



Nagar Yuwak Shikshan Sanstha's

Yeshwantrao Chavan College of Engineering

(An Autonomous Institution affiliated to Rashtrasant Tukadoji Maharaj Nagpur University)

Hingna Road, Wanadongri, Nagpur - 441 110

NAAC Accredited with 'A' Grade

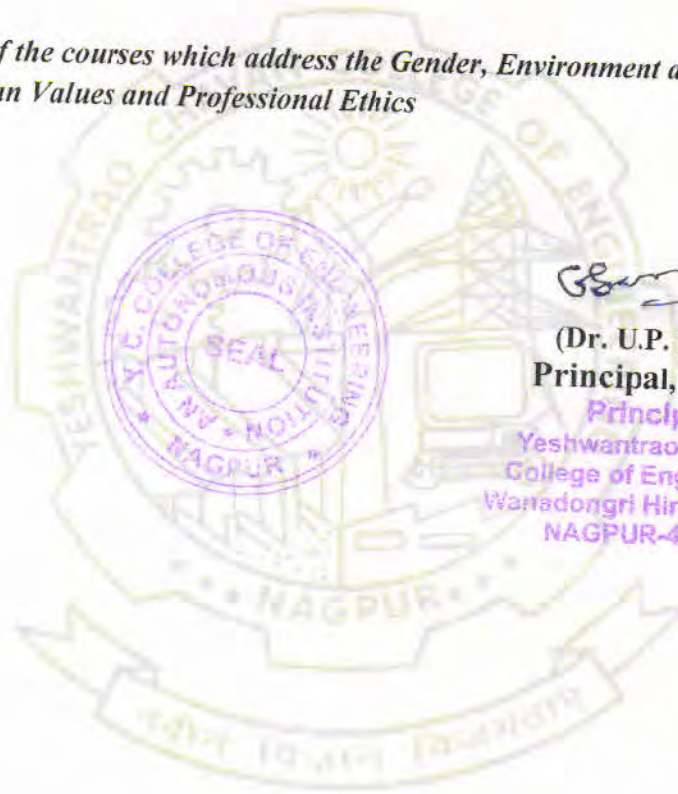
Ph.: 07104-242919, 242623, 242588

Website : www.ycce.edu E-mail : principal@ycce.edu

Summary

1.3.1 Institution integrates crosscutting issues relevant to Professional Ethics, Gender, Human Values, Environment and Sustainability, Human Values into the Curriculum

- List of the courses which address the Gender, Environment and Sustainability, Human Values and Professional Ethics



(Dr. U.P. Waghe)

Principal, Y.C.C.E.

Principal

Yeshwantrao Chavan
College of Engineering
Wanadongri Hingna Road,
NAGPUR-441110



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Ph.: 07104-237919, 234623, 329249, 329250 Fax: 07104-232376, Website: www.ycce.edu

Office of Dean (Academic Matters)

Courses related to Professional Ethics, Gender, Human Values, Environment and Sustainability, Human Values into the Curriculum:

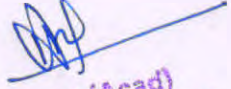
Professional Ethics:

CV1332	Steel Structures
CV1331	Reinforced Concrete Structures
CV1428	PE IV Earthquake Engineering
ME402	Production Management.
ME405	Project Evaluation & Management.
ME409	Financial & Cost Management.
ME453	Value Engineering
ME454	Lean Sigma
ME1405	Project Evaluation & Management.
ME1409	Financial & Cost Management.
ME1447	Production Management.
ME1453	Value Engineering.
ME1454	Lean Sigma.
CT2317	PE I: Introduction to Geographical Information System

Environment and Sustainability:

CV1441	Environmental Engineering – II
CV1315	PE I Water Treatment
CV1325	OE I Environmental Management
CV1427	PE IV Waste Water Treatment
CV2207	Water Supply Engineering
ME402	Production Management.
ME405	Project Evaluation & Management.
ME409	Financial & Cost Management.

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Dean (Acad)
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ME453	Value Engineering
ME454	Lean Sigma
ME1405	Project Evaluation & Management.
ME1409	Financial & Cost Management.
ME1447	Production Management.
ME1453	Value Engineering.
ME1454	Lean Sigma.

Dr. A.V. Patil
Dean (Academic Matters)
Dean (Acad)

Yeshwantrao Chavan
College of Engineering
Wanadongri Hingna Road
NAGPUR - 441 110



YESHWANTRAO CHAVAN COLLEGE OF ENGINEERING

B.E. SoE and Syllabus 2014-15

Civil Engineering

VI SEMESTER

CV1332	Steel Structures			L=3	T=1	P=0	CREDITS = 4
Evaluation Scheme	MSE-I	MSE-II	TA	ESE	Total		ESE Duration
	15	15	10	60	100		4 hours

COURSE OBJECTIVES	COURSE OUTCOMES
1. To study the behavior and design of Structural steel components. 2. To study the fundamental design philosophies of steel structures. 3. To study the codal provision for design of steel structure. 4. To study the design of built-up section and column bases.	1. An ability to understand effect of forces and its impact on structure 2. An ability to identify the type of structure and its design methodology 3. An ability to utilize the application of Indian Standard code for design purpose. 4. An ability to design the simple, built up section and column bases.
Mapped Program Outcomes: 1,8,11	
Mapped Program Outcomes:1	

UNIT – 1 :

Steel as a Structural Material: Physical and mechanical properties of Structural Steel, Merits and Demerits of Steel as a Structural Material, Grades of Structural Steel, Structural Steel Sections, **Introduction to Indian Standards: IS 800:1984, IS 800:2007**, Method of Design: Introduction to Working Stress Method, Introduction to Limit State Method. Drawing in sketchbook about different sections used.

[08 Hrs.]

UNIT – 2 :

Connection: Types and Failure of Connections, Simple Riveted Connection, Bolted Connection, Simple Welded Connection, Strength and Efficiency of Joint. Drawing in sketchbook about various connections

[09 Hrs.]

UNIT – 3 :

Tension Member: Types of Tension Member, Stresses , Design of axially loaded Tension Member
Compression Member: Effective length, Slenderness ratio, Built-up sections, Design of axially loaded Compression Member

[09 Hrs.]

UNIT – 4 :

Design of Beam: Types of Beams, Lateral Stability of beams, Types of section, Stresses on Beam, Design of Laterally Supported Beam, Design of Laterally Unsupported Beam, Built-up Beams. Drawing in sketchbook about built-up beam.

[08 Hrs.]

UNIT – 5 :

Column: Design of Axially loaded columns, Design of Laced and Battened Columns (Design of Built-up Columns) with Bolted and Welded End Connection. Drawing in sketchbook about built-up column

[09 Hrs.]

UNIT – 6 :

Column Bases and Footing: Types of Column Bases, Slab Base, Gusset Base, Foundation Bolt, Grillage Footing, Design of Slab Base and Gusseted Base. Drawing in sketchbook about column bases and footing.

[09 Hrs.]

Text Books:

1. Fundamentals of Structural Steel Design, By M. L. Gambhir, Mc Graw Hill Education, 2013
2. Design of Steel Structures, By N. Subramanian, OXFORD University Press, First Edition, 2008
3. Limit State Design of Steel Structures, By S. K. Duggal, Mc Graw Hill Education Private Limited, 2011

Reference Books:

1. Design of Steel Structures, LSM, By S. S. Bhavikatti, I. K. International Publication House Pvt. Ltd. 2009
2. Structural Steel Design, By Jack C. McCormac, Stephen F. Csernak, 5th Edition Pearson Education Limited, 2013

		1.02	Nov. 2017	Applicable for AY 2017-18 Onwards
Chairperson	Dean (Acad. Matters)	Version	Date of Release	



YESHWANTRAO CHAVAN COLLEGE OF ENGINEERING

B.E. SoE and Syllabus 2014-15

Civil Engineering

V SEMESTER

CV1331	Reinforced Concrete Structures			L=3	T=1	P=0	CREDITS = 4
Evaluation Scheme	MSE-I	MSE-II	TA	ESE	Total		ESE Duration
	15	15	10	60	100		4 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
<ol style="list-style-type: none"> 1. To impart comprehensive knowledge on the design of reinforced concrete structural elements such as beams, columns, slabs and footings. 2. To bring about an understanding of the behavior of reinforced concrete. 3. To bring about an understanding of the design philosophies of RCC structures. 4. To introduce the Prestressed concrete. 	<ol style="list-style-type: none"> 1. An ability to understand the structural properties of steel and concrete and their applications in structural planning. 2. An ability to acquire the knowledge about the basic methods of structural design. 3. An ability to understand the analysis, design and detailing of RCC structural elements required for building. 4. An ability to understand the concept and application of prestressed concrete

Mapped Program Outcomes : 1,2,3

Mapped Program Specific Outcomes: 1

UNIT – 1 :

Properties of different grades of concrete and steel, Permissible stresses, load factors, Structural planning & understanding the behavior of R.C.C. members. Load distribution of frame structure for beam, Slabs, Column, and footing. Methods of frame analysis (brief introduction). **Introduction to IS 456-2000, SP: 34, SP: 16 and specification for beam, slab, column.**

Drawing in sketchbook about structural planning of building.

