Course Information

Course Credits: 4 credits hours

Mode of Delivery: Hybrid (Online/In-Person) format

Course Website: https://ecse.rpi.edu/courses/F20/ECSE-1010/

or simply http://intro-ece.org

Instructor: Dr. Mahmood A. Hameed

Instructor Email: hameem2@rpi.edu

Office: JEC 7006 (This is FYI and not to be used as a meeting location)

Office Hours (OH): Mondays and Thursdays 3:00 pm – 4:00 pm eastern

Tuesdays 9:00 – 10:00 pm eastern

Email to setup a virtual appointment if the office hours mentioned do not work with your schedule.

OH Location: Office hours will be hosted on WebEx meetings in the instructor’s personal room. https://rensselaer.webex.com/meet/hameem2
Teaching Staff

<table>
<thead>
<tr>
<th>Name</th>
<th>During class</th>
<th>Section</th>
<th>Open Hours</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nazifa Rumman (TA)</td>
<td>TBD</td>
<td>1</td>
<td>TBD</td>
<td><a href="mailto:rumman@rpi.edu">rumman@rpi.edu</a></td>
</tr>
<tr>
<td>Julia Hariharan (TA)</td>
<td>TBD</td>
<td>1</td>
<td>TBD</td>
<td><a href="mailto:harihi@rpi.edu">harihi@rpi.edu</a></td>
</tr>
<tr>
<td>Matthew Caulfield (TA)</td>
<td>TBD</td>
<td>2</td>
<td>TBD</td>
<td><a href="mailto:caulfm@rpi.edu">caulfm@rpi.edu</a></td>
</tr>
<tr>
<td>Brian Lee (UGSA)</td>
<td>TBD</td>
<td>2</td>
<td>TBD</td>
<td><a href="mailto:Leeb10@rpi.edu">Leeb10@rpi.edu</a></td>
</tr>
<tr>
<td>Michael Ye (UGSA)</td>
<td>TBD</td>
<td>2</td>
<td>TBD</td>
<td><a href="mailto:Yem2@rpi.edu">Yem2@rpi.edu</a></td>
</tr>
<tr>
<td>Natalia Arroyo (UGSA)</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
<td><a href="mailto:arroyn@rpi.edu">arroyn@rpi.edu</a></td>
</tr>
<tr>
<td>Kevin Li (UGSA)</td>
<td>TBD</td>
<td>1</td>
<td>TBD</td>
<td><a href="mailto:Lik14@rpi.edu">Lik14@rpi.edu</a></td>
</tr>
<tr>
<td>Franklin Johnson (UGSA)</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
<td><a href="mailto:johnsf@rpi.edu">johnsf@rpi.edu</a></td>
</tr>
</tbody>
</table>

Class Schedule and Location

Class Time:  
Section 1 – Mondays and Thursdays 12:20 to 2:10 PM eastern.  
Section 2 – Mondays and Thursdays 04:45 to 6:35 PM eastern.  
All lectures will be recorded. Links to each lecture will be available on the class piazza page under “Resources”, “Video Lectures”.

Location:

<table>
<thead>
<tr>
<th>Section 1 and 2</th>
<th>Format</th>
<th>Location</th>
<th>Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 and 2 In-Person</td>
<td>Academy Hall Auditorium (from Sept. 8)</td>
<td>30 students</td>
<td></td>
</tr>
<tr>
<td>1 and 2 Online</td>
<td>WebEx Meetings/Teams</td>
<td>NA</td>
<td></td>
</tr>
</tbody>
</table>

Virtual Open hours during evenings will be arranged early in the semester to accommodate students in various time zones or are international.

Online Tools

The following online tools will be used to support this course. If you do not have access to any of these tools, please inform the instructor as soon as possible.

WebEx Meetings: Webex Meetings will be used to host lectures, office hours, and help sessions with invites provided ahead of time on Piazza. Smartphone app available.

WebEx Teams: WebEx Teams will be created so that students can form smaller groups and work together on the class activity/experiments. Smartphone app available.

Piazza: Piazza platform will be used for class related communication, announcements, organizing class logistics, Q and A, discussions. The platform is highly catered to getting you help quickly and efficiently from classmates, the TAs, and the professor. Rather than
emailing questions to the teaching staff, please post your questions on Piazza. There's also a nice smartphone app you should download, https://piazza.com/rpi/fall2020/ecse1010

Gradescope: All activities/experiments and quizzes submissions and grading will be done through this platform. If you aren't familiar with this tool, there are guides (document and video format) available on Piazza under the “Resources” tab. https://www.gradescope.com/courses/154030

Blackboard: LMS will be used for Problem Sets (PS). Refer “Course Assessment Measures” and “Assessment Policies” sections below for details about problem sets. https://lms.rpi.edu

YouTube: Playlist to host WebEx recordings. https://www.youtube.com/playlist?list=PLlutgI5N-Pzvy4xqbdwAGR7xQ95gCUZ8d

The video lectures will also be linked to the piazza site mentioned above. Note that pre-recorded video content that students are required to watch before each class is linked on the course website (under Resources by Class Day). The YouTube playlist will be used only for hosting video recorded during class time.

