



Instructors:

Name: Dr. Minglong Zhang
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Office Hours: Mondays 3:30-4:30pm
Office: Simrall 405 and WebEx

Notes on Office Hours: We want to meet with you! Starkville students, we are available in our Simrall office during our office hours unless prior notice has been sent out. Additionally, if you need an alternate meeting time, email 2-3 times that would work for your schedule and we will schedule an appointment.

Lecture Time: Tuesdays and Thursdays, 3:30-4:15pm in ALLEN 13

Lab Times: N/A

Prerequisites: Grade of C or better in ECE1002, MA3113, and PH2223

Corequisites: N/A

Textbook: Electric Circuits, By James W. Nilsson and Susan A. Riedel, 12TH Edition 2023 (Publisher: PEARSON ISBN 13: 9780137648276).

Software: N/A

Hardware: N/A

Website: canvas.msstate.edu

Course Description and Objectives

(Prerequisite: Grade of C or better in ECE1002, MA3113, and PH2223.). Two and half hours lecture per week. This course introduces basic electronic elements, electronic circuits with resistors, capacitors, and inductors. Attention is focused on solving problems involving the application of fundamental laws of circuit analysis, estimation of response of a circuit excited with different inputs and estimation of various parameters in a circuit.

After successfully completing this course, the students will be able to:

- I. Understanding the basic laws and principles that govern electric circuits, such as Ohm's Law, Kirchhoff's laws, and the relationship between voltage, current, and resistance.
- II. Familiarity with circuit components, such as resistors, capacitors, and inductors, and their properties and behaviors.



- III. Ability to analyze and solve simple electric circuit problems using mathematical tools, such as Kirchhoff's laws and circuit theorems.
- IV. Understanding of the principles of electric power, phasors, reactive power, VAR etc. (3.1)

LECTURE TOPICS (35 contact hours)

- I. System of SI Units, Charge (1.25 hours)
- II. Circuit Elements (2.5 hours)
- III. Resistive circuits (2.5 hours)
- IV. Analysis of circuits (6.25 hours)
- V. Operational Amplifier (2.5 hours)
- VI. Capacitors and Inductors (2.5 hours)
- VII. Sinusoidal Steady-state Analysis (3.75 hours)
- VIII. Sinusoidal Steady-state power calculation (2.5 hours) IX. Balanced Three-phase Circuits (1.25 hours)
- X. Progress exams (2.5 hours)
- XI. Review and Practical problems (7.5 hours)

Methods of Evaluation and Standards of Achievement

(a) **Progress Exam**– TWO progress exams will be given during the semester after completion of each major topic. These exams are held during class hours for face-to-face students. Unless stated otherwise, all exams will be closed book and closed notes. If you miss a progress exam, zero will be awarded.

(b) **Final Exam** – an in-person final, comprehensive exam will be administered according the university scheduled for face-to-face students. The final exam is also closed book and closed notes.

Final exam date: **3.30-6.30pm, Dec 11, 2024.**

(c) **Homework** – Homework will be assigned for most weeks. Homework must be turned in by the due date, which will be indicated for each assignment. No late HW will be accepted for any reason. Missed HW submissions will be awarded zero for grading purposes. It is your responsibility to keep track of HW assignments and due dates. Only those who never miss HWs are eligible to attend an extra reward quiz. You are encouraged to develop and share ideas for solutions of HW with others in the class but the work you submit cannot closely duplicate that submitted by another student. Plagiarism or any form of academic dishonesty will be reported to the MSU honor council. Please refer to www.honorcode.msstate.edu for more information.

Homework submissions must meet the following guidelines: They are intended to help you develop a good mathematical style and to allow us to grade in a sensible manner. If you don't make a good faith attempt to follow them, we reserve the right to take off lots of points or (in extreme case) give you a zero for the homework.

- All problems should be stapled together with the cover sheet, scan them into **pdf format** and submit them via **Canvas** on time.



- Always start a new problem in a new sheet of paper. You can write on both sides of the sheet but make sure there is no ink smudging.
- Show the **process** of how you solve the problems and the final results.
- Make sure the following information is clearly visible, and legible, near the top of every sheet:
Your name, your net id, Homework number and problem number
- Your homework should be neat and legible. The writing should be dark enough to be easily read

Your grade will be calculated using the following breakdown and scale.

