

Western Illinois University – School of Agriculture
AGTM 365: Agricultural Engines (3)
Course Syllabus – Spring 2017 “Subject to Change”

Course Meets: T/TH 10:00 – 11:50 am in KH 307 or 1B
Text: *Engine and Tractor Power*, 4th Edition, Goering and Hansen, ISBN: 1-892769-42-5

Instructor: Dr. Daniel Atherton **E-mail:** DL-Atherton@wiu.edu
Office: B 22 Knoblauch Hall **Office Phone:** 309-298-2395
Lab Fee: \$20.00

Office Hours: M/W 1:00 - 1:50 or T/TH 9:00 - 9:50 or TH 1:00 - 2:50 or by appointment

Dr. Atherton’s Spring 2017 Course Schedule

| | Monday | Tuesday | Wednesday | Thursday | Friday |
|---------------------------|----------------------------|-------------------------------|----------------------------|-------------------------------|--------|
| Period 1 (8:00-8:50) | | | | | |
| Period 2 (9:00-9:50) | | Office Hour | | Office Hour | |
| Period 3 (10:00-10:50) | | AGTM 365 KH 307-Lec/1B-Lab | | AGTM 365 KH 307-Lec/1B-Lab | |
| Period 4 (11:00-11:50) | | AGTM 365 KH 307-Lec/1B-Lab | | AGTM 365 KH 307-Lec/1B-Lab | |
| Period 5 (12:00-12:50) | AGTM 464 KH 307-Lecture | AGTM 464 KH 307-Lecture | AGTM 464 KH 307-Lecture | | |
| Period 6 (1:00-1:50) | Office Hour | AGTM 250 KH 3B-Lab | Office Hour | Office Hour | |
| Period 7 (2:00-2:50) | AGTM 250 KH 152-Lecture | AGTM 250 KH 3B-Lab | AGTM 250 KH 152-Lecture | Office Hour | |
| Period 8 (3:00-3:50) | AGTM 207 KH 152-Lecture | AGTM 250 KH 3B-Lab | AGTM 207 KH 152-Lecture | | |
| Period 9 (4:00-4:50) | AGTM 207 KH 152-Lecture | AGTM 250 KH 3B-Lab | AGTM 207 KH 152-Lecture | | |

Course Description: 365 Agricultural Engines - (3) Operating principles of gasoline and diesel engines, power trains, and fuel and electrical systems.

Course Objectives:

- Develop knowledge of the principles of operation of an internal combustion engine and drive train
- Develop skill to troubleshoot faulty engines
- Develop skill required to overhaul small gas engines and diesel engines

Quality of Work Policy: All assignments should be word processed with title of assignment, name, date, and a summary of the assignment included at the beginning of the assignment. Run spell-checker. If completing multiple-step problems, show all work. Your work should be neat and orderly.

Academic Dishonesty: Any violation of the Academic Dishonesty Policy in Student Handbook will result in an automatic failure of the course. Plagiarism and cheating are unacceptable. Academic Integrity Policy can be found at: www.wiu.edu/policies/acintegrity

Attendance: Attendance is mandatory. If class is missed, please use the OARS system to report your absence (www.wiu.edu/oars). I need the email generated from this system prior to class, not after. It is the student's responsibility to coordinate with the instructor to make up missed work. Quizzes may be given at any time and no makeup quizzes will be given unless the instructor approves the absence prior to missing class.

Assessment and Grading: Your final grade is based on your overall weighted percent on the following components of the course:

| <u>Component</u> | <u>Percentage</u> |
|----------------------------|-------------------|
| Exam 1 | 15% |
| Exam 2 | 15% |
| Exam 3 | 15% |
| Final Exam (Comprehensive) | 20% |
| Quizzes | 10% |
| Project/Presentation | 15% |
| Class & Lab Participation | 10% |

(Participation includes attendance, lab work, discussion, and lab clean up at the end of lab session)

Grading Scale

| | | | |
|----|-----------|----|----------|
| A | 93 – 100% | A- | 90 – 92% |
| B+ | 87 – 89% | B | 83 – 86% |
| B- | 80 – 82% | C+ | 77 – 79% |
| C | 73 – 76% | C- | 70 – 72% |
| D+ | 67 – 69% | D | 63 – 66% |
| D- | 60 – 62% | F | < 60% |

Students Rights and Responsibilities: www.wiu.edu/provost/students/

Final Grades: Unless a computational error was made, grades will not be changed after the end of the semester. Please do not come to the instructor with "extenuating circumstances" for why your grade should be changed – the semester grade represents the level of work you completed over the semester.

