

ECE 330 Power Circuits & Electromechanics, Spring 2026

Instructor:

Section C, D- MWF (10:00-10:50am, 1:00-1:50pm) 3013, 3017 ECEB: Prof. Olga Mironenko
Office Rm. 4066 ECEB, email: olgamiro@illinois.edu

Section F- MWF (2:00-2:50 pm) 2017 ECEB: Prof. Jonathon Schuh
Office Rm. 4062 ECEB, email: schuh4@illinois.edu

Teaching Assistants:

TA1: Dennis Butts (dbutts2@illinois.edu)

TA2: Melody Famil Rasoulia (naghmeh2@illinois.edu)

TA3: Evan Schmitz (evans3@illinois.edu)

Office Hours: please see the course Canvas

Course Text: Power Circuits and Electromechanics (Paperback Version) by M.A. Pai, Stipes Publishing, Champaign

Course Outline	Hrs
1. Review of phasors, complex power	3
2. Three phase circuits, three phase power, wye-delta conversion	4
3. Magnetic circuits, self and mutual inductance, Maxwell's equations	5
4. Ideal transformers, practical transformers, equivalent circuits	<u>4</u>
5. Electromechanical systems, energy, co-energy, energy cycles, computation of forces	6
6. Synchronous machines	<u>3</u>
7. Induction machines	3
8. Other machines	3
9. Dynamic equation, numerical integration of electromechanical systems	4
10. Equilibrium points, linearization, stability	<u>3</u>
11. Exams and review	4

Course Logistics:

- Check Canvas for homeworks, course material, quiz, and exams scores.
- Have an administrative or technical question? Ask on the [Campuswire \(3452\)](#)

Illinois Canvas

As the online learning management system for Illinois, Illinois Canvas lets students, faculty, and staff check grades, submit assignments, and store and download instructional and training materials. It is possible to use Illinois Canvas from any computer, tablet, or phone. For a list of help topics, please visit [Illinois Canvas Training Resources for Students](#).

Evaluation:

- **Homeworks:**

- Throughout the semester, you should expect a total of 10 homework assignments.
- These assignments do not count for credit but are designed primarily to help you practice the material that will be covered in quizzes and exams.
- HW assignments will be hosted on **PrairieLearn**.
- You will have an unlimited number of attempts for each homework assignment.

- **Quizzes:**

- Throughout the semester, you should expect a total of 5 quizzes. Please see the Canvas schedule for exact dates. Final grades will be posted on Canvas.
- Quizzes **count for credit** and are based on the material covered in a corresponding homeworks.
- **Quiz 0 is optional** and intended to help you practicing the quiz procedure including positioning of your work, uploading the scan etc. (please see Partial Credit grading scheme). **We strongly recommend dedicating time to take it. It is a student responsibility** to ensure they are familiar with quiz rules and procedures.
- **ATTN: You will be taking quizzes at the College of Engineering Computer-Based Testing Facility (CBTF):** <https://cbtf.engr.illinois.edu>.
 - Students will need to login to <https://cbtf.engr.illinois.edu/sched> which will cause the CBTF to automatically find your roster affiliation to courses. You should then receive reminder emails when new exams become available to reserve. **Please login at the start of the semester, even if you cannot make a reservation for any quiz yet.**
 - **It is the a student responsibility** to review the student instructions section at <https://cbtf.illinois.edu/students/rules> .It has guides for the CBTF policies, what to do if a quiz is missed, how to get support, etc. Take the [CBTF Orientation \(10 minutes\)](#), review all instructions on the CBTF website before your first quiz. **We strongly recommend using Quiz 0 to practice.**

