Department:  
Engineering Graphics & Technologies

Course Description:  
This course covers advanced concepts of drafting communication pertaining to mechanical engineering. Subjects include line types, orthographic projections, sectioning, language, auxiliary views, pictorial drawings, and scale.

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

1. Create pictorial drawings:  
   a. Identify and create axonometric drawings  
   b. Identify and create oblique drawings  
   c. Identify perspective drawings

2. Successfully complete facility and field work tasks  
   a. Measure an existing facility and prepare field sketches  
   b. Figure approximate size  
   c. Photograph an existing facility for field study inclusion  
   d. Video record an existing facility for field study inclusion  
   e. Use field notes and images to create an as built drawing

3. Understand 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 datums 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

4. Understand machining fundamentals:  
   a. Explain shop, machine, and tool safety measures  
   b. Effectively use measuring skills  
   c. Use basic hand tools  
   d. Use basic machining skills  
   e. Use basic CNC machining skills  
   f. Identify basic machinable materials

5. Develop architectural plans with essential information  
   a. Develop a building floor plan
b. Prepare elevations from the floor plan
c. Design a roof that works with floor plans and elevations
d. Develop a foundation plan
e. Draw an electrical plan
f. Draw a mechanical plan with plumbing and HVAC information
g. Draw cabinet elevations
h. Prepare a site plan
6. Use math skills relevant to technical drawing:
   a. Identify the sides of a right triangle with reference to any angle
   b. Compute complementary angles
   c. Compute an unknown angle of a right triangle when two sides are known
d. Compute an unknown side of a right triangle when an angle and a side are known
e. Compute triangle problems
   f. Use trigonometry tables and formulas

Course Content:

A. Pictorial Drawings
B. Field Work
C. Geometric Dimensioning and Tolerancing
D. Machining Fundamentals
E. Architectural Plans
F. Math Concepts

Learning Assessments:

Competencies will be assessed by assignments, case problems, quizzes, chapter tests, hands-on projects, lab assignments, midterm test, and final test. The tests may be in the objective format or in a problem solving format.

Instructional Materials:

or
ISBN: 159070196-8
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.

On-Campus Students: At enrollment, any on campus student may complete a form that will allow them to self-identify any disability.

Off-Campus Regional Students: Self-identify your disability and accommodation needs with the Regional Coordinator and/or instructor, preferably prior to the first class meeting.

Online Students: Self-identify your disability and accommodation needs by contacting the Disabilities Coordinator. Students must provide their own programs to allow accessibility on their home computer.

Any student may also identify their disability by completing an online form located on the HCC homepage under Students Services/Resources/Disabilities. Questions should be directed to the Disabilities Coordinator.