

ENGR 2300 ELECTRONIC INSTRUMENTATION, COURSE SYLLABUS

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Classes will be held on WebEx for the initial 2 weeks.

Basic Overview Section

Course Information

All times are for the Eastern
Time Zone

Section 01 CRN 52308	MR	8:00AM- 9:50AM	JEC 4201 Studio/Flipped
Section 02 CRN 52308	MR	4:00 PM- 5:50 PM	JEC 4201 Studio/Flipped

Course Website: <http://www.ei-rpi.org/>

Instructors:

Professor Paul Schoch
Office Location: J Building 4203
Office Hours: Monday 1:30 – 3:30 pm EST held on WebEx

schocp@rpi.edu
518-276-6072

Professor Dylan Rees
Office Location: JEC 6046
Office Hours: Tuesday 4-6pm held on Discord

reesj3@rpi.edu
[518-276-6316](tel:518-276-6316)

TAs:

Name	Email	Hours
Zhizhuo Liang	liangz7@rpi.edu	
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UGSA (check on course website for information)		

Course Description:

A survey, application-oriented course for engineering and science majors. Transducers and measurement devices. DC and AC analog circuits including impedance, power, frequency response, and resonance. Diodes, transistors and operational amplifiers. Signal conditioning, noise, and shielding. Digital electronics, A/D and D/A conversion. Power supplies, rectifiers, and electromagnetic devices.

Goals:

Build basic background in circuit, electronic and sensor fundamentals for students outside of electrical and computer engineering.

Prerequisites/Corequisites:

Prerequisite: PHYS 1200; Corequisite: MATH 2400

Text:

All materials online.

Optional: 'Practical Electronics for Inventors,' by Paul Scherz and Simon Monk

ONLINE RESOURCES: The table includes the online resources needed for this course. Please be sure that you are signed into each resource. **Please do not hesitate to contact us if events occur that disrupt your access to the internet such as power outages.**

Online Tool	Purpose	Website link/access code
LMS	Syllabus, Home Work, Grade Book	https://lms.rpi.edu/
Discord	Announcements, help	You will be invited
Gradescope	Submission of assignments	You will be added
Course web site	Course material	ei-rpi.org

Policy Section

FERPA STATEMENT:

The online tools in the table provide a service designed to assist schools, teachers and other educational partners to improve student learning outcomes. In some circumstances, these online tools may receive personally identifiable information about students ("Student Data") from the instructor in the course providing this service. For example, an instructor will provide a class roster, email addresses of all students in the class, as well as coursework data that may be linked to a particular student. All listed online resource companies used by the instructor consider Student Data to be strictly confidential and have physical, administrative and technical security protections in place to protect such data. They do not use personally identifiable Student Data for any purpose other than to provide the services to the instructor, and they do not share personally identifiable Student Data with any third party except as authorized or required by the instructor. The online tools above may collect, analyze, and share anonymized or aggregated data or data derived from Student Data for certain purposes, but only if the disclosure of such data could not reasonably identify a specific individual or specific School. Collection and use of Student Data provided by the instructor is governed by Terms of Service for each platform and by the provisions of the Family Educational Rights and Privacy Act (FERPA). Student Data is provided and controlled by the instructor.

Students will be asked to sign this statement to agree to the use of these online tools and to acknowledge understanding of their use to facilitate online content for the course.

COLLABORATION AND ACADEMIC DISHONESTY:

Intellectual integrity and credibility are the foundation of all academic work. A violation of Academic Integrity policy is, by definition, considered a flagrant offense to the educational process. It is taken seriously by students, faculty, and Rensselaer and will be addressed in an effective manner. If found responsible for committing academic dishonesty, a student may be subject to one or both types of penalties: an academic (grade) penalty administered by the professor and/or disciplinary action through the Rensselaer judicial process described in [this](#) handbook. Three relevant academic integrity violations to emphasize include:

Collaboration: Collaboration is defined as deliberately facilitating an act of academic dishonesty in any way or form; for example, allowing another student to observe an exam paper or allowing another student to "recycle" one's old term paper or using one another's work in a paper or lab report without citing it as another's work.

Copying: Copying is defined as obtaining information pertaining to a graded exercise by deliberately observing the paper of another student; for example, noting which alternative a neighboring student has circled on a multiple-choice exam.

