CET 482 REINFORCED CONCRETE DESIGN

MURRAY STATE UNIVERSITY

DEPARTMENT: DEPARTMENT OF INDUSTRIAL AND ENGINEERING TECHNOLOGY

I. **TITLE** Reinforced Concrete Design, 3 credit hours, Spring 2011
M W F 9:30am-10:20am, IT 106

II. DESCRIPTION

Analysis and design of reinforced concrete beams, columns, footings, and one-way slabs using the strength design method. Emphasis is placed on the ACI Building Code.

III. PURPOSE

Develop an understanding of fundamental behavior, design, and construction of reinforced concrete structures.

IV. OBJECTIVES

A. Describe the structural behavior and discuss the design rationale used for common reinforced concrete beams, columns, slabs and footings.
B. Discuss and apply the latest provisions of the ACI Building Code for design of various concrete structural elements. Design columns considering various end restraint conditions.
C. Incorporate prior studies in statics, strength of materials, and computer programming in solving reinforced concrete design problems.
D. Recognize the need to learn and use the latest building and design code throughout his/her career.

V. CONTENT

A. Load Factor Design of Beams for Flexure
   1. Derivation of moment capacity equations
   2. Analysis of singularly reinforced rectangular beams
   3. Design of rectangular beams
   4. Analysis of tee beams
B. Shear in Beams
   1. Shear strength of concrete
   2. Web reinforcement
C. Reinforcement Development and Splices
D. Column Design
   1. Tied columns
   2. Spiral columns
   3. Interaction diagrams
E. Footings
   1. Column footings
   2. Wall footings

VI. INSTRUCTION

A. Lectures and classroom participation (10%)
B. Exams (70%)
C. Homework (20%)
   1. Late homework will **not** be accepted except in unusual circumstances.

2. Homework must be presented in a professional manner (i.e., clearly organized, neat, first-class lettering, etc.)
3. Engineering calculation paper (or similar type paper) should be used for all assignments.
4. All figures should be sketched with a straightedge and properly labeled.
5. Multiple pages must be stapled together.

VII. FIELD, CLINICAL AND/OR LABORATORY EXPERIENCES

a. Not Applicable

VIII. RESOURCES

a. Class handouts.

IX. GRADING PROCEDURES

Grading Scale

90-100%	A
80-89%	B
70-79%	C
60-69%	D
Below 60%	E

X. ATTENDANCE POLICY

This course will adhere to the policy published in the MSU Undergraduate Bulletin. Attendance is expected and will greatly affect performance. **More than three unexcused absences will result in failure of the course.** Cell phone use is prohibited during class.

XI. ACADEMIC HONESTY POLICY

This course will adhere to the policy published in the MSU Undergraduate Bulletin. Disciplinary action may result in failure of this course.

XII. TEXT AND REFERENCES

a. Limbrunner, G.F. and Aghayere, A. O., Reinforced Concrete Design, 7th Ed., Prentice Hall, 2009.

XIII. PREREQUISITES

a. CET 298

XIV. STATEMENT OF AFFIRMITIVE ACTION AND EQUAL OPPORTUNITY

Murray State University endorses the intent of all federal and state laws created to prohibit discrimination. Murray State University does not discriminate on the basis of race, color, national origin, gender, sexual orientation, religion, age, veteran status, or disability in employment, admissions, or other provision of services and provides, upon request, reasonable accommodation including auxiliary aids and services necessary to afford individuals with disabilities equal access to participate in all programs and activities.