UNIVERSITY OF ENGINEERING AND MANAGEMENT,JAIPUR

Lecture-wise Plan

Subject Name: Advanced Structural Design **Subject Co**

Year: 1st Year Semester: Second

Module Number	Topics	Number of Lectures
1.	Flat slab, Grid slab, Deep beam, Shear wall, Frame shear wall interaction, Cylindrical shell, Structures for handing materialslike silo and bunkers, Liquid retaining structures, Pile and Pile cap.	**8 L**
2.	Design provisions as envisaged in various Indian Standards.	**8 L**
Total Number Of Hours = 16		

Faculty In-Charge HOD, CE Dept.

UNIVERSITY OF ENGINEERING AND MANAGEMENT,JAIPUR

Lecture-wise Plan

Subject Name: Structural Dynamics And Earthquake Engineering **Subject Code-SCE 202**

Year: 1st Year Semester: Second

Module Number	Topics	Number of Lectures
1.	Introduction – Single and multi-degree freedom systems, undamped and damped systems, numerical integration scheme,modal analysis for undamped and damped systems. Vibration of continuous elastic media – Beam, Plates.	**8 L**
2.	Characteristics of earthquake, Earthquake response of structures, Concept of earthquake resistant design.	**8 L**
3.	Codal provision for design of buildings, design of liquid storage tanks, liquefaction, non-engineered construction, special topics.	**9L**
Total Number Of Hours = 25		

Faculty In-Charge HOD, CE Dept.

UNIVERSITY OF ENGINEERING AND MANAGEMENT,JAIPUR

Lecture-wise Plan

Subject Name: Theory Of Elasticity And Plasticity **Subject Co**

Year: 1st Year Semester: Second

Module Number	Topics	Number of Lectures
1.	Elasticity: Introduction to tensor analysis; three dimensional stress and strain analysis. Two dimensional problems incartesian, polar and curvilinear co-ordinates, bending of a beam, thick cylinder under pressure, complex variable, harmonicand bi-harmonic functions.	**8 L**
2.	Torsion of rectangular bars including hollow sections, bending problems. Energy principles,variational methods and numerical methods.	**8 L**
3.	Plasticity: basic concepts and yield criteria. Equations of plasticity, elasto-plastic analysis of torsion and bending problems,torsion of a bar of oval section (Sokoloskey's method), problems of spherical and axial symmetry, slip lines and plastic flow,strain hardening.	**9L**
Total Number Of Hours = 25		

Faculty In-Charge HOD, CE Dept.

UNIVERSITY OF ENGINEERING AND MANAGEMENT,JAIPUR

Lecture-wise Plan

Subject Name: Pre Stressed Concrete Structures **Subject Code-SCE 204B**

Year: 1st Year Semester: Second

Module Number	Topics	Number of Lectures
1.	Specification of materials, methods of pre-stressing, losses, analysis and design of members for moment and shear, stresses inanchorage zones of pre-tensioned and post tensioned members, design of end block, pre-stressed concrete compressionmembers.	**8 L**
2.	Partial pre-stressing, composite construction with pre-stressed concrete and reinforced concrete.	**8 L**
3.	Two-way pre-stressing, circular pre-stressing, indeterminate structures. Review of IS code.	**9L**
Total Number Of Hours = 25		

Faculty In-Charge HOD, CE Dept.

UNIVERSITY OF ENGINEERING AND MANAGEMENT,JAIPUR

Lecture-wise Plan

Subject Name: Advanced Concrete Technology **Subject Co**

Year: 1st Year Semester: Second

Module Number	Topics	Number of Lectures
1.	Microstructural aspects of cement paste; Models of hydrated Portland cement gel; Mechanism, application and specificationof chemical admixtures, mineral admixtures and other cement replacement materials; Special cementitious systems, viz.,phosphate cement, magnesium oxy-chloride cement, regulated set cement, high alumina cement etc.	**8 L**
2.	Concrete- environment interaction; Marine concrete; Resistance of concrete to Fire and influence of temperature; Extreme weather concreting.	**8 L**
3.	Properties and mix proportioning of flyash concrete, silica fume concrete, fibre reinforced concrete, sprayed concrete, high performance concrete, self-compacting concrete and geopolymer concrete.	**9L**
Total Number Of Hours = 25		

Faculty In-Charge HOD, CE Dept.

