Model Template for Scheme of Course Work

to be submitted by the Faculty of B.Tech/M.Tech/MCA I semester on or before 11.10.2013 to bhanucvk@gvpce.ac.in and yadavalliraghu@yahoo.com

# SCHEME OF COURSE WORK

**Course Details:**

| | | | |
|---|---|---|---|
| **Course Title** | **: Advanced Steel Structural Design** | | |
| **Course Code** | **: 13CE2209** | **L P C** | **: 4 0 3** |
| **Program:** | **: M. Tech.** | | |
| **Specialization:** | **: Structural Engineering** | | |
| **Semester** | **: I** | | |
| **Prerequisites** | **:** | | |
| **Courses to which it is a prerequisite** | **: None** | | |

**Course Outcomes (COs):**
At the end of the course, the student will be able to:

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| 1 | Analysis and design the truss type rolling stock (moving vehicle)and pedestrian bridges. |
| 2 | Analysis and design high tension transmission line towers |
| 3 | Analysis and design self – supporting steel chimneys for industrial purposes. |
| 4 | Analyse and design North light roof trusses and lattice girders for industrial buildings. |
| 5 | Associate and perform analysis and design of elevated steel water tanks to store oil and water. |

**Program Outcomes (POs):**
Post graduates will be able to:

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| 1 | Apply the knowledge of basic infrastructure requirements for the development of towns, cities and satellite towns |
| 2 | Critically analyse the usage of natural resources in construction materials |
| 3 | Evaluate a wide range of potential solutions for the alternative methods and techniques which can be adopted effectively keeping economic considerations of the project. |
| 4 | Apply scientific knowledge to analyse various problems of infrastructural engineering and to provide possible solutions by pursuing research |
| 5 | Select appropriate modern engineering and IT tools for the design and construction of civil engineering infrastructure project. |
| 6 | Attain the capability to work in multidisciplinary teams to achieve common goals. |
| 7 | Demonstrate knowledge and understanding of engineering and management principles in multidisciplinary environments after consideration of economic and financial factors. |
| 8 | Communicate effectively on complex engineering activities to prepare reports and make presentations. |

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| 9 | Ability to engage in life-long learning independently to improve knowledge. |
| 10 | Understand the responsibility of carrying out professional practices ethically for sustainable development of society. |
| 11 | Examine critically and independently one's actions and take corrective measures by learning from mistakes. |

**Course Outcome versus Program Outcomes:**

| COs | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **CO-1** | M | | M | | | M | | | | | M |
| **CO-2** | M | S | S | M | | S | | | | | M |
| **CO-3** | S | M | M | S | | M | | | | | S |
| **CO-4** | M | S | | M | | M | | | | | M |
| **CO-5** | S | S | S | M | S | S | | M | | | M |

*S - Strongly correlated*, *M - Moderately* correlated, *Blank - No correlation*

| | |
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| **Assessment Methods:** | Assignment / Seminar / Mid-Test / End Exam |

## Teaching-Learning and Evaluation

| Week No. | TOPIC / CONTENTS | Course Outcomes | Sample questions | TEACHING-LEARNING STRATEGY | Assessment Method & Schedule |
|---|---|---|---|---|---|
| 1 | Design of pedestrian bridge (N-truss and Pratt), | CO-1 | Design a prat type pedestrian brige for a span of 10m? | ▫ Lecture<br>▫ Demonstration | Assignment (Week 2 - 4) |
| 2 | Design through type truss member for dead load and equivalent live load including top, bottom bracings and portal bracing. | CO-1 | Design a N type truss railway bridge for a span of 30m? | ▫ Lecture / Discussion | Mid-Test 1 (Week 9) |
| 3 | Design through type truss member for dead load and equivalent live load including top, bottom bracings and portal bracing | CO-1 | Design a N type truss railway bridge for a span of 40m, and design the bottom and top chord members& and lateral bracing system at the mid span. | ▫ Lecture<br>▫ Problem solving | |

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| 4 | Analysis for transmission line tower. | CO-1 | Analysis of forces for the given geometry of line tower under broken wire conditions? | ▫ Lecture / Problem solving /Discussion | |
| 5 | Analysis and design for transmission line tower. | CO-2 | Analysis of forces for the given geometry of tangent tower under normal wire conditions? | ▫ Lecture / Discussion | |
| 6 | Design for transmission line tower. | CO-2 | Design the geometry of transmission line tower for the given data include clearance distance, span? | ▫ Lecture / Discussion | |
| 7 | Design for transmission line tower. | CO-2 | Design a transmission line tower for the given data include clearance distance, span | ▫ Lecture<br>▫ Problem solving | |
| 8 | Design of self supporting steel chimneys. | CO-3 | Design a self support chimney for the given height & wind loads? | ▫ Lecture<br>▫ Problem solving | |
| **9** | **MID TEST – I** | | | | |
| 10 | Design of self supporting steel chimneys including foundations. | CO-3 | Design the foundation of self support steel chimney for the given height & wind loads? | ▫ Lecture<br>▫ Discussion<br>▫ Problem solving | Mid-Test 2 (Week 18) |
| 11 | Design of self supporting steel chimneys including foundations | CO-4 | Design the chimney shell at various heights for the given data? | ▫ Lecture / Discussion | |
| 12 | Design of North light Trusses | CO-4 | Design a north light roofing truss for the given span and location of Industrial building? | ▫ Lecture / Discussion | |
| 13 | Design of North light Trusses | CO-5 | Design the geometry of a north light roofing truss for the given span and location of Industrial building? | ▫ Lecture / Discussion | |
| 14 | Design of lattice girder. | CO-5 | Design a lattice girder for given span and loading conditions? | ▫ Lecture / Discussion | |
| 15 | Design of lattice girder. | CO-5 | Calculate the forces for given geometry of lattice girder? | ▫ Lecture / problem solving | Seminar (Week 15) |

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| 16 | Design of water storage | CO-5 | Calculate the member forces for given geometry of elevated water tank | ▫ Lecture / Discussion | |
| 17 | Design of oil storage steel tanks. | CO-5 | Design a steel water tank for the given quantity of water and pressure head? | ▫ Lecture / Discussion/problem solving | |
| **18** | **MID TEST – II** | | | | |
| **19/20** | **END EXAM** | | | | |