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
or reach out to Sarah Todd at todds@canton.edu

Created by: Cullen Haskins
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:

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

### KEY

<table>
<thead>
<tr>
<th>Institutional Student Learning Outcomes: ISLO 1 – 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISLO #</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>4</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>5</td>
</tr>
</tbody>
</table>

### 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:
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