UNIVERSITY OF ENGINEERING AND MANAGEMENT, JAIPUR

Course Description

Title of Course: Seminar
Course Code: SCE281
L-T-P scheme: 0-2-0 **Course Credit: 1**

The overall aim of the seminar series is to help develop an emerging field at the intersection of multi-disciplinary understandings of culture and education. It will build on the existing body of work on education and culture, but its aim is explore and develop new perspectives in this area.
The objectives of the six exploratory seminars are:

- **to explore new research from a range of academic disciplines which sheds light on the questions outlined above**
- **to showcase cutting edge research on education and culture from outstanding academic researchers from the UK and internationally**
- **to bring together seminar participants from different disciplines such as Sociology, Philosophy, Psychology, Human Geography, Media Studies as well as Education and Cultural Studies**
- **to encourage and financially support the participation of PhD students**
- **to actively involve practitioners and users from each venue**
- **to engage a core group of policy makers**
- **to use the seminars to develop links between academics and stakeholders in the arts, library, media, community and educational sectors**

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Lab Manual

Title of Course: Structural Laboratory II
Course Code: SCE 292
L-T-P scheme: 0-0-3 **Course Credit: 2**

Objectives:
1. The students will be able to develop the concepts of Computer Aided Design Of Structures.
2. They will be exposed to latest CAD CAM software environment and will be able to develop efficiently the detailed design and drawings including the floor plans of different kinds of structures.
3. The students will be able to prepare the detailed drawings of different structural elements including the ductility detailing of RCC slab, beam, column and footing design.

Learning Outcomes: The students will be able to develop the understanding of CAD software and develop a clear understanding of the analysis and design of a multistoried buildings using softwares. The students will be able to prepare the detailed drawings of different structural elements including the ductility detailing of RCC slab, beam, column and footing design.

Course Contents:
Exercises that must be done in this course are listed below:

1. Introduction and important features ofa software dealing with analysis and design of structures.
2. Analysis and design of a multistoried building using software, Preparation of detailed drawings of different structural elements including ductility detailing RCC Slab, beam, column and footing design.

Text Book:
1. CAD CAM Standard Manual.

INTRODUCTION to Computer Aided Design And Drawing

1. INTRODUCTION

Computer Aided Drafting is a process of preparing a drawing of an object on the screen of a computer. There are various types of drawings in different fields of engineering and sciences. In the fields of mechanical or aeronautical engineering, the drawings of machine components and the layouts of them are prepared. In the field of civil engineering, plans and layouts of the buildings are prepared. In the field of electrical engineering, the layouts of power distribution system are prepared. In all fields of engineering use of computer is made for drawing and drafting. The use of CAD process provides enhanced graphics capabilities which allows any designer to Conceptualize his ideas Modify the design very easily Perform animation Make design calculations Use colors, fonts and other aesthetic features.

The use of CAD process provides enhanced graphics capabilities which allows any designer to Conceptualize his ideas Modify the design very easily Perform animation Make design calculations Use colors, fonts and other aesthetic features.

REASONS FOR IMPLEMENTING A CAD SYSTEM

Increases the productivity of the designer:

CAD improves the productivity of the designer to visualize the product and its component, parts and reduces the time required in synthesizing, analyzing and documenting the design

Improves the quality of the design: CAD system improves the quality of the design. A CAD system permits a more detailed engineering analysis and a larger number of design alternatives can be investigated. The design errors are also reduced because of the greater accuracy provided by the system

Improves communication: It improves the communication in design. The use of a CAD system provides better engineering drawings, more standardization in the drawing, and better documentation of the design, few drawing errors and legibility.

