

Course Outline

COURSE: CARP 212 **DIVISION:** 50 **ALSO LISTED AS:**

TERM EFFECTIVE: Fall 2016 **Inactive Course**

SHORT TITLE: LAYOUT INSTRUMENTS

LONG TITLE: Layout Instruments

<u>Units</u>	<u>Number of Weeks</u>	<u>Type</u>	<u>Contact Hours/Week</u>	<u>Total Contact Hours</u>
1	1	Lecture:	24	24
		Lab:	12	12
		Other:	0	0
		Total:	36	36

COURSE DESCRIPTION:

This course covers use of leveling devices. It includes reading and interpreting an engineer's rod, horizontal and vertical setting circles, and vernier scale. Additional topics include construction layout of horizontal and vertical angles.

PREREQUISITES:

COREQUISITES:

CREDIT STATUS: C - Credit - Degree Non Applicable

GRADING MODES

L - Standard Letter Grade

REPEATABILITY: N - Course may not be repeated

SCHEDULE TYPES:

02 - Lecture and/or discussion

03 - Lecture/Laboratory

04 - Laboratory/Studio/Activity

STUDENT LEARNING OUTCOMES:

1. The student will calculate the elevation of a series of building elements using information derived from construction drawings and a bench mark elevation.

Measure: Class Performance, Quizzes, Written Exams

PLO: 2

ILO: 1, 2, 3, 7

GE-LO:

Year assessed or anticipated year of assessment: 2012-13

2. The student will use a digital Theodolite to layout a series of lines of a finite length and a given angle to a base line.

Measure: Class Performance, Quizzes, Written Exams

PLO: 2

ILO: 1, 2, 3, 7

GE-LO:

Year assessed or anticipated year of assessment: 2012-13

PROGRAM LEARNING OUTCOMES:

1. Demonstrate journey level skills, including those skills necessary to build all concrete infrastructures that comprise the California transportation system.
2. Locate on the blueprints and in the specifications, the information needed to construct various types of structures and assemble its various components.
3. Perform horizontal layout and vertical layout of wood framed wall components. Install interior and exterior trims and moldings. Construct various types of roofs and stairs.

CONTENT, STUDENT PERFORMANCE OBJECTIVES, OUT-OF-CLASS ASSIGNMENTS

Inactive Course: 11/28/2016

Out-of class assignments: For each topic, the student will read chapters and do homework assignments at the end of those chapters.

10 lec/ 2 lab

I. CONTENT

- a. Importance of survey instruments in construction.
- b. Automatic levels
 1. Parts and their function
 2. Care and maintenance
- c. Tripods
 1. Types
 2. Materials
 3. Tripod heads
 4. Care and maintenance

Automatic level - Instrument setup

SLO: The student will calculate the elevation of a series building elements using information derived from construction drawings and a bench mark elevation.

The student will use differential grading to determine the elevation of a remote point. Perform both arithmetic and accuracy checks.

Assignments: Read the chapters covered in the lecture and do the homework exercises at the end of the chapters. Answer the study guide questions on the assigned subject.

Calculate the elevation of a series building elements using information derived from construction drawings and a bench mark elevation. Use differential grading to determine the elevation of a remote point. Perform both arithmetic and accuracy checks.

10 lec/ 2 lab

d. Conversions and elevations

12/5/2016

- A. Conversion methods
- B. Elevations
 - 1. Bench marks
 - 2. Building section in construction drawings
 - 3. Determining elevations
- e. Leveling rods
 - 1. Engineer's rod
 - 2. Direct elevation rod
 - 3. Architect's rod
 - 4. Story pole
- f. Use an optical level and leveling rod to determine the elevation of a series of points.
- g. Use a laser level to determine the elevation of a series of points.
- h. Use an optical level to set an object to a specified elevation. Bench mark, backsight, height of instrument, fore sight, and point elevation
 - 1. Field notes
 - 1. Standard format
 - 2. Accuracy

SLO: The student will read and interpret an assortment of leveling rods. The student will use an optical level and leveling rod to determine the elevation of a series of points.

