis, ultimate load carrying capacity of tension members and compression members

Topic No.2 : Flexural members, shape factor, mechanisms

Topic No.3 : Plastic collapse, analysis

Topic No.4 : Plastic analysis applied to steel beams and simple portal frames and design.

Topic No.5 : Loads, general arrangement and stability, design considerations

Topic No.6 : Design of purlins, design of roof trusses

Topic No.7 : Industrial building frames, bracings and stepped columns

Unit No.2 Design of Water Tanks

Topic No.8 : Introduction, permissible stresses, design of circular

Topic No.9 : Rectangular and pressed steel tanks including staging

Unit No.3 Design of Steel Stacks, Towers

Topic No.10: Introduction

Topic No.11: Various loads to be considered for the design of steel stacks

Topic No.12: Design of steel stacks including foundation

Topic No.13: Transmission line towers

Topic No.14: Microwave towers

Topic No.15: Design loads

Topic No.16: Classification

Topic No.17: Design procedure and specification

Unit No.4 Cold Formed Sections

Topic No.18: Introduction and brief description of various type of cold formed sections

Topic No.19: Local buckling

Topic No.20: Concepts of effective width and effective sections

Topic No.21: Elements with stiffeners

Topic No.22: Design of compression and bending elements.

Study Scheme				Evaluation Scheme			Total Marks
L	T	P	Credits	Internal Assessment	External Assessment (Examination)		
				Max. Marks	Max. Marks	Exam Duration	
3	2	-	5	25	75	3 hours	100

TEXT BOOKS:

1. Design of Steel Structures, A.S. Arya and J.L. Ajmani , Nem Chand Brothers, Roorkee
2. Design of Steel Structures, Ram Chandra, Vol. I & II, Standard Book House
3. Design of Steel Structures, P. Dayaratnam, Wheeler Publishing, New Delhi.

REFERENCE BOOKS:

1. BIS Codes IS 800:2007, IS 801:1975, IS 875
2. Design of Steel Structures, Gaylord and Gaylord, Mcgraw hill Publication, Newyork

Note:

1. In the semester examination, the examiner will set two questions from each unit (total 08 questions in all), covering the entire syllabus. The students will be required to attempt only 5 questions selecting at least one question from each unit.
2. The use of scientific calculator will be allowed in the examination. However, programmable calculator



SYLLABUS: B Tech (CE)
Department: Civil Engineering – 7th Semester

Subject: Irrigation Engineering I (Theory)

Subject Code: CE-405B

Detailed Content

Unit No.1 Introduction, Soil-water relationship and irrigation methods, Methods of Irrigation

- Topic No.1 : Irrigation-necessity, advantages, disadvantages
- Topic No.2 : Development of irrigation in India, crops and crop seasons
- Topic No.3 : Soil-water relationship, root zone soil water
- Topic No.4 : infiltration, consumptive use, field capacity, wilting point, available moisture in soil
- Topic No.5 : Gross Command Area, Culturable Command Area, intensity of irrigation
- Topic No.6 : Delta, base period, Kor depth, core period, frequency of irrigation, duty of water, relation between delta
- Topic No.7 : Duty and base period, irrigation requirement
- Topic No.8 : Flooding methods, border strip method, check basin and furrow method, assessment of irrigation water
- Topic No.9 : Sprinkler irrigation, favourable conditions, sprinkler systems, planning
- Topic No.10: Design and maintenance of sprinkler systems, drip irrigation components parts

Unit No.2 Canal irrigation, Canal outlets

- Topic No.11: Component of canal distribution system, alignment of channels
- Topic No.12: Losses in irrigation channels, design discharge, silt theories and design of alluvial channels
- Topic No.13: Comparison of Kennedy's and Lacey's theories, canal section and design procedure
- Topic No.14: Garrets and Lacey's diagrams
- Topic No.15: Classification, requirements of a good outlet, design of pipe, APM and
- Topic No.16: Open flume outlet, flexibility proportionality, setting and sensitivity of outlet

