

## STANDARDIZED COURSE OUTLINE

### SECTION I

**SUBJECT AREA AND COURSE NUMBER: ARC 229**

**COURSE TITLE: STRUCTURES**

**COURSE CATALOG DESCRIPTION:** This course emphasizes structural design systems. It covers fundamental load analysis, structural systems in wood, steel concrete and masonry. The idea of structural systems and examples of different construction types through history will be reinforced in required core curriculum courses..

**LECTURE HOURS: 3**

**CREDIT HOURS: 3**

**PREREQUISITE: MAT 137 and MAT 181**

**CO-REQUISITE: none**

### SECTION II

- A. SCOPE:** Investigations will focus on the students' ability and understanding of forces and force actions, shear diagrams moment diagrams and bending moment. Materials discussed for structural design will begin with wood and steel for tensile materials. Course will further discuss and investigate compressive materials in design such as masonry, and concrete as well as composite materials such as reinforced concrete.
- B. REQUIRED WORK:**  
Students will be expected to build a basic understanding of structural systems through exercises done together in class and as homework assignments. Students will be expected to use correct formulas for given materials based on text and lectures. In addition to this students will be required to write a research paper related to an architectural and structurally significant building.
- C. ATTENDANCE AND PARTICIPATION:**  
Regular attendance, assignment submissions, timeliness, promptness and class participation are expected.
- D. METHODS OF INSTRUCTION**  
Methods of instruction include any of the following: lecture, demonstrations, group discussion and work sessions, and use of classroom audiovisual and computer –based presentation materials.

**E. OBJECTIVES, OUTCOMES AND ASSESSMENTS**

**1. COURSE OBJECTIVES/COMPETENCIES**

<b>LEARNING OBJECTIVES</b>	<b>LEARNING OUTCOMES</b>	<b>ASSESSMENT METHODS</b>
To demonstrate an understanding of:	Student will:	As measured by:
Identify the different structural systems	Use textbook examples as well as actual project examples from the field	Class exercises, homework, quizzes and exams
Shear, moment and bending moment diagrams	Use textbook examples, class work sessions as well as actual project examples from the field	Class exercises, homework quizzes and exams
Steel design and wood design-columns and beams	Use correct formulas to solve problems and be able to identify structural systems	Class exercises, homework quizzes and exams
Concrete design and masonry design	Use correct formulas to solve problems and be able to identify structural systems.	Class exercises, homework quizzes and exams
Relationship[ of abstract formulas of design with actual structural examples	Research buildings on internet and magazines and books	Class exercise and research paper, quizzes and exams

**F. TEXT (S) AND MATERIALS**

Simplified Engineering for Architects and Builders, By James Ambrose and Patrick Tripeny, Wiley and Sons, 2005 tenth edition

**G. INFORMATION TECHNOLOGY-** Microsoft Word for Research paper