

## FLORIDA STATE COLLEGE AT JACKSONVILLE

## COLLEGE CREDIT COURSE OUTLINE

COURSE NUMBER:	BCN 2226
COURSE TITLE:	Soils and Foundations
PREREQUISITE(S):	None
COREQUISITE(S):	None
CREDIT HOURS:	3
CONTACT HOURS/WEEK:	4
CONTACT HOUR BREAKDOWN:	
Lecture/Discussion:	3
Laboratory:	1
Other _____:	
FACULTY WORKLOAD POINTS:	3.5
STANDARDIZED CLASS SIZE ALLOCATION:	24

## CATALOG COURSE DESCRIPTION:

This course covers the criteria used in the selection, design, and construction of the elements of a structure that transfers its total load to the underlying formations. Theoretical aspects considered and treated are analysis of subsoil conditions, bearing capacity and settlement analysis, character of natural soil deposits, earth pressure and retaining wall theory, and stability of slopes and subgrades. The course also covers the basic types of prevalent foundations, their design and behavior characteristics.

SUGGESTED TEXT(S):	Liu, Cheng and Jack B. Evett. <u>Soils and Foundations</u> . Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1981. ISBN 013-025517-3
IMPLEMENTATION DATE:	Fall Term, 1983 (841) (was ETC 2220C)
REVIEW OR MODIFICATION DATE:	Fall Term, 2002 (20031) Fall Term, 2005 (20061) Fall Term, 2007 (20081) (was BCN 2223) Fall Term, 2008 (20091) - Outline Review 2007

## COURSE TOPICS

Rationale: The course examines the engineering properties of soils, the elements which transfer load to the underlying formations, together with related stability and design considerations.

Intent: The intent is to develop an understanding of soils as an engineering material and a working knowledge of the elements of design and construction as applied to foundations, retaining walls, and subgrades.

CONTACT HOURS  
PER TOPIC

Suggested Distribution:

A.	Engineering Properties of Soils 1. Soil Classification Systems 2. Grain Size Analysis 3. Weight-Volume Relationships 4. Compressibility 5. Shear Strength	10
B.	Stress Distribution in Soil 1. Concentrated Loads 2. Uniformly Distributed Loads 3. Settlement of Structures	10
C.	Shallow Foundations 1. Bearing Capacity Analysis 2. Size of Footings 3. Contact Pressure 4. Design	10
D.	Pile Foundations 1. Pile Capacity 2. Pile Driving Formulas 3. Pile Load Tests 4. Pile Groups 5. Design	8
E.	Drilled Caissons 1. Bearing Capacity 2. Design	8
F.	Retaining Walls 1. Earth Pressure Computation 2. Stability Analysis 3. Design	8

CONTACT HOURS  
PER TOPIC

Suggested Distribution:

G.	Stability of Slopes and Soil Reinforcement	8
	1. Stability Analysis	
	2. Geotextiles and Geomembranes	
H.	Exams, Reviews, Summaries	4

PROGRAM TITLE: Architectural Design and Construction Technology

COURSE TITLE: Soils and Foundations

CIP NUMBER: 1615010100

PERFORMANCE STANDARDS ADDRESSED:

NUMBER(S): TITLES(S):

01.0 COMMUNICATE EFFECTIVELY -

- 01.01 Identify communication channels in organizations.
- 01.02 Develop and use effective means of communications.
- 01.03 Develop an effective working relationship with others.
- 01.04 Prepare business correspondence, memos, and reports.
- 01.05 Compose clear and concise oral and written technical reports and presentations.
- 01.06 Participate in technical discussion and meetings.

03.0 IDENTIFY CONSTRUCTION MATERIALS AND THEIR APPLICATION -

- 03.01 Identify formwork materials and methods.
- 03.02 Identify concrete materials and applications.
- 03.03 Identify reinforcing steel and applications.
- 03.04 Identify structural steel shapes and applications.
- 03.05 Identify waterproofing materials and vapor barriers and applications.
- 03.06 Identify wood construction materials and applications.
- 03.07 Identify masonry materials and applications.
- 03.08 Identify exterior finishes and applications.
- 03.09 Identify insulation materials and applications.
- 03.10 Identify glass and glazing materials and applications.
- 03.11 Identify roofing materials and applications.
- 03.12 Identify flashings and applications.
- 03.13 Identify adhesives and sealants and applications.
- 03.14 Identify floor finish materials and applications.
- 03.15 Identify wall finish materials and applications.
- 03.16 Identify ceiling finish materials and applications.
- 03.17 Identify plastic materials and applications.
- 03.18 Identify miscellaneous metals and applications.
- 03.19 Identify millwork and applications.
- 03.20 Identify finish hardware and applications.
- 03.21 Identify manufactured specialties and applications.
- 03.22 Identify basic electrical components.
- 03.23 Identify basic H V A C components.
- 03.24 Identify basic plumbing components.
- 03.25 Identify paving materials and applications.
- 03.26 Identify fire proofing materials and applications.
- 03.27 Identify applications of pre-engineered and prefabricated structures.

## PERFORMANCE STANDARDS ADDRESSED: (continued)

NUMBER(S):      TITLES(S):

04.0 INTERPRET DRAWINGS AND DOCUMENTS -

- 04.01 Interpret technical symbols.
- 04.02 Interpret topographical drawings.
- 04.03 Interpret aerial photographs and maps.
- 04.04 Interpret site drawings.
- 04.05 Interpret architectural drawings.
- 04.06 Interpret specifications.