Unit No.3 Water logging and land reclamation, River Training

- Topic No.17: Water logging-effects, causes and measures of prevention
- Topic No.18: Lining of irrigation channels, types of lining, design of lined channel land drainage
- Topic No.19: Open drains, design considerations, advantages of tile drains, depth of tiledrains
- Topic No.20: Layout of closed drains, discharge and spacing of closed drains, diameter of tile drain
- Topic No.21: Outlets for tile drains, maintenance of tile drains
- Topic No.22: Purpose of land reclamation and methods of land reclamation.
- Topic No.23: Objectives of river training, Classification of rivers, Stages of rivers
- Topic No.24: Meandering of rivers, and classification of river training works

Unit No.4 Account Procedure of PWD Works, Safety in Construction

- Topic No.25: Role of Ground Water in hydrological cycle, Distribution of Ground Water
- Topic No.26: Types of aquifers, Aquifers parameters, Well Hydraulics: Darcy's law
- Topic No.27: Types of aquifers, Steady flow towards fully penetrating confined and unconfined aquifers
- Topic No.28: Equation of motion and its applications to ground water flow problems
- Topic No.29: Determination of aquifer constant in various types of aquifers
- Topic No.30: Types of tube wells, Methods of construction
- Topic No.31: Well development.

Study Scheme				Evaluation Scheme			Total Marks
Lectures per week				Internal Assessment	External Assessment (Examination)		
L	T	P	Credits	Max. Marks	Max. Marks	Exam Duration	
3	1	-	4	25	75	3 hours	100

TEXT BOOKS:

1. Irrigation, Water Resources and Water Power Engg. by P.N.Modi.
2. Fundamentals on Irrigation Engg. by Bharat Singh

REFERENCE BOOKS:

1. Irrigation Engg & Hydraulic Structures by S.K.Garg.



SYLLABUS: B Tech (CIVIL)

Department: Civil Engineering – 7th Semester

Subject: Estimating And Costing (Theory)

Subject Code: CE-407B

Detailed Content

Unit No.1 Estimate

- Topic No.1 : Principles of estimation, units, items of work
- Topic No.2 : Different kinds of estimates, different methods of estimation
- Topic No.3 : Estimation of materials in single room building
- Topic No.4 : Two roomed building with different sections of walls, foundation
- Topic No.5 : Estimate of Floors and roofs, R.B. and R.C.C. works
- Topic No.6 : Plastering, White-washing, Distempering
- Topic No.7 : Painting, doors and windows, lump sum items
- Topic No.8 : Estimates of canals, roads

Unit No.2 Specification of Works

- Topic No.9 : Necessity of specifications, types of specifications
- Topic No.10: General specifications, specification for bricks
- Topic No.11: Cement, sand, water, lime, reinforcement
- Topic No.12: Detailed specifications for Earthwork, Cement, concrete
- Topic No.13: Brick work, floorings, D.P. C., R.C.C.
- Topic No.14: Cement plastering, white and color washing
- Topic No.15: Distempering, painting

Unit No.3 Rate Analysis, Contracts and Tenders

- Topic No.16: Purpose, importance and requirements of rate analysis
- Topic No.17: Units of measurement, preparation of rate analysis
- Topic No.18: Procedure of rate analysis for items:- Earthwork, concrete works
- Topic No.19: R C C. works, reinforced brick work, plastering
- Topic No.20: Painting, finishing(white-washing, distempering)
- Topic No.21: Contract, guidelines, types of contracts, their advantages and disadvantages
- Topic No.22: Tenders: Tender and acceptance of tender
- Topic No.23: Earnest money, security money, retention money

Unit No.4 Public Works account

- Topic No.24: Introduction, function of Public Works department
- Topic No.25: Measurement book, cash book, preparation
- Topic No.26: Examination and payment of bills, first and final bills
- Topic No.27: Administrative sanction, technical sanction
- Topic No.28: Dispute Resolution and Arbitration
- Topic No.29: Preparation of Feasibility Report and DPR

Study Scheme				Evaluation Scheme			Total Marks
Lectures per week				Internal Assessment	External Assessment (Examination)		
L	T	P	Credits	Max. Marks	Max. Marks	Exam Duration	
3	1	-	4	25	75	3 hours	100

TEXT BOOKS:

1. A Text book on Estimating and Costing and Accounts by D.D. Kohli, S. Chand & Company, ND.
2. Construction Planning, Equipment and Methods by Robert L. Peurifoy Tata Mcgraw Hill Publication New Delhi
3. "Estimating and Costing", B N Dutta, S Dutta & Co., 2000.