[09 Hrs.]

UNIT – 2 :

Working stress method: Behavior of beam under flexure, Stress distribution diagram, Basic concept in design for flexure, assumptions, design constant, analysis of rectangular sections, balanced, under reinforced section & over reinforced sections.

Limit state method :Characteristic values, partial safety factor, stress strain relationship, stress block parameters, failure criteria. Limit state of collapse in flexure, basic assumptions.

Drawing in sketchbook about stress-strain curve of steel and concrete, stress diagram and stress block

[09 Hrs.]

UNIT – 3 :

Analysis and design of singly reinforced rectangular section, under reinforced section & balanced section. Analysis and design of doubly reinforced rectangular section, Analysis and design of T & L beam for flexure.

Drawing in sketchbook about structural detailing of different types of beam.

[08 Hrs.]

UNIT – 4 :

Limit state of serviceability, deflection control of beam and slab.

Design for Shear and Bond.

Design of one way, two way, cantilever & staircase slabs.

Drawing in sketchbook about stirrups, zoning and detailing about one way, two way and cantilever slab.

[09 Hrs.]

UNIT – 5 :

Limit state of collapse in compression; basic assumptions.

Analysis and design of columns subjected to axial load, and uni-axial & biaxial moments.

Design of isolated footing for column subjected to axial loads.

Drawing in sketchbook about columns and footing.

[09 Hrs.]

UNIT – 6 :

Design of rectangular combined footing.

Introduction to under-reamed pile foundation.

Introduction to Prestressed Concrete(Basic Concept, Types of Prestressing, Advantages and limitations of Prestressing, Pre-tensioning Systems and Devices. Prestressing Steel, Forms of Prestressing Steel, Types and properties of Prestressing Steel, Codal Provisions.)

Drawing in sketchbook about combined footing, piles and prestressed concrete.

[08 Hrs.]

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Civil Engineering

V SEMESTER


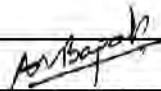
CV1331	Reinforced Concrete Structures			L=3	T=1	P=0	CREDITS = 4
Evaluation Scheme	MSE-I	MSE-II	TA	ESE	Total		ESE Duration
	15	15	10	60	100		4 Hours

Text Books:

1. P.C. Vergese, Limit State Design of Reinforced Concrete, Prentice Hall Publishers, 2nd edition, 2008
2. Shah and Karve, Reinforced Concrete Structures, Structures Publishers, Pune, 5th edition, 2015.
3. Sinha S.N, Reinforced Concrete Design, Tata McGraw Hill Publishing Company Limited, New Delhi, 2007
4. Ashok K. Jain, Reinforced Concrete – Limit State Design, Nem chand and Brothers, 7th edition, 2012

Reference Books:

1. P.C. Varghese, Advanced Design of Structures, Prentice Hall Publishers, 2009
2. Punmia B.C., Jain A.K., Jain A.K, Reinforced Concrete Structures (Vol-I), Laxmi Publications Pvt Ltd, New Delhi, 2007
3. N. Krishana Raju, Prestressed Concrete, Tata McGraw Hill Publishing Company Limited, New Delhi, 5th edition 2012

		1.02	Nov. 2017	Applicable for AY 2017-18 Onwards
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YESHWANTRAO CHAVAN COLLEGE OF ENGINEERING

B.E. SoE and Syllabus 2014-15

Civil Engineering

VIII SEMESTER

CV1428	PE IV : Earthquake Engineering			L=3	T=0	P=0	CREDITS = 3
Evaluation Scheme	MSE-I	MSE-II	TA	ESE	Total		ESE Duration
	15	15	10	60	100		3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
<ol style="list-style-type: none"> To study geology of earth and interior. To expose student to understand the detailed study of earthquake. To expose students to understand various provisions related to earthquake design. To understand various aspects of tall structures. To understand detailing of RCC members for ductile behavior as IS code provisions. To understand various effects of earthquakes on structures 	<ol style="list-style-type: none"> After completion of course the student will be able to understand the fundamentals and Importance of Earthquake Engineering apply the basic principles for seismic design and construction of structures in accordance with the provisions of Indian Standard Codes. understand various special aspects in Multi-story buildings understand the social aspects of earthquake disaster, its management and damages caused due to past Earthquake in & outside India and remedial measures.

Mapped Program Outcomes: 1,2,3,4,6,11

UNIT – 1 :

Origin of earthquakes, engineering geology, seismicity of the world, faults, earthquake waves, quantification of earthquake (magnitude, energy, intensity of earthquake), measurements of earthquake, analysis of earthquake records and its interpretation.

[07 Hrs.]

UNIT – 2 :

Determination of magnitude, epicenter, epicenter distances, focal depth, seismic zoning, ground motion and their characteristics, factors affecting ground motions, causes or sources of earthquake damages, evaluation of seismic hazards, concept of response spectra, generation of response spectrum from available earthquake.

[06 Hrs.]

UNIT – 3 :

Study of IS: 1893-Part (I)-2016, IS: 13920-2016 for analysis and ductile detailing of RCC structures and other related codes, concept of earthquake resistant design, design philosophy, virtues of earthquake resistant design.

[06 Hrs.]

UNIT – 4 :

Design and detailing of RCC members, beam, column, shear wall and beam-column joints for ductile behaviors, calculation of base shear distribution to various floors.

[07 Hrs.]

UNIT – 5 :

Special aspects in multi-storey buildings, effect of torsion, flexible first storey, P-delta effect, and soil-structure interaction on building response, drift limitation, soil liquefaction during earthquakes.

[07 Hrs.]

UNIT – 6 :

Load bearing structures, masonry structures, strengthening and rehabilitation of non-engineered building for earthquake, lessons from past earthquakes.

[06 Hrs.]

Text Books :

- Agrawal & Shrikhande, Design of Earthquake Resistant Structures, 3rd 2006, Prentice – Hall of India Pvt. Ltd.
- Roberto Villaverde, Fundamental Concepts of Earthquake Engineering, 2009, CRC Press
- Asadour H. Hadjian, Basic Elements of Earthquake Engineering, 2015, Wiley

References Books:

- C.V.R. Murty, Earthquake Tips, 2005, NICEE, IITK
- www.nicee.org / iaee / E_FrontCover.pdf, NICEE Guidelines for Earthquake Resistant Non-Engineered Construction, 2004, National information center of Earthquake engineering Indian Institute of Technology Kanpur Kanpur 208016, India.
- Robin K. McGuire, Seismic Hazard and Risk Analysis, 2004, Earthquake Engineering Research Institute; First edition
- Farzad Naeim, Handbook on Seismic Analysis and Design of Structures, 2001, Kluwer Academic Publisher
- Paulay, T. & Prestiley M.J.N., Seismic design of R C & Masonry Buildings, 2nd 1999, John Willey & Sons

VIII SEMESTER

		1.02	Nov. 2017	Applicable for AY 2017-18 Onwards
Chairperson	Dean (Acad. Matters)	Version	Date of Release	

Regular: - 7th Semester

Theory

PTDC: - 4th Semester

ME402	Production Management	L=3	T=1	P=0	Credits=4
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Evaluation Scheme	MSE-I	MSE-II	TA	ESE	Total	ESE Duration
	15	15	10	60	100	3 Hrs

Objective	Course Outcome
The course aims to develop an insight into working of production systems, their evaluation analysis and control. The overall objective is to learn to plan, design, execute or operate, control and measure the efficiency/ effectiveness of production systems. [a,c,e,k]	Students will have (I) Ability to estimate and evaluate manage production system using work study.
	(II) Ability to design and evaluate plant layouts.
	(III) Ability to predict and evaluate future demand using forecasting.
	(IV) Ability to estimate production costing and apply by judging production planning and control.

