Department:

Engineering Graphics and Technologies

Course Description:

This course teaches the basic concepts of Computer Aided Drafting communication and various applications. Subjects include templates, line types, orthographic projections, sectioning, language, auxiliary views, 2 and 3 dimensional objects, scale, plotting, assembly files, and Design Intent.

Course Competencies:

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

1. Identify and demonstrate the ability to utilize fundamental drafting skills.
2. Identify and demonstrate the ability to comprehend, draft, and design Orthographic Projections.
3. Identify and demonstrate the ability to comprehend, draft, and design the appropriate use of Dimensioning.
4. Identify and demonstrate the ability to comprehend, draft, and design 2 and 3 Dimensional components.
5. Identify and demonstrate the ability to utilize the fundamental math skills associated with technical drawing.

Course Content:

A. Fundamental Drafting Skills
   1. Use drawing media and related drafting.
   2. Use basic measurement systems.
   3. Add correct annotation to drawing.
   4. Identify & use line styles and weights.
   5. Prepare templates.
   6. Apply drawing standards. (e.g. American National Standards Institute-ANSI, Computer Aided Drafting-CAD).
   7. Identify and use appropriate standard symbols.
   8. Conversion of freehand technical sketches to Computer Aided Drafting.
   9. Develop 2D and 3D Computer Aided Drafting components.
   10. Understanding and application of Design Intent.
B. Orthographic Projection Identify, create and place appropriate orthographic views.
   1. Identify, create, and place appropriate auxiliary views Identify, create, and place appropriate section views.
   2. Develop 3D models into 2D technical drawings.
C. Dimensioning
   1. Apply dimensioning rules correctly.
   2. Use various dimensioning styles (e.g., Cartesian, polar, ordinate, datum).
   3. Place tolerance dimensioning and Geometric Dimensioning and Tolerancing (GD&T) on drawings when appropriate.

4. Assembly notation, tables, and bill of materials.
   D. Math Competencies
      1. Demonstrate an understanding of common fractions and mixed numbers.
      2. Add, subtract, multiply, & divide common fractions and mixed numbers.
      3. Perform combined operations of common fractions and mixed numbers.
      4. Add, subtract, multiply, & divide decimal fractions.
      5. Demonstrate the use of Powers and exponents.
      6. Use a calculator to determine Roots.
      7. Demonstrate the use of a table.
      8. Express word statements as algebraic expressions.
      9. Solve problems with signed numbers.
      10. Perform algebraic operations of addition, subtraction, and multiplication.
      11. Perform algebraic operation of division, powers, and roots.
      12. Express word problems as equations.
      13. Solve equations.
      14. Write and solve problems using ratios & proportions.

Learning Assessments:

Competencies will be assessed by chapter tests, problems and assignments, class participation, quizzes, and a comprehensive final exam.

Instructional Materials:

To be assigned depending on the featured software. Software may include: Draftsight, AutoCAD, Inventor, Solidworks, and/or SolidEdge.

Guidelines for Requesting Accommodations Based on Documented Disability or Medical Condition

It is the intention of Highland Community College to work toward full compliance with the Americans with Disabilities Act, to make instructional programs accessible to all people, and to provide reasonable accommodations according to the law.

Students should understand that it is their responsibility to self-identify their need(s) for accommodation and that they must provide current, comprehensive diagnosis of a specific disability or medical condition from a qualified professional in order to receive services. Documentation must include specific recommendations for accommodation(s). Documentation should be provided in a timely manner prior to or early in the semester so that the requested accommodation can be considered and, if warranted, arranged.

In order to begin the process all students **must** complete the "Disabilities Self-Identification Form" on our Disability Services website.

This form can also be accessed at the Highland Community College homepage under Students Services/Student Resources/Disability Service or by contacting the Disabilities Coordinator.

A Note on Harassment, Discrimination and Sexual Misconduct

Highland Community College seeks to assure all community members learn and work in a welcoming and inclusive environment. Title VII, Title IX, and College policy prohibit harassment, discrimination and sexual misconduct. Highland Community College encourages anyone experiencing harassment, discrimination or sexual misconduct to talk to report to the Vice President for Student Services, the Human Resources Director or complete an online report about what happened so that they can get the support they need and Highland Community College can respond appropriately.

There are both confidential and non-confidential resources and reporting options available to you. Highland Community College is legally obligated to respond to reports of sexual misconduct, and therefore we cannot guarantee the confidentiality of a report, unless made to a confidential resource. Responses may vary from support services to formal investigations. As a faculty member, I am required to report incidents of sexual misconduct and thus cannot guarantee confidentiality. I must provide our Title IX coordinator with relevant details such as the names of those involved in the incident. For more information about policies and resources or reporting options, please review our Equity Grievance Policy.