REFERENCE BOOKS:

1. Indian Practical Civil Engg. Handbook, P N Khanna, Engineers Publishers, 2000



SYLLABUS: B Tech (CE)

Department: Civil Engineering – 7th Semester

Subject: Irrigation Engineering Lab I

Subject Code: CE-409B

Detailed Content

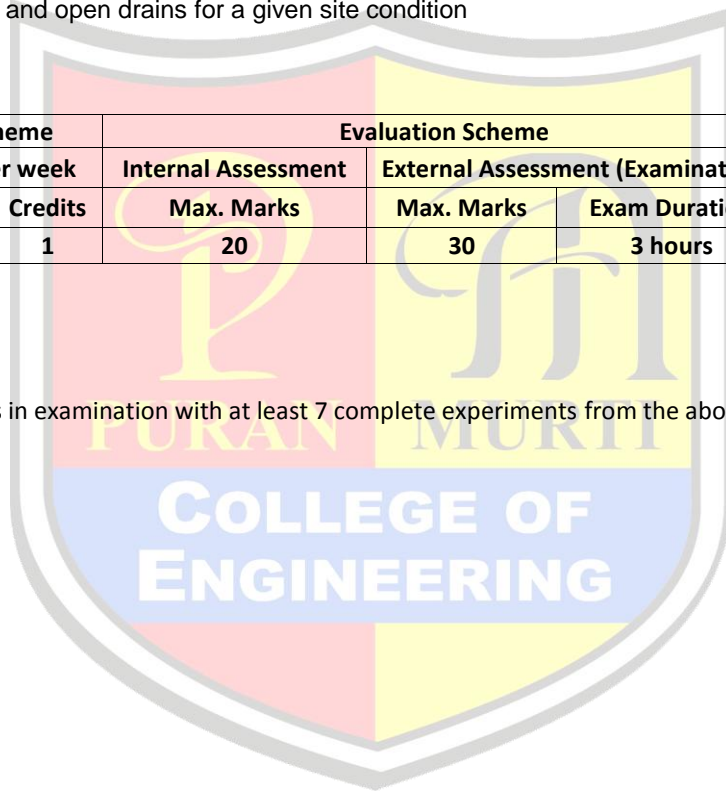
List of Experiments:

1. Design of canal in alluvium by Kennedy's & Lacey's methods
2. Cross section of canals in cutting, filling, partly in cutting and partly in filling.
3. Design of Wells in confined aquifers.
4. Design of Wells in unconfined aquifers.
5. Drawing of different types of outlets
6. Design of Guide banks.
7. Design and layout of Drip irrigation system
8. Design and layout of Sprinkler irrigation system
9. Spacing of tile drain and open drains for a given site condition

Study Scheme				Evaluation Scheme			Total Marks
Lectures per week		Credits	Internal Assessment	External Assessment (Examination)			
L	T		P	Max. Marks	Max. Marks	Exam Duration	
-	-	2	1	20	30	3 hours	50

Note:

It is must that a student appears in examination with at least 7 complete experiments from the above list.





SYLLABUS: B Tech (CE)

Department: Civil Engineering – 7th Semester

Subject: Project

Subject Code: CE-411B

Detailed Content

The primary objective of this course is to develop in students the professional quality of synthesis employing technical knowledge obtained in the field of Engineering & Technology through a project work involving design, analysis augmented with creativity, innovation and ingenuity.

Project involving design/ fabrication/ testing/ computer simulation/ case studies etc. which commences in the VII Semester will be completed in VIII Semester and will be evaluated through a panel of examiners consisting of the following:

Chairman of Department :	Chairperson
Project coordinator :	Member Secretary
Respective project supervisor :	Member

The student will be required to submit two copies of his/her project report to the department for record (one copy each for the department and participating teacher).

