



**Instructors:**

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Office Hours: Mondays 9:00-10:0am  
Office: Simrall 235 and Teams

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, 11:00-12:15pm in Simrall 106

**Lab Times:** No lab.

**Prerequisites:** Grade of C or better in Circuits and Fundamental of Energy Systems

**Corequisites:** N/A

**Textbook:** J. Glover, T. Overbye, and M. Sarma, Power System Analysis and Design, Sixth Edition, Cengage Learning, ISBN-13: 978-1-305-63213-4, ISBN-10: 1-305-63213-3

**Software:** **Optional** – PowerWorld simulator and ANDES (open source)

**Hardware:** no hardware required

**Website:** [canvas.msstate.edu](http://canvas.msstate.edu)

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**Course Description and Objectives**

(Prerequisite: Grade of C or better in both Circuits and Fundamental of Energy Systems.).

**Topics Covered:**

Review of fundamentals in power system analysis  
Brief overview of transformers and per unit system  
Transmission line parameters  
Transmission model and performance  
Power flow calculation  
Advanced topics in electric power industries



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## Objective:

1. Know the yesterday, today and tomorrow of electric power industries
2. Model elements of a power system including generators, transmission lines and transformers
3. Analyze multi-node power systems using an admittance matrix or impedance matrix representation
4. Understand the formulation of the power flow problem and solve power flow problems by application of the Gauss-Seidel, Newton-Raphson, and fast-decoupled method
5. Design and run a power transmission system using tools and methods from the course

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## Methods of Evaluation and Standards of Achievement

### Attendance and Homework

1. Students are required to attend course lectures and study the assigned course materials.
2. Class roll will be taken randomly.
3. If an absence from class is unavoidable due to some situation beyond a student's control ((such as a serious illness, the family emergency, etc.), the student should advise the instructor before a class is missed.
4. Homework will be assigned approximately on a weekly basis. Homework will be posted on the class web site.
5. Homework will be due before the class on Tuesday, unless otherwise specified. No late homework will be accepted.
6. Students are highly expected to independently complete their homework.
7. Students are allowed to discuss their homework and share ideas. Although collaborative study has educational value and is encouraged, all submitted homework must be that of the student.
8. Students may not copy any other student's homework solution and may not draw on any accessible solution manuals. **If found cheating on any homework assignment, the instructor will most likely recommend the student receive an "F" in the course.**
9. If a student cannot complete his/her homework and/or need an extended period of time for study due to some situations beyond a student's control (such as a serious illness, the family emergency, exposed to a person with the COVID-19 virus, etc.), the student should inform the instructor as early as possible to ensure appropriate accommodations are provided.

### Exams

1. All (3) exams are **closed-book, closed-notes**.
2. Students are required to prepare one/two equation sheets for each exam and turn in them along with the exam answer sheets.
3. Any discussions/communications among students are absolutely not accepted. **If found cheating on any exams, the instructor will immediately recommend the student receive an "F" in the course.**
4. Students are expected to take all exams. Make-up exams due to an absence will be given only under the following conditions:

The student has informed the instructor of the absence at least 24 hours in advance of missing the exam. —  
OR —

The student misses the exam due to some situation beyond the student's control (such as a serious illness, the family emergency, exposed to a person with the COVID-19 virus, etc.) which is unexpected, unavoidable, and



documented. The reason for each absence of this sort will be judged case by case by the instructor and, if it is deemed valid under the above description, a make-up exam will be given.

5. Detailed instructions about each exam will be send out one week before the scheduled exam date.

### **Distance Education:**

The target audience for the distance-learning section of the course will be professionals working in the electric power industry. However, any student with the requisite background will be permitted to enroll in the course.

#### **Video Access**

Both synchronous and asynchronous are available. Information about accessing your courses, videos, and instructions for streaming or downloading course videos can be found on our website at

<https://oc-engage.engr.msstate.edu/engage/ui/index.html>

#### **Homework**

Distance students will submit homework assignments to Canvas.

#### **Technical Assistance**

Distance students can visit the Bagley website at [www.bagley.msstate.edu/distance](http://www.bagley.msstate.edu/distance) to report technical difficulties or email [enr-dist-support@lists.msstate.edu](mailto:enr-dist-support@lists.msstate.edu) directly. Students should remember to include your netid and the name and number of the course you are referencing in the subject line.

#### **Proctoring**

The proctor form can be found at <https://online.msstate.edu/pdf/Proctor-Request-Form.pdf>

Students should submit this form via the proctor link no later than 1 week prior to the exam date. This allows time to contact proctors and verify their contact information. Students using the same proctor all semester do not have to resubmit forms for each exam unless there is a change in the proctor's contact information.