The student will use a laser level to determine the elevation of a series of points.

The student will use an optical level to set an object to a specified elevation.

Assignments: Read the chapters covered in the lecture and do the homework exercises at the end of the chapters. Answer the study guide questions on the assigned subject.

Read and interpret an assortment of leveling rods. Use an optical level and leveling rod to determine the elevation of a series of points. Use a laser level to determine the elevation of a series of points. Use an optical level to set an object to a specified elevation.

10 lec/ 2 lab

- i. Leveling procedures
 - a. Determine point elevations above and below the line of sight.
 - b. Set an object to a predetermined elevation.
 - c. Determine the elevation of a remote point.
- a. Temporary bench marks
- b. Accuracy check
- c. Arithmetic check
- j. Digital theodolites
 - 1. Parts and their function
 - 2. Care and maintenance
 - 3. Set up procedures
 - a. Selecting display screen preferences
 - b. Setting up over a point and leveling the instrument
 - c. Reading horizontal and vertical angles
- k. Angular measure
- l. Layout procedures
 - 1. Lines
 - 2. Angles
 - 3. Transferring points vertically
 - 4. Buildings
 - 5. Geometric shapes
 - 6. Closing the horizon

SLO: The student will name the instrument parts an automatic level and a digital theodolite and describe their function. Use a digital theodolite to extend lines, extrapolate lines, and transfer points vertically. The student will use a digital theodolite to layout a right angle. The student will use a digital theodolite to layout a series of lines of a finite length and a given angle to a base line. The student will use a digital theodolite to layout building corners for a rectangular building. The student will use a digital theodolite to layout a geometric shape.

Assignments: Read the chapters covered in the lecture and do the homework exercises at the end of the chapters. Answer the study guide questions on the assigned subject.

Name the instrument parts an automatic level and a digital theodolite and describe their function. Use a digital theodolite to extend lines, extrapolate lines, and transfer points vertically. Use a digital theodolite to layout a right angle. Use a digital theodolite to layout a series of lines of a finite length and a given angle to a base line. Use a digital theodolite to layout building corners for a rectangular building. Use a digital theodolite to layout a geometric shape.

2 hours

Final exam

METHODS OF INSTRUCTION:

- A. Lecture and discussion
- B. Visual aids
- C. Demonstrations
- D. Group hands-on exercise
- E. Individual hands-on exercise
- F. One-on-one hands-on instruction

METHODS OF EVALUATION:

The types of writing assignments required:

Written homework

Reading reports

Lab reports

Essay exams

The problem-solving assignments required:

Homework problems

Field work

Lab reports

Quizzes

Exams

The types of skill demonstrations required:

Class performance

Field work

Performance exams

The types of objective examinations used in the course:

Multiple choice

True/false

Matching items

Completion

Other category:

None

The basis for assigning students grades in the course:

Writing assignments: 10% - 40%

Problem-solving demonstrations: 30% - 50%

12/5/2016

Skill demonstrations: 20% - 40%
Objective examinations: 10% - 30%
Other methods of evaluation: 0% - 0%

REPRESENTATIVE TEXTBOOKS:

Required:

Leonard A. Koel. Carpentry 6th edition, American Technical Publishers, 2013. Or other appropriate college level text.

Reading level of text, Grade: 10 Verified by: publisher/dvt

ARTICULATION and CERTIFICATE INFORMATION

Associate Degree:

CSU GE:

IGETC:

CSU TRANSFER:

Not Transferable

UC TRANSFER:

Not Transferable

SUPPLEMENTAL DATA:

Basic Skills: N

Classification: Y

Noncredit Category: Y

Cooperative Education:

Program Status: 1 Program Applicable

Special Class Status: N

CAN:

CAN Sequence:

CSU Crosswalk Course Department:

CSU Crosswalk Course Number:

Prior to College Level: Y

Non Credit Enhanced Funding: N

Funding Agency Code: Y

In-Service: N

Occupational Course: A

Maximum Hours:

Minimum Hours:

Course Control Number: CCC000500345

Sports/Physical Education Course: N

Taxonomy of Program: 095210