Oklahoma State University Institute of Technology
Course Syllabus
Summer Semester 2017

ETDE 1263 AC Electronics and Photonics

Course Description:
Students learn to apply AC principles and analysis to solve parameters of electronic circuits and related systems. Wavelength and phase angles are introduced as a more complex form of signal analysis. As an introduction to Photonics, students learn optoelectronic sources and detectors that operate in the UV, IR, and visible wavelengths. Measurements are made with multi-meters, oscilloscopes, frequency counters and other test equipment. Students learn to draw and interpret electrical/electronic symbols, diagrams and schematics in accordance with industry standards. Through application and analysis each learner demonstrates mastery of basic electrical/electronic practices as well as construct and troubleshoot circuits and complete a course project with lasers. Students must have taken or be enrolled in Trigonometry.

Type of Course: Theory/Lab
Total Credit Hours: 3; Total hours of theory per semester: 35; Total hours of lab per semester: 40
Class length: Full Semester
Class days & times: Monday, Wednesday and Friday, 8:00 am to 9:25 am
Prerequisites: MATH 1513, ETDE 1243 **Corequisites:** MATH 1613

Instructor Name: Mark Threadgill **Instructor Phone:** (918) 293-4749
Office: ET bldg. A11, Room 15N **Instructor E-mail:** mark.threadgill@okstate.edu
Contact: My preferred method of contact is e-mail. Please allow 24-48 hours to return your correspondence during the normal work week.

Instructor's Office Hours: By appointment.

School of Engineering Technologies **School Phone:** (918) 293-5150

REQUIRED TEXTS, 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
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 Tools: **$630**

Upon completion of the course, students should be able to:

	Course Objectives	Assessment of Objectives
1	Apply fundamental AC laws to basic circuits	Written Exam and Lab/Technical Report
2	Explain the difference between measured and computed AC parameters	Lab/Technical Report
3	Demonstrate skill in analyzing and troubleshooting AC circuits	Lab/Technical Report
4	Analyze and explain AC sinusoidal parameters	Written Exam and Lab/Technical Report
5	Demonstrate the ability to use basic electronic instruments safely to set up and measure signals including the DMM, the oscilloscope and the function generator	Lab Exam and Lab/Technical Report
6	Implement capacitors and inductors in series, parallel and combination circuits and analyze their impact on voltage, current, phase relationships and power factor	Written Exam and Lab/Technical Report
7	Describe how a transformer works	Written Exam and Lab/Technical Report
8	Explain the effect of a resistive load and reflective load in a transformer	Written Exam
9	Interpret transformer schematics and physical transformers ratings	Written Exam and Lab/Technical Report

Aspects of the course objective assessments may be used in the university's assessment of student learning. If applicable, an asterisk (*) above indicates this course 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 DESIRE2LEARN ACCOUNT AND ACCESS THE ONLINE COURSE ANNOUNCEMENTS, INFORMATION, COURSE DOCUMENTS, RESOURCE DOCUMENTS, RESOURCE LINKS, LAB ASSIGNMENTS AND PROJECTS.
- Participate in class discussions and activities.
- 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.
- 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%
Research & Homework 15%
Labs & Project 30%
Exams ……..45%
3 Unit Exams
1 Final Exam
Total ……..100%

OSU-Okmulgee Grading Scale

A = 90.00 - 100.00
B = 80.00 – 89.99
C = 70.00 - 79.99
D = 60.00 - 69.99
F = 00.00 - 59.99

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.

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 pages of a lab can be submitted in a report.

Student classroom and laboratory conduct policy

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.**

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 to 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.

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.

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

UNIVERSITY & COURSE EXPECTATIONS
It is the responsibility of each OSUIT student to read, abide by and maintain a copy of the syllabus for this course. Syllabi are available on the OSUIT website.

Students understand that excerpts or portions of their work may be utilized for institutional assessment purposes. The purpose of institutional assessment is for verification of student learning and program improvement. Every effort will be made to keep this information confidential.

Institutional Attendance Policy for Face to Face courses:

A primary component of OSUIT's Mission is "*to prepare and sustain a diverse student body as competitive members of a world-class workforce."* Regular and consistent attendance not only aids in academic success, dependable attendance is a requirement in today's real-world employment; therefore, regular and consistent attendance is a requirement in all OSUIT courses.

Definitions:

Absent: Failing to attend all or a significant portion of a class or lab session.

A. Students may not be marked as absent if missing class for situations such as, but not limited to
    1. participating in a required university activity such as a field trip;
    2. fulfilling a military obligation;
    3. a mandatory court appearance;
    4. death in the immediate family;
    5. extreme illness or accident to oneself or immediate family. Instructors, at their discretion, may require proof of such events.

B. It is the responsibility of the student to contact and inform the instructor and/or department in advance of such excused absences whenever possible.