05.0 INTERPRET AND APPLY BASIC PRINCIPLES OF ARCHITECTURAL AND ENGINEERING DESIGN -

- 05.01 Conduct and interpret concrete slump test.
- 05.02 Take test cylinder and interpret results.
- 05.03 Interpret soil analysis reports.
- 05.04 Interpret compaction test reports.
- 05.05 Interpret theory of loads.
- 05.06 Determine effect of loads on materials.
- 05.07 Interpret principles of expansion and contraction and control
- 05.08 Interpret and apply fundamentals of site requirements.
- 05.09 Determine and apply space relationships.

06.0 INTERPRET AND APPLY CODES, REGULATIONS, AND TECHNICAL LITERATURE -

- 06.01 Interpret and apply graphic and time saver standards.
- 06.02 Interpret and apply national building codes.
- 06.03 Interpret and apply C.M.H.C. residential standards.
- 06.04 Interpret and apply national fire code.
- 06.05 Interpret and apply provincial codes and regulations.
- 06.06 Interpret and apply municipal codes and regulations.
- 06.07 Interpret zoning bylaws and regulations.
- 06.08 Interpret zoning maps.
- 06.09 Interpret trade magazines and catalogs.
- 06.10 Interpret trade manuals.
- 06.11 Interpret C.I.C.T. manual.
- 06.12 Interpret yardstick costing manual.
- 06.13 Interpret and apply C.E.T. regulations.
- 06.14 Interpret and apply construction association regulations.

13.0 DEMONSTRATE APPROPRIATE COMMUNICATION SKILLS -

- 13.01 Write logical and understandable statements, or phrases, to accurately fill out forms/invoices commonly used in business and industry.
- 13.02 Read and understand graphs, charts, diagrams, and tables commonly used in this industry/occupation area.
- 13.03 Read and follow written and oral instructions.
- 13.04 Answer and ask questions coherently and concisely.
- 13.05 Read critically by recognizing assumptions and implications and by evaluating ideas.
- 13.06 Demonstrate appropriate telephone/communication skills.

## PERFORMANCE STANDARDS ADDRESSED: (continued)

NUMBER(S):      TITLES(S):

- 14.0 DEMONSTRATE APPROPRIATE MATH SKILLS -
- 14.01 Solve problems for volume, weight, area, circumference and perimeter measurements for rectangles, squares, and cylinders.
  - 14.02 Measure tolerance(s) on horizontal and vertical surfaces using millimeters, centimeters, feet and inches.
  - 14.03 Add, subtract, multiply and divide using fractions, decimals, and whole numbers.
  - 14.04 Determine the correct purchase price, to include sales tax for a materials list containing a minimum of six items.
  - 14.05 Demonstrate an understanding of federal, state and local taxes and their computation.
- 16.0 DEMONSTRATE EMPLOYABILITY SKILLS -
- 16.01 Conduct a job search.
  - 16.02 Secure information about a job.
  - 16.03 Identify documents which may be required when applying for a job interview.
  - 16.04 Complete a job application form correctly.
  - 16.05 Demonstrate competence in job interview techniques.
  - 16.06 Identify or demonstrate appropriate responses to criticism from employer, supervisor or other employees.
  - 16.07 Identify acceptable work habits.



NOTE: Use either the Tab key or mouse click to move from field to field. The box will expand to accommodate your entry.

<i>Section 1</i>	
COURSE PREFIX AND NUMBER: <u>BCN 2226</u>	SEMESTER CREDIT HOURS: <u>3</u>
COURSE TITLE: <u>Soils and Foundations</u>	

*Section 2*

TYPE OF COURSE: (Click on the box to check all that apply)

<input type="checkbox"/> AA Elective	<input type="checkbox"/> AS Required Professional Course	<input type="checkbox"/> College Prep
<input checked="" type="checkbox"/> AS Professional Elective	<input type="checkbox"/> AAS Required Professional Course	<input type="checkbox"/> Technical Certificate
<input type="checkbox"/> Other _____		
<input type="checkbox"/> General Education: (For General Education courses, you must also complete Section 3 and Section 7)		

*Section 3 (If applicable)*

INDICATE BELOW THE DISCIPLINE AREA FOR GENERAL EDUCATION COURSES:

<input type="checkbox"/> Communications	<input type="checkbox"/> Social & Behavioral Sciences	<input type="checkbox"/> Mathematics
<input type="checkbox"/> Natural Sciences	<input type="checkbox"/> Humanities	

*Section 4*

INTELLECTUAL COMPETENCIES:

<input checked="" type="checkbox"/> Reading	<input checked="" type="checkbox"/> Speaking	<input checked="" type="checkbox"/> Critical Analysis	<input checked="" type="checkbox"/> Quantitative Skills	<input checked="" type="checkbox"/> Scientific Method of Inquiry
<input checked="" type="checkbox"/> Writing	<input checked="" type="checkbox"/> Listening	<input type="checkbox"/> Information Literacy	<input type="checkbox"/> Ethical Judgment	<input checked="" type="checkbox"/> Working Collaboratively

<i>Section 5</i>	
LEARNING OUTCOMES	METHOD OF ASSESSMENT
• develop an understanding of soils as an engineering material	lecture and laboratory
• theoretical aspects for the analysis of sub soil deposits	project designs
• earth pressure analysis	testing
• stability of earth slopes and sub grades	project designs
• design and construct basic types of foundations and soil reinforcement systems.	project designs
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*Section 6*

Name of Person Completing This Form: Martin Johnson                      Date: 09/13/05