Course Outcome Summary

MDTC 226 Geometric Dimensioning and Tolerancing

MONROE COUNTY COMMUNITY COLLEGE

Course Information
Division	ASET
Contact Hours	45
Theory	45
Total Credits	3

Prerequisites   MDTC 160

Course Description
This course covers fundamental concepts and applications relating to geometric dimensioning and tolerancing (GD&T). This includes tolerance of form, profile, orientation, runout and location as they relate to the ASME Y14.5M-2009 standard. Emphasis is placed on how GD&T is utilized by engineering, manufacturing and inspection departments.

This course is a required core course for students pursuing an AAS in Mechanical Design Technology

Program Outcomes Addressed by this Course:
Upon successful completion of this course, students should be able to meet the program outcomes listed below:

A. **Effectively communicate technical ideas and problem-solving decisions with others.**
B. **Demonstrate knowledge, techniques, skills, and use of the appropriate tool in mechanical design applications.**
C. **Apply math, science, and engineering technology principles to solve problems in mechanical design.**
D. **Use creativity in the design of mechanical components and systems.**
E. **Recognize problems in mechanical design applications and develop appropriate solutions.**
F. **Work productively as an individual and as a team member of a problem-solving team in an engineering environment.**
G. **Recognize the need to stay current in the mechanical design career field.**
H. **Demonstrate professional and ethical behavior.**

Course Outcomes
In order to evidence success in this course, the students will be able to:

1. **Identify/recognize the fourteen (14) geometric characteristics and other related symbols and terms.**
   Applies to Program Outcome
   B. Demonstrate knowledge, techniques, skills, and use of the appropriate tool in mechanical design applications.
   G. Recognize the need to stay current in the mechanical design career field.
2. **Identify/recognize the type of control, shape of the tolerance zone, rules that apply, and datums and modifiers for each characteristic.**
   Applies to Program Outcome
   B. Demonstrate knowledge, techniques, skills, and use of the appropriate tool in mechanical design applications.
   G. Recognize the need to stay current in the mechanical design career field.

3. **Identify/recognize rule 1, rule 2, pitch diameter rule, datum/virtual condition rule, and alternate practice rule 2a.**
    Applies to Program Outcome
    B. Demonstrate knowledge, techniques, skills, and use of the appropriate tool in mechanical design applications.
    G. Recognize the need to stay current in the mechanical design career field.

4. **Identify/recognize the components of a feature control frame, datum, and datum target symbol.**
    Applies to Program Outcome
    B. Demonstrate knowledge, techniques, skills, and use of the appropriate tool in mechanical design applications.
    G. Recognize the need to stay current in the mechanical design career field.

5. **Demonstrate the ability to read a geometric dimensioned and toleranced print.**
    Applies to Program Outcome
    A. Effectively communicate technical ideas and problem-solving decisions with others.
    B. Demonstrate knowledge, techniques, skills, and use of the appropriate tool in mechanical design applications.

6. **Demonstrate the ability to apply geometric dimensioning and tolerancing to a part.**
    Applies to Program Outcome
    A. Effectively communicate technical ideas and problem-solving decisions with others.
    B. Demonstrate knowledge, techniques, skills, and use of the appropriate tool in mechanical design applications.
    C. Apply math, science, and engineering technology principles to solve problems in mechanical design.
    D. Use creativity in the design of mechanical components and systems.
    E. Recognize problems in mechanical design applications and develop appropriate solutions.
    F. Work productively as an individual and as a team member of a problem-solving team in an engineering environment.

7. **Demonstrate the ability to calculate virtual condition at MMC, LMC, MMB and LMB.**
    Applies to Program Outcome
    A. Effectively communicate technical ideas and problem-solving decisions with others.
    B. Demonstrate knowledge, techniques, skills, and use of the appropriate tool in mechanical design applications.
    C. Apply math, science, and engineering technology principles to solve problems in mechanical design.
    F. Work productively as an individual and as a team member of a problem-solving team in an engineering environment.

8. **Demonstrate the ability to describe the inspection technique(s) employed for each characteristic.**
    Applies to Program Outcome
    A. Effectively communicate technical ideas and problem-solving decisions with others.
    B. Demonstrate knowledge, techniques, skills, and use of the appropriate tool in mechanical design applications.
    C. Apply math, science, and engineering technology principles to solve problems in mechanical design.
    F. Work productively as an individual and as a team member of a problem-solving team in an engineering environment.

9. **Demonstrate the ability to calculate the allowed versus actual deviation from true position.**
    Applies to Program Outcome
    A. Effectively communicate technical ideas and problem-solving decisions with others.
    B. Demonstrate knowledge, techniques, skills, and use of the appropriate tool in mechanical design applications.
    C. Apply math, science, and engineering technology principles to solve problems in mechanical design.
    F. Work productively as an individual and as a team member of a problem-solving team in an engineering environment.

10. Demonstrate the ability to paper gage a part.

Applies to Program Outcome

A. Effectively communicate technical ideas and problem-solving decisions with others.

B. Demonstrate knowledge, techniques, skills, and use of the appropriate tool in mechanical design applications.

C. Apply math, science, and engineering technology principles to solve problems in mechanical design.

F. Work productively as an individual and as a team member of a problem-solving team in an engineering environment.

11. Adhere to the ASME Y14.5M-2009 Geometric Dimensioning and Tolerancing standard.

Applies to Program Outcome

G. Recognize the need to stay current in the mechanical design career field.

12. Acknowledge the significance of geometric dimensioning and tolerancing.

Applies to Program Outcome

B. Demonstrate knowledge, techniques, skills, and use of the appropriate tool in mechanical design applications.

G. Recognize the need to stay current in the mechanical design career field.

H. Demonstrate professional and ethical behavior.

Date Updated: 4-14-19
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