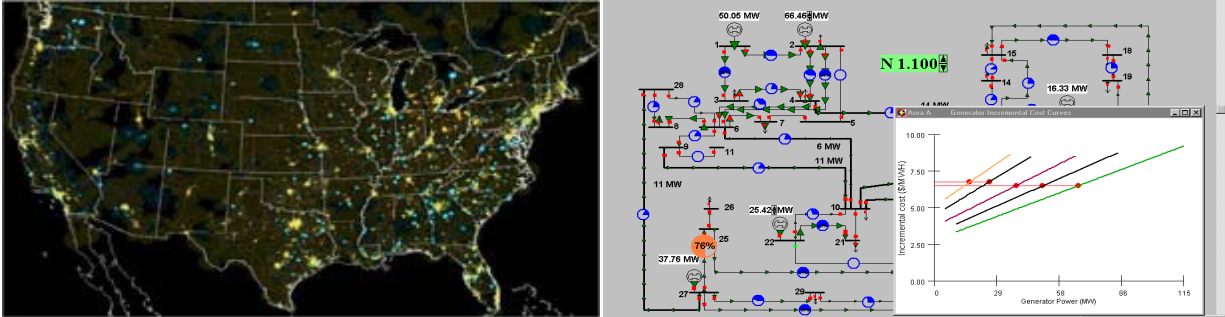


# ECE4320 Syllabus

## Power System Analysis and Control

Fall 2019, Prof. Santiago Grijalva



**Time and Place:** TR: 12:00 –1:15, Van Leer C457

**Description:** This course introduces concepts of large-scale power system analysis: electric power generation, power system component modeling, steady-state analysis and economic operation. It provides the fundamentals for advanced courses and engineering practice on electric power systems, smart grid, and electricity economics. The course will use commercial software to demonstrate power system modeling and simulation.

**Pre-requisites:** ECE 3070 or ECE3300

**Course Objectives:**

- Present the fundamentals of large-scale power systems
- Present models of most important power system components
- Develop analysis techniques use for steady-state simulation of power systems
- Introduce operational considerations of large-scale power systems
- Expose students to power system simulation software.

**Instructor:** Prof. Santiago Grijalva

**e-mail:** sgrijalva@ece.gatech.edu

**Office Phone:** (404) 894-2974

**Office Hours:** Van Leer 284, Thursdays: 1:30-2:30

**Text:** Instructor will provide electronic notes for all the lectures through Canvas.  
J.D. Glover, T. Overbye, M.S. Sarma, "Power System Analysis and Design", 6th Edition.  
A.R. Bergen, V. Vittal, "Power System Analysis", 2nd Ed., Prentice Hall, 2000

**Grading Policy:** Homework (20%), 2 one-hour midterms (15% each), Final Exam (30%)  
 Short-Paper Write-up (20%)  
 Final grade will be assigned as a letter grade according to the following scale:  
 A: 90-100%, B: 80-89%, C: 70-79%, D: 60-69%, F: 0-59%

**Tentative Course Schedule**

Date	Topic	Approximate Homework Due Dates
20-Aug	01_ Introduction	
22-Aug	02_ ReviewOfPhasor	
27-Aug	Invited Lecture	
29-Aug	03_ TransLineInductance	
3-Sep	04_ TransLineCapacitance	HW01 Due
5-Sep	05_ TransLineModeling	
10-Sep	06_ TransformersPU	
12-Sep	07_ ThreePhaseTrafos	
17-Sep	08_ GeneratorModels	HW02 Due
19-Sep	09_ AdmittanceMatrices	
24-Sep	10_ PowerFlowComputation	
26-Sep	11_ PowerFlowEquations	HW03 Due
1-Oct	<b>Midterm 1</b>	
3-Oct	12_ DecoupleAndDCPowerFlow	
8-Oct	13_ IntroOperations	
10-Oct	14_ PowerFlowSensit	
15-Oct	15_ ContinAnalysis	HW04 Due
17-Oct	16_ MinimizationTheory	
22-Oct	Fall Recess	
24-Oct	17_ EconomicDispatch	
29-Oct	18_ PWIntroSimulator	HW05 Due
31-Oct	<b>Midterm 2</b>	
5-Nov	19_ PWIntroModelData	
7-Nov	20_ PWSystemControl	
12-Nov	21_ PWSensitiv&ContAnalysis	HW06 Due
14-Nov	22_ LinearProgramming	
19-Nov	23_ LPOPFandMarginalPricing	
21-Nov	24_ PWOPF	
26-Nov	25_ OverviewElectricityMarkets	
28-Nov	Thanksgiving Holiday	
2-Dec	26_ AutomaticGenerationControl	
12 Dec	<b>Final Exam</b> Thursday, Dec 12 11:20 AM - 2:10 PM	

## Course Expectations & Guidelines

### Academic Integrity

Georgia Tech aims to cultivate a community based on trust, academic integrity, and honor. Students are expected to act according to the highest ethical standards. For information on Georgia Tech's Academic Honor Code, please visit <http://www.catalog.gatech.edu/policies/honor-code/> or <http://www.catalog.gatech.edu/rules/18/>.

Any student suspected of cheating or plagiarizing on a quiz, exam, or assignment will be reported to the Office of Student Integrity, who will investigate the incident and identify the appropriate penalty for violations.

### Accommodations for Students with Disabilities

If you are a student with learning needs that require special accommodation, contact the Office of Disability Services at (404)894-2563 or <http://disabilityservices.gatech.edu/>, to make an appointment to discuss your special needs and to obtain an accommodations letter. Please also e-mail me as soon as possible in order to set up a time to discuss your learning needs.

### Attendance and/or Participation

Attendance of students to all the lectures is expected and encouraged.

### Extensions, Late Assignments, & Re-Scheduled/Missed Exams

Assignments are provided with significant notice. Unless you have an emergency, no late assignments or missed exams will be accepted.