<p>Unit1 [7 hrs] Work Study: Productivity, factors affecting productivity. Measurement of productivity. Work study and methods study: Definitions, objectives, steps in method study, Process charts, string diagram, motion study, micro motion study, SIMO Chart . [a,e,k]</p>	
<p>Unit2 [8 hrs] <i>Work measurement: Objectives, definition, stop watch study, work sampling, PMTs, MTM & Work factor method</i> Value analysis and value Engineering: Introduction, steps involved in value analysis. Applications in Manufacturing. [a,e,k]</p>	
<p>Unit3 [8 hrs] Plant Layout: Types of Plant Layout, Layout Functions and problems, Organization, Automated material handling, Concepts of AGVs, AS/RS and other automated devices. Design of integrated plant layout for product handling system. [a,c,e]</p>	
<p>Unit4 [7 hrs] Forecasting: Need for forecasting, classification of forecasting methods, like judgmental technique, time series analysis, least square method, moving average method, exponential smoothing method. [a,e]</p>	[7]
<p>Unit5 [7 hrs] Production planning and control: Definition, objectives of PPC, functions of PPC, types of production, Inventory control, EOQ, Techniques in inventory control and associated problems. [a,e,k]</p>	
<p>Unit 6</p>	[8]

hrs]

Process analysis and Cost Estimation:

Steps involved in manual production planning, Selection of process, analysis. Aims of Cost Estimation, Difference between cost and Estimation, Elements of cost: material, Product cost, Analysis of overhead expenses, Product cost estimation. **[a,e]**

Text books:				
1	Introduction to Work study	4 th Edition (1992)	George Kanaway	ILO
2	Motion and Time study	1 st Edition (1980)	Barnes	Wiley
3	Ergonomics	1st Edition (1985)	Murell	Chapman & Hall
4	Production Planning and Control	2nd Edition (2006)	Jain & Agrawal	McGraw-Hill
5	Industrial Engg. And Project management	2 nd Edition (2006)	Mart and Telsang	s. Chand
6	Plant layout and Material Handling	1st Edition (1977)	James Apple	Wiley, Technology & Engineering

Regular: - 7th Semester Elective-I Theory PTDC: - 5th Semester

ME405	Project Evaluation & Management			L=4	T=0	P=0	Credits=4
Evaluation Scheme	MSE-I	MSE-II	TA	ESE	Total	ESE Duration	
	15	15	10	60	100	3 Hrs	

Objective	Course Outcome
The course focuses on developing complete understanding of formulating a problem/project and finding possible solutions against the given constraints. The overall learning shall resolve project identification evaluating its technical and economical feasibility and developing skills for its planning, and establishing controls. Relevant techniques, writing skills and monitoring methods shall be dealt with in details. [a,d,e,h,k]	(I)The students will be able to use the concepts of monitoring and evaluation, appraise and determine best monitoring methods, appreciate evaluation in the context of developmental project work..[a,d,e,h,k]
	(II)The students will be able to carry out problem analysis, determine relevant indicators and data necessary for evaluation, prepare for and implement a monitoring and evaluation process, establish baselines and targets.. [a,d,e,h,k]

Unit1 [7 hrs] Project Identification considering objectives and SWOT analysis, Screening of Project Ideas, Technical, Market, Financial, Socioeconomic and Ecological Appraisal of a project demand forecasting, secondary data, accuracy, confidence level, uncertainty. [a,d,e,h,k]
Unit2 [7 hrs] Technical feasibility : Process selection, Level of automation, plant capacity, acquiring technology, Appropriate technology plant location, Equipment selection & procurement, Govt. policies. Value analysis and project evaluation: . [a,d,e,h,k]
Unit3 [9 hrs] Economic feasibility: Cost of Project, working capital analysis, fixed cost, means of finance, estimation of sales & production price analysis, Break even point, Projected cash flow statements, projected balance sheet, projected profit & loss statement, projected cash flow, rate of return, Discounted payback period, cost benefit analysis, return after taxes. . [a,d,e,h,k]
Unit 4 [7 hrs] Project Planning and Control: Work break down structure and network development. Basic Scheduling, Critical Path and four kinds of floats. Scheduling under probabilistic durations, Time Cost tradeoffs, CPM, PERT, Optimum project duration, resource allocation, updating . [a,d,e,h,k]
Unit 5 [7 hrs] Project report: Preparation of project report, risk analysis, sensitivity analysis, methods of

raising capital .[a,d,e,h,k]

Unit6

[8 hrs]

Initial review, performance analysis , ratio analysis, sickness, project revival, Project Monitoring with PERT/Cost, Organizational aspects, Computer packages and Project Completion environmental & social aspects. .[a,d,e,h,k]

.Reference books:

S.N.	Title of the book	Edition (Year of publication)	Author(s)	Publisher
1	Projects	Seventh edition 2007	Prasanna chandra	Tata mc graw Hill publishing company Ltd.
2	CPM & PERT		L. S. Srinath	East West publisher
3	Projects	1963	P.K. Joy	Macmillon
4	Engineering Economy	Fifth edition	H. G Thuesen, W J Fabricky, G,J, Thuersen	Prentice-Hall
5	Finance series 'Project management' , Vol-I1 and Vol-III	2009	ICFAI	ICFAI,Press Hyderabad
6	Finance Management	Sixth edition 2010	M.Y.Khan	Tata McGraw hill
7	Financial Management	Fourth edition	Chandra, Prasanna	Tata McGraw-Hill Education, 1997
8	Engineering Economics	Eighth edition	G. J. Thuesen, Wolter J. Fabrycky	Prentice Hall, 1993

Regular: - 7th Semester Elective-II Theory PTDC: - 7th Semester

ME409		Financial & Cost Management			L=4	T=0	P=0	Credits=4
Evaluation Scheme	MSE-I	MSE-II	TA	ESE	Total	ESE Duration		
	15	15	10	60	100	3 Hrs		
Objective				Course Outcome				
<ul style="list-style-type: none"> •To develop in the engineering students the ability to analyze any engineering problem in a simple and logical manner and to apply a few well understood basic principles of Management to find its solution. •To be able to take a proper decision at proper time which will be beneficial in future. 				1.(I)The student will have ability to decide the cost of the product [c,d,e,f,i,l]				
				(II) The student will have the ability to Analyze the financial requirement. [c,d,e,f,i,l]				
				(III) The student will have improved Decision making ability. [c,d,e,f,i,l]				
				(IV) The student will have ability to take a proper decision on waste or scrap material. [c,d,e,f,i,l]				
Unit 1				[7 Hrs]				
Business Finance: Need for finance, sources of finance (fixed and working capital), equity and preference shares, deposits from public, debentures, bonds, term loans, financial institutions in India, Financial statements and their analysis. [c,d,e,f,i,l]								
Unit 2				[7 Hrs]				
Concept of Cost: Concept of cost, classification of cost, direct and indirect , fixed and variable , semi variable, product and period, controllable and uncontrollable costs, opportunity costs , sunk cost, joint cost, prime cost, factory cost, cost of production, selling and distribution cost, administrative cost, cost of sales. [c,d,e,f,i,l]								
Unit 3				[7 Hrs]				
Cost ascertainment and cost reduction: Concept of overhead, collection of overheads, allocation and appointment, absorption of overheads, absorption rates, under – over absorption , cost centers, cost units, cost statement sheet.Areas of cost reduction, techniques, productivity. [c,d,e,f,i,l]								
Unit 4				[8 Hrs]				
Costing System: Job costing, contract costing, cost plus contracts, batch costing, process costing, simple process costing, normal abnormal losses and gains, waste, scrap & spoilage, joint & byproducts, operating costing. [c,d,e,f,i,l]								
Unit 5				[8 Hrs]				
Cost Planning and Control: Concept of budgeting, advantages and limitations, budgetary control, key factors, fixed and flexible budget. Standard costing, selling of standards, variance analysis. [c,d,e,f,i,l]								
Unit 6				[8 Hrs]				
Decision Making: Marginal costing, break even analysis, cost volume, profit analysis, application of costing to various decisions like make or buy, add or drop products, cost or process further, operate or shut down, replace or retain.								

