

**CEST 65 Course Outline as of Fall 2017****CATALOG INFORMATION**

Dept and Nbr: CEST 65 Title: PW PLANS &amp; ESTIMATING

Full Title: Public Works Plans and Estimating

Last Reviewed: 1/24/2022

| Units   |      | Course Hours per Week |      | Nbr of Weeks | Course Hours Total |       |
|---------|------|-----------------------|------|--------------|--------------------|-------|
| Maximum | 3.00 | Lecture Scheduled     | 3.00 | 17.5         | Lecture Scheduled  | 52.50 |
| Minimum | 3.00 | Lab Scheduled         | 0    | 8            | Lab Scheduled      | 0     |
|         |      | Contact DHR           | 0    |              | Contact DHR        | 0     |
|         |      | Contact Total         | 3.00 |              | Contact Total      | 52.50 |
|         |      | Non-contact DHR       | 0    |              | Non-contact DHR    | 0     |

Total Out of Class Hours: 105.00

Total Student Learning Hours: 157.50

Title 5 Category: AA Degree Applicable

Grading: Grade Only

Repeatability: 00 - Two Repeats if Grade was D, F, NC, or NP

Also Listed As:

Formerly:

**Catalog Description:**

Reading and interpreting plans, and estimating time, material, labor and equipment needed for public works projects. Concepts include quantity take-offs, construction layout, rehabilitation, maintenance, inspection and testing with material cost estimating of public works improvements. Proper use of basic survey methods, symbols, mathematical conversions, determination of slope, grade, location and quantities are covered.

**Prerequisites/Corequisites:****Recommended Preparation:****Limits on Enrollment:****Schedule of Classes Information:**

Description: Reading and interpreting plans, and estimating time, material, labor and equipment needed for public works projects. Concepts include quantity take-offs, construction layout, rehabilitation, maintenance, inspection and testing with material cost estimating of public works improvements. Proper use of basic survey methods, symbols, mathematical conversions,

determination of slope, grade, location and quantities are covered. (Grade Only)

Prerequisites/Corequisites:

Recommended:

Limits on Enrollment:

Transfer Credit: CSU;

Repeatability: Two Repeats if Grade was D, F, NC, or NP

## **ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:**

|                      |                      |                        |           |
|----------------------|----------------------|------------------------|-----------|
| <b>AS Degree:</b>    | <b>Area</b>          | Effective:             | Inactive: |
| <b>CSU GE:</b>       | <b>Transfer Area</b> | Effective:             | Inactive: |
| <b>IGETC:</b>        | <b>Transfer Area</b> | Effective:             | Inactive: |
| <b>CSU Transfer:</b> | Transferable         | Effective: Spring 2010 | Inactive: |
| <b>UC Transfer:</b>  |                      | Effective:             | Inactive: |

**CID:**

**Certificate/Major Applicable:**

Both Certificate and Major Applicable

## **COURSE CONTENT**

### **Student Learning Outcomes:**

At the conclusion of this course, the student should be able to:

1. Read and interpret contract plans, specifications and standards.
2. Prepare public works bid documents, records and reports.
3. Prepare appropriate diagrams and reports for the layout, construction and maintenance of public works projects.

### **Objectives:**

Upon completion of this course, the student will be able to:

1. Determine take-off quantities from engineering drawings.
2. Determine time, labor and materials needed to construct public works projects.
3. Prepare layout documents to maintain and rehabilitate public works projects.
4. Calculate slope, grade and location of engineering features on public works projects.
5. Identify and describe proper safety procedures on a construction site.

### **Topics and Scope:**

1. Public Works Plan Interpretation and Implementation
  - a. Improvement plans: plan, profile, cross-section views
  - b. Engineering design standards and details
  - c. Contracts and specifications
  - d. Project administration
  - e. Scheduling and management
2. Engineering Construction Quantities
  - a. Clearing and grading
  - b. Underground piping systems
  - c. Roadway structural sections

- d. Landscaping
- e. Street lighting and traffic signal construction
- 3. Preparing Bid Documents
  - a. Engineering estimates
  - b. Quantity pricing
  - c. Contract specifications
- 4. Records and Reports
  - a. Progress payments
  - b. Contract change orders
  - c. Project acceptance and closing reports
  - d. Record drawings
- 5. Layout Construction Features
  - a. Compute locations
  - b. Surveying requests
  - c. Layout diagrams
- 6. Spreadsheets for Estimating
  - a. Formatting
  - b. Calculations and functions
  - c. Inclusion in reports
- 7. Construction Site Safety
  - a. Regulations
  - b. Equipment
  - c. Procedures

### Assignment:

- 1. Read one to three chapters of the textbook per week
- 2. Weekly homework assignments consisting of 5 to 10 problems and/or spreadsheets
- 3. Written papers and reports (4-7)
- 4. Semester project (1)
- 5. Midterms (2-3)
- 6. Final exam

### Methods of Evaluation/Basis of Grade:

**Writing:** Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

|                                      |
|--------------------------------------|
| Papers and reports, semester project |
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|                     |
|---------------------|
| Writing<br>15 - 30% |
|---------------------|

**Problem Solving:** Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

|   |
|---|
| Homework problems, project spreadsheets |
|---|

|                             |
|-----------------------------|
| Problem solving<br>20 - 40% |
|-----------------------------|

**Skill Demonstrations:** All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

|  |                                |
|--|--------------------------------|
| None   | Skill Demonstrations<br>0 - 0% |
| <b>Exams:</b> All forms of formal testing, other than skill performance exams.                   |                                |
| Midterms, final exam: essays, matching items, completion   | Exams<br>20 - 40%              |
| <b>Other:</b> Includes any assessment tools that do not logically fit into the above categories. |                                |
| Class participation  | Other Category<br>0 - 10%      |

### **Representative Textbooks and Materials:**

Estimating in Building Construction. 8th ed. Peterson, Steven and Dagostino, Frank. Prentice Hall. 2015

Fundamentals of Construction Estimating. 2nd ed. Pratt, David. Cengage Learning. 2012 (classic)

Construction Estimating Using Excel. Peterson, Steven J. Prentice Hall. 2006 (classic)

Chapters from various State, County and Local Agency Design and Construction Manuals (2006-2015)