CE 417 CONSTRUCTION EQUIPMENT AND METHODS	
Department of Civil Engineering King Saud University	
Course Description: CE 417 Construction Equipment and Methods (Required for a BSCE degree)	Overview of the construction industry. Earthmoving materials and operations. Excavation and lifting. Loading & hauling. Compacting & finishing. Concrete construction. Concrete form design. Construction economics. Contract construction. 3 (3,1,0)
Prerequisite	Eighth level
Course learning Objectives	Students completing this course successfully will be able to: a. understand earthmoving material and soil volume change characteristics b. Determine earthwork volume and mass diagram. c. Determine productivity of earthmoving equipment. for excavating, lifting, loading, hauling, compacting and finishing. d. Understand design principles of concrete formwork. e. Design concrete formwork for slab, beam, column, and footings. f. Understand construction economics. g. determine equipment operation and maintenance costs. h. Understand contract construction. i. Understand construction safety, health, and Ethics. j. Understand labor productivity, performance improvement, and life long learning.
Topics Covered	1. Overview of earthmoving materials and operations. 2. Productivity of earthmoving equipment for excavating, lifting, loading, hauling, compacting and finishing. 3. Concrete Construction 4. Concrete Form Design 5. Construction Economics 6. Construction Contract 7. Construction Safety and Ethics. 8. Improving Productivity and Performance.
Class/ tutorial Schedule	Class is held three times per week in 50-minute lecture sessions. There is also a 50-minute weekly tutorial associated with this course.
Computer Applications	Commercial and educational simulation software are encouraged to be used during the course.
Course Project	A course group project from five students is asked to choose a live construction project and present their work by the end of the semester.
Contribution of Course to Meeting the Professional Component	Students recognize the role of professional societies in developing codes and standards and updating current knowledge.
Relationship of Course to Program Outcomes	1. Students apply algebra, elementary calculus, and principles of mechanics. 2. Students are able to identify and formulate an engineering

	problem and to develop a solution. 3. Students recognize the importance of analysis in designing formwork components. 4. Students are encouraged to submit accurate analysis in an efficient and professional way. 5. Students recognize their role with an engineering team carrying other aspects for calculating earthwork volume, selecting appropriate earthmoving equipment, designing formwork, calculating equipment cost and the interaction of decisions made by various architectural and engineering teams. 6. Students are encouraged to recognize the different earthmoving equipment types and their range of applications. 7. Students recognize the ethical and professional responsibility in achieving accurate formwork structural analysis for safe and economical design, and its impact on the well-being of the society. 8. Students recognize the need for technical updating on a continuing basis, since the course emphasizes on the changing technology of equipment types software, codes and specifications. 9. Students recognize the importance of reading and understanding technical contents in English in order to achieve life–long learning and be able to carryout their responsibilities.
Textbook(s) and/or Other Required Material	S.W. Nunnally, **Construction Methods and Management**, (latest edition) Seventh Edition, 2007,Prentice-Hall, Inc.
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Grade Distribution

Mid-term exams	30%
Course project	5%
Lecture quizzes and attendance	5%
Homework Assignments	10%
Final Exam	50%