



AGR 1600
Introduction to Artificial Intelligence in Agriculture
Course Syllabus

Term:

Rhodes State College
Division of Health Sciences and Public Service

3 Credit Hours
2 lecture hours, 2 laboratory hours
Contact Hours

Agriculture Technology Program

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

Program Mission Statement:

The Agriculture Technology program is designed to provide students with practical education in an increasing demand field of agriculture business, agronomy, prescription mapping, and/or robotics and artificial intelligence.

Program Learning Outcomes:

- Communicate effectively in both written and oral form with coworkers, customers, and others in and about robotics and artificial intelligence in agriculture.
- Locate and use current information and numerical data in solving problems related to robotics and artificial intelligence in agriculture.

- Install, use, maintain, and troubleshoot precision agriculture technology including Robotics and artificially intelligent machines.
- Understand and explain how Robotics/AI components are used in agricultural application.
- Demonstrate initiative, leadership, and planning in building professional relationships in the workplace.

OVERVIEW

Catalog Description: Explores the use of Robotics/AI in agriculture. Students will have the opportunity to examine AI components of current agriculture and other equipment. Limitations and challenges of AI in agriculture will be reviewed and discussed. Students will set up and program basic commands of given AI enabled equipment. Included is basic trouble shooting of programming and equipment. Emphasis will be on the current state of northwest Ohio agriculture and the next steps in Robotics/AI for agriculture.

Prerequisites/Co-requisites: FMS 2110, AMT 2050, Prerequisites: MET 2310, AMT 1070, AMT 2030, AGR 1500

Meeting Dates and Times:

TBA

Course Delivery:

In-person

TEXT AND MATERIALS/SUPPLIES:

[Selected reading and text]

STUDENT LEARNING OUTCOMES:

- Describe AI uses in agriculture.
- Describe how Robotics/AI are used in the agriculture field.
- Explain the AI components needed to make a tractor and drone driverless utilizing technical terminology.
- **Demonstrate set up of given Robotics/AI agricultural equipment.**
- Summarize the limitations and challenges associated with AI in agriculture.

SCHEDULE OF INSTRUCTIONAL ACTIVITIES:

DATE	CLASS SCHEDULE	DUE DATES
Week 1	Course and syllabus review, history of robotics in agriculture	
Week 2	Robotic and AI safety review, discussion of safety in AI, Introduction to behavior-based robotics programming. Robotics controls	
Week 3	Arbitrations	
Week 4	Programming	
Week 5	Decomposition	
Week 6	Mid-term, lecture and laboratory	
Week 7	Decomposition continued	

Week 8	Exploring Arduino	
Week 9	Arduinos and electrical circuitry, create cod for given input	
Week 10	Digital inputs, outputs, and pulse-width modulations of Arduinos	
Week 11	Reading analog sensors	
Week 12	Create a project that incorporates a task and coding	
Week 13	Guest lectures from industry experts, project work continued	
Week 14	Guest lectures from industry experts. Project work continued	
Week 15	Demonstrate projects	
Week 16	Final exam	

Traditional lectures included laboratory exercises

LABORATORIES, CLINICALS, FIELD WORK/ SPECIAL REQUIREMENTS:

TESTING AND EVALUATION:

- Assignments,
- Demonstrations
- Problems
- Lab Reports
- Quizzes
- Exams

Grading Scale: Percentage grade to letter grade conversion will generally be:

- A 93-100
- A- 90-92.9
- B+ 87-89.9
- B 83-86.9
- B- 80-82.9
- C+ 77-79.9
- C 73-76.9
- C- 70-72.9
- D+ 67-69.9
- D 60-66.9
- E 0-59

Course Scoring

Quizzes	20
Homework/Assignments	40
Exams	40
Total	100

Assignments:

INSTRUCTOR EXPECTATIONS:

Attendance/Participation:

Student will manage online class so that once the class has been started at least weekly progress is demonstrated and if weekly progress is not continued student will contact the instructor to evaluate the progress and continuation of the class.

Makeup Policy:

All coursework shall be managed so that progress toward completion is continuous. Continuous is defined as progress made weekly.

COURSE BIBLIOGRAPHY AND/OR ADDITIONAL REFERENCES: As assigned.

ADDITIONAL INSTRUCTOR/SECTION INFORMATION: As needed.

PARTICIPATION

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.

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.

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.

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 Student Conduct on the college website (<http://www.rhodesstate.edu/currentstudents>) for additional information.

Student Support:

Resources	Location	Phone
Accommodative Services	TL 132	419-995-8009
Advising	PS 148	419-995-8400
Campus Security	TL 150	419-995-8499
Career Services	PS 150	419-995-8352
Computer Help Desk	KH 102	419-995-8069
Counseling Services	PS 216	419-995-8133
Financial Aid	PS 150	419-995-8800
Library	CK150	419-995-8401
Success Coaching	SCI 240	419-995-8039
Testing Center	TL132	419-995-8476
Tutoring	SCI 151	419-995-8039

ADA Reasonable Accommodations:

Accommodative Services supports all 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 AccommodativeService@RhodesState.edu, or via telephone at 419-995-8009. 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

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>)

**Rhodes State College is a tobacco-free campus.
This includes all smoked, chewed, vaporized, and electronic forms.**