ILLINOIS VALLEY COMMUNITY COLLEGE

COURSE OUTLINE

DIVISION: Workforce Development

COURSE: CAD 1202; Civil Applications of CAD

Date: Fall 2013

Credit Hours: 3

Prerequisite(s):

Delivery Method:	☒ **Lecture**	**2 Contact Hours (1 contact = 1 credit hour)**
	☐ **Seminar**	**0 Contact Hours (1 contact = 1 credit hour)**
	☒ **Lab**	**2 Contact Hours (2 contact = 1 credit hour)**
	☐ **Clinical**	**0 Contact Hours (3 contact = 1 credit hour)**
	☐ **Online**	
	☐ **Blended**	

Offered: ☒ **Fall** ☐ **Spring** ☐ **Summer**

IAI Equivalent –***Only for Transfer Courses***-go to *http://www.itransfer.org*:

CATALOG DESCRIPTION:
This course introduces the CAD technician to civil applications. Participants will prepare structural engineering drawings and developing survey plats and topographical drawings from surveyor coordinates. Lecture, two hours per week lab, two hours per week. (Students with working knowledge of AutoCAD may enroll by consent of instructor.)

GENERAL EDUCATION GOALS ADDRESSED

[See the last page of this form for more information.]

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

[Choose those goals that apply to this course.]

- ☐ To apply analytical and problem solving skills to personal, social and professional issues and situations.
- ☐ To communicate orally and in writing, socially and interpersonally.
- ☐ To develop an awareness of the contributions made to civilization by the diverse cultures of the world.
- ☐ To understand and use contemporary technology effectively and to understand its impact on the individual and society.
- ☐ To work and study effectively both individually and in collaboration with others.
- ☐ To understand what it means to act ethically and responsibly as an individual in one's career and as a member of society.
- ☐ To develop and maintain a healthy lifestyle physically, mentally, and spiritually.
- ☐ To appreciate the ongoing values of learning, self-improvement, and career planning.

EXPECTED LEARNING OUTCOMES AND RELATED COMPETENCIES:

[Outcomes related to course specific goals.]

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

1. List the primary duties of a CAD technician, senior CAD technician, checker, and drafting manager in a typical civil engineering drafting departments.
2. Understand the production fabrication process for structural steel, precast concrete and poured in place concrete.
3. Properly specify bolted, welded, riveted, split ring, and sheer plate connections for use in heavy construction.
4. Describe, designate and illustrate the various structural steel products used in framing plans.
5. Properly construct structural steel framing plans according to engineering specifications.
6. Prepare structural steel full, partial, and offset sections.
7. Construct fabrication details for structural steel columns and beams.
8. Prepare bills of material for structural steel projects
9. Develop framing plans, cross sections, anchor bolt plans, and connection details for pre-engineered steel buildings.
10. Construct precast concrete column, beam, floor and roof framing plans as and the necessary connection details.
11. Construct fabrication details of precast concrete columns, beams, wall panels, floor/ roof members and metal connectors.
12. Prepare engineering and placing drawings for poured in place concrete foundations, wall systems, floor systems and columns.
13. Develop and draw plot plans of property plats using the metes and bounds and rectangular systems of legal descriptions.
14. Calculate plot azimuths and bearings
15. Interpret and plot contour lines from survey notes

16. Construct contour map profiles, level drawings, highway layouts and plan and profile drawings.
17. Demonstrate proficiency in developing pipe drawings that include pumps, tanks and vessels.

COURSE TOPICS AND CONTENT REQUIREMENTS:

1. Overview of structural drafting introduction to standard structural components and fasteners. Students will specify and draw structural steel components using the standard American Institute of Steel Construction's Manual of Steel Construction.
2. Specifying and drawing engineering and shop drawings for structural steel projects. Students will draw framing plans, and the required details and connection specifications.
3. Introduction to structural precast concrete drafting standards. Students will specify and develop precast a concrete framing plan, sections detail and bill of materials.
4. Overview of poured in place concrete engineering and placing drawings. Students will learn to prepare the engineering and placing drawings for poured in place foundations and walls as well as the bill of materials.
5. Introduction to property plats and legal descriptions. Students will develop property maps/ plot plans and legal descriptions using the metes and bounds and rectangular systems of legal descriptions.
6. Overview of civil engineering drafting and piping/contour lines ,Development of profiles, and roadwork drawings
7. Introduction to the drawing and specification of piping systems used in industry. Students will specify and draw piping, fittings, miscellaneous valves, tanks and pumps.

INSTRUCTIONAL METHODS:

Lecture
Discussion
Guided Practice
Hands-On Activities

INSTRUCTIONAL MATERIALS:

Structural, Civil, and Pipe Drafting for CAD Technicians, Goetsch, Thomson Delmar Learning, 2004

STUDENT REQUIREMENTS AND METHODS OF EVALUATION:

1. Lab work and creation of drawings
2. A minimum of two exams

OTHER REFERENCES

Course Competency/Assessment Methods Matrix

CAD 1202; Civil Applications of CAD	**Assessment Options**																																
For each competency/outcome place an "X" below the method of assessment to be used.	**Assessment of Student Learning**	Article Review	Case Studies	Group Projects	Lab Work	Oral Presentations	Pre-Post Tests	Quizzes	Written Exams	Artifact Self Reflection of Growth	Capstone Projects	Comprehensive Written Exit Exam	Course Embedded Questions	Multi-Media Projects	Observation	Writing Samples	Portfolio Evaluation	Real World Projects	Reflective Journals	Applied Application (skills) Test	Oral Exit Interviews	Accreditation Reviews/Reports	Advisory Council Feedback	Employer Surveys	Graduate Surveys	Internship/Practicum /Site Supervisor Evaluation	Licensing Exam	In Class Feedback	Simulation	Interview	Written Report	Assignment
Assessment Measures – Are direct or indirect as indicated. List competencies/outcomes below.	**Direct/ Indirect**	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	I	I	I	I	D	D							