



# CHIPOLA COLLEGE

## COURSE SYLLABUS

Chipola's website: [www.chipola.edu](http://www.chipola.edu)

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**COURSE TITLE:**

Process Control & Automation

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**COURSE NUMBER:**

ETS 2535C

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**COURSE DESCRIPTION (with prerequisites):**

This course serves as a capstone for the advanced manufacturing program. Concentration will be on integration of sensors and control systems for level, flow, temperature, pressure, and other applications. Human Machine Interfaces and methods of control theory including PID will be a central focus. This course is one of four courses that lead to a Pneumatics, Hydraulics and Motors state certification. Prerequisite course ETS 2542C. 3 semester credit hours. (6 contact hours.)

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**NAME(S) OF INSTRUCTORS:**

TBD

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**EFFECTIVE ACADEMIC YEAR:**

2023-2024

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**REQUIRED TEXTBOOKS AND INSTRUCTIONAL MATERIALS:**

No textbook or course materials are required to purchase for this course. ZTC

Provided by Department: Amatrol eBook, 5085-1C Advanced Manufacturing Program Summary, Volume 1,  
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**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.

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**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, [pippenw@chipola.edu](mailto:pippenw@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](http://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 will develop expertise in process control applications and human machine interfaces. Both analog and digital instrumentation will be utilized and interfaced with programmable logic controllers to control a process.

<b>LINKING COURSE-LEVEL STUDENT LEARNING OUTCOMES WITH DISCIPLINE-SPECIFIC COMPETENCIES, ASSESSMENT METHODS, AND ARTIFACTS</b>			
<b>COURSE-LEVEL STUDENT LEARNING OUTCOMES FOR ETS 2535C</b>	<b>DISCIPLINE-SPECIFIC GENERAL EDUCATION COMPETENCIES</b>	<b>ASSESSMENT METHODS FOR COURSE LEVEL STUDENT LEARNING OUTCOMES</b>	<b>LEARNING ARTIFACTS FOR AA PROGRAM ASSESSMENT</b>

<p>Upon the successful completion of this course students will be able to:</p> <ul style="list-style-type: none"> <li>• Demonstrate knowledge of industrial processes and control systems</li> <li>• Demonstrate proficiency in using tools, instruments, and testing devices</li> <li>• Demonstrate basic troubleshooting skills</li> <li>• Create a human machine interface and use it to control a process</li> <li>• Interface control instrumentation with a programmable logic controller</li> <li>• Analyze a process to identify and correct problems</li> <li>• Work effectively as part of a team</li> <li>• Apply principles of robotics to automated systems</li> </ul>	<ol style="list-style-type: none"> <li>1. Demonstrate an understanding of industrial processes and material properties.</li> <li>2. Demonstrate ability to generate and interpret computer-aided drawings (CAD).</li> <li>3. Demonstrate a fundamental understanding of electronics and electricity.</li> <li>4. Demonstrate an understanding of industrial safety, health, and environmental requirements.</li> <li>5. Demonstrate proficiency in the use of quality assurance methods and quality control concepts.</li> <li>6. Demonstrate proficiency in using tools, instruments, and testing devices.</li> <li>7. Demonstrate math skills appropriate for employees in an engineering work environment.</li> <li>8. Demonstrate basic troubleshooting skills appropriate for employees in an engineering work environment.</li> </ol>	<p>Assessment methods used are:</p> <p>Q, T, SD, SP, Sk. Check</p>	
<p><b>**Assessment Codes</b></p>			

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

Assessments are determined by measuring the ability of each student to retain the learning outcomes and objectives of the course.

1. Learning modules for course theory delivered online.
2. Hands-on competency-based labs.
3. Assessments.

### **ASSIGNMENT AND/OR COURSE OUTLINE**

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