



**VEL TECH MULTI TECH
Dr RANGARAJAN Dr. SAKUNTHALA
ENGINEERING COLLEGE**

(An ISO 9001: 2008 Certified Institution)

(Owned by Vel Trust)

(Approved by Govt. of Tamil Nadu and affiliated to Anna University)



SYLLABUS

WEEKLY SCHEDULE

VII SEMESTER

2015 - 2016

DEPARTMENT OF CIVIL ENGINEERING

IV YEAR DEGREE COURSE

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WEEK DETAILS

SL.NO.	WEEK	FROM	TO
1	WEEK1	24.06.2015	26.06.2015
2	WEEK2	29.06.2015	03.07.2015
3	WEEK3	06.07.2015	10.07.2015
4	WEEK4	13.07.2015	17.07.2015
5	WEEK5	20.07.2015	24.07.2015
6	WEEK6	27.07.2015	28.07.2015
7	WEEK7	03.08.2015	07.08.2015
8	WEEK8	10.08.2015	14.08.2015
9	WEEK9	17.08.2015	21.08.2015
10	WEEK10	24.08.2015	28.08.2015
11	WEEK11	31.08.2015	04.09.2015
12	WEEK12	07.09.2015	11.09.2015
13	WEEK13	14.09.2015	18.09.2015
14	WEEK14	21.09.2015	25.09.2015
15	WEEK15	28.09.2015	30.09.2015
16	WEEK16	05.10.2015	09.10.2015
17	WEEK17	12.10.2015	16.10.2015
18	WEEK18	19.10.2015	20.10.2015
19	WEEK19	27.10.2015	30.10.2015

SUBJECT CONTENTS

SL.NO	SUBJECT CODE	SUBJECT NAME
THEORY		
1	CE2401	Design of RC and Brick Masonry Structures
2	CE2402	Estimation and Quantity Surveying
3	CE2403	Basics of Dynamics and Aseismic Design
4	CE2404	Prestressed Concrete Structures
5	CE2026	Traffic Engineering and Management
6	CE2039	Municipal Solid Waste Management
PRACTICAL		
7	CE2405	Computer Aided Design and Drafting Laboratory
8	CE2406	Design Project

TEST / EXAM SCHEDULE

SL.NO	SUBJECT CODE	SUBJECT NAME	UNIT TEST I	UNIT TEST II	Pre Model Exam	UNIT TEST IV
1	CE2401	Design of RC and Brick Masonry Structures	13.07.2015	03.08.2015	21.08.2015	14.09.2015
2	CE2402	Estimation and Quantity Surveying	14.07.2015	04.08.2015	22.08.2015	15.09.2015
3	CE2403	Basics of Dynamics and Aseismic Design	15.07.2015	05.08.2015	24.08.2015	16.09.2015
4	CE2404	Prestressed Concrete Structures	16.07.2015	06.08.2015	25.08.2015	18.09.2015
5	CE2026	Traffic Engineering and Management	17.07.2015	07.08.2015	26.08.2015	21.09.2015
6	CE2039	Municipal Solid Waste Management	20.07.2015	10.08.2015	27.08.2015	22.09.2015

SL.NO	SUBJECT CODE	SUBJECT NAME	MODEL EXAM
1	CE2401	Design of RC and Brick Masonry Structures	05.10.2015
2	CE2402	Estimation and Quantity Surveying	06.10.2015
3	CE2403	Basics of Dynamics and Aseismic Design	07.10.2015
4	CE2404	Prestressed Concrete Structures	08.10.2015
5	CE2026	Traffic Engineering and Management	09.10.2015
6	CE2039	Municipal Solid Waste Management	12.10.2015

CE 2401 DESIGN OF REINFORCED CONCRETE & BRICK MASONRY STRUCTURES

WEEK – 1

UNIT –I

Retaining Walls

Design of cantilever

WEEK – 2

Design of counter fort retaining walls

WEEK – 3

Design of counter fort retaining walls

WEEK – 4 UNIT TEST-I

UNIT –II

Water Tanks

Underground rectangular tanks – Domes

WEEK - 5

Overhead circular and rectangular tanks

WEEK – 6

Design of staging and foundations

WEEK – 7

UNIT TEST-II

WEEK – 8

UNIT III

Selected Topics

Design of staircases (ordinary and doglegged) – Design of flat slabs –
Design of Reinforced concrete walls

WEEK – 9

Principles of design of mat foundation, box culvert and road bridges

WEEK – 10 UNIT TEST-III

UNIT IV

Yield Line Theory

Application of virtual work method to square

WEEK – 11

Application of virtual work method to rectangular

WEEK – 12

Application of virtual work method to circular and triangular slabs

WEEK – 13

UNIT TEST-IV

WEEK - 14

UNIT – V

Brick Masonry

Introduction, Classification of walls, Lateral supports and stability, effective height of wall and columns, effective length of walls

