IMT 2170 - Industrial Motor Drives

Summer Semester 2022 Syllabus, Section 100, CRN 10113

Instructor Information

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Mission Statement

Rhodes State College changes lives, builds futures and improves communities through life-long learning.

Institutional Learning Outcomes

Institutional Learning Outcomes

1. Civic, Professional, and Ethical Responsibility (CPER)
2. Cultural and Diversity Awareness (CDA)
3. Critical Thinking (CT)
4. Effective Communication (EC)
5. Quantitative and Scientific Reasoning (QSR)
6. Technological Proficiency(TP)

Student Learning Outcomes

1. Understand the various types of motors and drive controls.
2. Understand the function of the major components of a basic industrial motor drive system.
3. Demonstrate how the industrial motor drive operate within a complete system.
4. Troubleshoot a servo system.

Course Description

Credit Hours: 2.00

Lecture Hours: 1.00

Lab Hours: 2.00

Total Contact Hours: 3.00

Provides a hands-on introduction to industrial servo motors including the various power supplies, speed control systems and feedback systems. Students will construct servo control circuits using schematic diagrams to install and troubleshoot the completed circuit.

Course Section Information

Upon completion of this course, the student will be able to:

- Identify and describe the major components of a basic industrial motor drive system
- Develop a complete understanding of the different types of motors used in an industrial setting.
- Express the main differences between the various types of feedback devices as well as the differences in operational characteristics.
- Summarize the operating characteristics of several types of power supplies and the output voltages they produce.
- Describe the difference between Closed Loop and Open Loop feedback control.

- Explain the different operational, application and installation methods used to determine which type of controller will be implemented in an industrial setting.
- Describe the difference between speed control and position control and the applications associated with each.
- Demonstrate how the industrial motor drive components are implemented and interconnected within a complete system.
- Demonstrate various troubleshooting and diagnostic techniques to remedy failures, either from mechanical issues or from hardware and/or software issues, and apply those processes to provide complete fault recognition and fault resolution within a servo system.
- Apply and demonstrate safety practices while working in a lab environment on simulators.
- Understand how safety features are incorporated into software and hardware components of a servo system

Course Fees

Base Fees (other charges may apply)

Meeting Dates and Times

MW 5:30pm-7:50pm in James J Countryman Eng Tech, Rm 162

Summer section is eight weeks, two classes of four hours each.

Course Delivery

Course Delivery: [Online, Face-to-Face, Blended]

Textbooks

Group	Title	Author	ISBN
	Drives and Controls for Industrial Automation	Tan Kok Kiong, Andi Sudjana Putra. ISBN 978-1-4471-2606-5 Electrical Drives, Jens Weidauer, Richard Messer,	ISBN 978-1-4471-2606-5
	Electrical Drives,	Jens Weidauer, Richard Messer,	ISBN 978-3-89578-434-7

Other Course Materials

Schedule of Topics and Assignments

Day:	Date:	Additional Information:	Due:

Laboratories, Clinicals, Field Work, Special Requirements

[Enter additional information here.]4 AB VFD/Motor/PLC Labs
2 GROB and Siemens Trainer Labs
10 MultiSim VFD/Motor/PLC VFD/Motor/PLC Labs

Testing and Evaluation

[Explain how course grade is calculated]

Grading Scale:

Tests	25%
Lab Exercises	75%
	100%

Attendance

Regular attendance is important to understand course content and perform required competencies. Absences, late arrivals, and early departures will negatively impact your grade and may result in a grade of "E" which may harm your Financial Aid eligibility. Please ensure that you understand the attendance policy for each course and follow the instructor's guidelines for communicating about unavoidable absences and making up course work, if permissible.

Late Assignments, Quiz, and Exam Make-Up Information

Makeup Policy:

Faculty to add text.

Incomplete and Withdrawal

Incomplete:
The grade of incomplete ("I") in a course is a temporary grade, reflecting that while your work in the course is qualitatively satisfactory, but for some extenuating circumstances, a small fraction cannot be completed by the scheduled end date. Before an "I" can be awarded, there must be a plan in place, verified by signatures or emails by both you and your instructor, outlining exactly what work must be accomplished and a schedule for doing so. The student must complete and submit the coursework no later than the sixth Friday following the start of the semester or term subsequent to the one in which the "I" was received. Failure to adhere to this plan will result in calculating the course grade with 0s for all remaining assignments. Until the "I" is resolved, the credit hours will not be counted or considered for any purpose. Your financial aid and academic standing may be negatively impacted. For more information see the College Catalog "Grading System" and "Registration."

In short, taking an incomplete should be avoided. However, if it becomes impossible for you to complete a course, please contact your instructor and Financial Aid advisor immediately.

Withdrawal:
You are responsible to officially drop/withdrawal from a course when you decide to no longer attend class. Without an official drop/withdrawal from the Office of Advising and Counseling, the institution has the right to identify a date of drop/withdraw. This may result in receiving an "E" in all classes and being required to pay all assessed fees and tuition, even though you have actually left the College. Any/all of these may have a negative impact upon future Financial Aid eligibility. Please contact your Academic and Financial Aid Advisors for assistance.

