MOHAWK VALLEY COMMUNITY COLLEGE UTICA AND ROME, NEW YORK

COURSE OUTLINE

INTRODUCTION TO SOLID MODELING MT 155

1. Catalog Description

MT155 Introduction to Solid Modeling C 1, P 4, CR 3

This course is an introduction into the use of three-dimensional solid modeling CAD software. Topics include creating models using features such as protrusions, cuts, rounds, blends, revolutions, and sweeps. Model planning and design intent are stressed. Assemblies, drawings, documentation, and detailing are also covered, as well as output and interfaces with common software such as spreadsheets and word processing.

1. Student Learning Outcomes

*Upon successful completion of the course, the student will be able to:*

* 1. Create sketched cross-sections using parametric construction techniques. (3)
  2. Use software in the creation of basic solid modeling features, including protrusions, cuts, rounds, blends, revolving, and sweeps. (3)
  3. Plan a solid model to capture desired design intent and utilize parametric capabilities.(2)
  4. Create parametric assemblies from the models. (3)
  5. Create drawings and other documentation based on solid models and assemblies and present and describe this information. (3)
  6. Create and integrate spreadsheet techniques into solid modeling capabilities using formulas. (1)

() – References ETAC of ABET Program Outcome

1. Major Course Topics

Introduction

Uses of CAD and spreadsheets Geometry, computer skills review

3D critical thinking Basic computer skills

CAD sketching

Geometric figures: line, rectangle, circle, arc, radius, point, centerline Relations: horizontal, vertical, symmetric, collinear, coincident, tangent, equal Dimensioning: horizontal, vertical,

oblique, angle, radius, diameter

Exact position: use of the origin, underdefined, overdefined

Trim, convert

Features

Extrusion, rotation, cut, hole

Fillet, chamfer Mirror, pattern, shell Sweep, helix, loft

Datum point, line, axis, plane

Assembly

Insert Mate

Subassemblies Pattern Assembly Motion

Drawings

Drawing generation Parametric capabilities Detailing

Spreadsheets Uses Formulas Formatting

CAD design tables

1. Materials

* 6” calipers, accurate to **0.001”** (similar to: [6 in. Digital Caliper](https://www.harborfreight.com/6-in-digital-caliper-63711.html) )