



CHIPOLA COLLEGE

COURSE SYLLABUS

Chipola's website: www.chipola.edu

COURSE TITLE:

Mechanical Measurement and Instrumentation

COURSE NUMBER:

ETM 1010C

COURSE DESCRIPTION (with prerequisites):

This course provides the foundation for both mechanical and electronic measurement techniques encountered in the advanced manufacturing environment. The course will integrate the conceptual measurements with the various mechanical and electronic measuring instruments and their usage. Hand tools, power tools, inspection equipment, measurements, mechanical drives, and rigging will be covered on the mechanical side. The electrical side will cover industrial electrical wiring and instrumentation, including digital sensors, optical and magnetic switches, pressure, temperature, and piezoelectric sensors. This course is one of six courses required for national MSSC-CPT certification. 3 semester hours credit. 5 contact hours.

NAME(S) OF INSTRUCTORS:

TBD

EFFECTIVE ACADEMIC YEAR:

2022-2023

REQUIRED TEXTBOOKS AND INSTRUCTIONAL MATERIALS:

Industrial Maintenance by Michael E. Brumbach and Jeffrey A. Clade, 2nd edition, ISBN: 9781133131199.

Amatrol eBook, 5085-1C Advanced Manufacturing Program Summary, Volume 1, Copyright 2013 Amatrol, Inc.

GRADING POLICY:

The standing of a student in each course is expressed by one of the following letters and corresponding grading system:

A – 90 – 100

B – 80 – 89

C – 70 – 79

D – 60 – 69

F – 59 or less

The Chipola Catalog provides policies and procedures regarding the grading system. A student's Grade Point Average is derived from the grading system/quality point scale.

ATTENDANCE AND WITHDRAWAL POLICIES:

Chipola College expects regular attendance of all students, and all instructors record attendance daily. Students who are absent from classes for any reason other than

official college activities must satisfy the instructor concerned that the absence was due to illness or other clearly unavoidable reasons. Otherwise, the student may suffer grade loss at the discretion of the instructor. Chipola policy allows each instructor to specify in the Instructor First Day Handout whether or not an absence is excusable and what affect the absence or tardy may have on the grade.

A student is allowed to repeat a course a maximum of three (3) times. **On the third attempt a student (1) must bear the full cost of instruction (unless waived by Student Services), (2) cannot withdraw, and (3) must receive a grade.**

MAKE-UP POLICY:

Chipola allows each instructor to specify in the Instructor First Day Handout the makeup policy.

ACADEMIC HONOR CODE POLICY:

Students are expected to uphold the Academic Honor Code. Chipola College's Honor Code is based on the premise that each student has the responsibility to (1) uphold the highest standards of academic honesty in his/her own work; (2) refuse to tolerate academic dishonesty in the college community; and (3) foster a high sense of honor and social responsibility on the part of students. Further information regarding the Academic Honor Code may be found in the Chipola Catalog, Student Governance section.

STUDENTS WITH DISABILITIES POLICY:

Chipola College is committed to making all programs and facilities accessible to anyone with a disability. Chipola's goal is for students to obtain maximum benefit from their educational experience and to effectively transition into the college environment. Students with disabilities are requested to voluntarily contact the Office of Students with Disabilities to complete the intake process and determine their eligibility for reasonable accommodations.

NOTICE OF EQUAL ACCESS/EQUAL OPPORTUNITY AND NONDISCRIMINATION:

Chipola College does not discriminate against any persons, employees, students, applicants or others affiliated with the college with regard to race, color, religion, ethnicity, national origin, age, veteran's status, disability, gender, genetic information, marital status, pregnancy or any other protected class under applicable federal and state laws, in any college program, activity or employment.

Wendy Phippen, Associate Vice President of Human Resources, Equity Officer and Title IX Coordinator, 3094 Indian Circle, Marianna, FL 32446, Building A, Room 183C, 850-718-2269, phippenw@chipola.edu.

LIBRARY AND ON-LINE REFERENCE MATERIALS:

The library is a comprehensive learning resource center providing information in print, electronic, and multimedia format to support the educational objectives of the College. On-line catalogs, e-books and electronic databases can be accessed by using the *LINCCWeb* icon on the Chipola Library website at www.chipola.edu/library. If you have

questions about database usage consult the “How to Use the Chipola Databases” on the Library website or call the Library at 850/718-2274 during regular hours. Library hours are posted each semester at the building entrance and on the Library website. See your Instructor First Day Handout for individual instructor recommendations and resources.

TECHNOLOGY RESOURCES:

The college’s learning management system is **Canvas**. Classes become available on Canvas on the first day of the semester. It is the student’s responsibility to log onto the Canvas system the first day of class to establish the first day of attendance and to check announcements. All official class communication must be through Canvas. For further information, contact your instructor or the Director of eLearning. The Canvas support hotline is available online in live chat and on the phone, toll-free, at 855-308-2812 for any issues in accessing or utilizing Canvas. The **Technology Center**, located in the library, is equipped with computer workstations. Lab hours are posted each semester at the building entrance and on the Library website.

