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Dimensioning and Tolerancing

at Kellogg Community College

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COURSE TITLE: Drafting 211, **Dimensioning & Tolerancing**

COURSE DESCRIPTION: Prerequisite: Drafting 120 and Drafting 234. Use of engineering graphics and basic measurement techniques to explore the application and effects of dimensioning and tolerancing. Topics will include geometric dimensioning and tolerancing (GDT), fit analysis, tolerance stack-ups, metrology, and the effects of tolerancing in the manufacturing environment. Conformance to ANSI Y14.5M-1994 will be stressed throughout.

TEXTBOOK(S): Geometric Dimensioning & Tolerancing, D. Madsen

ATTENDANCE POLICY: Your attendance grade is based on 50 points. Deduct two (2) points for each class you miss. If you are tardy but attend more than half the lecture deduct one (1) point. If you complete all work prior to the deadline you *may* be granted vacation days by your instructor. The instructor reserves the right to deduct a point for students that leave early.

ACADEMIC HONESTY: All courses offered by the Drafting and Design Department will be conducted with the highest standards of academic honesty. Each student is expected to support these standards by neither giving nor accepting assistance on tests or exams and by submitting only his or her own work for credit. Violations of these academic honesty standards will result in appropriate disciplinary action. Such disciplinary action may include: failing grade in the course, dismissal from the curriculum, or other action.

DERIVATION OF GRADE: The final grade will be computed by total points. Your available points (tentative) are as follows:

250	points for Drawings
250	points for Lab Tests
100	points for written Tests/Quizzes
100	points for Chapter Exercises
<u>50</u>	points for Attendance
750	Total points

INSTRUCTOR SYLLABUS RIGHTS STATEMENT: Information contained in this syllabus was to the best knowledge of the instructor considered correct and complete when distributed for use at the beginning of the semester. However, this syllabus should not be considered a contract with Kellogg Community College and any student, nor between the instructor and any student. The instructor reserves the right, acting within the policies and procedures of Kellogg Community College, to make changes in the course content or instructional techniques without notice or obligation.

ACADEMIC INTEGRITY: All courses offered by the Computer-Aided Drafting and Design Department will be conducted with the highest standards of academic honesty. Each student is expected to support these standards by neither giving nor accepting assistance on quizzes, tests or exams, and by submitting only his or her own work for credit. The Kellogg Community

College policy on Academic Integrity is spelled out in the student handbook. If it is suspected that you are cheating, fabricating, facilitating academic dishonesty, or plagiarizing, there may be serious consequences. The incident will be documented and may be reported to the academic chair and/or program director for possible disciplinary actions up to and including course, program, or college expulsion.

ADA AND SECTION 504 STATEMENT: Kellogg Community College does not discriminate in the admission or treatment of students on the basis of disability. KCC is committed to compliance with the Americans with Disabilities Act and Section 504 of the Rehabilitation Act.

OBJECTIVES:

In this course the learner will . . .

- Determine tolerances for dimensions on a drawing
- Calculate the effect of dimension placement on the relation between features
- Describe the advantages and disadvantages of both chain and baseline dimensions
- Indicate the name and date of the current American National Standard on geometric dimensioning and tolerancing
- Identify the symbols used with geometric dimensioning and tolerancing
- Classify geometric characteristic as form, orientation, location, runout, or profile tolerances.
- Name the parts of the feature control frame.
- Calculate the maximum material condition and the least material condition.
- Compare geometric dimensioning and tolerancing and limit tolerancing.
- List the rules of geometric dimensioning and tolerancing.
- Evaluate the dimensions on produced parts to verify conformance to position tolerances.
- Calculate the virtual size.
- Describe a datum reference frame.
- Compare datum features, datum simulators, and simulated datums.
- Identify the primary, secondary, and tertiary datum.
- Distinguish between datum features with size and datum features without size.
- Employ datums on a print.
- Evaluate the effect of datum modifiers.
- Define the form tolerances - flatness, straightness, circularity, and cylindricity.
- Define the orientation tolerances - parallelism, angularity, and perpendicularity.
- Define profile of a line and profile of a surface.
- Identify which geometric characteristics may be used with a feature modifier.
- Identify which geometric characteristics may be used with a datum modifier.
- Interpret feature control frames in which form, orientation, and profile tolerances are used.
- Draw feature control frames in which form, orientation, and profile tolerances are used.
- Define position tolerance.
- Define coaxial and non-cylindrical controls - runout, concentricity, position, profile and symmetry.
- Calculate position tolerance using the fixed and floating fastener formulas.
- Explain the terms inner boundary, outer boundary, and virtual condition.
- Draw feature control frames in which runout, concentricity, position, profile, and symmetry tolerances are used.
- Convert limit type prints to geometric dimensioning and tolerancing.