

---

## ECE 6180 Power System Analysis

---

**Instructor:** Dr. Ramtin Hadidi [rhadidi@clermson.edu](mailto:rhadidi@clermson.edu)

310 Zucker Family Graduate Education Center, Charleston 843-730-5106

### References:

- Power System Analysis & Design, 6th Ed. by Glover, Overbye & Sarma, CL Engineering, 2016.

### Additional references:

- Class notes
- Handouts

**Course Objectives:** Study of power system planning and operational problems. Topics include three-phase system study, transmission line modeling, load flow, economic dispatch, control of power flow, symmetrical faults, Symmetrical components and unsymmetrical faults.

**Course Objectives:** At the completion of the course, student should be able to:

- Analyze and design three-phase power systems in steady state
- Conduct per unit analysis and change of base
- Analyze transmission line electrical performance.
- Understand and perform power flow analysis
- Understand symmetrical components and their role in unsymmetrical fault analysis
- Analyze symmetrical and unsymmetrical short circuit scenarios

**Software:** PowerWorld, MS Office, and MATLAB will be required at minimum.

**Lecture:** Tuesday- Thursday 9:30-10:45 a.m. Watt Family Innovation Center 310

**The class section number:** 001 and 002

**Office hours:** By appointment.

**Prerequisites:** ECE 3600 and ECE 3800, each with a C or better

### TA Information:

- Divya Vedullapalli ([dvedull@clermson.edu](mailto:dvedull@clermson.edu)) Office location and hours : TBA

**Classroom Policies:** Attendance is voluntary but strongly encouraged. No make up for missed classes, exams, or assignments will be given. Students are required to be present for the final examination and tests. Students are responsible for all material covered and all assignments given in every lecture. Some lectures may cover material not found in the textbook. It is the responsibility of each student to make up any deficiencies that result from missed classes. Students are expected to wait 15 minutes before leaving if the instructor is late. Cell phones must be turned off or silenced before coming into class.

## Course Outline:

This is a tentative outline for the course:

- Study of basic power system concepts ( 1.5 week)
- Per-Unit System for Power System Analysis (1.5 week)
- Transmission Lines (1 week)
- Power Flow Studies (3)
- Economic Dispatch and Optimal power Flow ( 2 week)
- Symmetrical Faults (3 week)
- Symmetrical Components and Unsymmetrical Faults (3 week)

## Evaluation:

Assignments	20%
Projects	15%
Tests (2)	30%
Final (comprehensive)	35%

Assignments may be graded on a selective basis.

## Grading Scale:

Below is the letter grade scale that will be used in this class:

A = 90 – 100
B = 80 – 89
C = 70 – 79
F = Below 70

**Tests:** All students must attend all tests. **Makeup tests will not be given under any circumstances. A student who misses a test or the final examination for any reason will receive a grade of 0 for that test or examination.** To accommodate students who must miss class when a test is given because of

a true and documented personal emergency, significant illness or other circumstances beyond their control, the final examination score will be substituted for the missed test score. The test and final exam will be closed book and notes. Formula sheets will be allowed. The specifics will be announced prior to the tests.

Tentative dates for the exam is as follows:

- **Test1:** October 11,2018
- **Test2:** November 15, 2018
- **Final Examination:** Wednesday December 12th from 8-10:30 am

**Homework:** All homework should be submitted by the beginning of the class period in which it is due. Late homework and projects will not be accepted and results in a 0 on the assignment. All homework/project must be legible. Submissions that cannot be read will be marked wrong. The submitted homework should be able to stand on its own. Collaborative work up to three persons are permitted on homework provided it is mentioned on the front page of the submitted work. Every student must submit its own solution to the homework.

### Important Dates:

<http://www.registrar.clemson.edu/calendar/view.php?year=2018&semester=fall>

- Last Day to Add a Class: Tue, August 28, 2018
- Last Day to Drop a Class without “W” Grade: September 4, 2018
- Last Day to Drop a Class without a Final Grade: October 26, 2018

**Changes to Syllabus:** The instructor reserves the right to make changes to this syllabus during the semester. Students will be given adequate notice in class of any changes.

**Agreement:** If you disagree with any of the policies or procedures spelled out above or cannot accept the demands of the course (i.e., the amount of time and work required), you need to drop the course as soon as possible. By staying in the course, you agree to comply with all the policies and procedures described in this syllabus