

RCET 2251 – System Analog and Digital Theory Syllabus

6 Cr

M, T, TH, F. 1:00 pm – 2:50 pm

T&T Room 333

Asst. Professor: Timothy Leishman, timothyleishman@isu.edu

Office: T&T Room 323

Office Hours: M-F 3:00pm - 4:00pm. An alternative meeting time may be scheduled with the instructor.

Course Description RCET Program Required Course

Analog circuit analysis applied to amplifiers, power supplies, operational amplifiers, and discrete switching circuits, with an emphasis on frequency limitations of discrete components and circuitry. Introduction to actuators, motors, and transducer control circuitry.

PREREQ: RCET 1154, **COREQ:** RCET 2253

Books: RCET 2251 course content will be provided by the instructor via Moodle. Personal laboratory notebooks, lecture notes, and books from previous RCET courses are strongly recommended for use as reference material.

Other supplies: A TI-30 calculator or equivalent. Programmable or solve function calculators are strictly prohibited on quizzes or tests.

Attendance: Department attendance policy will be enforced, refer to student handbook for more information.

Goal: Successful students will demonstrate an ability to apply knowledge, techniques, skills and modern tools of mathematics, science, engineering, and technology to solve well-defined problems related to the discipline of electronic analog and digital technology in support of COREQ RCET 2253.

Student Learning Outcomes Addressed:

1. *Review of first year content, throughout semester*
2. *Oscilloscope and Test Equipment, Week 1*
3. *RC Circuits, Week 2*
4. *BJT Multi-Stage Amplifiers, Frequency Response and Peaking, Weeks 3-4*
5. *Push-Pull & Differential Amplifiers, Weeks 5-6*
6. *Operational Amplifiers – Integration, Differentiation, Active Filtering, Weeks 7-8*
7. *Discrete Linear Regulated Power Supplies, Weeks 9-10*
8. *Switching Transistors & Multivibrators, Week 11*
9. *Linear Regulators & Switch Mode Power Supplies, Week 12*
10. *Motors – DC, Steppers, Servos, Solenoids, Weeks 13-14*
11. *Semester Review, Week 15*
12. *Final Test, Week 16*

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Grading

Tests	55%
Homework/Class Participation	20%
Final	<u>25%</u>
Total	100%

Course Structure

Homework will be assigned and submitted electronically through Moodle. Late submissions will not be accepted unless approved by the instructor at least 24 hours in advance. Students may occasionally be selected at random to demonstrate their understanding and problem-solving process during class. Test dates will be announced and scheduled in Moodle. The course schedule and homework assignments are subject to modification by the instructor to better support student learning objectives or to accommodate program activities.

Material from prerequisite courses will be revisited and integrated throughout this course. Students are expected to demonstrate a solid understanding of this foundational knowledge and effectively apply it to the topics covered in class. It is the student's responsibility to review and stay prepared with the content from prerequisite courses. Unit tests may include questions that assess fundamental electronics knowledge from these prerequisites to ensure mastery of essential concepts.

Disabilities Services

The RCET program is committed to providing an accessible learning environment for students with documented disabilities. If there are aspects of the instruction or design of this course that result in disability-related barriers to your participation, please contact Disability Services to engage in a confidential conversation about the process for requesting accommodations. Students are encouraged to register with Disability Services as soon as they begin this course or in the timeliest manner possible as accommodations are not provided retroactively. More information can be found online at isu.edu/disabilityservices, or by contacting Disabilities Services at:

Disability Services - Main Office
Rendezvous Complex, Room 125
921 South 8th Avenue, Stop 8121
Pocatello, ID 83209-8121

Phone: 208-282-3599
Fax: 208-282-4617
VP for ASL: 208-417-0620
Email: disabilityservices@health.isu.edu