CANTON, NEW YORK

MASTER SYLLABUS

MECH 102 – PARAMETRIC MODELING

CIP Code: 15.0805
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

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Updated by: N/A

CANINO SCHOOL OF ENGINEERING TECHNOLOGY
MECHANICAL ENGINEERING TECHNOLOGY
SPRING 2023

A. TITLE: PARAMETRIC MODELING

B. COURSE NUMBER: MECH 102

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

 # Credit Hours: 2
 # Lecture Hours ___ per Week
 # Lab Hours _4__ Week (2x at 2 hours each)
Other ___ per Week

Course Length (# of Weeks): 15

D. WRITING INTENSIVE COURSE: No

E. GER CATEGORY:
Does course satisfy more than one GER category? If so, which one?

F. SEMESTER(S) OFFERED: (*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 covered as well.

H. PRE-REQUISITES: MECH 101 (Drawing for Engineers)
CO-REQUISITES: none

I. STUDENT LEARNING OUTCOMES:

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

software tools			

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 one or more of the following categories:

Classroom/Lab_X_
Internship___
Clinical Practicum___
Practicum___
Service Learning___
Community Service___
Civic Engagement___
Creative Works/Senior Project___
Research___
Entrepreneurship___
(program, class, project)

K. TEXTS: https://www.sdcpublications.com/Textbooks/Parametric-Modeling-Autodesk-Inventor-2022/ISBN/978-1-63057-422-2/

L. REFERENCES: N/A

M. EQUIPMENT: Computer lab

N. GRADING METHOD: A-F

O. SUGGESTED MEASUREMENT CRITERIA/METHODS:

Homework/Labs
Quizzes
Exams

P. DETAILED COURSE OUTLINE:

See Lab Outline

Q. LABORATORY OUTLINE:

1. Week 1
    a. Getting Started
    b. Parametric Modeling Fundamentals
2. Week 2
    a. Constructive Solid Geometry Concepts
3. Week 3
    a. Model History Tree
4. Week 4
    a. Parametric Constraint Fundamentals
5. Week 5
    a. Geometric Construction Tools
6. Week 6
    a. Parent/Child Relationships and the BORN Technique
7. Week 7
    a. Review
    b. Exam 1
8. Week 8
    a. Part Drawings and 3D Model-Based Definition
9. Week 9
    a. Datum Features and Auxiliary Views
10. Week 10
    a. Symmetric Features in Designs
11. Week 11
    a. Advanced 3D Construction Tools
12. Week 12
    a. Sheet Metal Designs
13. Week 13
    a. Assembly Modeling – Putting It All Together
14. Week 14
    a. Assembly Modeling – Putting It All Together
    b. Review
15. Exam 2