#### **BCoEOnline Website**

Distance students who have questions throughout the semester can find answers to many questions via the [www.bagley.msstate.edu/distance](http://www.bagley.msstate.edu/distance) website.

### **Grading Policies**

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

Participation:	10%
Homework:	25%
Midterm Exam 1:	20%
Midterm Exam 2:	20%
Final Exam (comprehensive):	25%

Your final grade is



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Undergraduate Students		Graduate Students	
A:	100-85	A:	100-90
B:	84-75	B:	89-80
C:	74-65	C:	79-70
D:	64-55	D:	69-60
F:	54-0	F:	59-0

According to the University exam schedule for Fall 2024, the final exam time for ECE 4613/6613 is **Monday Dec. 9<sup>th</sup> from 12-3pm**. **This will be in-person in Simrall.**

Note that **Final grades for group assignments (e.g., design project, presentations) can be adjusted by plus or minus 10% based on feedback collected from a peer review or self-assessment process.** Ideally, all team members contribute equally and, as a result, the team achieves their grade goals. Occasionally, peer review reveals that contributions are markedly uneven, despite all efforts to address the project as a team. As a part of self-assessment process, team members will submit a written evaluation of their fellow team members. All claims of mutiny, insurgency, poor performance, etc., must be documented in sufficient detail to be given consideration.

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### 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>



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## ECE 4613/6613 COURSE POLICIES

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### Course Grading Policies

Instructor-provided class materials are the only resources allowed while taking quizzes. **All quizzes, homework, laboratories, and presentations are INDIVIDUAL assignments.** If you share quiz questions, provide the quiz password, copy another student's work, or allow another student to copy your work, then you will be referred for an Honor Code violation.

You may use a calculator, lecture notes, lecture videos, and other instructor-provided material when taking quizzes. **No other outside resources are allowed.** Resources such as Chegg or any other unauthorized resource used during the completion of a quiz or homework is considered a violation of the Mississippi State University Honor Code.

**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 4613/6613 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.

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### 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 4613/6613 is a large class with many assignments. To be efficient, ECE 4613/6613 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 quizzes. All quizzes are provided in the online environment and, in most cases, available for multiple days. ***There will be no make-up quizzes 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.

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### 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.

Further, once the design project is underway, **you and your team will be required to meet once per a week with your course TA and/or instructors** for a 30-minute team meeting. We will base the meeting time of team member and TA availability. Your team will also need to plan regular team meetings to communicate about the group project.

Course material will post by Monday and be due the following Monday.

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### **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.

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### **Expectations for the ECE 4613/6613 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 4613/6613 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.

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### 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](mailto:help@ece.msstate.edu) or [enr-dist-support@lists.msstate.edu](mailto:enr-dist-support@lists.msstate.edu) or [www.bagley.msstate.edu/distance](http://www.bagley.msstate.edu/distance).

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### 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.





MISSISSIPPI STATE UNIVERSITY™  
— JAMES WORTH —  
**BAGLEY**  
COLLEGE OF ENGINEERING

Department of Electrical and Computer Engineering

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**ECE 4613/6613 Power Transmission Systems**  
**Syllabus – Starkville Campus**



### Tentative Schedule

Week	Date		Lecture
1	TH	August 22	Course Introduction (Syllabus)
	T	August 27	Review of Fundamentals
2	TH	August 29	Review of Fundamentals
	T	September 3	Power Transformers
3	TH	September 5	Power Transformers
	T	September 10	Power Transformers
4	TH	September 12	Power Transformers
	T	September 17	Transmission Line Parameters
5	TH	September 19	Transmission Line Parameters
	T	September 24	Transmission Line Parameters
6	TH	September 26	<b>Mid-term exam 1</b>
	T	October 1	Transmission Line Parameters
7	TH	October 3	Transmission Line Parameters
	T	October 8	Transmission Line Parameters
8	TH	October 10	Transmission Line: Steady State Operation
	T	October 15	Transmission Line: Steady State Operation
9	TH	October 17	<b>Fall Break</b>
	T	October 22	Transmission Line: Steady State Operation
10	TH	October 24	Transmission Line: Steady State Operation
	T	October 29	Power Flow Analysis
11	TH	October 31	Power Flow Analysis
	T	November 5	<b>Mid-term exam 2</b>
12	TH	November 7	Power Flow Analysis
	T	November 12	Power Flow Analysis
13	TH	November 14	Power Flow Analysis
	T	November 19	Power Flow Analysis
14	TH	November 21	Power Flow Analysis
	T	November 26	Power Flow Analysis
15	TH	November 28	<b>Thanksgiving Holiday</b>
16	T	December 3	<b>Final Review - Class End</b>
17	M	December 9	<b>Final Exam (12:00 – 3:00 PM)</b>