

# ECE 3600

## Introduction to AC Power Engineering Spring 2025 Class Syllabus

Instructor: Arn Stolp  
Office: MEB 2103  
Phone: U of U: 581-4205  
Cell: (801) 783-6589 **Always TEXT FIRST & start text with "ECE 3600".** This is the best way to contact me.  
E-mail: [arnstolp@ece.utah.edu](mailto:arnstolp@ece.utah.edu) I rarely check my e-mail, so text me if you send me email that I need to read. Subject should start with "ECE 3600". DO NOT use other email addresses or Canvas messaging.  
Office hours: Mon. & Wed. after class as a problem session. I'm often in or near my office or the lab after that, check the map on the door for my location. Otherwise, text me and we'll figure something out.  
DO NOT send messages via Canvas. I don't monitor them.

Web Site: <http://www.ece.utah.edu/~ece3600/>

Required and Recommended books and lab supplies:

Textbook: *Electrical Machinery and Power System Fundamentals*, by Stephen J. Chapman. International edition is cheaper and fine for this class.  
Calculator that easily handles complex-number arithmetic.  
Ring binder for additional materials to be handed out in class.  
Lab notebook (bound or spiral)

Prerequisites: ECE 2210 or ECE 2240

### Introduction:

Why do people care about electricity? Basically for two reasons-- information and energy. Computers, TVs, internet devices, phones and control systems all process, present, store and use information in the form of electrical signals. The circuits and theories behind these occupy the majority of your studies in Electrical Engineering. These circuits also require some energy to function (power supplies) and often need to control some energy to produce outputs (power amplifiers), both subjects for a power electronics class, not this class. Here we cover electrical energy in a more primal form-- the energy that lights your house, washes your clothes and moves you up the ski lift, all of which is done with AC power.

This class will introduce you to AC power use and generation, AC and DC machines, and AC power systems. We will study single-phase and 3-phase power, power factors and corrections, transformers, synchronous and induction machines, DC motors, power transmission lines, and introduce the concepts used to analyze power flow and faults.

I teach concepts and the use of those concepts to solve problems, not formulas and memorization. The hands-down easiest way get a good grade in this class is to learn the concepts.

## **This class consists of:**

**Lectures:** M & W 3:00 - 4:20 pm in WEB L114 (or WEB 1250) AND a few lectures in the Fri. lab time.

Lectures set the direction and tone of the class and cover more than the written material. You will be held accountable for everything discussed in the lectures, so your attendance is important. Some lectures will be held at the lab time, in place of lab.

## **Problem Sessions:** Directly after class

I will use this time to work examples and to answer your questions in detail. I will not cover new material in the problem session times.

## **Textbook:**

*Electrical Machinery and Power System Fundamentals*, by Stephen J. Chapman.

## **Handouts:**

There will be a number of handouts for, homework, labs, notes, etc.. I will hand these out before class or you may download them from canvas or the class web site;  
<http://www.ece.utah.edu/~ece3600/>.

## **Homework, homework, and more homework:**

15%

I will assign a lot of homework, it will be your main study tool. As such, I'll give you all the numeric answers so that you can check your work immediately. In fact, you'll have to self-correct your homework. If you can't get the answer, check the web site for corrections, study some more, come to the problem session, ask for help, or see the posted solutions. Sometimes I even post solutions before the homework is due. So, you might ask, "Why is it handed in and 'graded'?" Well, to answer a question with a question, "Would you even do it otherwise?"

Your homework should be neat and clear and show all your work. For most problems the grader will simply check to see that you've done it and that your paper shows the necessary work to get the answer. Only a few problems will be checked in greater detail. You may collaborate with others to learn how to do the homework, but will need to hand in your own work. Copying or allowing another student to copy your work is considered cheating.

You will probably learn more from doing the homework than any other part of this class. If you thoroughly understand the homework, you will know what the class is about, and the exams should give you no trouble.

You will need to scan your homework, create a .pdf file, and turn that in on canvas by 11:59 pm of the due date. Solutions will be posted in my office window. Most graded material will be returned on Canvas.

