ELECTRICAL, COMPUTER AND SYSTEMS ENGINEERING DEPARTMENT

Computer Architecture, Networks and Operating Systems (ECSE-2660)
Fall 2024
Version 1.0

Basic Information

Instructors

Name	Role	Office Hours	Email / WebEx
J. Dylan Rees	Instructor	By appointment	reesj3@rpi.edu
TBA	Grad TA		

During the office hour times specified above, the instructor and TAs will check and respond to messages in the WebEx space. They will also be available for video meetings by request at these times.

Class Meeting Times & Locations

Meeting Type	Time	Oncampus Location
Lectures	Tue, Fri 10:30am-12:35pm	JEC 6309
Exams	During specified lecture times	JEC 6309
Office Hours	*(See Instructors section)*	*(See Instructors section)*

Overview (Catalog Description)

Quantitative basis of modern computer architecture, processor design, memory hierarchy, and input/output methods. Layered operating system structures, process and storage management. Layered network optimization, network protocols, switching, local and wide area networks. Examples from Unix and the Internet.

Student Learning Outcomes

The students who finish this course in a satisfactory manner will be able to demonstrate:

1.) A knowledge of basic building blocks of computer architecture, and an ability to evaluate its performance and benchmarks

2.) A knowledge of instruction set architecture and microprocessor arithmetic

3.) An ability to design and compare performance of single-cycle and multi-cycle processor architectures

4.) An ability to design and evaluate performance of pipeline processor architecture

5.) An ability to design and evaluate performance of memory hierarchies including cache, virtual memory, main memory and storage devices

6.) A knowledge of operating systems structure (Examples from Unix and Windows)

7.) A knowledge of operating systems procedural calls and process management

8.) An ability to perform a performance comparison of operating systems process scheduling

9.) A knowledge of computer networks reference layering and performance metrics

10.) Knowledge and and performance evaluation of data link, network and transport protocols

Prerequisites

ECSE 2610 – Computer Components and Operations

Textbooks

David Patterson and John Hennessy, “Computer Organization and Design”, Morgan Kaufman 6th Edition, 2013

Abraham Silberschatz, Peter B. Galvin, and Greg Gayne, “Operating System Concepts”, Wiley 10th Edition, 2018

Grading

Exam 1	(17%)
Exam 2	(17%)
Final Exam	(16%)
Projects	(25%)
Homework Assignments	(15%)
Metacognition Journals	(10%)

Assessment Policies

- Homework will be assigned each week and due at the beginning of the following week. Homework in this class is intended to allow you to practice concepts individually or with another student. Homework is graded as “participation plus”. This means that full credit will be awarded for any student who completes all problems and generates an understanding of all problem concepts, even if there are a few mistakes. Teaching staff will provide additional feedback on your homework upon request.
- Projects are graded group work. Each student will be asked to describe their contribution to the project write-up in the write-up document.
- Assignments are submitted on Gradescope and are due by **11:59pm** on the designated due date. Late assignments will not be accepted unless an official excuse is provided. Please plan accordingly and communicate directly with me via email if serious circumstances prevent you from completing assignments. While collaboration in homework is encouraged, obvious copying of homework from another person will result in a grade of 0 points and potential sanctions due to academic dishonesty.

- Homework and exam grades may be appealed by submitting a regrade request on Gradescope. These are due within 7 days of when the grades are published on Gradescope.

Inclusivity and Accessibility Statement

Rensselaer Polytechnic Institute strives to make all learning experiences as accessible as possible. I will strive to provide an environment that is equitable and conducive for learning for all students. Please contact me as soon as possible if you:

2) anticipate or experience academic barriers based on a disability. To establish reasonable accommodations, please register with The Office of Disability Services for Students. After registration, make arrangements with me 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.

1) Require remote work accommodations. Although Rensselaer has mostly resumed its pre-pandemic operations, I anticipate that on a few occasions during the semester, a student will be required to isolate due to COVID or may be unable to attend class for other personal reasons. Students will automatically be given the option to attend lecture remotely via WebEx. I can also provide a remote option for exams, but I expect you to reach out ahead of time in order for me to arrange this.

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