

ESE 304: Electronic Instrumentation and Operational Amplifiers - Summer 2017

Instructor: Dr. Gianluigi De Geronimo

gianluigi.degeronimo@stonybrook.edu

Course Description - This course focuses on the design and application of operational amplifiers. The student will learn fundamentals of operational amplifiers from transistor-level to stability, noise, basic and advanced configurations. The acquired knowledge covers a very broad range of analog and mixed-signal applications. Exercises will be assigned during the classes. At the end of the course the student will own a solid background on the subject of amplifiers.

Course Outline

- Fundamentals of operational amplifiers
- Resistive feedback
- Active filters and switched capacitors
- Static and dynamic limitations of operational amplifiers
- Noise
- Stability
- Non-linear circuits, peak detectors, sample-and-hold
- Signal generators
- Voltage references, linear and switching regulators
- DACs and ADCs

Recommended textbook Sergio Franco
“Design with Operational Amplifiers and Analog ICs”
McGraw-Hill

Learning Outcomes - The student will acquire the following abilities

- understand operational amplifiers and their applications
- formulate and resolve an amplifier-based design
- optimize a design for maximum performance
- perform frequency-domain and stability analysis
- apply knowledge in mathematics to resolve an electronics engineering problem

Americans with Disabilities Act: If you have a physical, psychological, medical or learning disability that may impact your course work, please contact Disability Support Services, ECC(Educational

Communications Center) Building, Room 128, (631)632-6748. They will determine with you what accommodations, if any, are necessary and appropriate. All information and documentation is confidential. <http://studentaffairs.stonybrook.edu/dss/index.shtml>.

Academic Integrity: Each student must pursue his or her academic goals honestly and be personally accountable for all submitted work. Representing another person's work as your own is always wrong. Faculty is required to report any suspected instances of academic dishonesty to the Academic Judiciary. Faculty in the Health Sciences Center (School of Health Technology Management, Nursing, Social Welfare, Dental Medicine) and School of Medicine are required to follow their school-specific procedures. For more comprehensive information on academic integrity, including categories of academic dishonesty please refer to the academic judiciary website at http://www.stonybrook.edu/commcms/academic_integrity/index.html

Critical Incident Management: Stony Brook University expects students to respect the rights, privileges, and property of other people. Faculty are required to report to the Office of University Community Standards any disruptive behavior that interrupts their ability to teach, compromises the safety of the learning environment, or inhibits students' ability to learn. Faculty in the HSC Schools and the School of Medicine are required to follow their school-specific procedures. Further information about most academic matters can be found in the Undergraduate Bulletin, the Undergraduate Class Schedule, and the Faculty-Employee Handbook.