FREE TUTORING RESOURCES:

The Academic Center for Excellence (**ACE**) Lab, located in Building L, offers free tutoring from 8 a.m. to 5 p.m. and is equipped with computer workstations. ACE lab hours are posted each semester at the room entrance and on the website. Additionally, live online tutoring conferences and individual tutoring sessions are available for a variety of courses through ACE@Home. For a conference schedule or to schedule an individual appointment, visit “ACE Tutoring” in the left navigation from any course in Canvas.

ELECTRONIC DEVICE USAGE STATEMENT:

Classrooms should be free of all unnecessary distractions from the task of learning. Therefore, as a general rule, students should silence and avoid use of all electronic devices (laptops, phones, tablets, etc.) not being used for coursework. Consult first-day handouts for any specific policies related to the use of electronic devices in the classroom, as they may vary depending upon the nature of the course or the guidelines of the instructor. Faculty reserve the right to regulate the use of electronic devices and their accessories in class.

DISCIPLINE SPECIFIC COMPETENCIES / LEARNING OUTCOMES:

This course provides the basic foundation for both mechanical and electronic measurement techniques used in manufacturing environments. The course will integrate the concepts, principles, and techniques of mechanical measurement with the use of various types of instruments including micrometers, Verniers, calipers, gauges, and other types of measuring equipment. The course will also introduce the student to the basic measurement techniques employing electronic test equipment including the operation and usage of digital multi-meters, function generators, and oscilloscopes.

LINKING COURSE-LEVEL STUDENT LEARNING OUTCOMES WITH DISCIPLINE-SPECIFIC COMPETENCIES, ASSESSMENT METHODS, AND ARTIFACTS

<p>COURSE-LEVEL STUDENT LEARNING OUTCOMES FOR ETM 1010C</p>	<p>DISCIPLINE-SPECIFIC GENERAL EDUCATION COMPETENCIES</p>	<p>ASSESSMENT METHODS FOR COURSE LEVEL STUDENT LEARNING OUTCOMES</p>	<p>LEARNING ARTIFACTS FOR AA PROGRAM ASSESSMENT</p>
<p>Upon the successful completion of this course, students will be able to:</p> <ul style="list-style-type: none"> • Understand the concepts of measurement and metrology • Understand the basic features of measurement, gauging and tolerances • Demonstrate knowledge of the language and systems of measurement • Measure with graduated scales and scaled instruments • Measure with calipers, Vernier and micrometer instruments • Identify and use hand and power tools properly and safely • Understand the different types of electronic measurement • Utilize basic electronic testing equipment • Understand the basic measurement techniques for electronic circuits 	<p>Demonstrate mastery of computer aided drafting (CAD) by constructing engineering, mechanical, and geometrical drawings. Demonstrate ability to sketch, letter, and generate line-work to describe various objects.</p> <p>Demonstrate ability to read and produce drawings involving orthographic projection, sections, pictorial and auxiliary views.</p> <p>Demonstrate a wide range of mathematical skills including plane trigonometry, strength of materials, technical, and other engineering problems, including theories learned in engineering mechanics.</p> <p>Demonstrate ability to use standard surveying equipment to make measurements and calculations to run a traverse, establish levels, keep notes and produce required drawings.</p> <p>Demonstrate ability to analyze physical and mechanical properties of soil and concrete.</p> <p>Demonstrate ability to solve basic hydraulic problems using the theory of incompressible fluids.</p> <p>Demonstrate on-site skills required to establish grades, locate property lines and utilities and produce plots and calculate cut and fill by average-end-area</p>	<p>Assessment methods used are:</p> <p>Q, T, SD, SP, Sk. Check</p>	

**Assessment Codes			
T = Tests	RPT = Report/Presentation	Proj. = Projects	BO = Behavioral Observation
Pre/Post = Pre- and Post-Tests	SP = Skills Performance	Exp. = Experiments	Clin. = Clinicals
OT = Objective Tests	SD = Skills Demonstration	Cap. Proj. = Capstone Project	CS = Case Study
UT = Unit Tests	W = Writing Assignments	Cap. Course = Capstone Course	CP = Case Plan
Q = Quizzes	E = Essays	Prac. = Practicum	Port. = Portfolio
F = Final Examination	DE = Documented Essays	Intern. = Internship	Obs. = Teacher Observation
CF = Cumulative Final	RP = Research papers	H = Homework	Sk. Check = Skills Check-off Curriculum Frameworks
EX = Departmental Exam	J = Jury	PS = Problem Solving	JP = Judged Performance/Exhibition
SE = Nat'l or State Standardized Exam	R = Recital	DB = Discussion Board	

MEANS OF ACCOMPLISHING STUDENT LEARNING OUTCOMES:

1. Learning modules for course theory delivered online.
2. In-class lecture and discussion.
3. Hands-on competency-based labs.
4. Assessments.

ASSIGNMENT AND/OR COURSE OUTLINE

See your Instructor First Day Handout for individual instructor assignment schedule.