Late Assignments: No late assignments will be accepted unless the instructor approves of turning in an assignment late prior to the assignment's due date. Assignments will be due at the beginning of class on their due date. Hand written assignments will not be accepted unless instructed otherwise. Assignments will be written in 12 point font with 1" margins. Points will be deducted for incorrect spelling and grammar.

Attention Education Majors: The changes within the state certification require all education majors to receive a grade of a "C" or better in this course in order to meet these new requirements. With the university +/- grading system, receiving a "C-" or below will require you to retake this course or find a substitute course to meet School of Agriculture graduation requirements.

Professional Learning Environment: Please be respectful of your fellow students and the instructor and do your part to maintain the professional learning environment of this course. **Please silence your cell phones. Avoid texting during class.** Individual disruptions, such as **entering the classroom late, allowing your cell phone to ring audibly, engaging in unrelated activities** (e.g., **texting or surfing the web**) during class time, or **packing your belongings before class ends**, distract other students and detract from the quality of the learning environment for the whole class. Infractions will be noted and your class participation grade will suffer. The instructor reserves the right to ask for cell phones to be returned to students after the class period or to remove from group work a student who is demonstrating inadequate levels of participation.

Students with Disabilities: In accordance with University values and disability law, students with disabilities may request academic accommodations where there are aspects of a course that result in barriers to inclusion or accurate assessment of achievement. To file an official request for disability-related accommodations, please contact the Disability Resource Center at 309-298-2512, disability@wiu.edu or in 143 Memorial Hall. Please notify the instructor as soon as possible to ensure that this course is accessible to you in a timely manner.

University values, Title IX, and other federal and state laws prohibit sex discrimination, including sexual assault/misconduct, dating/domestic violence, and stalking. If you, or someone you know, has been the victim of any of these offenses, we encourage you to report this to the Title IX Coordinator at 309-298-1977 or anonymously online at: http://www.wiu.edu/equal_opportunity_and_access/request_form/index. If you disclose an incident to a faculty member, the faculty member must notify the Title IX Coordinator. The complete Title IX policy is available at: <http://www.wiu.edu/vpas/policies/titleIX>.

***** Scheduling and weekly topics are subject to change at instructor's discretion *****

Schedule:

Week 1: Course introduction; Basic thermodynamics of engines – chap. 2;

Week 2: Basic thermodynamics of engines – chap. 2; Engine components – chap. 3. Engine cycles and timing – chap. 4.

Week 3: Fuels and combustion – chap. 6. Fuel systems and carburation – chap. 9.

Week 4: Fuel systems and carburation – chap. 9. Precision measuring and testing instruments. Exam 1 (chap. 2, 3, 4, 6, and 9)

Week 5: Ignition circuits – chap. 8. Electrical systems – chap. 7. Small gas engine disassembly, inspection, and assembly.

Week 6: Electrical systems – chap. 7. Power efficiencies and measurement – chap. 5. Small gas engine disassembly, inspection, and assembly.

Week 7: Power efficiencies and measurement – chap. 5. Diesel engines – chap. 10. Small gas engine disassembly, inspection, and assembly.

Week 8: Diesel engines – chap. 10. Diesel engine disassembly, inspection, and assembly. Exam 2 (chap. 5, 7, 8, and 10)

Spring Break Week – No Classes

Week 9: Intake and Exhaust systems – chap. 11. Cooling systems – chap. 12. Diesel engine disassembly, inspection, and assembly.

Week 10: Cooling systems – chap. 12. Lubricants and lubricating systems – chap. 13. Diesel engine disassembly, inspection, and assembly.

Week 11: Lubricants and lubricating systems – chap. 13. Hydraulic systems and hitches – chap. 14. Diesel engine disassembly, inspection, and assembly.

Week 12: Hydraulic systems and hitches – chap. 14. Power Trains – chap. 15. Diesel engine disassembly, inspection, and assembly.

Week 13: Power Trains – chap. 15. Weight, transfer, traction, and safety – chap. 16. Exam 3 (chap. 11, 12, 13, 14, 15). Diesel engine disassembly, inspection, and assembly.

Week 14: Weight, transfer, traction, and safety – chap. 16. Datalink, ECMs, J1939, ATA protocols. Diesel engine disassembly, inspection, and assembly.

Week 15: Student Presentations. Laboratory cleanup.

Final Exam: Tuesday, May 9th from 10:00 – 12:00 pm

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