- If you have accommodations identified by the [Division of Rehabilitation-Education Services \(DRES\)](#) for exams, **please submit your Letter of Accommodations (LOA) through the DRES Accommodations tab on the CBTF website as soon as possible.** It can take **up to five days** for your LOA to be processed and if you make a reservation before your LOA has been processed, your reservation will not include your testing accommodations and you will be required to reschedule. This must be done each semester you use the CBTF.
- If you have any issue during an exam, **inform the proctor immediately.** Work with the proctor to resolve the issue at the time before logging off. If you do not inform a proctor of a problem during the test then you **forfeit** all rights to addressing the problem you experienced during your exam.
- **The policies of the CBTF are the policies of this course,** and academic integrity infractions related to the CBTF are infractions in this course.
- Quizzes are timed assignments. You will have **50 minutes** to finish it.
- **No extensions are allowed.** However, to provide students some flexibility and to accommodate for emergency situations, travel etc., the lowest quiz will be dropped from the quiz average used to compute the final grade.
- Quiz solutions will become available on **Canvas** once the quiz window has been closed.
- **Partial credit grading scheme:**
 - **Quiz 1 and Quiz 2:** Before submitting the quiz, make sure to upload a scan of the work you used to solve the quiz problem. Your preliminary score issued by the automated system may be adjusted upwards (but never downwards) for partial credit based on submitted work. **NOTE:** attach your work **BEFORE** you submit your quiz on PrairieLearn. **ATTN: We strongly recommend practicing positioning, scanning and uploading your work during Quiz 0. If you uploaded work is missing or unreadable, graders won't be able to assign any manual partial credit.**
 - **Regrades:** email your instructor directly about possible questions regarding grading **within a week (7 days)** after the grades are released on Canvas. Any requests outside the 7 day window will not be honored.
- **Quiz 3-Quiz 5: Partial Credit Appeals:** appeal instructions will be provided later in the semester.

- **Exams:**
 - Two midterm exams: 7-8:30 pm on Thursday, February 26 and Thursday, April 9, 2025. Location: please see Canvas schedule.
 - Final Exam: TBD
- Allowed material:
 - This exam is closed book and closed notes. You will be provided with an equation sheet for the exam. No other notes are allowed. Use of any external resources will result in a 0 on the exam and an **Academic Integrity report** being filed against you.
- Calculations:
 - Standard scientific and graphing calculators are allowed and expected on the exam. No other electronic devices are allowed. The use of prohibited calculation devices will result in an **Academic Integrity report** being filed against you.
- No collaboration allowed:
 - You are **not allowed** to share or collaborate on this exam and all work should be your own; otherwise, it will result in an **Academic Integrity report** being filed against you.
- Solving the exam
 - You will be graded based on submitted work rather than the final answer. Therefore, you must show all your work on the exam and provide explanations when needed to receive credit. Any answer or part of the answer without any work will receive no credit and an **Academic Integrity report** may be filed. If we cannot track your solution or part of the solution, we cannot assign credit for that. Please note, that writing just the formula from the provided equation sheet will not result in partial credit.
- Regrades
 - You will receive an email from Gradescope to log in and see your graded exam. If **after** looking at the posted solutions, you feel there was an **inaccuracy** in the grading of your exam, you can request a regrade within Gradescope itself.

- Regrades should be used only to correct mistakes made in grading. Regrades are not to be used for getting back more partial credit on your exam. Only regrades regarding inaccurate grading will be addressed.
- Regrades open 24 hours after exam scores are posted and must be submitted **within 7 days**. Regrades will **not be accepted** after that date.

○ **Conflict exam requests**

- Some of you might have an overlapping activity that warrants a conflict exam, as indicated in the [Article 3 part 202](#) of the student code (please see [Article 3 part 201](#) for a conflict with a final exam). We will offer a conflict exam in those cases, but you need to get the approval of the instructor in order to be able to take the conflict exam. All students will receive an email with a link to request a conflict two weeks before each exam. If you have a conflict with the exam, you must complete the form before the corresponding deadline.

- **ATTN: Religious Observances:**

Illinois law requires the University to reasonably accommodate its students' religious beliefs, observances, and practices in regard to admissions, class attendance, and the scheduling of examinations and work requirements. You should examine this syllabus **at the beginning of the semester** for potential conflicts between course deadlines and any of your religious observances. If a conflict exists, you should fill out the [Religious Accommodation Request form](#) and email the copy to your instructor. **This must be done in the first two weeks of classes for midterms and within a week after being informed of the final examination schedule.**

○ **Absence from midterm exams**

- If for some reason of emergency such as severe illness, family emergencies, or other uncontrollable circumstances you are not able to take the exam at the required time, you will need to obtain a written excuse from the [Office of the Dean of Students](#). Documentation which validates the absence is required by the Dean's Office to provide the absence letter.

○ **Absence from the final exam**

- If for some reason of emergency such as severe illness you are not able to take the final exam at the required time, you will need to contact the [Office of the Dean](#) of Students and request [Incomplete grade](#). Documentation which validates the absence is required.