[c,d,e,f,i,l]

Reference books:				
S.N.	Title of the book	Edition (Year of publication)	Author(s)	Publisher
1	Principles and Practice of Cost Accounting	Fifth edition	N.K.Prasad	Pearson Education
2	Cost Accounting		Jawahar Lal	
3	Management Accountancy	Third edition 2010	J. Batty	Tata Mc Graw Hill
4	Financial Management	2007	Prasanna Chandra	Tata Mc Graw Hill
5	Engineering Economy	1973	Paul Degarmo	Macmillan, 1973
6	Cost Accounting	2008	B.K.Bhar	Academic publishers
7	Costing and finance management	2012	Mrunalini Naik	Thakur publications

Regular: - 8th Semester Elective-V Theory

ME453	Value Engineering	L=4	T=0	P=0	Credits=4
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Evaluation Scheme	MSE-I	MSE-II	TA	ESE	Total	ESE Duration
	15	15	10	60	100	3 Hrs

Objective	Course Outcome
<p>To familiarize students with :</p> <ol style="list-style-type: none"> 1.Philosophy of Value Analysis / Value Engineering , its importance and application 2.The various steps involved in systematic implementation of Value Analysis / Value Engineering [d,l] 	<p>Students will be able to:</p> <ol style="list-style-type: none"> 1. Explain the various types of Values and functions. 2. Evaluate the product life cycle. 3. Analyze the project selection and estimate life cycle costs. 4. Evaluate and improve value of product/system by designing and critically analyzing the VE job plans and othe VE/VA techniques.

<p>Unit 1 [7 hrs]</p> <p>Introduction to Value Engineering (V.E.) and Value Analysis, Quantitative definition of Value, Use Value and Prestige Value, Estimation of product quality/performance, Types of Functions. [e, g, l]</p>	
<p>Unit 2 [7 hrs]</p> <p>Life Cycle of a Product, Product life cycle Management, Methodology of V.E., [f, h, m]</p>	
<p>Unit 3 [8 hrs]</p> <p>Relationship between Use Functions and Esteem Functions in product design, Functional Cost and Functional Worth, Effect of value improvement on profitability, Aims of VE systematic Approach [c, i, l]</p>	
<p>Unit 4 [8 hrs]</p> <p>Introduction to V.E. Job plan / Functional Approach to Value Improvement, Various phases and techniques of the job plan [a, j, m]</p>	
<p>Unit 5 [8 hrs]</p> <p>Factors governing project selection, Life Cycle Costing for managing the Total Value, Concepts in LCC, Present Value concept, Annuity concept, Net Present Value, Pay Back period, Internal rate of return on investment (IRR), Examples and illustrations. [b, k, l]</p>	

Unit 6**[7 hrs]**

Creative thinking and creative judgment, False material, labor and overhead saving, System Reliability, Reliability elements in series and parallel, Decision matrix, Estimation of weights and efficiencies, Sensitivity analysis, Utility functions, Fast diagramming, Critical path of functions, DARSIRI method of value analysis, Purchase price analysis.

[a, c, d, m]**Reference Books**

S.N.	Title of the book	Edition (Year of publication)	Author(s)	Publisher
1	Value Engineering	1962	L.D.Miles	Materials Management International,
2	Getting more at less cost	1995	Jagannathan	Tata McGraw-Hill Publishing Company Limited,
3	Value Engineering		Tufly	
4	Value Engineering	3 rd edition	Donald Parker	
5	Value Engineering	4 th edition 1984	Zimmerman	City of Tulsa, 1984

Regular: - 8th Semester Elective-V Theory

ME454	Lean Sigma	L=4	T=0	P=0	Credits=4
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Evaluation Scheme	MSE-I	MSE-II	TA	ESE	Total	ESE Duration
		15	15	10	60	100

OBJECTIVES	Course Outcome
<ul style="list-style-type: none"> •The course aims to develop a broad understanding of Lean/Six Sigma principles. •It focuses on build capability to implement Lean/Six Sigma initiatives in manufacturing as well as service operations will also help the capability to operate with awareness of Lean/Six Sigma at the enterprise level.[a,b,c,d,e,f,h,k,l,m) 	(I)The students will able to manage the industrial resources more efficiently.. [a,b,c,d,e,f,h,k,l,m)
	(II)The students will be able to reduce wastage, cost and at the same time improve efficiency through use of various lean techniques. [a,b,c,d,e,f,h,k,l,m)
	(III)The students will be able to design, optimise and innovate six sigma.. [a,b,c,d,e,f,h,k,l,m)
	(IV)The students will be able to apply TRIZ technique.. [a,b,c,d,e,f,h,k,l,m)

UNIT 1 [8 hrs] Business process, Quality management, Need and significance of LS, COQ, COPQ, LS implementation, LS culture, Team roles and function, benefits. [c, d, f, l]	
UNIT 2 [8 hrs] Six sigma essentials, SS tools, DMAIC methodology, case studies and applications.[a, b, e, m]	
UNIT 3 [8 hrs] Statistical applications and methods using Minitab Software, cases and problems.[a, b, k, l]	
UNIT 4 [7 hrs] Process capability, Gage R & R,MSA, ANOVA,HYPOTHESIS testing, DOE, process characterization. [b, k, l]	4
UNIT 5 [7 hrs] Lean manufacturing concepts, Lean means speed, efficiency, waste time and cost reduction. Lean Tools and Techniques-VSM,7 waste,5S,Kanban,Poka-yoke,Kaizen,TPM,SMED,Pull vs Push, JIT, single piece flow. [a, c, h]	
UNIT 6 Design for Six Sigma, (DFSS)- need and significance, DMADV methodology, DFSS tools, Product and process optimization, innovations, TRIZ, case studies and applications.[a, b, k, m]	

S.N.	Title of the book	Edition (Year of	Author(s)	Publisher
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		publication)		
Test Books :				
1	Getting started in Six-sigma		Michel C Thomset	John Wiley and Sons
2	Six Sigma for every one		George Eccles	John Wiley and Sons
3	Transactinal Six sigma nad Lean servicing		Betsi Harris Ehrlich	St.Lucie Press
4	Six sigma for small business		Greg Brue	Ep- Entrepreneur press
5	Six sigma for Quality and productivity promotion	2003	Sung H.	Park Asian Productivity organization
Reference Books				
1	Six sigma and Beyond- Vol I to VII		D. S Stamalatis	St. lucie Press
2	Demystifying Six Sigma	2003	Alan Lasson	AMCON(American management Association)
3	The Six sigma Way	2003	P.Pande R Nenman & R.Cavanagh	Mc GraHill
4	Lean Production Simplified: A plain-Language Guide to the World's Most powerful Production System	2002	Dennis, Pascal	New York: Productivity Press, ISBN: 1563272628
5	Lean Six sima		Michel L George	Mc GraHill
6	Design for Six Sigma		Kai Yang,Basen El-Haik	Mc GraHill
7	Design for Lean Six sigma			

Regular: - 7th Semester Elective-II Theory PTDC: - 7th Semester

ME1409		Financial & Cost Management			L=4	T=0	P=0	Credits=4
Evaluation Scheme	MSE-I	MSE-II	TA	ESE	Total	ESE Duration		
	15	15	10	60	100	3 Hrs		
Objective				Course Outcome				
<ul style="list-style-type: none"> •To develop in the engineering students the ability to analyze any engineering problem in a simple and logical manner and to apply a few well understood basic principles of Management to find its solution. •To be able to take a proper decision at proper time which will be beneficial in future. 				1.(I)The student will have ability to decide the cost of the product [c,d,e,f,i,l]				
				(II) The student will have the ability to Analyze the financial requirement. [c,d,e,f,i,l]				
				(III) The student will have improved Decision making ability. [c,d,e,f,i,l]				
				(IV) The student will have ability to take a proper decision on waste or scrap material. [c,d,e,f,i,l]				
Unit 1				[7 Hrs]				
Business Finance: Need for finance, sources of finance (fixed and working capital), equity and preference shares, deposits from public, debentures, bonds, term loans, financial institutions in India, Financial statements and their analysis. [c,d,e,f,i,l]								
Unit 2				[7 Hrs]				
Concept of Cost: Concept of cost, classification of cost, direct and indirect , fixed and variable , semi variable, product and period, controllable and uncontrollable costs, opportunity costs , sunk cost, joint cost, prime cost, factory cost, cost of production, selling and distribution cost, administrative cost, cost of sales. [c,d,e,f,i,l]								
Unit 3				[7 Hrs]				
Cost ascertainment and cost reduction: Concept of overhead, collection of overheads, allocation and appointment, absorption of overheads, absorption rates, under – over absorption , cost centers, cost units, cost statement sheet.Areas of cost reduction, techniques, productivity. [c,d,e,f,i,l]								
Unit 4				[8 Hrs]				
Costing System: Job costing, contract costing, cost plus contracts, batch costing, process costing, simple process costing, normal abnormal losses and gains, waste, scrap & spoilage, joint & byproducts, operating costing. [c,d,e,f,i,l]								
Unit 5				[8 Hrs]				
Cost Planning and Control: Concept of budgeting, advantages and limitations, budgetary control, key factors, fixed and flexible budget. Standard costing, selling of standards, variance analysis. [c,d,e,f,i,l]								
Unit 6				[8 Hrs]				
Decision Making: Marginal costing, break even analysis, cost volume, profit analysis, application of costing to various decisions like make or buy, add or drop products, cost or process further, operate or shut down, replace or retain.								