Course Description

The overall goal of this course is to help EE and CSE students build a broad analysis skill set so that through experimentation, simulation and the application of science, mathematics and engineering fundamentals, they can develop useful systems models that enable engineered solutions addressing a broad array of societal needs.

Course Text

None

Supplemental Reference

See https://www.ecse.rpi.edu/courses/S20/ECSE-1010/

Required Software

(Installation instructions on course Website)

1. LTspice (circuit simulation)
2. Alice 1.3 (Software application for M1K)
3. Pixel Pulse 2 (Software application for M1K)
4. Waveforms (if using Analog Discovery 2)
5. Matlab (numerical analysis)
Student Learning Outcomes

1. **Experimental Methodology**: Students will be able to build and make reliable time-dependent measurements of simple analog and digital circuits, exporting data to display and analysis tools (e.g. Excel, MATLAB), and demonstrate understanding of results by describing key data features and comparing with simulation and analysis. Extract useful information from component datasheets.

2. **Simulation Methodology**: Students will be able to create circuit simulations using a commercial SPICE program and produce reliable voltage and current plots (functions of both time and frequency), exporting simulated data to display and analysis tools and demonstrate understanding of results by describing key data features and comparing with experiment and analysis.

3. **Mathematics and Analytic Methodology**: Students will be able to apply precollege circuit knowledge to real circuits, analyze simple circuits based on voltage dividers and inverting/non-inverting op-amps, apply phasor analysis to simple combinations of R, L and C components and apply all analysis skills to demonstrate understanding of experimental and simulated data for simple circuits. Apply the basic matrix arithmetic used in circuit analysis, circuit simulation and in the display and analysis of data using tools like Excel and MATLAB.

4. **Design Methodology**: Students will be able to modify existing circuit designs for specific applications and fully characterize the operation of the circuit using experimental, simulation and analytic methods.

Course Assessment Measures

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Due Date</th>
<th>Learning Outcome #s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quiz 1</td>
<td>September 24th</td>
<td>1, 2, 3, 4</td>
</tr>
<tr>
<td>Quiz 2</td>
<td>October 19th</td>
<td>1, 2, 3, 4</td>
</tr>
<tr>
<td>Quiz 3</td>
<td>November 12th</td>
<td>1, 2, 3, 4</td>
</tr>
<tr>
<td>Quiz 4</td>
<td>December 7th</td>
<td>1, 2, 3, 4</td>
</tr>
<tr>
<td>Experiments</td>
<td>Daily except quiz days</td>
<td>1, 2, 3, 4</td>
</tr>
<tr>
<td>Problem Sets</td>
<td>Daily except quiz days</td>
<td>1, 2, 3</td>
</tr>
</tbody>
</table>
Grading Criterion

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quizzes</td>
<td>10% each</td>
</tr>
<tr>
<td>Experiments</td>
<td>30%</td>
</tr>
<tr>
<td>Problem Sets</td>
<td>20%</td>
</tr>
<tr>
<td>Attendance and Participation</td>
<td>10%</td>
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</tbody>
</table>

Assessment Policies

**Quizzes:**
- All students are expected to take the four quizzes during the semester.
- Four quizzes will be conducted over the semester.
- The quizzes will be online on quiz days mentioned in “Course Assessment Measures” section above.
- Each quiz duration will be 1 hour 50 minutes.
- Logistical details about quizzes will be provided the week before the quiz day.
- Quizzes are individual assessments and each student is expected to work through them independently. Refer to the “General Course Policy” section later to read expectations related to academic integrity.
- Submission of the quizzes will be on Gradescope.
- All quizzes are open book, open notes.
- If you require adjustments for learning disabilities, letters from the Dean are to be submitted at the beginning of the semester.

**Experiments:**
- Experiments for each class day will be available on the course website under “Resources by Class Days” section.
- Experiment reports are due electronically on Gradescope.
- The first two experiments (activities) will be individual assessments due on Gradescope.
- Teams of 2 students per group will be formed during the second week on classes.
- From the third week onwards, the experiments are supposed to be team effort and team report submission on Gradescope.
- Experiments are due two class days after they are assigned. The assignment class # is included in the title of each experiment.
Experiments turned in late will receive the following penalties: 10% per class day late (no penalty over weekends).
Experiments can be done in class or at home during class time – all you would need is the instrumentation board and the parts kit.
Students are expected to use WebEx Teams to work together in smaller groups.
Discussion is encouraged, however, each student team should submit their own. Refer to the “General Course Policy” section later to read expectations related to academic integrity.
Virtual help sessions will be arranged on most weekdays for you to get online help. These help sessions will primarily be during evening times, i.e. after 6pm eastern.
Details about the availability of online help will be posted on Piazza or course website, or both.