Grading Breakdown		Grading Scale		
Assignment Type	Percentage	Grade	Points	
Progress exam1	20%	A	90.0-100	
Progress exam2	20%	B	80.0-89.9	
Homework	30%	C	70.0-79.9	
Final exam	30%	D	60.0-69.9	
TOTAL	100 pts	F	<60.0	
<i>+Extra Credit</i>	<i>as announced</i>			

University Policies

The Mississippi State University Syllabus contains all policies and procedures that are applicable to every course on campus and online. The policies in the University Syllabus describe the official policies of the University and will take precedence over those found elsewhere. It is the student's responsibility to read and be familiar with every policy. The University Syllabus may be accessed at any time on the Provost website under Faculty and Student Resources and at <https://www.provost.msstate.edu/faculty-student-resources/university-syllabus>



ECE 3413 COURSE POLICIES

Course Grading Policies

All quizzes, homework, and exams are INDIVIDUAL assignments. If you share quiz questions, copy another student's work, or allow another student to copy your work, then you are guilty of academic dishonesty.

Students shall not bring or have any computing equipment in the exam, including programmable calculators, mobile phones, books, dictionaries, electronic organizers, notes or paper, and other materials as shall be authorized by the professor.

Preparation, self-regulated learning, and participation are expected and required throughout the semester. These skills are demonstrated through attendance in lecture, consistent log ins to the Canvas site, frequent email reading and responding, viewing course videos, and/or timely submission of assignments.

Due dates matter. The rule in ECE 3413 is that assignments must be turned in on the due date by the time specified. Assignments typically close at the due date and time, and no late assignments will be accepted.

On occasion and with prior announcement, your instructor may choose to institute a “soft” deadline for an assignment to encourage you to work on an assignment early, but give you more time if needed. In these exception cases, the assignment will be open past the due date, which means Canvas will accept the assignment and mark it as “late”. Ignore the “late” label. We do not have late work / late penalties in the class – if an assignment is accepted through Canvas, it will be graded as an on-time assignment.

Except in cases of an excused absence as defined in Academic Operating policy 12.09 or “soft” deadlines described above, assignments will not be accepted after the due date listed in Canvas and will receive no credit. For excused absences, contact the instructor prior to the absence, if possible, or as soon as possible after the absences if the nature of the absence prevents prior notice. For other unusual emergency situations beyond the student’s control (e.g., housing disruption, family emergency), deadline extensions may be requested via email and may be granted solely based on the instructor’s discretion.

Assignment Submissions

Submit assignments well before the deadline! Engineering is often more about creating an efficient process than the final product, and engineering education is very similar. ECE 3413 is a large class with many assignments. To be efficient, ECE 3413 uses the Canvas classroom management system for almost all “classroom transactions”: assignments are made via Canvas, homework assignments are submitted to



Canvas, quizzes are administered and graded by Canvas, etc. It is impractical or impossible to adjust student submissions or computer-based grading on a student-by-student basis. Therefore, **it is YOUR responsibility to ensure that your submissions are in the right format and have been accepted by the Canvas system before the scheduled deadline.**

Missed exams/quizzes. All exams/quizzes are provided either in person or online. ***There will be no make-up exam/quiz offered.*** In cases of true emergency or excused absence, the instructor may temporarily reopen a quiz if the instructor is notified of the emergency within 24 hours of the student's return to campus, **and** it is reasonably feasible, **and** documentation of the circumstance is produced upon the instructor's request.

Attendance Policies

Please refer Academic Operating policy 12.09. (<http://www.policies.msstate.edu/policypdfs/1209.pdf>Links to an external site.), regarding attendance expectations and accommodations. Note that official, university-approved and documented absences are not subjected to attendance penalties. It is the student's responsibility to initiate a request of making up course work in a timely manner. Unless impractical, all communication regarding official, university-approved and documented absences and make-up work should take place prior to the absence.

Attendance Policy for Distance instruction

Distance students are expected to "attend" every class meeting by watching assigned lecture videos and reading assigned material. Both lecture and lab meetings are asynchronous, which means you can "attend" (e.g., watch videos) at a time convenient for your weekly schedule. However, you must attend class and turn in assignments according to the weekly class schedule and assignment due dates.

AI Policy: Permitted for Select Assignments in this Course with Attribution

Generally, students are **NOT** permitted to use generative AI tools such as ChatGPT for assignments except those authorized specifically by their instructor in the assignment directions. The unauthorized use of a generative AI tool to complete an assignment constitutes academic dishonesty and may be reported as an Honor Code violation. All submitted work will be filtered through Turnitin's AI writing detection tool, and other screeners may also be used.