Plagiarism: Plagiarism is defined as representing the work or words of another as one's own through the omission of acknowledgment or reference. Examples include using sentences verbatim from a published source in a term paper without appropriate referencing, or presenting as one's own the detailed argument of a published source, or presenting as one's own electronically or digitally enhanced graphic representations from any form of media.

The Rensselaer Handbook of Student Rights and Responsibilities defines the full list of forms of Academic Dishonesty and you should make yourself familiar with these. In this class, all assignments that are turned in for a grade must represent the student's own work. In cases where help was received, or

teamwork was allowed, a notation on the assignment should indicate your collaboration. If you have any questions concerning this policy before submitting an assignment, please ask for clarification.

Specifics example: Some assignments, like exams, have a clearly marked place on the front page that requires a signature confirming academic integrity. If you forget to sign the document before submitting it, a TA or Prof. will contact you directly to ask you to sign before grading your assignment. It is expected that each student will take exams without speaking to other students via another communication channel. If exams are conducted in open book fashion, course resources posted online, textbook, etc. can be used in addition to the crib sheets. If the exams are closed book, then only crib sheets are allowed as in-class exams. For either mode of exams, students cannot interact with Chegg.com or any other online/internet assignment sharing system. If such interactions are noticed, it will result in an automatic failure for the entire course. As a warning, there are ways that instructor can easily detect use of online resources that compromise academic integrity.

STUDENTS WITH DISABILITY

Rensselaer Polytechnic Institute strives to make all learning experiences as accessible as possible. If you anticipate or experience academic barriers based on a disability, please let the instructor know immediately so that the instructor can discuss your options. To establish reasonable accommodations, please register with The Office of Disability Services for Students. After registration, make arrangements with the instructor as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion. DSS contact information: dss@rpi.edu; 518-276-8197, 4226 Academy Hall.

Assignment Detail Section

Electronic submissions and grading:

Reports and exams will be submitted and graded using Gradescope. You will need to submit a single pdf in places as marked in Gradescope. You may include pictures of hand work in those pdf file.

Grades from reports and exams will appear on Gradescope first and at some point, will be uploaded to LMS. Each student will be able to see their individual scores as soon as their reports and exams are graded.

Homework:

Home work is done on LMS. Grades from HWs will be posted in LMS. Each student will be able to see their individual scores as soon as their HWs are graded.

LTSpice;

The course instructions are for using LTSpice. Many of the activities/homework involves the circuit simulation program LTSpice. You can obtain a link to download on course web site. ***It is expected and encouraged that you check your homework and other assignments using LTSpice.*** It is also a great tool for verifying solutions to practice problems you find elsewhere.

Laboratory assignments:

The experiments and projects are provided on the course website. Students will work in pairs for experiments and groups for projects as describe with each assignment. Each student is responsible the material covered and to report your results. You are encouraged to collaborate with other students but you must present your own results and reports.

Outside class hour collaborations are strongly encouraged for completing lab assignments on time. TAs will be available for help as needed during class hours and during designated open shop hours.

For the spring of 2022, students will work in groups for Experiment 1. A group is nominally 4 students. For experiments 2-4 and 6-8, students work in pairs. The projects and Experiment 5 are done in groups (4 students).

Exams/Quizzes:

All exams (quizzes) will be held as in person and will be individual work. At the discretion of the instructors, part of each quiz may be done using LMS. Exams are closed book, closed notes, and closed computers. Crib sheets will be provided, these can be view on the course website.

Materials to review for full participation:

This is a flipped class. You are required to view videos before each class and there will be discussion time at the state of each class which includes time for questions. There are additional videos to that are part of each lab. The videos are linked on the course calendar on the course web site: ei-rpi.org

Course Logistics Section

Grading Policy:

Grade points will be calculated based on the numerical scores as follows:

All 8 Experiments and 4 Projects MUST be completed and the reports submitted by the student to receive a passing grade in this course.

GRADE TABLE	
Less than 60	F
60 to <65	D
65 to <70	D+
70 to <73	C-
73 to <77	C
77 to <80	C+
80 to <83	B-
83 to <87	B
87 to <90	B+
90 to <93	A-
93 to 100	A

Grading Criteria

The final grade for the course is determined by the breakdown below.