WEEK - 15

Design loads, load dispersion, permissible stresses

WEEK – 16

Design of axially and eccentrically loaded brick walls

WEEK - 17

UNIT TEST-V

WEEK - 18

Modal exam

TEXT BOOKS

1. Krishna Raju, N., “Design of RC Structures”, CBS Publishers and Distributors, Delhi, 2006

2. Dayaratnam, P., “Brick and Reinforced Brick Structures”, Oxford & IBH Publishing House, 1997
3. Varghese, P.C., “Limit State Design of Reinforced Concrete Structures ”Prentice hall of India Pvt Ltd New Delhi, 2007.

REFERENCES

1. Mallick, D.K. and Gupta A.P., “Reinforced Concrete”, Oxford and IBH Publishing Company Syal, I.C. and Goel, A.K., “Reinforced Concrete Structures”, A.H. Wheelers & Co. Pvt. Ltd.,1994
2. Ram Chandra.N. and Virendra Gehlot, “Limit State Design”, Standard Book House.2004.

CE 2402 ESTIMATION AND QUANTITY SURVEYING

WEEK – 1

UNIT –I

Estimate of Buildings

Load bearing and framed structures – Calculation of quantities of brick work, RCC, PCC

WEEK – 2

Plastering, white washing, colour washing and painting / varnishing for shops, rooms, – Various types of arches

WEEK – 3

Calculation of brick work and RCC works in arches – Estimate of joineries for panelled and glazed doors, handrails

WEEK – 4 UNIT TEST-I

UNIT –II

Estimate of Other Structures

Estimating of septic tank, soak pit – sanitary and water supply installations

WEEK - 5

Water supply pipeline – sewer line – tube well – open well – estimate of bituminous and cement concrete roads

WEEK – 6

Estimate of retaining walls – culverts – aqueduct, syphon, fall.

WEEK – 7

UNIT TEST-II

WEEK – 8

UNIT III

Specification and Tenders

Data – Schedule of rates – Analysis of rates – Specifications – sources

WEEK – 9

Detailed and general specifications – Tenders – Contracts – Types of contracts – Arbitration and legal requirements.

WEEK – 10 UNIT TEST-III

UNIT IV

Valuation

Necessity – Basics of value engineering – Capitalised value

WEEK – 11

Depreciation – Escalation – Value of building

WEEK – 12

Calculation of Standard rent – Mortgage – Lease

WEEK – 13

UNIT TEST-IV

WEEK - 14**UNIT – V****Report Preparation**

Principles for report preparation – report on estimate of residential building

WEEK - 15

Report on estimate of Culvert – Roads

WEEK – 16

Water supply and sanitary installations – Tube wells – Open wells.

WEEK - 17**UNIT TEST-V****WEEK - 18**

ICD CLASSES and model exam

TEXT BOOKS:

1. Dutta, B.N., “Estimating and Costing in Civil Engineering”, UBS Publishers & Distributors Pvt. Ltd., 2003
2. Kohli, D.D and Kohli, R.C., “A Text Book of Estimating and Costing (Civil)”, S.Chand & Company Ltd., 2004

REFERENCE:

1. PWD Data Book.

CE 2403 BASICS OF DYNAMICS AND ASEISMIC DESIGN**WEEK – 1****UNIT –I****Theory of Vibrations**

Concept of inertia and damping – Types of Damping – Difference between static forces– Degrees of freedom

WEEK – 2

SDOF idealization – Equations of motion of SDOF system for mass as well as base excitation – Free vibration of SDOF system

WEEK – 3

Response to harmonic excitation – Impulse and response to unit impulse – Duhamel integral

WEEK – 4 UNIT TEST-I

UNIT –II

Multiple Degree of Freedom System

Two degree of freedom system – Normal modes of vibration

WEEK - 5

Natural frequencies –Introduction to MDOF systems

WEEK – 6

Decoupling of equations of motion – Concept of mode superposition

WEEK – 7

UNIT TEST-II

WEEK – 8

UNIT III

Elements of Seismology

Causes of Earthquake – Geological faults – Tectonic plate theory

Elastic rebound – Epicentre – Hypocentre – Primary, shear and

Raleigh waves

WEEK – 9

Seismogram – Magnitude and intensity of earthquakes – Magnitude and Intensity scales – Spectral Acceleration - Information on some disastrous earthquakes

WEEK – 10 UNIT TEST-III

UNIT IV

Response of Structures to Earthquake

Response and design spectra – Design earthquake – concept of peak acceleration

WEEK – 11

Site specific response spectrum – Effect of soil properties and damping – Liquefaction of soils

WEEK – 12

Methods of introducing ductility into RC structures.

