South Plains College - Levelland Campus

RBTC 1305 – Robotics and Automation

Instructor Information

Instructor: Brandon Wickware
Office: Floydada Collegiate ISD
Office Hours: 10:36-11:24
Email: bwickware@floydadaisd.esc17.net
Phone: 806-983-2340
Semester: Fall 2025
Location: Floydada Campus, Secondary Building/201-200
Meeting Times: Monday- Friday/ 1:28-2:16

Course Description

An introduction to the principles and operation of robotic systems, including programming, sensors, actuators, and control techniques used in automation.

Course Learning Outcomes

1. Identify basic components of robotic systems including controllers, sensors, actuators, and end effectors.
2. Explain the concepts of robot motion, coordinate systems, and programming methods.
3. Demonstrate safety procedures used in robotics and automated systems.
4. Apply programming concepts to control robotic movement and automation processes.
5. Troubleshoot and maintain basic robotic systems.
6. Integrate robotic systems with industrial automation equipment.

Required Materials

- Textbook: *Introduction to Robotics in CIM Systems*, 7th Edition (by James A. Rehg & Glenn D. Sartori) — or latest edition.
- ANSI approved safety glasses
- USB memory stick
- Scientific calculator
- Laptop or desktop computer with internet access
- Closed-toe shoes and appropriate shop attire required

Attendance & Participation Policy

Students are expected to attend all classes and labs, arriving on time and prepared.
Excessive absences may result in administrative withdrawal.
After six absences, the instructor may drop the student. Three tardies may count as one absence.
SPC policies for religious holy days, military service, and excused absences apply.

Grading Policy

- Quizzes and Written Assignments: 25%
- Lab Projects and Performance: 45%
- Midterm Exam: 15%
- Comprehensive Final Exam: 15%

Students must earn a minimum average of 70% to successfully complete the course.

Tentative Course Schedule

Week 1: Introduction to Robotics, Safety, and Lab Procedures
Week 2: History and Applications of Robotics
Week 3: Robot Components and Classification
Week 4: Coordinate Systems and Motion Control
Week 5: Actuators and Sensors
Week 6: Robot Programming Concepts
Week 7: End Effectors and Grippers
Week 8: Midterm Exam and Lab Project Evaluation
Week 9: Vision Systems and Feedback Control
Week 10: Path Planning and Kinematics
Week 11: Introduction to Automation and PLC Integration
Week 12: Troubleshooting and Maintenance Procedures
Week 13: Robotics Project Development and Testing
Week 14: Final Project Presentations and Review
Week 15: Comprehensive Final Exam and Course Wrap-Up

Safety & Shop Policies

- Safety glasses must be worn at all times in lab/shop areas.
- No open-toed shoes or loose clothing permitted.
- Cell phones may only be used during breaks or as part of instructional activities.
- No food, drinks, or tobacco products in lab areas.

- Report all injuries or unsafe conditions to the instructor immediately.

Academic Integrity & Disability Statement

Students must adhere to South Plains College's standards of academic honesty.
Cheating, plagiarism, or falsifying lab results will result in disciplinary action.
Students requiring accommodations should contact the Disability Services Office at 806-716-2577 as early as possible.

Core Competencies

This course develops problem-solving, teamwork, technology application, and critical thinking skills relevant to modern robotics and automation.

Additional Notes

The instructor reserves the right to make changes to the syllabus as necessary.
Students should verify registration and drop status through MySPC and use SPC email for all official communications.
Regular attendance and participation in both lecture and lab are vital for success in this course.