Assignments, Exams and Quizzes

Seventeen short quizzes following each chapter.
Two tests of approximately one hour during the semester, one for each textbook

Exam

quizzes **100**

Seventeen short quizzes following each chapter.
Two tests of approximately one hour during the semester, one for each textbook

Course Bibliography and/or Additional References

(Optional)

[References]

Additional Instructor/Section Information

(Optional)

[Additional Instructor or Section Information]

Diversity Statement

RSC values the pluralistic nature of our society reflected in diversities of race, ethnicity, national origin, religion,economic status, gender, gender identity and expression, age, sexual orientation, veteran status, or abilities. The College recognizes the strengths and challenges that come with social variety and thus promotes diversity in its vision and practices for equity and inclusion.

Faith-Based Absences

Rhodes State College is committed to students' freedom to practice their sincerely held religious beliefs. The College has adopted the Faith-Based Absences Policy, No. 4.05, which complies with the Testing Your Faith Act, Ohio Revised Code 3345.026. Students are given up to three days of absences per term for activities or holidays conducted under the auspices of a religious denomination, church, or other religious or spiritual organization. The religious belief or practice must severely affect your ability to take an exam or complete an academic requirement on the due date. To receive alternative accommodations, students must submit their written request, including requested dates for alternative accommodations, within 14 calendar days of the first day of class using the Faith-Based Absence Module in Canvas. **Alternative accommodations are not retroactive, and no academic penalty will be imposed for an absence under this policy.** These requests for alternative accommodations will be kept confidential. For further questions or information about this Policy, please contact Dean, Student Affairs at StudentAffairs@RhodesState.edu.

Student Code of Conduct

Academic Integrity:
Attempting to deceive, defraud, or use dishonesty for one's own gain will not be tolerated. Dishonesty in any form may result in a grade of "zero" for the activity, whether in providing or utilizing materials inappropriately. Additionally, individual programs may impose greater sanctions. This includes – but is not limited to – plagiarism, attempting to pass off someone else's work as one's own; submitting substantially the same work, using materials created for one course in another without the instructor's knowledge and permission; securing/providing answers to a test apart from the instructor's directions, etc. Students are encouraged to review the Student Code of Conduct Policy and Procedure located in "Chapter 4: Student" on the college website (https://www.rhodesstate.edu/human-resources/policies-and-procedures.html).

Student Support:

Resources	Location	Phone
Accommodative Services	TL 132	419-995-8476
Advising		419-995-8400
Campus Security	TL 150	419-995-8499
Career Development	JJC 179J	419-995-8312
Computer Help Desk	KH 102	419-995-8069
Financial Aid	PS 148	419-995-8802
Library	CK 150	419-995-8401
Testing Center	TL 132	419-995-8476
Tutoring	SCI 240	419-995-8039

ADA Reasonable Accommodations:
Accommodative Services supports eligible students with documented disabilities who are enrolled for credit. Students needing accommodations at Rhodes State should contact Accommodative Services in person in the Technical Education Laboratory building, Room 132 (TL 132), via email at TestCenter@RhodesState.edu, or via telephone at 419-995-8476. Students must meet with Accommodative Services, receive an Accommodations Letter, and present the letter to the instructor **before accommodations take effect. Accommodations are not retroactive.**

Comprehensive Early Alert Program (CEAP):
Rhodes State employs a Comprehensive Early Alert Program (CEAP) to identify and provide just-in-time support for students who are having academic difficulties. It is a process by which your instructor will "alert" you and an advisor or success coach when you are absent, frequently late or leaving early, have missed assignments, or earned low test scores. CEAP enhances existing services, such as advising, coaching, and tutoring, which increase student success. Please contact your instructor, advisor, or success coach to learn about what assistance might be available.

Campus Communication

E-mail:
You are responsible for checking your College email frequently for college and course-related communications. RSC recommends checking email daily in recognition that certain communications may be time-sensitive. Please use proper etiquette when submitting emails to College personnel: a positive tone, correct spelling and grammar, and verify the intended recipient's title and address before sending the email. These details will expedite communication.

College Closures:
Please sign up for **Rhodes Alert** which can be found on the RSC website. Rhodes Alert was created to provide students with Emergency Notifications in the event of Weather Emergencies, Weather Closures, and Campus Security Threats. These notifications will be delivered via phone, email, and text message. The local TV and radio stations also post information about College closures. When referring to a media outlet, please remember to look specifically for RSC as other institutions may follow different protocols for weather cancellations.

Weather Delays and Cancellations:
In the event that weather forces a delay to the start of the academic day, the College will announce when classes will begin. Classes starting and ending prior to the announced start time are cancelled. If the class starts before the announced start time but still has more than 30 minutes of class remaining after the start time, that class will begin at the announced specific time and end at its normal time. This same 30-minute rule will be used in the event of an early closure of the College. The portion of the class which was scheduled prior to the announced closure time would be cancelled

Because travel to clinical/practicum experiences may begin at an early hour, program leadership may delay the start to enable the College to assess weather conditions and allow for the College's communication process to occur. Always, please exercise your best judgment in determining whether to attend classes or activities sanctioned by RSC. Remember that you are accountable for any material missed during an absence without an official delay or announced cancellation.

Emergency Procedures:
Students are responsible for following appropriate campus emergency procedures. Students are encouraged to review the Building Emergency Action Plan on the college website: (http://www.rhodesstate.edu/About%20Rhodes/College%20Offices%20and%20Departments/Security-Safety/Emergency%20Information.aspx)