WEEK – 13

UNIT TEST-IV

WEEK - 14

UNIT – V

Design Methodology

IS 1893, IS 13920 and IS 4326 –Design as per the codes

WEEK - 15

Base isolation techniques – Vibration control measures

WEEK – 16

Important points in mitigating effects of earthquake on structures

WEEK - 17

UNIT TEST-V

WEEK - 18

ICD CLASSES and model exam

TEXT BOOKS

1. Chopra, A.K., “Dynamics of Structures – Theory and Applications to Earthquake Engineering”, Second Edition, Pearson Education, 2003.

REFERENCES

1. Biggs, J.M., "Introduction to Structural Dynamics", McGraw-Hill Book Co., N.Y., 1964
2. Dowrick, D.J., "Earthquake Resistant Design", John Wiley & Sons, London, 1977
3. Paz, M., "Structural Dynamics – Theory & Computation", CSB Publishers & Distributors, Shahdara, Delhi, 1985
4. NPEEE Publications.

CE 2404 PRESTRESSED CONCRETE STRUCTURE

WEEK – 1

UNIT –I

Introduction – Theory and Behaviour

Basic concepts – Advantages – Materials required – Systems and methods of prestressing

WEEK – 2

Analysis of sections – Stress concept – Strength concept – Load balancing concept – Effect of loading on the tensile stresses in tendons – Effect of tendon profile on deflections

WEEK – 3

Factors influencing deflections – Calculation of deflections – Short term and long term deflections - Losses of prestress – Estimation of crack width

WEEK – 4 UNIT TEST-I

UNIT –II

Design Concepts

Flexural strength – Simplified procedures as per codes – strain compatibility method

WEEK - 5

Basic concepts in selection of cross section for bending – stress distribution in end block

WEEK – 6

Design of anchorage zone reinforcement – Limit state design criteria
– Partial prestressing – Applications.

WEEK – 7

UNIT TEST-II

WEEK – 8

UNIT III

Circular Prestressing

Design of prestressed concrete tanks

WEEK – 9

Design of prestressed concrete Pipes

WEEK – 10 UNIT TEST-III

UNIT IV

Composite Construction

Analysis for stresses

WEEK – 11

Estimate for deflections

WEEK – 12

Flexural and shear strength of composite members

WEEK – 13

UNIT TEST-IV

WEEK - 14

UNIT – V

Pre-Stressed Concrete Bridges

General aspects – pretensioned prestressed bridge decks

WEEK - 15 and WEEK – 16

Post tensioned prestressed bridge decks – Principles of design only.

WEEK - 17

UNIT TEST-V

WEEK - 18

ICD CLASSES and model exam

TEXT BOOKS:

1. Krishna Raju N., Prestressed concrete, Tata McGraw Hill Company, New Delhi 1998
2. Mallic S.K. and Gupta A.P., Prestressed concrete, Oxford and IBH publishing Co. Pvt. Ltd.1997.
3. Rajagopalan, N, "Prestressed Concrete", Alpha Science, 2002

REFERENCES:

1. Ramaswamy G.S., Modern prestressed concrete design, Arnold Heinimen, New Delhi,1990
2. Lin T.Y. Design of prestressed concrete structures, Asia Publishing House, Bombay 1995.
3. David A.Sheppard, William R. and Philips, Plant Cast precast and prestressed concrete – A design guide, McGraw Hill, New Delhi 1992

CE 2026 TRAFFIC ENGINEERING AND MANAGEMENT

WEEK – 1

WEEK-1 UNIT I INTRODUCTION

Significance and scope, Characteristics of Vehicles and Road Users

WEEK – 2

Skid Resistance and

Braking Efficiency (Problems), Components of Traffic Engineering

WEEK – 3

Road, Traffic and Land Use

Characteristics

WEEK – 4 UNIT TEST-I

UNIT II TRAFFIC SURVEYS AND ANALYSIS

Surveys and Analysis - Volume, Capacity, Speed and Delays, Origin,

WEEK - 5

Destination, Parking, Pedestrian Studies, Accident Studies

WEEK – 6

Safety Level of Services- Basic principles of Traffic Flow.

WEEK – 7

UNIT TEST-I

WEEK – 8

UNIT III TRAFFIC CONTROL

Traffic signs, Road markings, Design of Traffic signals and Signal co-ordination (Problems),

WEEK – 9

Traffic control aids and Street furniture, Street Lighting, Computer applications in Signal design

WEEK – 10 UNIT TEST-III

UNIT IV GEOMETRIC DESIGN OF INTERSECTIONS

Conflicts at Intersections, Classification of ‘At Grade Intersections, - Channallised Intersections

WEEK – 11

Principles of Intersection Design, Elements of Intersection Design, Rotary design

WEEK – 12

Grade Separation and interchanges - Design principles.

