



## COURSE SYLLABUS

**COURSE NUMBER:** CIVE 421  
**COURSE TITLE:** REINFORCED CONCRETE DESIGN

### **COURSE DESIGNATION**

REQUIRED COURSE FOR CIVIL ENGINEERING MAJORS AND TECHNICAL ELECTIVE FOR CONSTRUCTION ENGINEERING MAJORS

### **COURSE DESCRIPTION**

PROPERTIES AND CHARACTERISTICS OF REINFORCED CONCRETE; DESIGN OF STRUCTURAL COMPONENTS. INTRODUCTION TO PLASTIC THEORY AND LIMIT DESIGN. (3 CREDITS)

### **PRE-REQUISITE**

CIVE 321

### **LECTURES SCHEDULE**

LECTURE – 3 SESSIONS PER WEEK, 50 MINUTES PER SESSION

### **TEXTBOOK**

BAYASI, M.Z., "INTRODUCTION TO REINFORCED CONCRETE DESIGN," FIRST EDITION, LINUS PUBLISHING COMPANY, 2011.

### **COURSE LEARNING OUTCOMES**

TO DEVELOP A FUNDAMENTAL UNDERSTANDING OF THE BEHAVIOR, ANALYSIS AND DESIGN OF REINFORCED CONCRETE STRUCTURAL ELEMENTS BASED ON STRUCTURAL MECHANICS PRINCIPLES UTILIZING ACI CODE.

### **TOPICS COVERED**

- INTRODUCTION AND MATERIALS
- STRENGTH DESIGN METHOD VS. ALLOWABLE STRESS METHOD
- STRUCTURAL ANALYSIS OF REINFORCED CONCRETE
- DESIGN OF SINGLY REINFORCED BEAMS IN FLEXURE
- ONE-WAY SLABS
- DOUBLY REINFORCED CONCRETE BEAMS
- T-BEAMS
- SHEAR DESIGN FOR BEAMS
- BOND AND DEVELOPMENT LENGTH
- SERVICEABILITY OF BEAMS
- COLUMNS
- FOOTINGS
- EXAMS AND REVIEW.

### **GRADING**

HOMEWORK ASSIGNMENTS AND QUIZZES	20%	
EXAMS		50%
FINAL		30%