

TEACHING RESOURCE MATERIAL FOR TEACHERS  
OF  
CIVIL & STRUCTURAL ENGINEERING  
FOR  
DIPLOMA CIVIL ENGINEERING COURSES IN STEEL

*(As per AICTE Model Curriculum for Diploma Courses in Engineering & Technology)*

*[Course Code CEPC301 and CEPC305]*

## **CONTENTS**

### **1. LIMIT STATE METHOD OF DESIGN**

- INTRODUCTION
- ALLOWABLE STRESS DESIGN (ASD)
- LIMIT STATE DESIGN
- PARTIAL SAFETY FACTOR
- FACTORS GOVERNING THE LIMIT STATE OF STRENGTH
- LIMIT STATE OF SERVICEABILITY
- CONCLUDING REMARKS
- REFERENCES
- WORKED OUT EXAMPLE

### **2. LOCAL BUCKLING AND SECTION CLASSIFICATION**

- INTRODUCTION
- BASIC CONCEPTS OF PLASTIC THEORY
- SECTION CLASSIFICATION
- LIMITS ON WIDTH-THICKNESS RATIOS
- CONCLUDING REMARKS
- REFERENCES

### **3. DESIGN OF COMPRESSION MEMBERS**

- INTRODUCTION
- STIPULATIONS OF NBC 2016/IS 800:2007
- EFFECTIVE LENGTH OF COLUMNS
- STEPS IN DESIGN OF AXIALLY LOADED COLUMNS AS PER NBC 2016/ IS 800 :2007
- CROSS SECTIONAL SHAPES FOR COMPRESSION MEMBERS AND BUILT-UP COLUMNS
- BASE PLATES FOR CONCENTRICALLY LOADED COLUMNS
- CONCLUDING REMARKS
- REFERENCES
- WORKED OUT EXAMPLE
- SUMMARY

### **4. DESIGN OF TENSION MEMBERS**

- INTRODUCTION
- TYPES OF SECTIONS USED FOR TENSION MEMBERS
- BEHAVIOUR OF TENSION MEMBERS
- CONCLUDING REMARKS
- REFERENCES
- WORKED OUT EXAMPLE
- SUMMARY

## **5. LATERALLY RESTRAINED BEAMS**

- INTRODUCTION
- BEHAVIOUR OF STEEL BEAMS
- SHEAR BEHAVIOUR OF STEEL BEAMS
- LIMIT STATE OF SERVICEABILITY – DEFLECTION
- LIMIT STATE DESIGN OF STEEL BEAMS AS PER NBC 2016/ IS 800:2007
- BUILT-UP BEAMS
- CONCLUDING REMARKS
- REFERENCES
- WORKED OUT EXAMPLE
- SUMMARY