STATE UNIVERSITY OF NEW YORK
COLLEGE OF TECHNOLOGY
CANTON, NEW YORK

MASTER SYLLABUS

MECH 151 – 3D Modeling

For available course numbers, contact the Registrar's Office at registrar@canton.edu

CIP Code: 14.1901

For assistance determining CIP Code, please refer to this webpage
https://nces.ed.gov/ipeds/cipcode/browse.aspx?y=55
or reach out to Sarah Todd at todds@canton.edu

Created by: Cullen Haskins
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School: Canino School of Engineering Technology
Department: Mechanical Engineering Technology
Implementation Semester/Year: Spring 2026

A. TITLE: 3D MODELING

B. COURSE NUMBER: MECH 151

C. CREDIT HOURS (Hours of Lecture, Laboratory, Recitation, Tutorial, Activity):

# Credit Hours per Week	**2**
# Lecture Hours per Week	**0**
# Lab Hours per Week	**4**
Other per Week	**0**

D. WRITING INTENSIVE COURSE:

Yes	
No	X

E. GER CATEGORY: N/A

Does course satisfy a GER category(ies)? If so, please select all that apply.

[1-2] Communication	
[3] Diversity: Equity, Inclusion & Social Justice	
[4] Mathematics & Quantitative Reasoning	
[5] Natural Science & Scientific Reasoning	
[6] Humanities	
[7] Social Sciences	
[8] Arts	
[9] US History & Civic Engagement	
[10] World History & Global Awareness	
[11] World Languages	

F. SEMESTER(S) OFFERED:

Fall	
Spring	X
Fall and Spring	

G. COURSE DESCRIPTION:

This course is an introduction to parametric design. The course covers parametric modeling fundamentals, solid geometry concepts, fundamentals of parametric constraints, geometric construction tools, use of symmetrical features, advanced 3D construction tools, sheet metal tools, and basic assembly modeling. Software implementation of the skills learned in MECH 101 and the creation of industry-accepted drawing sets are also covered.

H. PRE-REQUISITES: MECH 101 – Drawing for Engineers
CO-REQUISITES: None

I. STUDENT LEARNING OUTCOMES:

Course Student Learning Outcome [SLO]	Program Student Learning Outcome [PSLO]	GER	ISLO & Subsets
a. Communicate engineering ideas clearly and easily using parametric modeling software	1, 3		5
b. Create accurate parametric models based on drawings and physical objects or parts	1		5
c. Employ industry-accepted drawing and dimensioning practice with parametric software tools	1		5
d. Correctly locate and orient orthographic, section, and auxiliary views on drawing sheets	1, 3		5

KEY	Institutional Student Learning Outcomes [ISLO 1 – 5]
ISLO #	**ISLO & Subsets**
1	**Communication Skills** Oral [O], Written [W]
2	**Critical Thinking** *Critical Analysis [CA], Inquiry & Analysis [IA] , Problem Solving [PS]*
3	**Foundational Skills** *Information Management [IM], Quantitative Lit, /Reasoning [QTR]*
4	**Social Responsibility** *Ethical Reasoning [ER], Global Learning [GL],* *Intercultural Knowledge [IK], Teamwork [T]*
5	**Industry, Professional, Discipline Specific Knowledge and Skills**

J. APPLIED LEARNING COMPONENT:

Yes	X
No	

If yes, select [X] one or more of the following categories:

Classroom / Lab	X	Community Service	

Internship		Civic Engagement	
Clinical Practicum		Creative Works/Senior Project	
Practicum		Research	
Service Learning		Entrepreneurship [program, class, project]	

K. TEXTS:

Parametric Modeling with Autodesk Inventor 2023
By Luke Jumper, Randy H. Shih
ISBN: 978-1-63057-506-9
https://www.sdcpublications.com/Textbooks/Parametric-Modeling-Autodesk-Inventor-2023/ISBN/978-1-63057-506-9/

L. REFERENCES: N/A

M. EQUIPMENT: Computer Lab

N. GRADING METHOD: A-F

O. SUGGESTED MEASUREMENT CRITERIA/METHODS:

Homework/Labs
Quizzes
Exams
Project

P. DETAILED COURSE OUTLINE:

See Lab Outline

Q. LABORATORY OUTLINE:

1. Week 1
    a. Getting Started & Organizing Your Work
    b. Parametric Modeling Fundamentals
2. Week 2
    a. Constructive Solid Geometry Concepts
    b. Model History Tree
3. Week 3
    a. Parametric Constraint Fundamentals
    b. Geometric Construction Tools
4. Week 4
    a. Parent/Child Relationships and the BORN Technique
    b. Part Drawings and 3D Model-Based Definition (Part 1)
5. Week 5
    a. Part Drawings and 3D Model-Based Definition (Part 2)
    b. Datum Features and Auxiliary Views
6. Week 6
    a. Symmetric Features in Designs
    b. Assembly Modeling – Putting It All Together
7. Week 7
    a. Review
    b. Exam 1
8. Week 8
    a. Advanced 3D Construction Tools
    b. Project Assignment

9. Week 9
    a. Intro to 3D Printing from Inventor
    b. Project Work (RC Chassis Design)
10. Week 10
    a. Project Work (RC Chassis Design)
    b. Gears in the Design Accelerator
11. Week 11
    a. Project Work (RC Drivetrain Design)
    b. Project Work (RC Wheels and Steering)
12. Week 12
    a. Project Work
    b. Project Work
13. Week 13
    a. Project Work
    b. Project Work
14. Week 14
    a. Project Testing and Submissions
    b. Review
15. Exam 2