

Bossier Parish Community College  
Master Syllabus

**Course Prefix and Number:** TEED 260

**Credit Hours:** 4-3-3

**Course Title:** Mechatronics Level 1

**Course Prerequisite:** MATH 102 or MATH 129, TEED 150 or TEED 153, and TEED 101

**Textbook(s):** No Book Required

**Course Description:** This course covers the fundamentals of digital logic and an introduction to programmable logic controllers (PLCs) in a complex mechatronic system with a focus on the automation system SIMATIC S7-1200 and the appropriate programming software. Using computer simulation, students will learn the role PLCs play within a mechatronic system or subsystem. They will also learn basic elements of PLC functions by writing small programs and testing these programs on an actual system. Students will learn to identify malfunctioning PLCs, as well as to apply troubleshooting strategies to identify and localize problems caused by PLC hardware.

**Learning Outcomes:**

At the end of the course, the student will:

- A. understand and explain the principal operations of the subsystems in a complex mechatronic system;
- B. understand and explain how mechatronic subsystems work together;
- C. read and understand the technical documents, reports and outlines specific to the system and subsystems;
- D. identify commonly used instruments and understand their role in modern industrial processes;
- E. within a mechatronic system recognize potential or impending malfunctions and where possible correct them in order to keep the system functioning; and
- F. understand and implement safety regulations required for operation of the system.

To achieve the learning outcomes, the student will or will be able to:

(The letter designations at the end of each statement refer to the learning outcome(s).)

1. identify the major electrical, mechanical, hydraulic/pneumatic, and control components in mechatronic systems; (A,B)
2. define block diagrams for mechatronic systems; (A,B,D,E)
3. define material, energy, signal, and material flow for mechatronic systems; (A,B,D,E)
4. create basic step function diagrams for mechatronic systems; (A,B,D,E)
5. write basic PLC programs to control a mechatronic system; (A,B,C)
6. read and interpret component specification sheets; (C)
7. read and interpret system diagrams and documentation; (C,E)
8. identify safety procedures for mechatronic systems; (C,E)
9. describe the basic instrumentation used in modern process control; (D) and
10. identify the basic instruments used with temperature, pressure, levels, flow, and proximity. (D)

Revised: 09/27/2018

**Course Requirements:** Complete all homework assignments, in-class equipment exercises, in class tests, and final exam.

**Course Grading Scale:**

90 – 100 = A  
80 – 89 = B  
70 – 79 = C  
60 – 69 = D  
0 – 59 = F

20% grade from in class quizzes  
20% grade from Lab Exercises  
35% grade from Lecture Test  
25% grade from Final Exam

**Attendance Policy:** The college attendance policy is available at <http://www.bpcc.edu/catalog/current/academicpolicies.html>

**Course Fees:** This course is accompanied with an additional non-refundable fee for supplemental materials, laboratory supplies, software licenses, certification exams and/or clinical fees.

**Nondiscrimination Statement:** Bossier Parish Community College does not discriminate on the basis of race, color, national origin, gender, age, religion, qualified disability, marital status, veteran's status, or sexual orientation in admission to its programs, services, or activities, in access to them, in treatment of individuals, or in any aspect of its operations. Bossier Parish Community College does not discriminate in its hiring or employment practices.

**COORDINATOR FOR SECTION 504 AND ADA**

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**Equity/Compliance Coordinator**

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