WEEK – 13

UNIT TEST-IV

WEEK - 14

UNIT V TRAFFIC MANAGEMENT

Traffic Management- Transportation System Management (TSM) - Travel Demand

Management (TDM),

WEEK - 15

Traffic Forecasting techniques, Restrictions on turning movements, Oneway Streets, Traffic Segregation

WEEK – 16

Traffic Calming, Tidal flow operations, Exclusive Bus Lanes, Introduction to Intelligent Transportation System (ITS).

WEEK - 17

UNIT TEST-V

WEEK - 18

ICD CLASSES and model Exam

TEXT BOOKS:

1. Kadiyali L R, Traffic Engineering and Transport Planning, Khanna Technical Publications, Delhi, 2000.
2. Khanna K and Justo C E G, Highway Engineering, Khanna Publishers, Roorkee, 2001.

REFERENCES

1. Indian Roads Congress (IRC) specifications: Guidelines and special publications on Traffic Planning and Management
2. Guidelines of Ministry of Road Transport and Highways, Government of India. Subhash C.Saxena, A Course in Traffic Planning and Design, Dhanpat Rai Publications, New Delhi, 1989.
3. Transportation Engineering – An Introduction, C.Jotin Khisty, B.Kent Lall, Prentice Hall of India Pvt Ltd, 2006.

CE 2039 MUNICIPAL SOLID WASTE MANAGEMENT

WEEK – 1

UNIT I SOURCES AND TYPES OF MUNICIPAL SOLID WASTES

Sources and types of solid wastes - Quantity – factors affecting generation of solid wastes; characteristics

WEEK – 2

Methods of sampling and characterization; Effects of improper disposal of solid wastes – public health effects

WEEK – 3

Principle of solid waste management – social & economic aspects; Public awareness; Role of NGOs; Legislation

WEEK – 4 UNIT TEST-I

UNIT II ON-SITE STORAGE & PROCESSING

On-site storage methods – materials used for containers

WEEK - 5

On-site segregation of solid wastes – public health & economic aspects of storage

WEEK – 6

Options under Indian conditions – Critical Evaluation of Options

WEEK – 7

UNIT TEST-II

WEEK – 8

UNIT III COLLECTION AND TRANSFER

Methods of Collection – types of vehicles – Manpower requirement – collection routes; transfer

WEEK – 9

stations – selection of location, operation & maintenance; options under Indian conditions

WEEK – 10 UNIT TEST-III

UNIT IV OFF-SITE PROCESSING

Processing techniques and Equipment;

WEEK – 11

Resource recovery from solid wastes – composting, incineration, Pyrolysis

WEEK – 12

options under Indian conditions

WEEK – 13

UNIT TEST-IV

WEEK - 14

UNIT V DISPOSAL

Dumping of solid waste; sanitary land fills

WEEK - 15

site selection, design and operation of sanitary

WEEK – 16

landfills – Leachate collection & treatment

WEEK - 17

UNIT TEST-V

WEEK - 18

ICD CLASSES and model exam

TEXT BOOKS

1. George Tchobanoglous et.al., “Integrated Solid Waste Management”, McGraw-Hill Publishers, 1993.
2. B.Bilitewski, G.HardHe, K.Marek, A.Weissbach, and H.Boeddicker, “Waste Management”, Springer, 1994.

REFERENCES

1. Manual on Municipal Solid Waste Management, CPHEEO, Ministry of Urban Development, Government of India, New Delhi, 2000
2. R.E.Landreth and P.A.Rebers, “Municipal Solid Wastes – problems and Solutions”, Lewis Publishers, 1997.
3. Bhide A.D. and Sundaresan, B.B., “Solid Waste Management in Developing Countries”, INSDOC, 1993.

CE 2405 COMPUTER AIDED DESIGN & DRAFTING LABORATORY

WEEK EXPERIMENT

- | | |
|----------|---|
| 1 to 3. | Design and drawing of RCC cantilever and counterfort type retaining walls with reinforcement details |
| 4 to 7 | Design of solid slab and RCC Tee beam bridges for IRC loading and reinforcement details |
| 8 to 13 | Design and drafting of Intz type water tank, Detailing of circular and rectangular water tanks |
| 13 to 16 | Design of plate girder bridge – Twin Girder deck type railway bridge – Truss Girder bridges – Detailed Drawings including connections |
