

## FLORIDA STATE COLLEGE AT JACKSONVILLE

## COLLEGE CREDIT COURSE OUTLINE

COURSE NUMBER:	BCN 2280
COURSE TITLE:	Surveying: Construction Layout
PREREQUISITE(S):	MAC 1114 and ETD 1100
COREQUISITE(S):	None
CREDIT HOURS:	3
CONTACT HOURS/WEEK:	4
CONTACT HOUR BREAKDOWN:	
Lecture/Discussion:	2
Laboratory:	2
Other _____:	
FACULTY WORKLOAD POINTS:	3
STANDARDIZED CLASS SIZE ALLOCATION:	24
CATALOG COURSE DESCRIPTION:	
<p>The course is a study of the fundamentals of surveying with emphasis on distance measurement, leveling, angles, bearings, traverses, topographic data collection, and construction layout. The course includes related field work, computations, and drawing.</p>	
SUGGESTED TEXT(S):	<u>Elementary Surveying</u> , Russell/Brinker/Paul Wolf, Harper & Row Publishers, Latest ed. ISBN 006040982-7
IMPLEMENTATION DATE:	June 11, 1984
REVIEW OR MODIFICATION DATE:	Fall Term, 2002 (20031) Fall Term, 2007 (20081) (was BCN 2281) Fall Term, 2008 (20091) - Outline Review 2007

## COURSE TOPICS

Rationale: The course examines the fundamentals of surveying with particular emphasis on instrumental procedures and computation methods. Examined are the methods employed for distance measurement, vertical and horizontal control, leveling, measurement of angles, bearing determination, traverse closure, area determination, and construction layout.

Intent: The intent is to develop an understanding of surveying methods and to develop a degree of skill in the use of basic surveying instruments and the computational methods normally used in surveying.

		<u>CONTACT HOURS PER TOPIC</u>
Suggested distribution:		
I.	Introduction	2
	A. Plane Surveys and Geodetic Surveys	
	B. Accuracy and Precision	
	C. Field Notes	
II.	Distance Measurement	6
	A. Methods	
	B. Distance Corrections	
	C. Miscellaneous Taping Operations	
	D. Assignment: Field work - Distance Measurement	
III.	Leveling	12
	A. Reference Elevations	
	B. Types of Levels and Level Rods	
	C. Differential Leveling	
	D. Reciprocal Leveling	
	E. Adjustment of Level Circuits	
	F. Profile Leveling and Cross-Sections	
	G. Assignment: Field Work - Leveling	
IV.	Angles, Bearings, and Traverses	12
	A. Transmits and Theodolites	
	B. Measurement of Horizontal Angles	
	C. Measurement of Vertical Angles	
	D. Traverse Adjustment	
	E. Latitude and Departure	
	F. Error of Closure	
	G. Coordinates	
	H. Calculating Land Area	
	I. Miscellaneous Traverse Computations	
	J. Assignment: Field Work, Computations, and Drawing	

CONTACT HOURS  
PER TOPIC

Suggested distribution: (CONTINUED)

V.	Construction Layout	11
	A. Grade Stakes	
	B. Reference Points for Construction	
	C. Building Layout Calculation	
	D. Assignment: Computation and Drawing	
VI.	Topographic Surveying	12
	A. Data Collection	
	B. Data Presentation	
	C. Assignment: Field Work and Drawing	
VII.	Exams, Review, and Summaries	5

PROGRAM TITLE: Civil Engineering Technology  
COURSE TITLE: Surveying: Construction Layout  
CIP NUMBER: 0715.020101

## LIST PERFORMANCE STANDARDS ADDRESSED:

NUMBER(S): TITLES(S):

- 08.0 SOLVE PROBLEMS INVOLVING PLANE TRIGONOMETRY -- The student will be able to:
- 08.01 Solve right triangle problems using sine, cosine, tangent and pythagorean theorem.
  - 08.02 Solve oblique triangle problems using the law of sines and the law of cosines.
  - 08.03 Compute areas of right and oblique triangles.
- 11.0 UTILIZE STANDARD SURVEYING EQUIPMENT TO MAKE MEASUREMENTS AND CALCULATIONS TO RUN A TRAVERSE, ESTABLISH LEVELS, KEEP NOTES, AND PRODUCE REQUIRED DRAWINGS -- The student will be able to:
- 11.01 Use engineers tape.
  - 11.02 Use chaining pins.
  - 11.03 Use plumb bobs.
  - 11.04 Use tension pulls scale.
  - 11.05 Use Lock hand level.
  - 11.06 Use thermometers.
  - 11.07 Use EDM equipment.
  - 11.08 Use engineers level.
  - 11.09 Use modern level.
  - 11.10 Use precise level.
  - 11.11 Use engineers transit, repeating and directional.
  - 11.12 Use theodolite, repeating and directional.
  - 11.13 Use field book to keep field notes.
  - 11.14 Use plane table.
  - 11.15 Use HP 41CX computer or equivalent.
- 18.0 ESTABLISH GRADES, LOCATE PROPERTY LINES, AND UTILITIES; AND PRODUCE PLOTS AND CALCULATE CUT AND FILL BY AVERAGE-END-AREA -- The student will be able to:
- 18.01 Calculate horizontal alignment for civil engineering structures.
  - 18.02 Calculate vertical alignment for civil engineering structures.
  - 18.03 Plot and draft maps, plats, plans and profiles, charts and graphs.