Create data base for manufacturing:

In the process of creating the documentation for these products, much of the required data base to manufacture the products is also created.

Improves the efficiency of the design:

It improves the efficiency of the design process and the wastage at the design stage can be reduced.

APPLICATION OF CAD:

There are various processes which can be performed by use of computer in the drafting process.

1. Automated drafting: This involves the creation of hard copy engineering drawings directly from CAD data base. Drafting also includes features like automatic dimensioning, generation of cross – hatched areas, scaling of the drawing and the capability to develop sectional views and enlarged views in detail. It has ability to perform transformations of images and prepare 3D drawings like isometric views, perspective views etc.

2. , Geometric modeling: concerned with the computer compatible mathematical description of the geometry of an object. The mathematical description allows the image of an object to be displayed and manipulated on a graphics terminal through signals from the CPU of the CAD system. The software that provides geometric modeling capabilities must be designed for efficient use both by computer and the human designer.

BENEFITS OF CAD:

The implementation of the CAD system provides variety of benefits to the industries in design and production as given below:

1. Improved productivity in drafting

2. Shorter preparation time for drawing

3. Reduced man power requirement

4. Customer modifications in drawing are easier

5. More efficient operation in drafting

6. Low wastage in drafting

7. Minimized transcription errors in drawing

8. Improved accuracy of drawing

9. Assistance in preparation of documentation

10. Better designs can be evolved

11. Revisions are possible

12. Colors can be used to customize the product

13. Production of orthographic projections with dimensions and tolerances

14. Hatching of all sections with different filling patterns

15. Preparation of assembly or sub assembly drawings

16. Preparation of part list

17. Machining and tolerance symbols at the required surfaces

18. Hydraulic and pneumatic circuit diagrams with symbols

19. Printing can be done to any scale

LIMITATIONS OF CAD

1. 32 – bit word computer is necessary because of large amount of computer memory and time

2. The size of the software package is large

3. Skill and judgment are required to prepare the drawing

4. Huge investment

AUTO CAD

Auto CAD package is suitable for accurate and perfect drawings of engineering designs. The drawing of machine parts, isometric views and assembly drawings are possible in AutoCAD. The package is suitable for 2D and 3D drawings.

2. AutoCAD – BASICS

2.1 STARTING WITH ACAD CAD uses four basic elements for preparation of any drawing:

1. Line

2. Curves

3. Text

4. Filling point.

Computer Aided Drafting is done by the operator by placing the mouse pointer by placing the mouse pointer at the desired location and then executing the command to draw the graphic elements using different methods. Advanced computer aided drafting packages utilize four areas on the screen.

1. CURVES

Following are the various types of curves used in the drawings:

i. Circle

ii. Ellipse

iii. Arc

Regular or any other type.

Aim: to draw the following figure using ACAD

PROCEDURE

STEP 1:

Draw axis lines in the respective format with their intersection point at (0,0) Go to PROPERTIES tool bar Load line type as ISO LONG DASH SHORT DASH in the line type area. Select line type ISO LONG DASH SHORT DASH in the line type area.

STEP 2

a Draw circles of given dimensions using circle command with their centre as the intersection of the axis lines. 3 circles of diameters 94, 74 and 54 are to be drawn The circle with 74 diameter is of ISO LONG DASH SHORT DASH format

STEP 3: Draw two construction lines at an angle of 30o to the vertical axis line

STEP 4: With A as center an radius 100 draw an arc between the above lines

STEP 5: Offset the arc on the either side by the distances as mentioned in the figure.

STEP 6: Complete the figure by using fillet command.

STEP 7: Give dimensions to the completed figure. Command: _qsave

PRECAUTIONS:

Put ORTHO ON where ever necessary. Use the required modify tool bar commands like TRIM, ERASE, COPY, MIRROR ETC.

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Civil Engineering Department