

**COURSE TITLE** : **STRUCTURAL AND IRRIGATION ENGINEERING DRAWING**  
**COURSE CODE** : **4015**  
**COURSE CATEGORY** : **A**  
**PERIODS/WEEK** : **4**  
**PERIODS/SEMESTER** : **72**  
**CREDITS** : **3**

### TIME SCHEDULE

MODULE	TOPIC	PERIODS
I	R.C.C. Drawing	17
	Test I	1
II	R.C.C drawing II	17
	Test II	1
III	Steel drawing	17
	Test III	1
IV	Irrigation & Environmental Drawing	17
	Test IV	1
	<b>TOTAL</b>	<b>72</b>

***Rationale:***

*Drawing is basically the language of an Engineer. It is a means of communication between owner, architect, engineer and contractor. Civil Engineering Diploma holder has to supervise various construction processes and execute civil engineering structures such as buildings, roads, railways, dams, bridges – etc. Civil Engineer has to convert design parameters, process details into pictorial views. Therefore he is required to understand and prepare the drawings. He has to interpret the drawings, so that, he can execute the works. Civil Engineer should be competent to covert his ideas in to the drawing. This help him to transfer his ideas, thoughts to his subordinates on the suite. Drawing makes his job simple and effective. Drawing helps in detailing the structures processes with quality parameters. Drawings are essential for drafting specifications and tender documents.*

*This subject is a core technology subject. The knowledge of this subject is useful for building construction, estimate and costing, design of structure, project, etc*

### OBJECTIVES

**1.1.0 R.C.C. Drawing I**

- 1.1.1 Draw the cross section at center and support and the longitudinal sections of simply supported rectangular beam, showing the reinforcement and dimension
- 1.1.2 Draw the cross section at center and support and the longitudinal section of Continuous beam, showing the reinforcement and dimensions
- 1.1.3 Draw the cross sections at center, support and longitudinal section of a Cantilever beam, showing the reinforcement and dimensions
- 1.1.4 Draw the sectional elevation and plan showing reinforcement of a one way slab, Simply supported
- 1.1.5 Draw the sectional elevation and plan showing reinforcement of a one way continuous slab.

- 1.1.6 Draw the sectional elevation for two spans and the plan at the levels of reinforcement of two way slab- simply supported, by showing all details and dimensions
- 1.1.7 Draw the sectional elevation for two spans and the plan at the levels of reinforcement of two way slab- restrained, by showing all details and dimensions
- 1.1.8 Draw the cross section and sectional elevation of a lintel cum sunshade, showing all the details and dimensions
- 1.1.9 Draw the cross section of a rectangular and circular columns, showing all details and dimensions
- 1.1.10 Draw the plan and the section showing reinforcement and dimension of a isolated column footing.
- 1.1.11 Draw the details of reinforcement at the junction of column and beam and column and footing according to the ductility provision.

### **2.1.0 R.C.C. Drawing II**

- 2.1.1 Draw the cross section and longitudinal section - Cantilever retaining wall showing all the details and dimensions
- 2.1.2 Draw the plan and longitudinal section - Stair case, dog legged, showing all the details and dimensions
- 2.1.3 Draw the sections and plan - R.C.C Elevated water tank, showing all the details and dimensions
- 2.1.4 Draw the cross section and longitudinal section - R.C.C. Tee beam and slab, bridge, showing all the details and dimensions

### **3.1.0 Steel Drawing**

- 3.1.1 a) Draw the elevation and plan of a single and double lacing system for compound column, using welded connection
  - b) Draw the elevation and plan of a battern system for a compound column.
  - c) Draw the elevation and cross section of a steel beam to steel column connection.
- 3.1.2 Draw the elevation and cross section of a secondary beam to main beam connection.
- 3.1.3 a) Draw the elevation and plan of a slab base for column with welded connection
  - b) Draw the elevation and plan of a Gusseted base for a column
- 3.1.4 Draw the elevation and cross section of a plate girder.
- 3.1.5 Draw Steel truss-medium span- draw the joints in detail.

### **4.1.0 Irrigation Engineering & Environmental Drawing**

- 4.1.1 Draw the cross section of masonry dam showing component parts
- 4.1.2 Draw the longitudinal section and Plan of a canal drop showing component parts
- 4.1.3 Draw the longitudinal section and Plan of a Tank sluice with tower head
- 4.1.4 Draw the longitudinal section of a aqueduct showing component parts
- 4.1.5 Draw the longitudinal section and plan of surplus escape, showing all components
- 4.1.6 Draw the longitudinal section and plan of a surplus escape/weir, showing component parts
- 4.1.7 Draw the plan and show the different components of a septic tank and dispersion trench

## **COURSE CONTENT**

### **MODULE - I**

Simply supported beams  
 Continuous beam  
 Cantilever beam  
 One-way slab- simply supported  
 One-way slab- continuous  
 Two-way slab- simply supported  
 Two-way slab- end restrained  
 Lintel and sunshade  
 Columns  
 Isolated column footing

Column beam junction and column footing junction according to the ductility provisions

**MODULE - II**

Cantilever retaining wall  
Stair case , dog legged  
Stair case open well  
R.C.C Elevated water tank  
R.C.C. Tee beam and slab bridge

**MODULE- III**

Lacing and battens of columns  
Beams to column connection  
Secondary beam to main beam connection  
Column bases:- a) Slab base b) Gusseted base  
Plate girders  
Steel truss-medium span- joint details. parts

**MODULE –IV**

Irrigation Engineering drawing  
Masonry dams  
Tank sluice with tower head. Surplus escape/weir  
Canal drop  
Septic tank with soak pit and dispersion trench

**REFERENCE**

1. Design & Drawing – P.K.Sasidharan, Archana Publishers
2. Building Design & Civil Engineering Drawing – Balagopal & Prabhu, Spade Engineers Pvt. Ltd