## **Midterms:**

(300 exam pts) 43.75%

You will take three 80-minute midterms throughout the semester. They will cover material up to the time of the test. All exams are closed book, closed notes, no phones, tablets or computers allowed. These exams will usually be in two parts, a no calculator, no reference material part where I ask for items that you should have committed to memory, and a part with some reference material where I will ask you to solve problems that may require your calculator. The second section will be designed to see if you learned concepts and problem solving strategies and whether you can work with them, sometimes in new and

different ways. Don't try to memorize formulas or specific problems. Exams also cover what you learn in the labs and field trips. Exams will be returned in class. If you miss class, come to my office.

**Final:** Friday, 4/25/25, 3:30 - 5:30+ pm

(180 exam pts) 26.25%

The final will be comprehensive with greater emphasis on the most recent material. It will also be in two parts. There will be a zoom review session. Listen for details in class.

**Labs:** MEB 2365 & 2337

15%

Lab will be held every few weeks. Many of the subjects covered in lab aren't covered anywhere else in class, so make sure you pay attention and read the lab instructions. You will have to keep a laboratory notebook as a requirement of the lab. Your lab TA will either collect and grade these notebooks or ask you to scan them and submit on canvas. Lab times not used for labs may be used for lectures or field trips.

Labs are **not optional**. For each lab that you miss or fail ( < 60% score ), your final grade will suffer a **half letter drop** (5% of possible points). Be sure to make-up any labs you miss or fail.

**Field Trips:**

scored as labs

I'm planning several field trips which will take place during lab times (approximately); Gadsby power plant, Rocky Mountain Power dispatch, and, hopefully, Terminal Substation. You will be responsible for your own transportation. If you cannot make a field trip you will have to make it up with some personal field investigation. Field trip reports will be graded with your labs. A missed field trip can also result in a 5% grade drop.

**Grades:**

		<u>% of total</u>	<u>Grade</u>
Homework:	15%	> 93	A
Labs:	15%	90-93	A-
Exams:	<u>70%</u>	87-90	B+
Total:	100%	83-87	B
		80-83	B-
Failed lab:	-5%	77-80	C+
		73-77	C
Cheating:	-100%	70-73	C-
		67-70	D+
		63-67	D
		60-63	D-
		< 60	E

If you want any deviations from the normal requirements (say credit for labs, you've done before) you will need to see me before the work would normally be due and get an agreement *in writing*. You'll need to turn in your copy of the agreement with your final, so I'll remember to grade you properly.

**Disclaimer:**

All information provided here is subject to change due to external factors or unintended typos or errors.

# PRICE COLLEGE OF ENGINEERING GUIDELINES

<https://www.price.utah.edu/students/current/semester-guidelines>

Spring Semester 2025

## Appeals Procedures

See the [Code of Student Rights and Responsibilities](#)

### Appeals of Grades and other Academic Actions

If a student believes that an academic action is arbitrary or capricious, they should discuss the action with the involved faculty member and attempt to resolve. If unable to resolve, the student may appeal the action in accordance with the following procedure:

1. Appeal to Department Chair (in writing) within 40 business days; chair must notify student of a decision within 15 days. If faculty member or student disagrees with decision, then,
2. Appeal to Academic Appeals Committee (see <https://www.price.utah.edu/students/academic-affairs/academic-appeals> for members of committee). See II Section D, Code of Student Rights and Responsibilities for details on Academic Appeals Committee hearings.

## Americans with Disabilities Act (ADA)

The University of Utah seeks to provide equal access to its programs, services, and activities for people with disabilities. If you need accommodations in a class, reasonable prior notice needs to be given to the instructor and to the [Center for Disability & Access](#). The CDA office is in the Student Services Building, Room 350. Call 801-581-5020 (V/TDD) to make arrangements for accommodations. All written information in a course can be made available in alternative format with prior notification to the Center for Disability & Access.

## Adding Classes-Full Term

**Please read carefully:** All classes must be added by the add/drop deadline: **Friday, January 17, 2025**. Late adds will be allowed January 21-24, requiring only the instructor's signature. Any request to add a class after the census deadline, January 27, will require signatures from the instructor, department, and Dean, and need to be accompanied by a petition letter to the Dean's office.

**A \$50 FEE WILL BE ASSESSED BY THE REGISTRAR'S OFFICE FOR ADDING CLASSES AFTER THE CENSUS DEADLINE \*\*\***

**\*\*\*\*Before you elect to take a class CR/NC you should check with your Advisor. Core classes used to compute your Engineering GPA need letter grades.**

## Withdrawal Procedures

For more, see the [Withdrawal Policy](#) and information on [Drop Deadlines](#) provided by the Office of the Registrar \*\* Please note the difference between the terms "drop" and "withdraw". Drop implies that the student will not be held financially responsible, and a "W" will not be listed on the transcript. Withdraw means that a "W" will appear on the student's transcript and tuition will be charged. \*\*

### Drop Period for Full Term Classes– No Penalty

Students may DROP any class without penalty or permission up until Friday, January 17, 2025.