[c,d,e,f,i,l]

Reference books:				
S.N.	Title of the book	Edition (Year of publication)	Author(s)	Publisher
1	Principles and Practice of Cost Accounting	Fifth edition	N.K.Prasad	Pearson Education
2	Cost Accounting		Jawahar Lal	
3	Management Accountancy	Third edition 2010	J. Batty	Tata Mc Graw Hill
4	Financial Management	2007	Prasanna Chandra	Tata Mc Graw Hill
5	Engineering Economy	1973	Paul Degarmo	Macmillan, 1973
6	Cost Accounting	2008	B.K.Bhar	Academic publishers
7	Costing and finance management	2012	Mrunalini Naik	Thakur publications

Regular: - 7th Semester Elective-I Theory PTDC: - 5th Semester

ME1405	Project Evaluation & Management			L=4	T=0	P=0	Credits=4
Evaluation Scheme	MSE-I	MSE-II	TA	ESE	Total	ESE Duration	
	15	15	10	60	100	3 Hrs	

Objective	Course Outcome
The course focuses on developing complete understanding of formulating a problem/project and finding possible solutions against the given constraints. The overall learning shall resolve project identification evaluating its technical and economical feasibility and developing skills for its planning, and establishing controls. Relevant techniques, writing skills and monitoring methods shall be dealt with in details. [a,d,e,h,k]	(I)The students will be able to use the concepts of monitoring and evaluation, appraise and determine best monitoring methods, appreciate evaluation in the context of developmental project work..[a,d,e,h,k]
	(II)The students will be able to carry out problem analysis, determine relevant indicators and data necessary for evaluation, prepare for and implement a monitoring and evaluation process, establish baselines and targets.. [a,d,e,h,k]

Unit1 [7 hrs]
Project Identification considering objectives and SWOT analysis, Screening of Project Ideas, Technical, Market, Financial, Socioeconomic and Ecological Appraisal of a project demand forecasting, secondary data, accuracy, confidence level, uncertainty. [a,d,e,h,k]

Unit2 [7 hrs]
Technical feasibility : Process selection, Level of automation, plant capacity, acquiring technology, Appropriate technology plant location, Equipment selection & procurement, Govt. policies. Value analysis and project evaluation: . [a,d,e,h,k]

Unit3 [9 hrs]
Economic feasibility: Cost of Project, working capital analysis, fixed cost, means of finance, estimation of sales & production price analysis, Break even point, Projected cash flow statements, projected balance sheet, projected profit & loss statement, projected cash flow, rate of return, Discounted payback period, cost benefit analysis, return after taxes. . [a,d,e,h,k]

Unit 4 [7 hrs]
Project Planning and Control: Work break down structure and network development. Basic Scheduling, Critical Path and four kinds of floats. Scheduling under probabilistic durations, Time Cost tradeoffs, CPM, PERT, Optimum project duration, resource allocation, updating . [a,d,e,h,k]

Unit 5 [7 hrs]
Project report: Preparation of project report, risk analysis, sensitivity analysis, methods of

raising capital .[a,d,e,h,k]

Unit6

[8 hrs]

Initial review, performance analysis , ratio analysis, sickness, project revival, Project Monitoring with PERT/Cost, Organizational aspects, Computer packages and Project Completion environmental & social aspects. .[a,d,e,h,k]

.Reference books:

S.N.	Title of the book	Edition (Year of publication)	Author(s)	Publisher
1	Projects	Seventh edition 2007	Prasanna chandra	Tata mc graw Hill publishing company Ltd.
2	CPM & PERT		L. S. Srinath	East West publisher
3	Projects	1963	P.K. Joy	Macmillon
4	Engineering Economy	Fifth edition	H. G Thuesen, W J Fabricky, G,J, Thuersen	Prentice-Hall
5	Finance series 'Project management' , Vol-I1 and Vol-III	2009	ICFAI	ICFAI,Press Hyderabad
6	Finance Management	Sixth edition 2010	M.Y.Khan	Tata McGraw hill
7	Financial Management	Fourth edition	Chandra, Prasanna	Tata McGraw-Hill Education, 1997
8	Engineering Economics	Eighth edition	G. J. Thuesen, Wolter J. Fabrycky	Prentice Hall, 1993

Regular: - 7th Semester

Theory

PTDC: - 4th Semester

ME1447	Production Management	L=3	T=1	P=0	Credits=4
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Evaluation Scheme	MSE-I	MSE-II	TA	ESE	Total	ESE Duration
	15	15	10	60	100	3 Hrs

Objective	Course Outcome
The course aims to develop an insight into working of production systems, their evaluation analysis and control. The overall objective is to learn to plan, design, execute or operate, control and measure the efficiency/ effectiveness of production systems. [a,c,e,k]	Students will have (I) Ability to estimate and evaluate manage production system using work study.
	(II) Ability to design and evaluate plant layouts.
	(III) Ability to predict and evaluate future demand using forecasting.
	(IV) Ability to estimate production costing and apply by judging production planning and control.

Unit1

[7 hrs]

Work Study: Productivity, factors affecting productivity. Measurement of productivity. Work study and methods study: Definitions, objectives, steps in method study, Process charts, string diagram, motion study, micro motion study, SIMO Chart . [a,e,k]

Unit2

[8 hrs]

Work measurement: Objectives, definition, stop watch study, work sampling, PMTs, MTM & Work factor method

Value analysis and value Engineering: Introduction, steps involved in value analysis. Applications in Manufacturing. [a,e,k]

Unit3

[8 hrs]

Plant Layout: Types of Plant Layout, Layout Functions and problems, Organization, Automated material handling, Concepts of AGVs, AS/RS and other automated devices. Design of integrated plant layout for product handling system. [a,c,e]

Unit4

[7

hrs]

Forecasting: Need for forecasting, classification of forecasting methods, like judgmental technique, time series analysis, least square method, moving average method, exponential smoothing method. [a,e]

Unit5

[7 hrs]

Production planning and control: Definition, objectives of PPC, functions of PPC, types of production, Inventory control, EOQ, Techniques in inventory control and associated problems. [a,e,k]

Unit 6

[8

hrs]

Process analysis and Cost Estimation:

Steps involved in manual production planning, Selection of process, analysis. Aims of Cost Estimation, Difference between cost and Estimation, Elements of cost: material, Product cost, Analysis of overhead expenses, Product cost estimation. **[a,e]**

Text books:				
1	Introduction to Work study	4 th Edition (1992)	George Kanawaty	ILO
2	Motion and Time study	1 st Edition (1980)	Barnes	Wiley
3	Ergonomics	1st Edition (1985)	Murell	Chapman & Hall
4	Production Planning and Control	2nd Edition (2006)	Jain & Agrawal	McGraw-Hill
5	Industrial Engg. And Project management	2 nd Edition (2006)	Mart and Telsang	s. Chand
6	Plant layout and Material Handling	1st Edition (1977)	James Apple	Wiley, Technology & Engineering

Regular: - 8th Semester Elective-V Theory

ME1453	Value Engineering	L=4	T=0	P=0	Credits=4
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Evaluation Scheme	MSE-I	MSE-II	TA	ESE	Total	ESE Duration
	15	15	10	60	100	3 Hrs

Objective	Course Outcome
<p>To familiarize students with :</p> <ol style="list-style-type: none"> 1.Philosophy of Value Analysis / Value Engineering , its importance and application 2.The various steps involved in systematic implementation of Value Analysis / Value Engineering [d,l] 	<p>Students will be able to:</p> <ol style="list-style-type: none"> 1. Explain the various types of Values and functions. 2. Evaluate the product life cycle. 3. Analyze the project selection and estimate life cycle costs. 4. Evaluate and improve value of product/system by designing and critically analyzing the VE job plans and othe VE/VA techniques.