Problem Sets (PS):
Problem sets are assigned and due on LMS.
There is a Problem Set associated with every class day (except for quizzes).
The Problem Set # (i.e. PS #) corresponds to the Class # for the material addressed.
Problem Sets are released before 12 noon eastern of the day indicated on the calendar and is to be completed by 11:59 pm eastern of the next class day.
It is always possible to attempt Problem Sets more than once. Any attempts completed by the due date & time will receive full credit.
For example, PS#5 is to be completed (for full credit) by the 11:59pm on the day of Class #6. Problem sets completed after the due date receive half credit. Late problem sets will be available for two more class days, i.e. three class days after the original assignment.
Problem sets are individual assessments, however, you are welcome to discuss ways to answer with other students in class. Exchanging the answers will be considered as academic misconduct. Refer to the “General Course Policy” section later to read expectations related to academic integrity.

Attendance and Participation:
It is important to stay on schedule in this class. You and your partner work together on experiments.
Even though we will not be taking any formal attendance this semester, we will be monitoring if you are coming to class (in-person), or are working with your partner on WebEx and getting help as needed from the teaching staff (remote).
Participation grade will depend on your interactions with the professor and teaching staff.
It is based on the following criteria:

- Your instructor will assess your general performance in terms of how much you contributed to the work your group was doing during class time.
- Your TA's will assess your general performance in terms of how much you contributed to the work your group was doing during class time.
- Periodically, you will be asked questions by the staff which we use to judge how well you understand what is going on. These questions fall into four categories: circuits (Do you know how to wire and debug a circuit using the diagram?), equipment (Can you correctly hook the circuit to the equipment?), theory (Do you understand the theory that was taught in the lecture?) and software (Can you effectively use the computer tools we use in the experiments?).
- Examples of contributions to the work your group does include: (1) Preparation for class; (2) Interesting questions raised in class and on piazza; (3) Creative approaches to completing assigned work; (4) Effectively getting help when needed; (5) Clear demonstration of improved understanding of concepts; (6) Feedback on course materials that were particularly helpful; (7) Providing answers to questions on piazza; (8) Identifying errors or points of confusion in course materials, including homework; etc. From this list, you can see that participation is just being engaged in the course, helping your partner and other students learn and the TAs and instructor do their job better.

**Extra-Time Accommodations:**

If you require extra time on exams or another form of accommodation, please contact the Dean of Students Office and email me a copy of the DSS note. Please do this early in the term so that we have plenty of time to plan.
General Course Policy

Two forms (Digital tools acknowledgement and Academic Integrity policy) available on Piazza that each student needs to sign and upload to Gradescope. Your assignments will not be graded without a copy of these form on file. Due September 8th on Gradescope.

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 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. If you have questions about reviewing, modifying, or deleting personal information of a student, please contact (point of contact TBD). 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.

Students in this course should be aware that the items emphasized above also apply to the experimental/simulation data, Matlab code generated by each student or student team towards the completion of the studios. Tools exist to detect similarities between files and the staff reserves the right to employ such tools to deter code based academic dishonesty.

Inclusivity and Accessibility Statement: Rensselaer Polytechnic Institute strives to make all learning experiences as accessible as possible. We strive to provide an environment that is equitable and conducive for learning for all students. Please contact the instructor as soon as possible if you:

1. live in a distant time zone and may need accommodations for meetings and exams. For additional help, please be proactive about attending studio hours and office hours.

2. have internet accessibility issues where you live at any time during the semester. Contact the instructor directly if events cause disconnection for any important portion of the course. If you know this will be a consistent problem, please contact the instructor early.

3. anticipate or experience academic barriers based on a disability, please let the instructor know immediately so that alternative options may be discussed and determined early. 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. To receive any academic accommodation, you must be appropriately registered with DSS.

DSS contact information: dss@rpi.edu; 518-276-8197, 4226 Academy Hall
Covid-19 Related Information

We are committed to the health and safety of students as well as a high-quality educational experience. Rensselaer continues to monitor new developments regarding covid-19 and determine a best course of action to support student well-being and outstanding education.

- **Masks**: Wearing a mask in public can help prevent the spread of COVID-19. **Masks will be worn by all students in this class and while in the building.** Students violating this policy will be requested to leave classroom/building and return to their living quarters; they will also be reported to the Dean of Students for appropriate sanctions per code of conduct expectations.

- **Traffic Flow and Social Distancing**: We expect students and faculty to follow social distancing protocols. You are expected to follow posted traffic flow directions as well as any instructions by the instructor aimed at reducing congestion.

- **In-Class Seating**: Students will sit only in the appropriate designated seating in the classroom, to ensure social distancing. Moving furniture or sitting inundesignated seats is not permitted.

- **Cleaning of Spaces**: Students are encouraged to clean the surfaces of the chairs/tables/desks they occupy before they sit down and as they prepare to leave.

- **Student Health**: Students who are ill, under quarantine for COVID-19, or suspect they are ill will report that to Student Life. Every reasonable effort to accommodate the student absences will be made. Students who need to report an illness should contact the **Student Health Center** via email (healthcenter@rpi.edu) or call 518-276-6287. Student seen by an off campus doctor may request an excused absence via [www.bit.ly/rpiabsence](http://www.bit.ly/rpiabsence) using appropriate documentation.

- **Refusal**: Refusal to comply with any appropriate request will be treated as would any classroom disruption and disciplinary actions and sanctions will be taken through judicial process outlined in the Student Handbook.