

# ENGR 106 Articulation Competencies

## *Computer-Aided Design: Solid Modeling (4 Credits)*

**Introduces Computer Assisted Design through parametric Solid Modeling: creating accurate three-dimensional objects and parts for use in engineering, machining and product design. Topics include part design, surfaces, arraying and patterning, reference geometry, dimensioning and tolerances, assemblies, mating features, and exporting technical drawings. Laboratory included.**

*Upon completion of this course, successful students will score 80% or better on the following competencies to receive WVC college credits.*

### Student Learning Outcomes:

| <b>CATEGORIES</b>  |  |  |   |
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| <b>1. Problem Solving:</b> A. Critical Thinking<br>B. Creative Thinking<br>C. Quantitative Reasoning<br>D. Qualitative Reasoning | <b>2. Communication:</b> A. Oral Expression<br>B. Written Expression<br>C. Artistic Expression | <b>3. Social Interaction:</b> A. Collaboration<br>B. Ethical Conduct<br>C. Professional Conduct<br>D. Cultural Diversity | <b>4. Inquiry:</b> A. Information Literacy<br>B. Research<br>C. Documentation |

### Course Competencies Checklist:

- Create complex and accurate engineering 3D objects and 2D drawings in current industry standard solid modeling software. (1A,C, 2C)
- Communicate engineering and design ideas through CAD modeling. (1B,C, 2C, 4A,C)
- Interpret drawings or reverse-engineer physical objects into CAD drawings or 3D objects. (1A,C, 4A,C)
- Create accurate assemblies out of multiple parts to demonstrate construction and functionality. (1B,C, 4A,C)

Program Outcomes:

- Drafters generate technical drawings and three-dimensional models for architectural, civil, electrical, or mechanical fields. WVC's Drafting Certificate program teaches students the basic operation of a variety of industry standard software to supplement their chosen specialty. Students pursuing employment in industrial fields such as machining or electronics can apply their drafting skills to their trade just as students pursuing their transfer degrees would be able to apply their drafting knowledge to engineering or architecture fields.
- Students who complete the drafting certificate will demonstrate an understanding of engineering graphic principles and will be able to generate two-dimensional technical drawings as well as 3D models of parts and assemblies.

Course Topics:

- 3-D drawing techniques
- Fundamentals of solid modeling
- Dimensioning and tolerancing
- Basic surface modeling
- Exporting accurate 2D technical drawings according to universal standards
- Creating larger functioning assemblies from individual part models