Project coordinator will be assigned the project load of maximum of 2 hrs. per week including his own guiding load of one hr. However, the guiding teacher will be assigned maximum of one period of teaching load irrespective of number of students/groups under him/her.

The format of the cover page and the organization of the body of the report for all the B.Tech. will be finalized and circulated by the Dean, Faculty of Engineering and Technology.

Study Scheme				Evaluation Scheme			Total Marks
Lectures per week				Internal Assessment	External Assessment (Examination)		
L	T	P	Credits	Max. Marks	Max. Marks	Exam Duration	
-	-	4	4	100	-	-	100



SYLLABUS: B Tech (CE)

Department: Civil Engineering – 7th Semester

Subject: Colloquium

Subject Code: CE-413B

Detailed Content

The objectives of the course remains

1. To learn how to carry out literature search
2. To learn the art of technical report writing
3. To learn the art of verbal communication with the help of modern presentation techniques

A student will select a topic in emerging areas of Engineering & Technology and will carry out the task under the observation of a teacher assigned by the department.

He/ She will give a seminar talk on the same before a committee constituted by the chairperson the department. The committee should comprise of three faculty members from different specializations. The teacher associated in the committee will be assigned 2 hours teaching load per week.

However, guiding students' colloquium will not be considered towards teaching load.

The format of the cover page and the organization of the body of the seminar report for all the undergraduate programs will be finalized and circulated by the Dean, Faculty of Engineering and Technology.

Study Scheme				Evaluation Scheme			Total Marks
Lectures per week		Credits	Internal Assessment	External Assessment (Examination)			
L	T		P	Max. Marks	Max. Marks	Exam Duration	
-	-	2	2	50	50	3 hours	100



SYLLABUS: B Tech (CE)

Department: Civil Engineering – 7th Semester

Subject: Professional Training

Subject Code: CE-415B

Detailed Content

At the end of 6th semester each student would undergo four weeks Professional Training in an Industry/ Institute/ Professional Organization/ Research Laboratory etc. with the prior approval of the Training and Placement Officer of the University and submit in the department a typed report along with a certificate from the organization.

The typed report should be in a prescribed format.

The report will be evaluated in the V Semester by a Committee consisting of three teachers from different specialization to be constituted by the Chairperson of the department. The basis of evaluation will primarily be the knowledge and exposure of the student towards different processes and the functioning of the organization.

The student will interact with the committee through presentation to demonstrate his/her learning.

Teachers associated with evaluation work will be assigned 2 periods per week load.

Study Scheme				Evaluation Scheme			Total Marks
Lectures per week		Credits	Internal Assessment	External Assessment (Examination)			
L	T		P	Max. Marks	Max. Marks	Exam Duration	
-	-	2	2	50	-	3 hours	50



SYLLABUS: B Tech (CE)

Department: Civil Engineering – 7th Semester

Subject: Pollution & Control

Subject Code: CE-451B

Detailed Content

Unit No.1 WATER POLLUTION

- Topic No.1 : Classification of water pollutants, water characteristics, effluent standards
- Topic No.2 : Primary treatment, secondary treatment
- Topic No.3 : Aerobic (activated sludge, aerated lagoons)
- Topic No.4 : Trickling filter, roughing filter, rotating biological contactor
- Topic No.5 : Anaerobic (contact process, UASB)

Unit No.2 AIR POLLUTION, HYDROCARBONS

- Topic No.6 : Classification of air pollutants
- Topic No.7 : Particulates: Physical characteristics, mode of formation
- Topic No.8 : Setting properties, Control measures
- Topic No.9 : Nature; sources, control, Carbon Monoxide
- Topic No.10: Source, harmful effects on human health, control measures
- Topic No.11: Oxides of Sulphur and Nitrogen Sources
- Topic No.12: Effects on human health and plants. Control measure

