ILLINOIS VALLEY COMMUNITY COLLEGE

COURSE OUTLINE

DIVISION: Workforce Development

COURSE: CAD 2204 Geometric Tolerancing and Dimensioning

Date: August 28, 2018

Credit Hours: 3

Prerequisite(s): DFT1200

Delivery Method:	☒ **Lecture**	**2 Contact Hours (1 contact = 1 credit hour)**
	☐ **Seminar**	**0 Contact Hours (1 contact = 1 credit hour)**
	☒ **Lab**	**2 Contact Hours (2-3 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 is a course in Geometric Tolerance and Dimensions including tolerances of form and position or location control. The student will learn methods of indicating geometric tolerances by means of geometric characteristic symbols, as recommended by ANSI, rather than by traditional notes.

GENERAL EDUCATION GOALS ADDRESSED

[See last page for Course Competency/Assessment Methods Matrix.]

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

[Choose up to three goals that will be formally assessed in this course.]

- ☒ To apply analytical and problem solving skills to personal, social, and professional issues and situations.
- ☐ To communicate successfully, both orally and in writing, to a variety of audiences.
- ☐ To construct a critical awareness of and appreciate diversity.
- ☒ To understand and use technology effectively and to understand its impact on the individual and society.
- ☐ To develop interpersonal capacity.
- ☐ To recognize what it means to act ethically and responsibly as an individual and as a member of society.
- ☐ To recognize what it means to develop and maintain a healthy lifestyle in terms of mind, body, and spirit.
- ☐ To connect learning to life.

EXPECTED LEARNING OUTCOMES AND RELATED COMPETENCIES:

[Outcomes related to course specific goals. See last page for more information.]

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

1. Student will be able to examine parts in terms of its function and its relationship to mating parts to determine the tolerance limits, not just for the size of the object, but for all of the various critical characteristics of a part.

    a. Student will learn the fundamentals required to interpret engineering drawings.
    b. Student will learn various building blocks which make up the system as well as how to properly apply them.
    c. Student will learn the concepts of datums in order to effectively apply geometric tolerancing.
    d. Students will apply concepts according to the latest ANSI Y14.5 standards.
    e. Students will apply principles of quality control and continuous quality improvement.

MAPPING LEARNING OUTCOMES TO GENERAL EDUCATION GOALS

[For each of the goals selected above, indicate which outcomes align with the goal.]

Goals	Outcomes
First Goal	
To apply analytical and problem solving skills to personal, social, and professional issues and situations.	Student will learn various building blocks which make up the system as well as how to properly apply them. Student will learn the concepts of datums in order to effectively apply geometric tolerancing.
Second Goal	
To understand and use technology effectively and to understand its impact on the individual and society.	Students will apply concepts according to the latest ANSI Y14.5 standards. Students will apply principles of quality control and continuous quality improvement.

COURSE TOPICS AND CONTENT REQUIREMENTS:

1. Engineering Drawings and Tolerancing
    a. Dimensioning standards
    b. Coordinate tolerance system
    c. Dimensioning rules
    d. Geometric dimensioning and tolerance system
2. Introduction to Geometric Tolerancing symbols and terms
    a. Definitions
    b. Material conditions
    c. Modifiers
    d. Introduction to geometric tolerances
3. Rules and concepts of GD&T
    a. Introduction to basic dimensions
    b. Introduction to virtual condition, inner and outer boundary
    c. Introduction to bonus tolerance
4. Form controls
    a. Flatness control
    b. Straightness as a surface element control
    c. Straightness as an axis of centerline control
    d. Circularity control
    e. Cylindrically control
5. Datums
    a. Implied datums
    b. Planar datums
    c. FOS Datum features and applications
6. Orientation controls
    a. Perpendicularity
    b. Angularity
    c. Parallelism
7. Tolerance of position
    a. TOP theories
    b. TOP applications
    c. Inspection TOP
    d. TOP Calculations
8. Concentricity and symmetry controls
9. Runout controls
    a. Circular runout
    b. Total runout
10. Profile controls
    a. Profile of surface
    b. Profile of a line

INSTRUCTIONAL METHODS:

- Lecture
- Lab
- Group projects

INSTRUCTIONAL MATERIALS:

Fundamentals of Geometric Dimesioning and Tolerancing, Krulikowski
Workbook, Krulikowski

STUDENT REQUIREMENTS AND METHODS OF EVALUATION:

1. Completion of assigned problems, required reading of text.
2. Periodic tests
3. Group projects
4. Problem Based learning

A= 90-100
B= 80-89
C= 70-79
D= 60-69
F= 0-59

OTHER REFERENCES

Course Competency/Assessment Methods Matrix

(Dept/# Course Name)	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						
Student will examine parts in terms of its function and its relationship to mating parts to determine the tolerance limits, not just for the size of the object, but for all of the various critical characteristics of a part. a. Student will learn the fundamentals required to interpret engineering drawings.					X		X	X	X									X		X											X
b. Student will learn various building blocks which make up the system as well as how to properly apply them.					X		X	X	X									X		X											X

c. Student will learn the concepts of datums in order to effectively apply geometric tolerancing.					X		X	X	X									X		X												X
d. Students will apply concepts according to the latest ANSI Y14.5 standards.					X		X	X	X									X		X												X
e. Students will apply principles of quality control and continuous quality improvement.					X		X	X	X									X		X												X