For assignments in which generative AI has been explicitly permitted by your instructor, students must give credit and cite any AI-generated material according to citation-specific rules (e.g., IEEE style), including in-text citations, quotations, and references. Any work with more than the allowable percentage of AI-generated material specified in the assignment instructions, if applicable, could be reported as an Honor Code violation. Students must also include the following statement in assignments to indicate use of a generative AI tool: “The author(s) acknowledges the use of [Tool Name] in the preparation of this assignment for [brainstorming, grammatical correction, citation, etc.]” Failure to acknowledge use of generative AI could be reported as an Honor Code violation.

Expectations for the ECE 1022 Classroom and Communication

The following policies for course communication apply for **ALL students**:

- You are required to check your MSU email account regularly. This is considered an official means of communication by MSU for all students.
- The course materials for each week will be accessed through Canvas beginning on Mondays.
- Assignment submissions including quizzes will utilize Canvas unless otherwise specified by the instructor.
- You are required to have access to a computer that connects to the internet.
- Students should direct correspondence to the instructor directly related to the class via the mail feature in Canvas.
- Students should not discuss specific quiz questions.
- Students are encouraged to discuss homework together in a group, but the assignment should be completed individually.

The following policies for course communication apply to **students enrolled in ECE 3413 Online**:

- Faculty office hours will be hosted in WebEx. Students can join using a computer or smartphone app.
- Students can correspond with each other via the general course discussion board. Please note that collaboration on individual work is not acceptable, but this course does require a group design project where collaboration with team members is essential.
- Students should expect to log in to Canvas no less than 2-3 times per week to access course information, lectures, and updates.

Minimum Technology Requirements

The following minimum technology requirements are necessary **for all students** to complete the course:

- Computer with web browser, Microsoft Office, and Adobe Reader



- Internet access
- Webcam and microphone (computer or smartphone) to upload video responses to assignments or participate in virtual meetings / office hours.
- Video recording and editing software (Camtasia is available to download free from MSU ITS)

Online students will also need:

- Webcam and microphone (computer or smartphone) to upload video responses to assignments or participate in virtual meetings / office hours.
- Video recording and editing software (Camtasia is available to download free from MSU ITS)

Quizzes are administered online via Canvas. **Ensure you have adequate internet access and power for your computer BEFORE you begin the quiz.** You will only be able to start the quiz one time. There are no time extensions available.

Technical Assistance

If you have questions about this course, please contact the instructor via Canvas messaging. For technical support (e.g., computer support, Canvas issues), please contact help@ece.msstate.edu or engr-dist-support@lists.msstate.edu or www.bagley.msstate.edu/distance.

Copyright

Copyrighted materials within the course are only for the use of students enrolled in the course for purposes associated with this course and may not be retained or further disseminated. Course materials must not be posted on any website or added to any database without the instructor's written permission. Do not distribute test problems, homework, or any other materials. Do not post course materials on websites such as chegg.com, slader.com, etc. Violations of this policy will be referred to the Honor Court.



Tentative Schedule

Week		Lecture: Thursday 2pm, Hand 1100
0	8/21 – 8/23	Intro to course, System of SI Units, circuit ideal element and concept, passive sign convention, power balance
1	8/26 – 8/30	Circuit elements, Ohm's law, Kirchhoff's laws
2	9/2 – 9/6	Kirchhoff's laws, Resistors in series and parallel
3	9/9 – 9/13	Voltage division and current division, measuring voltage, Delta-to-Wye equivalent
4	9/16 – 9/20	Circuit analysis: node voltage and mesh current
5	9/23 – 9/27	Circuit analysis: source transformation
6	9/30 – 10/4	Circuit analysis: Thevenin and Norton equivalent
7	10/7 – 10/9	Operational Amplifier
	10/10 – 10/11	Fall break
8	10/14 – 10/18	Operational Amplifier, Inductance
9	10/21 – 10/25	Capacitance
10	10/28 – 11/1	Sinusoidal source, response, phasor
11	11/4 – 11/8	AC circuit analysis by using Kirchhoff laws in frequency domain
12	11/11 – 11/15	Node voltage and mesh current in AC circuits
13	11/18 – 11/22	Sinusoidal Steady-state power calculation
14	11/25 – 11/26	Balanced Three-phase Circuits



	11/27 – 11/29	Thanksgiving holiday
15	12/2 – 12/3	Last class: Review
16	12/11	Final exam