### Withdrawal from Full Term Length Classes

Students may WITHDRAW from classes without petition until **Friday, February 28, 2025**. Beginning January 18 until February 28, a "W" will appear on the transcript AND **tuition will be charged**. Refer to Class Schedule, Tuition and Fees for tuition information.

### Drop/Withdrawal from Session I & Session II

Visit the academic calendar for more detail.

<https://registrar.utah.edu/academic-calendars/spring2025.php>

Withdrawals for term length classes after February 28 will only be granted for compelling, nonacademic emergencies. A petition and supporting documentation must be submitted via email to the Dean's Office at [coepetitions@utah.edu](mailto:coepetitions@utah.edu). Petitions must be received by the last day of classes (**April 22, 2025**).

## Repeating Courses

When a Price College of Engineering class is taken more than once, only the grade for the second attempt is counted. Grades of **W, I, or V** on the student's record count as having taken the class. Departments enforce these guidelines for other courses as well (e.g., math, physics biology, chemistry). Attempts of courses taken at transfer institutions count as one attempt. This means a student may take the course only one time at the University of Utah. Courses taken at the University of Utah may not be taken a second time at another institution. If a second attempt is needed, it must be at the University of Utah. Please work with your department advisor to determine the value of repeating courses. Students should note that anyone who takes a required class twice and does not have a satisfactory grade the second time may not be able to graduate. It is the responsibility of the student to work with the department of their major to determine how this policy applies in extenuating circumstances.

## **Important Safety Information**

The University of Utah values the safety of all campus community members. To report suspicious activity or to request a courtesy escort, call campus police at 801-585-COPS (801-585-2677). You will receive important emergency alerts and safety messages regarding campus safety via text message. For more information regarding safety and to view available training resources, including helpful videos, visit <https://safeu.utah.edu>

If you are experiencing a mental health crisis, interpersonal violence, sexual assault, domestic violence, and/or stalking, please connect with one of the resources below.

<b>Resource</b>	<b>Phone #</b>	<b>Hours</b>	<b>Affiliation</b>
<a href="#"><u>McCluskey Center for Violence Prevention</u></a> Email checked daily: <a href="mailto:cvp@utah.edu">cvp@utah.edu</a>	801.587.3982	NA	University
<a href="#"><u>Center for Campus Wellness, Victim Survivor Advocate:</u></a>	801.581.7776	8-5	University
<a href="#"><u>Office of Equal Opportunity</u></a>	801.581.8365	9-5	University
<a href="#"><u>University Department of Public Safety</u></a>	801.581.7200	9-5	University
<a href="#"><u>University Police</u></a>	801.585.2677	24hrs	University
<a href="#"><u>Crime Victim Advocate</u></a> (ask to speak to the on-call Victim Advocate) For less urgent matters, email checked M-F 9-5: <a href="mailto:crimevictimsadvocates@utah.edu">crimevictimsadvocates@utah.edu</a>	801.585.2677	24hrs	University
<a href="#"><u>Huntsman Mental Health Institute</u></a>	801.583.2500	7-6	U of U Health
<a href="#"><u>Utah Crisis Line</u></a>	988 or 801.587.3000	24hrs	State
<a href="#"><u>Utah Domestic Violence Coalition</u></a>	800.897.5465	24hrs	State
<a href="#"><u>Rape Recovery Center</u></a>	801.467.7282	(M-Th) 9-5	State
<a href="#"><u>Utah Coalition Against Sexual Assault</u></a> 24 hour crisis line	801.736.4356	24hrs	State
<a href="#"><u>Stalking Helpline</u></a>	800.621.4673	24hrs	National

Mandatory reporters are university employees, including students in paid leadership positions who are required to report sexual misconduct to the Office of Equal Opportunity and Affirmative Action per university regulations. Examples of mandatory reporters include:

- Professors and other faculty
- Administration and staff (non-mental health)
- Resident Advisors
- Student employees
- Campus Police or Campus Security officials
- Athletic Coaches/Assistants