<p>Unit 1 [7 hrs]</p> <p>Introduction to Value Engineering (V.E.) and Value Analysis, Quantitative definition of Value, Use Value and Prestige Value, Estimation of product quality/performance, Types of Functions. [e, g, l]</p>	
<p>Unit 2 [7 hrs]</p> <p>Life Cycle of a Product, Product life cycle Management, Methodology of V.E., [f, h, m]</p>	
<p>Unit 3 [8 hrs]</p> <p>Relationship between Use Functions and Esteem Functions in product design, Functional Cost and Functional Worth, Effect of value improvement on profitability, Aims of VE systematic Approach [c, i, l]</p>	
<p>Unit 4 [8 hrs]</p> <p>Introduction to V.E. Job plan / Functional Approach to Value Improvement, Various phases and techniques of the job plan [a, j, m]</p>	
<p>Unit 5 [8 hrs]</p> <p>Factors governing project selection, Life Cycle Costing for managing the Total Value, Concepts in LCC, Present Value concept, Annuity concept, Net Present Value, Pay Back period, Internal rate of return on investment (IRR), Examples and illustrations. [b, k, l]</p>	

Unit 6**[7 hrs]**

Creative thinking and creative judgment, False material, labor and overhead saving, System Reliability, Reliability elements in series and parallel, Decision matrix, Estimation of weights and efficiencies, Sensitivity analysis, Utility functions, Fast diagramming, Critical path of functions, DARSIRI method of value analysis, Purchase price analysis.

[a, c, d, m]**Reference Books**

S.N.	Title of the book	Edition (Year of publication)	Author(s)	Publisher
1	Value Engineering	1962	L.D.Miles	Materials Management International,
2	Getting more at less cost	1995	Jagannathan	Tata McGraw-Hill Publishing Company Limited,
3	Value Engineering		Tufly	
4	Value Engineering	3 rd edition	Donald Parker	
5	Value Engineering	4 th edition 1984	Zimmerman	City of Tulsa, 1984

Regular: - 8th Semester Elective-V Theory

ME1454	Lean Sigma	L=4	T=0	P=0	Credits=4
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Evaluation Scheme	MSE-I	MSE-II	TA	ESE	Total	ESE Duration
	15	15	10	60	100	3 Hrs

OBJECTIVES	Course Outcome
<ul style="list-style-type: none"> •The course aims to develop a broad understanding of Lean/Six Sigma principles. •It focuses on build capability to implement Lean/Six Sigma initiatives in manufacturing as well as service operations will also help the capability to operate with awareness of Lean/Six Sigma at the enterprise level.[a,b,c,d,e,f,h,k,l,m) 	(I)The students will able to manage the industrial resources more efficiently.. [a,b,c,d,e,f,h,k,l,m)
	(II)The students will be able to reduce wastage, cost and at the same time improve efficiency through use of various lean techniques. [a,b,c,d,e,f,h,k,l,m)
	(III)The students will be able to design, optimise and innovate six sigma.. [a,b,c,d,e,f,h,k,l,m)
	(IV)The students will be able to apply TRIZ technique.. [a,b,c,d,e,f,h,k,l,m)

UNIT 1 [8 hrs] Business process, Quality management, Need and significance of LS, COQ, COPQ, LS implementation, LS culture, Team roles and function, benefits. [c, d, f, l]	
UNIT 2 [8 hrs] Six sigma essentials, SS tools, DMAIC methodology, case studies and applications.[a, b, e, m]	
UNIT 3 [8 hrs] Statistical applications and methods using Minitab Software, cases and problems.[a, b, k, l]	
UNIT 4 [7 hrs] Process capability, Gage R & R,MSA, ANOVA,HYPOTHESIS testing, DOE, process characterization. [b, k, l]	4
UNIT 5 [7 hrs] Lean manufacturing concepts, Lean means speed, efficiency, waste time and cost reduction. Lean Tools and Techniques-VSM,7 waste,5S,Kanban,Poka-yoke,Kaizen,TPM,SMED,Pull vs Push, JIT, single piece flow. [a, c, h]	
UNIT 6 Design for Six Sigma, (DFSS)- need and significance, DMADV methodology, DFSS tools, Product and process optimization, innovations, TRIZ, case studies and applications.[a, b, k, m]	

S.N.	Title of the book	Edition (Year of	Author(s)	Publisher
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		publication)		
Test Books :				
1	Getting started in Six-sigma		Michel C Thomset	John Wiley and Sons
2	Six Sigma for every one		George Eccles	John Wiley and Sons
3	Transactinal Six sigma nad Lean servicing		Betsi Harris Ehrlich	St.Lucie Press
4	Six sigma for small business		Greg Brue	Ep- Entrepreneur press
5	Six sigma for Quality and productivity promotion	2003	Sung H.	Park Asian Productivity organization
Reference Books				
1	Six sigma and Beyond- Vol I to VII		D. S Stamalatis	St. lucie Press
2	Demystifying Six Sigma	2003	Alan Lasson	AMCON(American management Association)
3	The Six sigma Way	2003	P.Pande R Nenman & R.Cavanagh	Mc GraHill
4	Lean Production Simplified: A plain-Language Guide to the World's Most powerful Production System	2002	Dennis, Pascal	New York: Productivity Press, ISBN: 1563272628
5	Lean Six sima		Michel L George	Mc GraHill
6	Design for Six Sigma		Kai Yang,Basen El-Haik	Mc GraHill
7	Design for Lean Six sigma			



YESHWANTRAO CHAVAN COLLEGE OF ENGINEERING

B.E. SoE and Syllabus 2014-15

Civil Engineering

VII SEMESTER

CV1441	Environmental Engineering – II			L=4	T=0	P=0	CREDITS = 4
Evaluation Scheme	MSE-I	MSE-II	TA	ESE		Total	ESE Duration
	15	15	10	60		100	3 Hours

COURSE OBJECTIVE	COURSE OUTCOMES
1. To study different methods of conveyance of sewage. 2. To study method of construction and maintenance of sewerage system. 3. To study treatment methods for sewage and industrial wastewater. 4. To study different causes of air pollution and methods to control it.	1. An ability to understand importance of effective collection and conveyance of sewage. 2. An ability to understand methods of construction and maintenance of sewerage system including house drainage system. 3. An ability to understand working of sewage treatment plant including difference with industrial wastewater treatment plant. 4. An ability to understand importance of air pollution control including methods to control it.
Mapped Program Outcomes: 1,4,7,8,11	

UNIT – 1 :

Systems of sanitation: Conservancy and water carriage system. Patterns of sewage collection systems. Quantity of storm water and sanitary wastewater. Hydraulic Design of sewers - capacity, size, grade. Sewers – shapes and materials. Drains.

[08 Hrs.]

UNIT – 2 :

Sewer Appurtenances – manholes, street inlets, storm water overflows, inverted siphons, flushing and ventilation. Construction and Maintenance of sewers, equipment's for maintenance, safety equipment's. Sewage pumping. House drainage systems, sanitary fitting and appliances, traps – function and types, anti-syphonage, inspection chambers. Storm water drainage. Rain water harvesting for individual houses, Different Methods.

[09 Hrs.]

UNIT – 3 :

Characteristics of wastewater. Flow sheet of conventional sewage treatment plant. Preliminary and primary treatment: Screens, Grit chambers, Primary settling tank. Design of bar screens, grit chambers and primary settling tanks.

[09 Hrs.]

UNIT – 4 :

Secondary Treatment: Principle of Biological Treatment. Activated sludge process, Trickling Filter – Concept, Functioning and Basic Load Calculations. Sludge digestion, Sludge drying beds. Methods of disposal: Disposal on land and in water stream. Self-purification capacity of stream.

[08 Hrs.]

UNIT – 5 :

Rural sanitation: Pit Privy, Aqua Privy, Bio-gas Recovery, Eco-Sanitation. Septic tank including soak pit. Imhoff tanks. Industrial Waste Water Treatment: Basic concepts of Industrial Waste Water Treatment, flow equalization, neutralization. Common treatment alternatives for industrial waste water.