Tardy: Arriving late to class as defined by the individual class instructor. Faculty, at their discretion, may equate three tardies to equal one absence.

Procedures:

Early Intervention

A. Any student who misses 10% of an individual course (or earlier at faculty discretion) during a regular fifteen-week semester, or the equivalent portion of time in a shorter session, will have their name submitted by that course instructor to the OSUIT Early Alert System for retention intervention.

B. At the point the Early Alert is issued, the student ***must*** meet with their assigned faculty advisor or designated faculty/staff member within seven (7) academic calendar days for counseling on how to improve their attendance and academic success.

Excessive Absences

A. The University reserves the right to administratively withdraw any student from an individual course who misses 20% of that course, whether excused or unexcused, and, in the opinion of the instructor, the student does not have a reasonable opportunity to be successful in the course.

B. Students should be aware any of the following may impact their financial aid:
    1.being administratively withdrawn from a course
    2.dropping a course
    3.their last date of attendance in a course

Please see OSUIT Policy 2-021 for full details and procedures.

ACADEMIC DISHONESTY

Academic dishonesty or misconduct is neither condoned nor tolerated at OSUIT. Any student found guilty of academic dishonesty or misconduct shall be subject to disciplinary action. Academic dishonesty and/or misconduct includes, but is not limited to, the following actions: (1) Plagiarism: the representation of previously written, published, or creative work as one's own; (2) Unauthorized collaboration on projects; (3) Cheating on examinations; (4) Unauthorized advance access to exams; (5) Fraudulent alteration of academic materials; (6) Knowing cooperation with another person in an academically dishonest undertaking. Students are required to actively protect their work against misuse by others. For details, refer to The OSUIT Student Handbook (Student Rights and Responsibilities Governing Student Behavior) available online at http://www.osuit.edu/academics/forms/student_rights_responsibility.pdf.

Americans with Disabilities ACT (ADA)

According to the Americans with Disabilities Act, each student with a disability is responsible for notifying the University of his/her disability and requesting accommodations. If you think you have a qualified disability and need special accommodations, you should notify the instructor and request verification of eligibility for accommodations from the Office of Academic Accommodations/LASSO Center. Please advise the instructor of your disability as soon as possible, and contact The LASSO Center, to ensure timely implementation of appropriate accommodations. Faculty have an obligation to respond when they receive official notice of a disability but are under no obligation to provide retroactive accommodations. To receive services, you must submit appropriate documentation and complete an intake process during which the existence of a qualified disability is verified and reasonable accommodations are identified. The LASSO Center is located on the 3rd floor of the Noble Center. You may call 918.293.4855 for more information or fax documentation to 918.293.4853.

Course Schedule			
Course Outline Schedule	**Topic**	**Assignment**	**Due Date**
Week 1	Intro to Alternating Current	Homework 1	5/19/2017
Week 2	Intro to AC (continued) Oscilloscopes	Lab 1	5/19/2017
Week 3	Capacitors	Lab 2 Homework 2	5/26/2017 5/26/2017
Week 4	RC Circuits	Lab 3 Homework 3	6/2/2017 6/2/2017
Week 5	RC Circuits (continued)	Lab 4	6/9/2017
Week 6	Review	**Exam 1**	6/16/2017
Week 7	Solving RC circuits with Complex Numbers	Lab 5	7/14/2017
Week 8	Inductors and RL Circuits	Lab 6 Homework 4	7/21/2017 7/21/2017
Week 9	Inductors and RL Circuits	Lab 7 Homework 5	7/28/2017 7/28/2017
Week 10	RLC Circuits and Resonance	**Exam 2**	8/4/2017
Week 11	RLC Circuits and Resonance (continued) Passive Filters	Lab 8 Homework 6 RLC Design Project (Audio 3-way Crossover Network)	8/18/17 8/18/17 8/20/17
Week 12	Passive Filters Transformers	Lab 9 Transformers Research Paper	8/20/2017 8/20/2017
Week 13	Review	Homework 7 **Exam 3**	8/11/2017 8/11/2017
Week 14	Review		
Week 15	Review of Final Grade	**Final Exam**	8/21/2017 8/23/2017

*Schedule is subject to change at instructor discretion.

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I have read and understand this syllabus, and agree to abide by the policies, procedures and guidelines specified therein.

_____	_____
Printed Name	**Student ID Number (this is not your SSN)**
_____	_____
Signature	**Date**

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Student Assessment Release

I agree that Oklahoma State University Institute of Technology may excerpt some of my work to be utilized for institutional assessment purposes. The purpose of institutional assessment is for verification of student learning and program improvement. I recognize that every effort will be made to keep this information confidential and that my name will not be associated with my work.

_____	_____
Printed Name	**Student ID Number (this is not your SSN)**
_____	_____
Signature	**Date**