Unit No.3 SOLID WASTE, SOLID WASTE MANAGEMENT

- Topic No.13: Types, sources and properties of solid waste.
- Topic No.14: Methods of solid waste treatment and disposal
- Topic No.15: Generation, Collection and techniques for ultimate disposal
- Topic No.16: Elementary discussion on resource and energy recovery

Unit No.4 Elementary treatment

- Topic No.17: Elementary treatment of nuclear pollution
- Topic No.18: Metal pollution, noise pollution their effects & control
- Topic No.19: Trace element: Mechanism of distribution
- Topic No.20: Essential and non essential elements
- Topic No.21: Trace of element in marine environment
- Topic No.22: Its ecological effects and biological effects

Study Scheme				Evaluation Scheme			Total Marks
Lectures per week		Credits	Internal Assessment	External Assessment (Examination)			
L	T		Max. Marks	Max. Marks	Exam Duration		
4	-	-	4	25	75	3 hours	100

TEXT BOOKS:

1. Environmental Engg.: by Howard s. Peavy & Others, MGH International.
2. Metacaf – EDDY – Waste-water engineering revised by George Teholonobus (TMH)
3. Environmental Chemistry by B.K. Sharma, Goel Publishing, Meerut.
4. Environmental Chemistry, A.K.DE, Wiley Eastern.
5. Air Pollution: H.C. Perking – Mc Graw Hill.

Note:

1. In the semester examination, the examiner will set two questions from each unit (total 08 questions in all), covering the entire syllabus. The students will be required to attempt only 5 questions selecting at least one question from each unit.
2. The use of scientific calculator will be allowed in the examination. However, programmable calculator and cellular phone will not be allowed.



SYLLABUS: B Tech (CE)

Department: Civil Engineering – 7th Semester

Subject: Industrial Waste Management

Subject Code: CE-463B

Detailed Content

Unit No.1 Introduction, Pretreatment Methods

- Topic No.1 : Uses of water by Industry - Sources and types of wastewaters
- Topic No.2 : Quality criteria, effluent standards- Individual and common
- Topic No.3 : Effluent treatment plants - Population equivalent
- Topic No.4 : Effects of industrial wastes on streams
- Topic No.5 : Land, air and waste water treatment plants
- Topic No.6 : Process modification – methods and materials changes
- Topic No.7 : Reduce, reuse and recycle methods, house keeping

Unit No.2 Equalization, Chemical oxidation

- Topic No.8 : Neutralization - Oil separation – Floatation
- Topic No.9 : Precipitation – Adsorption - Aerobic
- Topic No.10: Anaerobic biological treatment - High rate reactors
- Topic No.11: Ozonation – Ion Exchange – Membrane technologies

Unit No.3 Industrial Waste Treatment I

- Topic No.12: Manufacturing process description - wastewater characteristics
- Topic No.13: Waste treatment flow sheet for typical industries – Textiles.
- Topic No.14: Tanneries – Pulp and Paper
- Topic No.15: Manufacturing process description - wastewater characteristics
- Topic No.16: Waste treatment flow sheet for typical industries
- Topic No.17: Metal finishing – Petroleum refining – Chemical industries - Sugar and distilleries

Unit No.4 Industrial Waste Treatment I

- Topic No.18: Manufacturing process description - wastewater characteristics
- Topic No.19: Waste treatment flow sheet for typical industries
- Topic No.20: Dairy – Iron and Steel- Fertilizers – Nuclear power plants

Study Scheme				Evaluation Scheme			Total Marks
Lectures per week				Internal Assessment	External Assessment (Examination)		
L	T	P	Credits	Max. Marks	Max. Marks	Exam Duration	
3	1	-	4	25	75	3 hours	100

TEXT BOOKS:

1. Eckenfelder. W.W., Industrial Water Pollution Control, McGraw Hill, 2000.
2. Arceivala.S.J. Wastewater Treatment for Pollution Control, Tata Mc.Graw Hill. 2008.

Note:

1. In the semester examination, the examiner will set two questions from each unit (total 08 questions in all), covering the entire syllabus. The students will be required to attempt only 5 questions selecting at least one question from each unit.
2. The use of scientific calculator will be allowed in the examination. However, programmable calculator and cellular phone will not be allowed.