

MET 2301: Metrology and Geometric Dimensioning & Tolerancing

3 Credit Hours

Prerequisite: EDG 1212, MET 1000, and MET 1400, or the consent of the instructor.

Principles of metrology and the relationship of accurate measurement to design practice and production processes are studied. The principles and applications of geometric dimensioning and tolerancing (GD&T) are thoroughly covered. The use of standards, nondestructive testing (NDT), statistics, and utilization and calibration of various precision measurement instruments are addressed. The laboratory illustrates repeatability, reproducibility, and applications of precision measurement devices and nondestructive testing methods.

MET 2501: Engineering Computation using Matlab

3 Credit Hours

Prerequisite: MATH 1111 or MATH 1113

This course provides an introduction to computation in the context of engineering problem solving. In this course, the fundamental tenets of computer programming will be placed into the context of MATLAB, a user-friendly language for engineers. It employs hands on exercises, examples from the world of engineering, and a variety of core tools to increase general proficiency and capability in the computer programming, preparing students to fluidly adapt learned programming concepts to other languages. After teaching the linear algebra, an introduction to computer programming with MATLAB, including flow charts, loops, condition statements, and functions, is given. Basic numerical methods, including numerical integration, differentiation, and root finding are also covered. Emphasis is placed on using MATLAB to solve engineering problems, and using user-defined functions and toolboxes within MATLAB to create computer programs and GUI's. A brief introduction to Simulink is also given.

MET 2800: CNC Programming and Machining II

3 Credit Hours

Prerequisite: MET 1800 and EDG 1212

This course is an advanced CNC programming for 5 Axis Milling and introduction to Dual Spindle Lathe operation and programming, as well as process identification, process optimization, and automation. Tooling and work holding selection is incorporated into the manufacturing design process. Laboratory projects emphasize safety, CNC programming techniques, engineering documentation, design considerations, and in-process inspection.