

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



## MASTER SYLLABUS

MECH 303 – GEOMETRIC DIMENSIONING AND TOLERANCING

**CIP Code: 15.0805**

*For assistance determining CIP Code, please refer to this webpage*

*<https://nces.ed.gov/ipeds/cipcode/browse.aspx?v=55>*

*or reach out to Sarah Todd at [todds@canton.edu](mailto:todds@canton.edu)*

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**Updated by: N/A**

**CANINO SCHOOL OF ENGINEERING TECHNOLOGY  
MECHANICAL ENGINEERING TECHNOLOGY  
SPRING 2023**

A. TITLE: GEOMETRIC DIMENSIONING AND TOLERANCING

B. COURSE NUMBER: MECH 303

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 introduces students to the terminology and applications of Geometric Dimensioning and Tolerancing (GD&T). Students learn and apply the key principles of the ASME Y14.5-20XX standard. Students read and interpret industry drawings with GD&T, create their own drawings utilizing GD&T, and fabricate and measure assembly parts to ensure compliance.

H. PRE-REQUISITES: MECH 121 (Manufacturing Processes) and MECH 102 (Parametric Modeling)

CO-REQUISITES: none

I. STUDENT LEARNING OUTCOMES:

<u>Course Student Learning Outcome [SLO]</u>	<u>PSLO</u>	<u>GER</u>	<u>ISLO</u>
a. Translate geometric feature control frames into plain English with one meaning	(ABET – 3)		5
b. Explain the major rules found in ASME Y14.5-20XX	(ABET – 1)		1-W
c. Demonstrate an understanding of the tolerance zones for the 14 geometric characteristics and an ability to apply those characteristics correctly	(ABET – 1)		5
d. Understand the hierarchy of geometric tolerancing and	(ABET – 1)		5

demonstrate its application			
e. Recognize the proper application of GD&T	(ABET – 1)		5
f. Calculate, fabricate, and inspect geometric tolerances and boundaries to guarantee assembly	(ABET – 2)		5

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

J. APPLIED LEARNING COMPONENT: Yes  No

If Yes, select one or more of the following categories:

Classroom/Lab   
 Internship   
 Clinical Practicum   
 Practicum   
 Service Learning   
 Community Service

Civic Engagement   
 Creative Works/Senior Project   
 Research   
 Entrepreneurship   
 (program, class, project)

K. TEXTS:

The GD&T Hierarchy Y14.5-2009, Don Day, Distributed by Tec-Ease

L. REFERENCES:

- American National Standards Institute Drafting Manual
- Modern Drafting Practices and Standards Manual, by: General Electric and Genium Publishing Corporation
- The Machinist's Handbook

M. EQUIPMENT: Machine Shop

N. GRADING METHOD: A-F

O. SUGGESTED MEASUREMENT CRITERIA/METHODS:

Homework/Labs

Project(s)

Quizzes

Exams

P. DETAILED COURSE OUTLINE:

See Lab Outline

Q. LABORATORY OUTLINE:

1. Week 1
  - a. Introduction, Course Objectives, & Machine Shop Equipment Orientation / Review
  - b. Features
2. Week 2
  - a. Features
  - b. Identifying and Measuring Features
3. Week 3
  - a. Datums
  - b. Selecting Datums
4. Week 4
  - a. Datum Feature Controls
  - b. Controlling Datums
5. Week 5
  - a. Datum Concepts
  - b. Datum-Based Measurement and Inspection
6. Week 6
  - a. Catch-up and Exam Review
  - b. Exam 1
7. Week 7
  - a. Form
  - b. Application and Measurement: Form
8. Week 8
  - a. Orientation
  - b. Application and Measurement: Orientation
9. Week 9
  - a. Profile
  - b. Application and Measurement: Profile
10. Week 10

- a. Position and Symmetry
  - b. Application and Measurement: Position and Symmetry
- 11. Week 11
  - a. Coaxial Features
  - b. Application and Measurement: Coaxial Features
- 12. Week 12
  - a. Integration with Parametric Modeling Software
  - b. Fabrication and Inspection of Part(s)
- 13. Week 13
  - a. Tolerance Analysis
  - b. Fabrication and Inspection of Part(s)
- 14. Week 14
  - a. CAD/CAM Integration
  - b. Fabrication and Inspection of Part(s)
- 15. Final Exam