Grading:

It is a student's responsibility to check that the correct grades are entered on Canvas.

Two midterm exams	25% each
Final exam	35%
Quizzes	15%

Other Course Policies:

- **Communications:**

- It is the student's responsibility to attend lectures and check their emails daily in case there are announcements from the course staff. Missing a lecture and/or not checking email will not excuse complying with the course deadlines and policies.

- **Accommodations:**

- We are happy to accommodate all DRES needs for our students. Please forward your DRES letter to your instructor **as soon as possible**, but **no later than** 1 week before the midterm exam (May 1st for the final exam). **ATTN:** please see Quizzes section of the syllabus regarding accommodations for quizzes.
- You can contact DRES at 1207 S. Oak Street, Champaign, (217) 333-1970, via email at disability@illinois.edu or via the [DRES website](#).
- All DRES exams will be taken at the Testing Accommodation Center (TAC). Please get familiar with the [TAC policy, registration and the deadlines](#). Although, it is the student's responsibility to register with the TAC for each exam, please contact your instructor with the DRES letter before taking any actions.

- **Emergency Response Recommendations**

Emergency response recommendations can be found at the following website: <https://police.illinois.edu/em/>. We encourage you to review this website and the campus building floor plans website within the first 10 days of class. <http://police.illinois.edu/emergency-preparedness/building-emergency-action-plans/>.

- **Academic integrity:**

- The University of Illinois at Urbana-Champaign Student Code should also be considered as a part of this syllabus.
- Students should pay particular attention to **Article 1, Part 4: Academic Integrity**. Read the Code at the following URL: <http://studentcode.illinois.edu/>.
- Academic dishonesty may result in a failing grade.

- Every student is expected to review and abide by the Academic Integrity Policy: <https://studentcode.illinois.edu/article1/part4/1-401/>.
- **Ignorance is not an excuse for any academic dishonesty.** It is your responsibility to read this policy to avoid any misunderstanding. Do not hesitate to ask the instructor(s) if you are ever in doubt about what constitutes plagiarism, cheating, or any other breach of academic integrity.

Anti-Racism and Inclusivity Statement:

The intent is to raise student and instructor awareness of the ongoing threat of bias and racism and of the need to take personal responsibility for creating an inclusive learning environment.

The Grainger College of Engineering is committed to the creation of an anti-racist, inclusive community that welcomes diversity along a number of dimensions, including, but not limited to, race, ethnicity and national origins, gender, and gender identity, sexuality, disability status, class, age, or religious beliefs. The College recognizes that we are learning together in the midst of the Black Lives Matter movement, that Black, Hispanic, and Indigenous voices and contributions have largely either been excluded from, or not recognized in, science and engineering, and that both overt racism and micro-aggressions threaten the well-being of our students and our university community.

The effectiveness of this course is dependent upon each of us to create a safe and encouraging learning environment that allows for the open exchange of ideas while also ensuring equitable opportunities and respect for all of us. Everyone is expected to help establish and maintain an environment where students, staff, and faculty can contribute without fear of personal ridicule, or intolerant or offensive language. If you witness or experience racism, discrimination, micro-aggressions, or other offensive behavior, you are encouraged to bring this to the attention of the course director if you feel comfortable. You can also report these behaviors to [Campus Belonging Resources](#). Based on your report, Campus Belonging Resources members will follow up and reach out to students to make sure they have the support they need to be healthy and safe. If the reported behavior also violates university policy, staff in the Office for Student Conflict Resolution may respond as well and will take appropriate action.

We in the Illinois ECE community are committed to understanding, empathizing with, and respecting each other, embracing the many differences among us.

Sexual Misconduct Policy and Reporting:

The University of Illinois is committed to combating sexual misconduct. Faculty and staff members are required to report any instances of sexual misconduct to the university's Title IX and Disability Office. In turn, an individual with the Title IX and Disability Office will provide information about rights and options, including accommodations, support services, the campus disciplinary process, and law enforcement options.

A list of the designated university employees who, as counselors, confidential advisors, and medical professionals, do not have this reporting responsibility and can maintain confidentiality, can be found in the [Confidential Resources](#) section. Other information about resources and reporting is available at wecare.illinois.edu.

Student Wellness Resources:

The University of Illinois strives to promote student success through the support of student psychological and emotional well-being. Please take advantage of the resources listed on the [Student Affairs](#).