

## **ECE8903 Syllabus**

Special Problems, Section G05, 3 credits

Summer, 2026

### **Instructor Information**

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**Instructor:** Prof. Santiago Grijalva

**Email:** sgrijalva@ece.gatech.edu

### **General Course Information**

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#### **Description**

The Special Problems course is a graduate-level independent study intended to provide in-depth investigation of a specialized topic not typically covered in the standard curriculum. Conducted under the supervision of a faculty advisor, the course involves rigorous engagement with relevant literature, analytical or computational methodologies, and, where appropriate, original research. Students are expected to demonstrate advanced critical thinking, methodological rigor, and scholarly communication through a formal written report and/or presentation. The specific scope, objectives, and deliverables are defined in consultation with the supervising faculty member and are aligned with the student's academic and research goals.

#### **Course Learning Outcomes**

Topic-specific

#### **Pre-Requisites**

Graduate Standing

#### **Required Course Materials**

Topic-specific

#### **Grading Policy:**

88-100: A

72-87: B

60-71: C

## Example Course Topics

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Available Transfer Capability (ATC) and Power Flow Analysis

Voltage Stability and Power System Collapse

Grid Cyber-Physical Security

Solar PV Integration and Hosting Capacity

Smart Grid Architecture and Prosumer Concepts

Distributed and Decentralized Control/Optimization

Distribution System Modeling Using AMI and Smart Meter Data

Energy Storage Systems and Electric Vehicles

Grid Resilience, Microgrids, and Extreme Events

Deep Learning for Real-Time Power System Security Assessment

Reinforcement Learning and Neural Networks for Building and Grid Energy Management

Data-Driven Optimization for Unit Commitment and Economic Dispatch

## Course Policies

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### **Attendance and/or Participation**

Students are expected to attend regular meetings with faculty

### **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. Review [Georgia Tech's Honor Code](#) and the student [Code of Conduct](#).

Any student suspected of cheating or plagiarism 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](#) (404-894-2563) as soon as possible 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.

### **Student-Faculty Expectations Agreement**

At Georgia Tech, we believe that it is important to strive for an atmosphere of mutual respect, acknowledgement, and responsibility between faculty members and the student body. [The Student-Faculty Expectations](#) articulate some basic expectations that you can have of me and that I have of you. In the end, simple respect for knowledge, hard work, and cordial interactions will help build the environment we seek. Therefore, I encourage you to remain committed to the ideals of Georgia Tech while in this class.

### **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

## **Campus Resources for Students**

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### **Graduate Student Academic and Professional Success Resources:**

A list of resources for graduate students is given on the [Office of Graduate and Postdoctoral Education](#) website. Specific information for [current graduate students](#) includes

- [Academic Resources](#) such as the Communications Center, Language Institute, Library, Catalog, Registrar, resources for conducting research, Advocacy and Conflict Resolution resources, and how to manage unexpected situations that may impact your academic performance;
- [Student Resources](#) such as Campus Services, Child Care/Family programs, Health & Wellness, Career Services, and the Student Resource Guide; and
- [Professional Development](#) such as *the programming from the Career Center and other professional development resources and events*”

### **Student Well-Being:**

At Georgia Tech, we are concerned about your overall physical, social, and mental well-being. A [comprehensive list](#) of wellness related resources has been compiled and

maintained by the Office of the Vice President for Student Engagement and Well-being  
([student-resource-guide \(gatech.edu\)](http://student-resource-guide.gatech.edu))