

Oklahoma State University Institute of Technology
Face-to-Face Common Syllabus
Fall 2017

ETDE 1283 AC/DC Circuits 1

This course covers the fundamentals of DC and AC electric circuit theory. This includes detailed coverage of direct current, alternating current, ohms law, energy and power relationships, series, parallel and combinational resistive circuit laws. An introduction to magnetism and electromagnetism and their roles in DC & AC motor and generator operation will be introduced. Inductance and Capacitance and their fundamental applications will be introduced. An introduction to troubleshooting and safety in Electrical circuits will be covered. Students will be introduced to electronic test equipment and its proper operation including the Digital Multimeter, Oscilloscope, Function Generator and DC Power supplies. Exposure to these topics in a laboratory setting is included using onsite facilities and hardware and software simulation tools.

Course Purpose:

The purpose of this course is give the student a thorough understanding of the basics of direct current and alternating current principles.

Type of Course: Theory/Lab

Credit Hours: 3; Total clock hours of theory per semester: 35;

Total clock hours of lab per semester: 40; Total clock hours of clinical per semester: N/A.

Class Length: Full Semester

Class Days and Times: MWF: 8:00 am to 9:25 am

Prerequisites: MATH 1513

Instructor Name: Mark Threadgill

Instructor Phone: (918) 293-4749

Office: ET bldg. A11, Room 15N

Instructor Email: mark.threadgill@okstate.edu

Contact: My preferred method of contact is by email. Please allow 24-48 hours to return your correspondence during the normal work week.

Instructor's Office Hours: By appointment.

School Name: Engineering Technologies

School Main Phone: 918-293-5150

REQUIRED TEXT, REFERENCES, AND MATERIALS

Texts: Electronics Fundamentals: A Systems Approach, Thomas L Floyd and David M Buchla, Pearson, ISBN-10: 0-13-314363-5

Experiments in Electronics Fundamentals and Electric Circuits Fundamentals
8th ed., David M Buchla, Prentice Hall, ISBN 10# 0-13-506327-2

References: Electromagnetic Radiation Spectrum Chart, Unihedron.com
Materials: Engineering Graph Paper, Notebook, Pencils, Pens, Straight-edge, 4+ Gig Thumb Drive, Scientific Calculator

Uniform/Tools: Digital Multi-meter, Klein Tools MM2000, Knight K-521A or equivalent Electrical/Electronics Tool Kit / Electronics Parts Kit / NI Multisim Software

Estimated Cost for Materials: \$125

Estimated Cost for Uniform/Tools: \$630

Optional Resources: N/A

Upon completion of the course, students should:

Course Objectives	Assessment of Objectives
Apply fundamental DC laws to basic circuits	Homework, Exams, Labs
Demonstrate the ability to use basic electronic test instruments safely to set up and measure DC and AC signals including the Digital Multimeter, DC power supply, oscilloscope, and function generator	Labs
Troubleshoot and analyze DC circuits	Labs
Demonstrate the ability to interpret symbols, schematics and diagrams	Homework, Exams, Labs
Explain the difference between measured and computed DC circuit parameters	Labs
Explain electromagnetic induction using Faraday's law and Lenz' law	Homework, Exams
Analyze and explain AC sinusoidal wave parameters	Homework, Exams, Labs
Design electronic circuits using simulation software (Multisim)	Labs
Describe the basic structure and characteristics of capacitors and inductors	Homework, Exams, Labs

Describe how capacitors and inductors work in DC/AC circuits	Homework, Exams, Labs
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Aspects of the course objective assessments may be used in the university’s assessment of student learning. If applicable, an asterisk (*) above indicates this assignment is used in the university assessment program.

(Please asterisk the assignment above if utilized for the assessment assignment.)

