

Department:

Engineering Graphics and Technologies

Course Description:

This course teaches introductory concepts of drafting communication as it pertains to mechanical engineering and processes of manufacturing. Subjects include line types, orthographic projections, sectioning, language, auxiliary views, pictorial drawings, and scale usage.

Course Competencies:

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

1. Use media and related drafting materials to create a project.
2. Use measurement systems (e.g., micrometers, calipers).
3. Add correct annotation to drawing, line styles and weights, dimensioning and title blocks.
4. Identify appropriate drafting views.
5. Identify appropriate drafting symbols.
6. Convert 2D and 3D drafting and models to CNC code using conversion software.
7. Understand practices for CNC applications.
8. Setup and create a 3D scan.

Course Content:

- A. Working Drawings and Designs
 1. Pictorial drawings
 - a) Identify and create axonometric drawings (e.g., Isometrics, diametric, trimetric)
 - b) Identify and create oblique drawings (e.g., Cabinets, cavalier)
 - c) Identify perspective drawings (e.g., 1-point, 2-point, 3-point)
 2. Introduction to Geometric Dimensioning and Tolerancing
 - a) Identify symbols for application of tolerances
 - b) Identify dimensioning methods
 - c) Differentiate between size, shape and control dimensions.
 - d) Identify datum's and explain their use
 - e) Identify uses for form tolerances
 - f) Identify uses for position tolerances
 - g) Identify uses for orientation tolerances
 - h) Define material conditions
 - i) Apply feature control frames to an object to control tolerance.
 3. Welding Drawings
 - a) Understand welding symbols and types of welds
- B. CNC Fundamentals
 1. Understand Safety-shop-machine-tool

2. Develop measuring skills
3. Understand basic hand tools
4. Develop basic CNC Machining Skills
5. Develop a basic understanding of applicable materials

Learning Assessments:

Competencies may be evaluated by multiple measures, including exams, papers, article reviews, research, experiments, and projects.

Instructional Materials:

Textbook: Jensen, C., Helsel, J. D., & Short, D. R. (2007). *Engineering Drawing and Design* (7th ed.). McGraw-Hill. ISBN-13: 978-0-07-352151-0

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](#).