[09 Hrs.]

UNIT – 6 :

Introduction to Air Pollution, Monitoring and Control. Meteorological Parameters. Monitoring methods. Techniques of air pollution control.

[09 Hrs.]

Text Books:

1. B.C. Punmia, Waste Water Engineering, Laxmi Publication
2. S.K. Garg, Environmental Engineering – Vol – II, Sewage Disposal and Air Pollution Engineering Standard Publication
3. G.S. Birdie, Water Supply & Sanitary Engineering, Dhanpat Rai Pub Company
4. M.N. Rao & H.V.N. Rao, Air Pollution, McGraw Hill Publication.

Reference Books:

1. M.J. Machghee, Water Supply & Sewage, McGraw Hill Publication.
2. Metcalf & Eddy, Wastewater Engineering-Treatment and Reuse, McGraw Hill Education; 4 edition (1 July 2017)

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Civil Engineering

VI SEMESTER

CV1315	PEI : Water Treatment			L=3	T=0	P=0	CREDITS = 3
Evaluation Scheme	MSE-I	MSE-II	TA	ESE		Total	ESE Duration
	15	15	10	60		100	3 Hours

COURSE OBJECTIVES	COURSE OUTCOME
1. Understand the layout of water treatment plant and its various units. 2. Understand the principle of working of each unit and its design. 3. Understand various water treatment processes for different quality requirements	1. An ability to understand importance of water treatment 2. An ability to analyse available data and design a water treatment unit.
Mapped Program Outcomes: 1,2,3,7,	

UNIT – 1 :

Introduction: Water treatment objectives, Water quality standards and regulations, Health and aesthetic aspects of water quality. Unit processes and unit operations. Site selection, synthesis of treatment flow sheet.

Aeration: Objectives, Principles, Various methods, Design of aerators.

[06 Hrs.]

UNIT – 2 :

Coagulation: History, need of coagulation, chemistry of coagulation, various coagulants used in the process, factors affecting efficiency of coagulation process. Operation of feeders. Type of rapid mixing devices, design of flash mixer

Flocculation: Theory of flocculation, slow mixing devices.

[07 Hrs.]

UNIT – 3 :

Sedimentation: Principle, Stoke's law, working of ideal sedimentation tank, Types of sedimentation tanks, design of rectangular sedimentation tank, working and design of clariflocculator. Operational problems in sedimentation tanks.

[06 Hrs.]

UNIT – 4 :

Filtration: Theory of filtration, Types of filters, Slow and rapid sand filters, Operation of rapid sand filters, Operational difficulties, Design of rapid sand filter.

[07 Hrs.]

UNIT – 5 :

Disinfection: History, Various methods of disinfection, Chemical disinfections, Kinetics of chemical disinfection, Chlorination, Chemistry of chlorination, Methods of chlorination.

[06 Hrs.]

UNIT – 6 :

Adsorption: Theory, Granular and powder activated carbon, Performance and reactivation. Adsorption of organic compounds. Defluoridation, Ion Exchange, Materials and reactions, Kinetics, Applications.

[07 Hrs.]

Text Books :

1. P.N. Modi, Water Supply and treatment, Standard Book House.
2. CPHEEO Manual on Water Supply and Treatment.
3. Dr.A.G.Bhole, Design of Water Treatment Plant ,IWWA Publication

Reference Books :

1. Fair, Geyer and Okun, Water and wastewater engineering Vol. 2, John Wiley and Sons, New York
2. Franklin Burton, Stensel, Waste Water Engineering, Tata Mc Graw Hill.
3. Dr. B.C. Punmia, Waste Water Engineering, Firewall Media.

		1.02	Nov. 2017	Applicable for AY 2017-18 Onwards
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YESHWANTRAO CHAVAN COLLEGE OF ENGINEERING

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Civil Engineering

V SEMESTER

CV1325	OEI : Environmental Management			L=3	T=0	P=0	CREDITS = 3
Evaluation Scheme	MSE-I	MSE-II	TA	ESE		Total	ESE Duration
	15	15	10	60		100	3 Hours

COURSE OBJECTIVES	COURSE OUTCOME
<ol style="list-style-type: none"> 1. To develop, implement, monitor and maintain environmental strategies, policies, programmes and systems that promote sustainable development 2. To oversee the environmental performance including compliance with environmental legislation across the organisation, and coordinating all aspects of pollution control, waste management, environmental health and conservation 3. To lead the implementation of environmental policies and practices and raise awareness, at all levels of an organisation, about the emerging environmental issues 	<p>At the end of the course the student will be able to-</p> <ol style="list-style-type: none"> 1. Identify the scientific and social aspects of environmental issues. 2. understand the procedure of environmental protection by legislation. 3. understand the role of environmental management system in protecting the resources.

Mapped Program Outcomes: 6,7,8,9

UNIT – 1 :

Sustainable development -carrying capacity based development planning process, assimilative and supportive capacity, Environmental Management in India. Concept of EIA, environmental attributes, nature of impact – directly & indirectly measurable impacts

[06 Hrs.]

UNIT – 2 :

Screening and scoping in EIA, terms of reference for conducting EIA, methodologies of EIA-checklists, matrices, overlays, cost benefit analysis & adaptive environment and management, networks. Framework of EIA - baseline data collection, prediction of impacts, evaluation of impacts, Battelle environmental evaluation system, environmental quality monitoring budgetary provisions for implementing control measures.

[07 Hrs.]

UNIT – 3 :

Environmental appraisal of projects, MoEF questionnaire for environmental clearance, element of public participation & hearing, case studies on EIA, critical environmental issues and formulation of strategies of EMP, environmental management plan, development of action plans for critical environmental education programmes.

[07 Hrs.]

UNIT – 4 :

Environmental legislation – basic concepts, critical issues, civil liability, various enactment and their provisions – , Environmental Protection Act 1986, environmental tribunal & its functions. Implementation mechanism of environmental legislation, Role of State & Central boards of pollution control, local government social action groups, and environmental policies.

[07 Hrs.]

UNIT – 5 :

Environmental Audit- Concept of EA, environmental statement, procedural aspects of conducting environmental audit, pre-audit phase, on-site audit phase & post-audit phase, water audit, health & safety audit.

[06 Hrs.]

UNIT – 6 :

Resource Management: Biotic & Abiotic resources, renewable and non-renewable resources, bio-energy resource, depletion of resources – causes & effects, resource utilization, , optimal use of resources, Human Resources – importance of socio-economic studies in development projects.

[06 Hrs.]

Text Books :

1. Anand Bal, An Introduction to Environmental Management, Himalaya Publishing House.
2. John Rau & Wooten, Environmental Impact Assessment, Mc Graw Hill.
3. W.F. Canter, Environmental Impact Assessment, McGraw Hill.


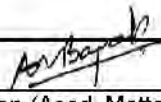
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4. Harry W. Gehm, Jacob I. Bregman, Handbook on pollution Control Acts, Central Pollution Control Board, New Delhi.
5. R.K. Sapra, S.Bhardwaj, The New Environmental Age, Ashish Pub. House, New Delhi.

References Books :

1. Rosencranz, S. Divan, M.L. Nobal, Environmental Law and Policy in india, Cases, Materials And Statutes, Tripathi Pvt. Ltd. Bombay.

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YESHWANTRAO CHAVAN COLLEGE OF ENGINEERING

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Civil Engineering

VIII SEMESTER

CV1427	PE IV: Waste Water Treatment			L=3	T=0	P=0	CREDITS = 3
Evaluation Scheme	MSE-I	MSE-II	TA	ESE		Total	ESE Duration
	15	15	10	60		100	3 Hours

COURSE OBJECTIVES	COURSE OUTCOME
<ol style="list-style-type: none"> 1. To study necessity and objectives of wastewater treatment and layout of a wastewater treatment plant. 2. To study disposal methods for wastewater. 3. To study principles of working and design of various waste water treatment units and processes. 4. To understand need & processes of Advanced wastewater treatment. 5. To study treatment of wastewater from various industries. 	<ol style="list-style-type: none"> 1. An ability to understand the necessity of water quality management 2. An ability to understand & design various treatment units for wastewater treatment 3. An ability to understand Advanced waste water treatment 4. An ability to understand treatment for Industrial waste.

Mapped Program Outcomes: 1,2,3

UNIT – 1 :

Holistic approach to Wastewater management, Effluent & Stream standards, wastewater characteristics and their significance, disposal methods for wastewater on land and in water and its impact, self-purification of streams

[06 Hrs.]

