PELLISSIPPI STATE TECHNICAL COMMUNITY COLLEGE
MASTER SYLLABUS

GEOMETRICS & COORDINATE MEASURING
MET 2310

Class Hours: 3.0  Credit Hours: 4.0
Laboratory Hours: 3.0  Revised: Spring 05

Catalog Course Description:

Geometrics & Coordinate Measuring is a course in state-of-the-art methods of metrology with emphasis on Geometric Dimensioning and Tolerancing (GD&T) and Computer-Assisted Coordinate Measuring (CMM).

Entry Level Standards:

Students entering this course should have fundamental knowledge of geometry, trigonometry, basic manufacturing, and drawing practices to include blueprint reading and the use of AutoCAD.

Prerequisites:

ENGT 1000, MET 1020, & CID 1100

Textbook(s) and Other Course Materials:


I. Week/Unit/Topic Basis:

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
</tr>
</thead>
</table>
| 1    | Introduction  
Theory & Rules |
| 2-3  | Symbols  
Feature Control Frames  
Material Conditions |
| 4-5  | Datums - Basics  
Position - Basics  
Standard Gaging Methods  
Standard Gaging Lab Exercise |
| 6    | Standard Gaging Lab Exercise  
Coordinate Measuring - Basics |
| 7    | Form Tolerances  
Coordinate Measuring - Basics |
II. Course Objectives*:

A. Demonstrate their understanding of GD&T principles. (A-C)

B. Measure and analyze a part using standard gauging techniques. (A-C)

C. Measure and analyze a part using CMM techniques. (A-C)

D. Communicate technical information. (F, G)

*Letters after course objectives reference MET Program Outcomes (as required by ABET).

III. Instructional Processes*:

Students will:

1. Actively listen to class lectures and participate in class discussions that develop and reinforce an understanding of the theories, concepts, principles, and applications of Geometric Dimensioning & Tolerancing (GD&T). Communication Outcome, Mathematics Outcome, Technological Literacy Outcome, Active Learning Strategies

2. Work individually or in teams to complete projects and assignments related to the theories, concepts, principles, and applications covered in the lecture or demonstration portions of the course. Communication Outcome, Mathematics Outcome, Technological Literacy Outcome, Active Learning Strategies

3. Collect, analyze, and tabulate data in an orderly format to prepare a college level technical report using computer software packages such as AutoCAD, Microsoft Word, Word Perfect, Excel, and MCAT-C1 CMM Software. Communication Outcome, Mathematics Outcome, Technological Literacy Outcome, Active Learning Strategies

*Strategies and outcomes listed after instructional processes reference TBR's goals for strengthening general education knowledge and skills, connecting course work to experiences beyond the classroom, and encouraging students to take active and responsible roles in the educational process.

IV. Expectations for Student Performance*:

Upon successful completion of this course, the student should be able to:
1. Define, explain, and associate the terminology used in GD&T. A
2. Identify and associate the various GD&T symbols. A
3. Dimension and tolerance parts in accordance with ASME Y14.5M specifications. A
4. Setup and collect data using standard gauging techniques. B
5. Tabulate results and "accept or reject" part. B, C, & D
6. Operate and set-up CMM. C
7. Align part, create geometric elements, and collect data using computer-assisted techniques. C
8. Edit CMM program. C
9. Locate and extract needed information from ASME standard and operational/programming manuals. D
10. Document technical information in a neat and orderly format. D
11. Complete assignments based on written and oral instructions. D

*Letters after performance expectations reference the course objectives listed above.

V. Evaluation:

A. Testing Procedures:

Evaluation of both classroom and laboratory work is required in this course. Total evaluation will be based on the following point distribution.

Quizzes (35 Points)

Approximately 7-10 quizzes will be administered during the course. They will include discussion questions, short answer questions, true/false questions, and problem solving.

B. Laboratory Expectations:

Project 1: Standard Gauging & Analysis (20 Points)
Project 2: CMM Gauging & Analysis
   GD&T Application Exercise (10 Points)
   Report (15 Points)
   Operational Evaluation (10 Points)

Guidelines and requirements for each project will be provided by the instructor.

C. Field Work:

N/A

D. Other Evaluation Methods:

Participation (10 Points)

Based on instructor observation during the course, each student will be evaluated on participation activities. Evaluation parameters to include active participation in class discussions, being prepared, efficient use of lab time, striving to achieve more than minimum requirements, and regular attendance.
E. Grading Scale:

Final grade for this course will be based on the following alphabetic/numerical scale.

A 92-100  
B+ 88-91  
B 83-87  
C+ 79-82  
C 74-78  
D 65-73  
F Below 65

VI. Policies:

A. Attendance Policy:

Pellissippi State Technical Community College expects students to attend all scheduled instructional activities. As a minimum, students in all courses must be present for at least 75 percent of their scheduled class and laboratory meetings in order to receive credit for the course (Pellissippi State Catalog).

B. Academic Dishonesty:


C. Accommodations for disabilities:

If you need accommodation because of a disability, if you have emergency medical information to share, or if you need special arrangements in case the building must be evacuated, please inform the instructor immediately. Privately after class or in the instructor's office.

To request accommodations students must register with Services for Students with Disabilities: Goins 127 or 131, Phone: (865) 539-7153 or (865) 694-6751 Voice/TDD.

D. Other Policies:

Make-Up Quizzes: As a general rule, no make-up quizzes will be administered during the course.

Safety and Equipment Abuse: Repeated safety violations will result in a reduction of final grade, at the instructor's discretion. Flagrant violations which result in equipment damage or personal injury will result in automatic failure of the course.

Counseling: Counseling is available during posted office hours or by appointment.