

MOHAWK VALLEY COMMUNITY COLLEGE  
UTICA AND ROME, NEW YORK

COURSE OUTLINE

INTRODUCTION TO SOLID MODELING

MT 155

I. 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.

II. 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)

0 – References ETAC of ABET Program Outcome

### III. 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