COURSE ACTIVITIES

In this course students will:

- Establish a Bright Space account and access the online course announcements, information, course documents, resource documents, resource links, lab assignments and projects.
- View videos that depict the various concepts.
- Participate in class labs and submit lab reports for evaluation.
- Complete outside project assignments and submit technical reports for evaluation.
- Integrate internet-searches into assignments and reports.
- May participate in individual and group presentations.
- Compile a portfolio of skills learned and work produced.
- Take examinations
- Complete reading assignments

EVALUATION - GRADES WILL BE BASED ON THE QUALITY AND COMPLETION OF THESE TASKS:

Quizzes.....	10%
Homework and Research.....	20%
Labs	30%
3 Unit Exams.....	20%
Final Exam*.....	20%
Total	<u>100%</u>

OSUIT Grading Scale
A = 90% -100%
B = 80% -89%
C = 70% -79%
D = 60% -69%
F = 59% & below

*The student’s grade for this assignment will be used in the university’s assessment of student learning. A 70% competency or higher receives a Pass rating. This Pass/Fail rating is independent of the student’s course grade.

Daily and/or weekly quizzes, small weekly assignments and similar type projects: Normal return time to student by next class meeting or no later than one (1) week.

Extensive assignments, large lab projects, extensive quizzes, exams and similar type projects:
Normal return time to students in one (1) to two (2) weeks.

RECOMMENDED STUDENT COMPETENCIES/SKILLS

Microsoft Windows, Microsoft Word, proficiency in use of a scientific calculator

AUTHORIZED TOOLS

Instructors Policy to Submit Work

To provide students with improved feedback, technical documents shall be submitted electronically via D2L. To ensure students learn to submit documents electronically, students are required to submit work in pdf format and follow a pre-define template and format. Students will be asked to meet a goal in data recording and analysis by submitted data plots in pdf format (after creating in a Microsoft Excel or other professional software format) with the aid of team members and instructor advisement. All submissions must be submitted as **one** pdf document unless instructed otherwise. Documents that are not legible will be given a grade of zero. **NO EXCEPTIONS!**

Submission of Work

1. All work **MUST** be submitted to D2L in one (1) PDF file.
2. **NO** JPEG or other type image files will be accepted.
3. Any type of image files submitted will receive 0 points and will not be graded.
4. **NO** work submitted by email will be accepted. The email will immediately be deleted.
5. **NO** scanned lab book pages of a lab can be submitted in a report except for the signature page.

E-Mail Communication Standards

Students are encouraged to use e-mail when communicating personal issues with their instructor. E-mail corruption is a significant problem and unidentified e-mails are simply purged. Therefore a strict standard is necessary to identify a legitimate student communication. The “message line” of student e-mails must contain in order – Subject, Name, Course, and Trimester. Example: **Missing Assignment, John Smith, ETDE 1263, Fall 2014.**

LATE WORK

- **NO LATE WORK WILL BE ACCEPTED *unless it meets the requirements for an excused absence according to OSUIT policy or at instructors' discretion.***
- **Quizzes and Group Activities** are in-class lecture assessments that cannot be made-up under any circumstances. Attendance is mandatory.
- **Research, Homework, Lab and Project** reports submitted before the posted due date and time on D2L or written assignment sheet is considered to be on time. Presentations **CANNOT** be made up.
- **Unit Exams and Final Exam** **CANNOT** be made up without strict approval and penalty! If you miss an exam, it cannot be made up unless your absence meets the requirements for an approved absence. Make-up exams may be different from the exam given in class and may be more difficult. If you know in advance that you will miss an exam, special arrangements to re-schedule the exam may be possible for hardship circumstances.

TESTING

The following guidelines will be enforced during in class exams:

- All materials not required for the exam must be placed off the desk
- Scientific/Engineering Calculators are allowed unless otherwise noted
- Once testing has started you are not allowed to leave the room until you have completed the test. Doing so will immediately end the test for you.
- All material associated with the exam must be submitted upon completion.
- All tests will have a defined time for completion.
- Exceptions may be made to these rules at the instructor's discretion

OTHER LAB AND CLASSROOM POLICIES

Students are expected to cooperate in maintaining a classroom environment conducive to learning. Courteous and respectful behavior will be expected from all students each day, every day.

