JEFFERSON COLLEGE
COURSE SYLLABUS

CVL257
SURVEYING II
3 Credit Hours

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by
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CAREER & TECHNICAL EDUCATION
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CVL257 SURVEYING II

I. CATALOG DESCRIPTION

Prerequisite: CVL151
3 semester hours credit

Surveying II consists of hands-on experiences involving horizontal and vertical curves, route surveying, construction and land surveying.

II. GENERAL COURSE OBJECTIVES

A. Demonstrate knowledge and skill in the curves commonly used in route surveys.
B. Demonstrate knowledge and understanding with the various forms of plane coordinate grids used to establish control reference points, elevations and lines.
C. Demonstrate knowledge and understanding of the components and uses of the Global Positioning System (GPS).
D. Demonstrate knowledge and skill in the various types of surveys used in construction.
E. Demonstrate knowledge and skill in the research and surveying used to establish boundaries for public and/or private properties.
F. Demonstrate knowledge and understanding in the application of aerial photographs to surveying (photogrammetry).

III. COURSE OUTLINE

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<th>CLASSROOM</th>
<th>LABORATORY</th>
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<td>Horizontal curve layout</td>
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<td>B. Control surveys</td>
<td>Field Project: Closed traverse centerline</td>
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<td>C. Global Positioning System (GPS)</td>
<td>Polaris observation</td>
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<td>D. Construction surveys</td>
<td>Field Project: Demonstration</td>
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<td>E. Land surveys</td>
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<td>F. Photogrammetry</td>
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<td>Field Project: Cross-section survey</td>
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<td>Field Project: Slope stakes</td>
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<td>Court House records search</td>
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<td>Field Project: Using aerial photos</td>
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IV. UNIT OBJECTIVES

A. Highway Curves

Classroom:
1. Route surveys.
2. Circular curves.
3. Compound curves.
4. Reverse curves.
5. Vertical curves.
6. Curve design considerations.
7. Spiral curves.
8. Superelevation.

Laboratory:
10. Field Project: Layout route centerline by open traverse.

B. Control Surveys

Classroom:
1. Mercator grid systems.
2. State plane coordinate grid systems.
3. Lambert Projection.
4. Horizontal control techniques.
5. Project control.
6. Control survey markers.
7. Polaris azimuth calculations.

Laboratory:
8. Polaris observation.

C. Global Positioning System

Classroom:
2. Receivers.
4. GPS applications.
5. GPS techniques.

Laboratory:
7. Field Project: Field Demonstration

D. Construction Surveys

Classroom:
1. Accuracy and mistakes.
2. Progress and final payment measurements.
3. As-built measurements.
Establish Baselines:
5. Highway construction.
6. Sewer and tunnel construction.
7. Bridge construction.
8. Building construction.

Laboratory:

E. Land Surveys.

Classroom:
1. Public land surveys.
2. Property conveyance.
3. Rural land surveys.
4. Urban land surveys.
5. Cadastral surveys.

Laboratory:
6. Court House records search.

F. Photogrammetry.

Classroom:
1. Camera systems.
2. Photographic scale.
3. Flying heights and altitude.
4. Relief displacement.
5. Flight lines and photograph overlap.
6. Ground control for mapping.
7. Mosaics.
8. Stereoscopic viewing and parallax.
10. Orthophotos.
11. Surveying applications.

V. METHODS OF INSTRUCTION

A. Lecture
B. Classroom demonstrations
C. Laboratory demonstrations
D. Laboratory exercises
E. Homework assignments

VI. REQUIRED TEXT BOOK(S)

VII. REQUIRED MATERIALS

A. Student's survey field book.
B. Hand-held calculator (with self-contained power supply), "scientific" with trigonometric functions.
C. Field clothing suitable for the season from fall into winter.
D. 3.5" floppy disk. (Surveying software available on the computers in the classroom.)

VIII. SUPPLEMENTAL REFERENCES


IX. METHOD OF EVALUATION

A. Distribution of the Final Grade:

1. Tests
   - Mid Semester 10%
   - Comprehensive Final Examination 10%
2. Laboratory Exercises
   - Four exercises 20%
   - Field Project 25%
3. Homework Assignments 20%
4. Instructor Observation
   - Group participation, attitude, etc. 15%

B. Assignment of Final Letter Grades:

A = 90 to 100
B = 80 to 89
C = 70 to 79
D = 60 to 69
F = Below 60