Component	Quantity	Contribution
Homework Assignments	8	10 %
Quizzes	3	45 %
Experiments	8	24 %
Design Projects	4	16 %
Overall Class Participation (Instructor and Peer Evaluation)	-	5 %
	TOTAL	100 %

3 Quizzes (45%)

There will be three quizzes. These are closed book, closed notes and closed computer. Crib sheets will be provided at the quiz. Copies of the crib sheets can be found on the course website.

Specific topics to be addressed on each quiz are listed on the course website. Any new topics will be announced at least one week before the quiz date. Check the webpage on Quiz Information to see the kind of questions you can expect to see on the quizzes. Attendance at quizzes is required. Official requests for an alternate quiz time and/or additional time to complete quizzes will be accommodated if reasonable and received two weeks before the scheduled quiz time. Late requests will be accommodated only if arrangements can be made.

8 Homework Assignments (10%)

All homework assignments are on LMS. There are eight HWs corresponding to eight labs. They are generally due a few days before the experiment is due. For the exact dates, check the course website. Late versions of the homework assignments are available and will lead to reduced credit.

8 Experiments (24%) – submission through Gradescope, one student submits but must list their partner in Gradescope.

Templates for submitting results from the lab. are posted on the course website. Follow the template to compile your reports and submit through Gradescope. Submission dates are posted on the course calendar. **Each student pair submits combined reports on Gradescope. Late submission will result in reduced points.** If there are circumstances due to which the report submission is delayed, the student must communicate with the instructor prior to the submission deadline indicating reason(s) for the delay.

4 Design Projects (16%) – submission through Gradescope, one student submits but must list the other group members in Gradescope.

Instructions on how to put together the project reports are posted on the course website. Please note that the guidelines and exact point breakdown are somewhat different for each project. **Late reports will receive reduced points.** Each group must submit the report in its current form by the deadline. **Each student must ensure that their names are listed on the front page of the report for receiving credits for the projects.** If there are circumstances due to which the report submission is delayed, the team must communicate with the instructor prior to the submission deadline indicating reason(s) for the delay.

Overall Participation Points (5%): The score will be allocated based on teaching staff evaluation of the student's participation level during the class throughout the semester as well as a peer evaluation (from team members) that will be conducted at the end of the semester on LMS. Average participation will be given a grade in the 3 to <4% range. Higher participation level is awarded to those who ask questions, are fully prepared for checkoffs, have clearly viewed the videos and have read the experiment documents before asking for help, are consistently on time, and seek to understand the material rather than seeking to do minimal effort. Your activity on Discord will be considered as part of your participation.

Teamwork, and the learning community:

You will work in pairs for experiments and in groups of 4 students for projects, with some exceptions. You are given the opportunity to self-select your partner and group members or else they will be assigned. You are encouraged and expected to help your partner and your group but remember that all students are responsible for all the material. Do not specialize such as one person does all of the circuit building and one does all of the circuit simulations.

You are encouraged to discuss problems and issues encountered using Discord, other than when taking quizzes. The discussions should be to help others resolve problems and to better understand the material, not to just provide numerical result.

Clean-up:

Students in JEC 4201 will need to follow RPI protocol regarding sanitation, PPE and safe distancing. All students should keep their workspace clean.

Conflicts:

We expect you to take the exams unless there is an approved excuse. Please contact the instructors as soon as possible if you anticipate any exam conflicts during the semester so arrangements can be made.

The following is the long-standing policy on the resolution of conflicting exams. Students who have conflicts between two or more exams given at the same time must first discuss if the time slot given to students who need extra time will fit their schedule. If so, the students must then take this time slot to avoid a make-up exam. If this does not resolve the matter, the professor who will give the make-up exam is decided in the following manner:

1. The lower level course has precedence over an upper level course. For example, if a student has conflict between a 2000 and 4000 level course, the instructor in the 4000 level course gives a makeup exam.
2. If both courses are the same level (i.e. both are 2000 level courses) the student should approach each instructor to determine if one of the instructors will give a makeup exam.
3. If both instructors refuse to give a makeup exam when requested under the circumstances of item # 2, the student should see the department scheduler. It will be that scheduler's responsibility to call his/her counterpart in the other department to determine who should give the makeup exam.
4. If the two schedulers cannot reach a compromise, the scheduler originally approached by the student should call the Associate Dean in his/her school and ask that Dean to flip a coin and the loser of the toss will have to give a makeup exam.