Students will be expected to stay focused on the material being presented during lecture and lab and not to engage in any activity that will distract them or anyone else around them from the material being presented. Texting and inappropriate use of electronic devices is detrimental to the learning process. **Use of ear buds, headphones etc. is not allowed in the classroom at any time. TEXTING and other such disruptive activities will not be permitted during both lecture and lab.** If you choose to do so anyway, I will document this fact and deduct points accordingly with the date and time of the occurrence. So, please do not do these activities. If you feel you must respond to an emergency text, then please leave the area then return when you have finished your texting. The use of tobacco in any form in University buildings is prohibited.

- Students are not allowed to listen or watch any type of electronic device at any time in the classroom environment.
- Students are expected to maintain a clean and organized lab work place. After completion of a lab or at the end of the class period, components must be returned to the appropriate storage location they were obtained from. Instruments, test probes, and any items used to perform an experiment must also be returned to the appropriate storage location. All other instruments must be turned-off.
- Class computers are to be used for teaching/learning only. Do not use for entertainment or casual internet surfing or chatting.
- Students are expected to maintain a respectful manner during class. Sleeping or otherwise assuming a laid down position will not be tolerated.
- Safety Glasses are required while in the lab setting. NO EXCEPTIONS!
- NO FOOD OR DRINK IN LAB/COMPUTER AREA!
- Students are expected to check D2L and e-mail for announcements and assignments on a regular basis.
- All research assignments, written formal Lab Reports, project work, etc. must be submitted in the appropriate folder in the D2L drop box by the due date and time.

Dress Code

1. Shoes must cover entire foot.
2. Clothing with obscene logos are not to be worn.
3. Hats and sunglasses may not be worn in the classroom setting.
4. Clothing that is saggy/baggy should not be worn for safety reasons.
5. Jewelry should be removed in the lab setting.

SYLLABUS ATTACHMENT

View the Syllabus Attachment, which contains other important information, by visiting http://osuit.edu/center/student_syllabus_information

Course Schedule			
Course Outline Schedule	Topic	Assignment	Due Date
<i>Day/Week 1</i>	Chap 1: Scientific and Engineering Notation	HW1 Lab 1	9/22/17 9/22/17
<i>Day/Week 2</i>	Scientific Notation and Engineering Notation	Lab 2	9/29/17
<i>Day/Week 3</i>	Chap 2: Voltage, Current, Resistance	HW2 Lab 3	10/6/17 10/6/17
<i>Day/Week 4</i>	Chap 3: Ohms Law, Energy and Power	EXAM 1 (Chap 1,2,3) Lab 4	10/11/17 10/13/17
<i>Day/Week 5</i>	Chap 4: Series Resistive Circuits	HW3 Lab 5	10/20/17 10/20/17
<i>Day/Week 6</i>	Chap 4: Series Circuits and KVL	Lab 6	10/27/17
<i>Day/Week 7</i>	Chap 5: Series Circuits Vs. Parallel Circuits, KCL	HW4 Lab 7	11/3/17 11/3/17
<i>Day/Week 8</i>	Chap 5: Parallel Circuits	EXAM 2(Chap 4,5) Lab 8	11/8/17 11/10/17
<i>Day/Week 9</i>	Chap 6: Series Parallel Circuits	HW5 Lab 9	11/17/17 11/17/17
<i>Day/Week 10</i>	Chap 6: Series Parallel Circuits	Lab 10	11/24/17
<i>Day/Week 11</i>	Ch 7: Magnetism & Electromagnetism	HW6 EXAM 3 (Chap 6,7,8)	12/1/17 12/1/17
<i>Day/Week 12</i>	Ch 8: Introduction to Alternating current & Voltage	HW7	12/8/17
<i>Day/Week 13</i>	Ch 9: Capacitors		
<i>Day/Week 14</i>	Ch 10: Inductors Review		
<i>Day/Week 15</i>		FINAL EXAM(Comprehensive) Review Grade	12/11/17 12/13/17

Schedule is subject to change at instructor discretion.