UNIT – 2 :

Preliminary and primary treatment processes and units: Screens, grit chamber and primary settling tank- Principles, types & designs.

[07 Hrs.]

UNIT – 3 :

Secondary treatment processes & units: Concepts in biological treatment, bacterial growth and biological oxidation, Activated sludge process, Trickling filter- Principles, types. Simple design problems.

[07 Hrs.]

UNIT – 4 :

Other biological treatment units: Aerated lagoons, Stabilization Ponds, Up flow Sludge Blanket Reactors, fixed film reactors, Sludge De watering methods, Sludge Digester.

[06 Hrs.]

UNIT – 5 :

Need of advanced treatment, removal of trace organics, micro screening and control of nutrients, nitrification and denitrification, removal of phosphorus.

[07 Hrs.]

UNIT – 6 :

Treatment alternatives for Industrial waste, volume reduction, strength reduction, equalization tank, neutralization tank, Specific industrial wastewater treatment for paper and pulp industry, sugar industry, distillery industry, dairy industry, textile industry.

[06 Hrs.]

Text Books:

1. B.C. Punmia, 2010, Wastewater engineering, Laxmi Publications (P) Ltd., New Delhi.
2. P. N. Modi, 2008, Sewage Treatment & Disposal and Waste Water Engineering, Standard Book House.
3. S. K. Garg, 2010, Environmental Engineering (Volume-2), Khanna Publication.
4. M. N. Rao, 2007, Waste water treatment, oxford and IBH publishing.
5. Patwardhan, 2008, Industrial wastewater Treatment, PHI learning Pvt. Ltd.
6. G.L. Karia and R. A. Christian, 2006, Wastewater Treatment, PHI learning Pvt. Ltd.

Reference Books:

1. Metcalf and Eddy, 2006, Wastewater Treatment Disposal and reuse, Tata McGraw Hill publishing company Ltd.

		1.02	Nov. 2017	Applicable for AY 2017-18 Onwards
Chairperson	Dean (Acad. Matters)	Version	Date of Release	



Nagar Yuwak Shikshan Sanstha's

Yeshwantrao Chavan College of Engineering

(An Autonomous Institution affiliated to Rashtrasant Tukadoji Maharaj Nagpur University)

BE SoE and Syllabus 2018

CIVIL ENGINEERING

III Semester CV2207 - Water Supply Engineering

COURSE OBJECTIVES	COURSE OUTCOMES
<ol style="list-style-type: none">To study various components of public water supply scheme.To study water quality and objectives of water treatment.To study working of various water treatment units and distribution system.To introduce the concept of solid waste management.	<ol style="list-style-type: none">An ability to understand significance of community water supply scheme.An ability to design water conveyance system.An ability to understand importance of water quality and its treatment aspects.An ability to understand different patterns of distribution of water.An ability to understand the significance and concept of solid waste management.

Mapped Program Outcomes : 1,2,3,4,6,7

UNIT – I

[7 Hrs.]

Introduction, Importance and necessity of water supply scheme, Water demand: Types of demand, factors affecting per Capita demand, variation in demand, design period and methods of population forecasting.

UNIT – II

[6 Hrs.]

Conveyance of water: Types of pipes, joints in pipes, valves and fittings, Intake structures: Location types – river, lake, canal reservoir, Hydraulic design of rising mains. Pump: Classification, working, merits, demerits & selection of pumps.

UNIT – III

[7 Hrs.]

Water quality: General idea of water borne diseases, Physical, Chemical, and bacteriological characteristics and analysis of water, Standards of drinking water. Water treatment: Objective of treatment, unit operations and processes, Flow sheet of conventional water treatment plant. Aeration: Purpose, types of aerators. Coagulation and Flocculation: Definition, Principles, types of coagulants and reactions, coagulant doses, types of mixing and flocculation devices.

UNIT – IV

[6 Hrs.]

Sedimentation: Principles, types of settling basins, inlet and outlet arrangements. Clariflocculators. Filtration: Mechanism of filtration, types of filters, working, operational problems in filters.

UNIT – V

[7 Hrs.]

Disinfection: Purpose, Mechanism, criteria for good disinfectant, types of disinfectants, chlorination. Distribution systems: Requirements for a good distribution system, methods of distribution, systems and their layouts, Leakage and leak-detector. Storage reservoirs for treated water: Types, capacity of reservoir, mass curve.

UNIT – VI

[6 Hrs.]

Introduction to Municipal solid waste management: Generation sources, composition, Quality, Methods of Collection, transportation, treatment and disposal, 3 R's of solid waste management.

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Nagar Yuwak Shikshan Sanstha's

Yeshwantrao Chavan College of Engineering

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BE SoE and Syllabus 2018

CIVIL ENGINEERING

III Semester CV2207 - Water Supply Engineering

Text Books:

S. No.	Title	Authors	Edition	Publisher
1	Water Supply Engineering (Vol.-I & II)	Modi P.N.	2 nd Edition	Standard Book House / Rajsons Publication, New Delhi.
2	Water Engineering	Punmia B. C.	2 nd Edition	Laxmi Publication, New Delhi
3	Water Supply and Sanitary Engineering	Birdie G.S., Birdie J.S.	4th Edition	DhanpatRai Publication, New Delhi.
4	Water Supply Engineering	S. K. Garg		Khanna Publications
5	Solid Waste Management for Developing country	A.D. Bhide & Sunderson		Indian National Scientific Documentation Centre, New Delhi

Reference Books:

S. No.	Title	Authors	Edition	Publisher
1	Water supply and Sewerage	E.W.Steel, T.J. McGhee	6 edition (31 January 1991)	McGraw-Hill Education
2	Water and wastewater Engineering	Fair, Geyer and Okun		John Wiley & Sons Ltd

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BE SoE and Syllabus 2018

(Revised Scheme of Examination w.e.f. 2020-21 onward)

**SoE No.
CT-201**

Computer Tehnology

V Semester

CT2317– PE I: Introduction to Geographical Information System

Objective	Course Outcome
1. Get an overview of fundamental concepts of GIS, applications and study. 2. Explore the Coordinate Systems, Map Projections metadata, spatial data, spatial analysis and new trends in GIS. 3. Comprehend the Making and sharing of maps.	On completion of this course, the student will be able to : 1. Demonstrate the fundamental concepts of GIS 2. Develop the apprehension of various concepts in GIS 3. Design and share maps.

Unit No.	Contents	Max. Hrs.
1	Introduction to GIS: Concepts of GIS, Applications currently used by Industry & Govt and their common usages. Fundamental concepts of GIS: GIS terminologies, various components of GIS software and types of GIS applications. The GIS Software Market, Role of GIS in smart cities.	6
2	Fundamentals of Coordinate Systems and Map Projections: History of Coordinate Systems, Geographic Coordinate Systems, Map Projections and Geo referencing.	7
3	Fundamentals of Spatial Data: Introduction to Spatial Data Formats, Creation of Vector data, Organization of Spatial Data and Displaying Spatial Data, metadata and spatial data standards.	7
4	Making Sharing Maps: Map Creation and Design, Sharing Maps as Services, Sharing Spatial Data and using shared Spatial Data.	6
5	Fundamentals of Spatial Analysis: Spatial Analysis, analyzing Vector and Raster data, overview of analysis tools, analyzing Spatial Relationships and sharing Analysis Results	7
6	New trends in GIS: GIS Trends Changing the World, Machine learning in GIS, Geospatial big data, Integration of GIS with different technologies, GIS with LiDar data.	7

Text Books

SN	Title	Edition	Authors	Publisher
1	An Introduction to Geographical Information Systems	3 rd Edition (2006)	D. Ian Heywood, Sarah Cornelius & Steve Carver	Pearson Prentice Hall

Reference Books

SN	Title	Edition	Authors	Publisher
1	Getting to Know ArcGIS	4 th Edition (2015)	Michael Law & Amy Collins	Esri Press
2	Mathematical Modeling in Geographical Information System global Positioning System and Digital Cartography	4 th Edition (2006)	H. S. Shrama, D. R. Ram, Rama Prasad & P. R. Binda	Concept Publishing Company

<i>Chandharker</i>	<i>Anbapat</i>	June 2020	1.02	Applicable for AY 2020-21 Onwards
Chairperson	Dean (Acad. Matters)	Date of Release	Version	