



# Computer Science

## **Fall 2024: CSCI 181RT** Real-Time Systems in the Real World

### **Lecture 1**

Tuesday, August 27, 2024  
Edmunds Hall 105  
2:45 PM - 4:00 PM

Professor Jennifer DesCombes

# Agenda

- Welcome
- Introductions
- Student Questions
- Real Time Systems?
- Survey
- Course Goals
- Syllabus
- Assignment
- Look Ahead
- Action Items

# Introductions

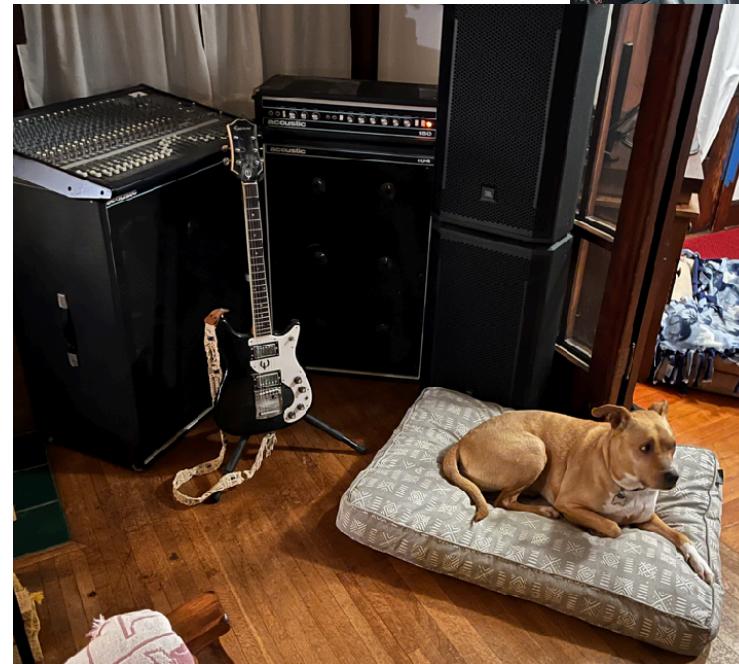
- Prof DesCombes
- Associates (that's all of you)
- TA Neil Chulani

## Student Questions

- To help you get to know me, please send me two questions you would like me to answer.
- Questions might be "Do you have a dog?" [Answer, yes, Noble (she/her), a rescue bully breed from Texas via Denver - long story]
- I may not answer all of your questions, but I will answer at least one from each of you.

## Student Questions

- More about Noble and her journey from Texas - Denver - Claremont.
- What is your career story?
- How did you get into teaching/becoming a professor?
- With respect to teaching, what are you looking forward to?
- What is your favorite memory from your 20s?

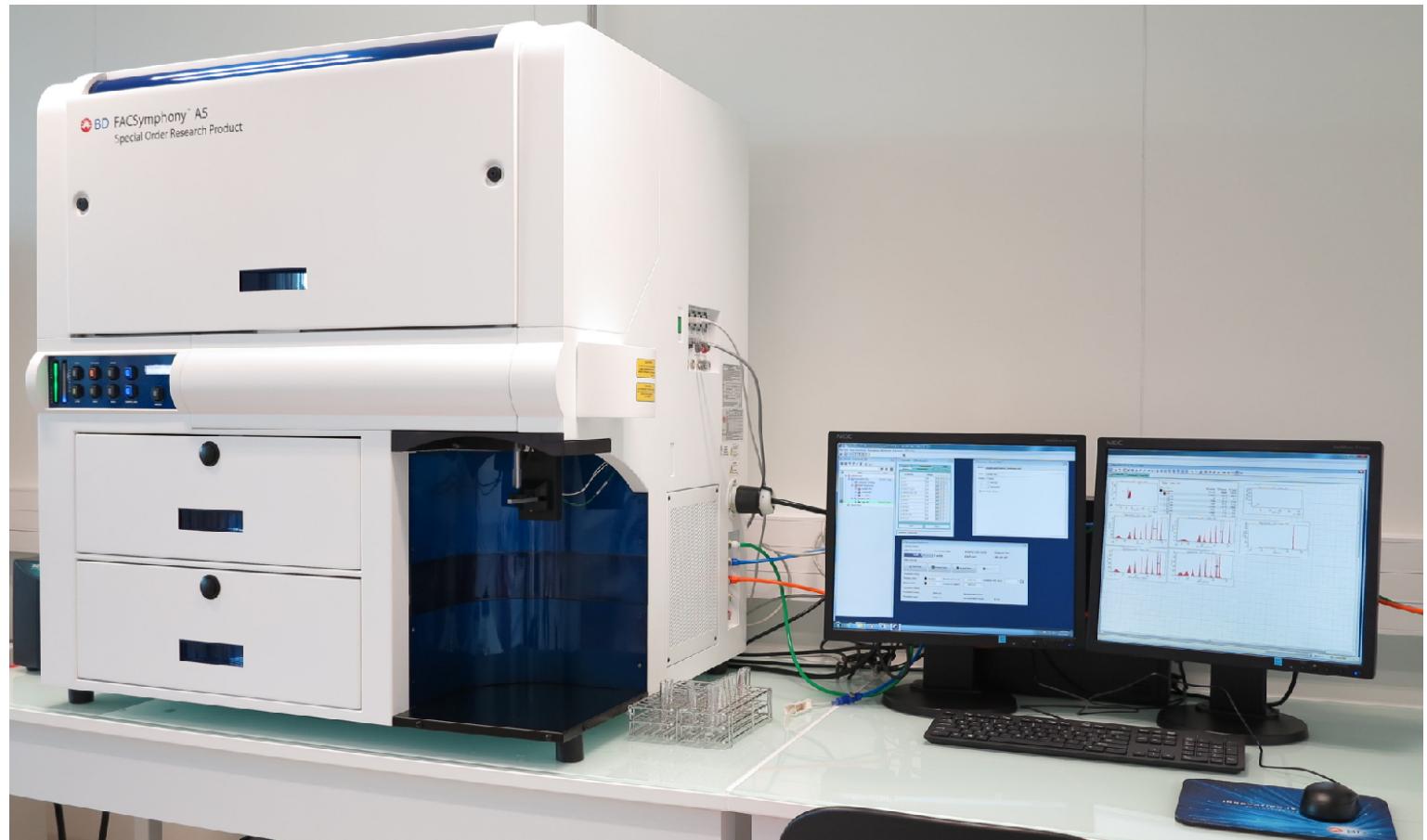


# Real Time Systems?

- What?
- Limitations?
- Time?
- Risk?

# Real Time Systems?

- This?



# Real Time Systems?

- This Too? 

- Yep, No Question on this one!



# Survey

**CSCI 181RT**  
Real-Time Systems in the Real World.  
**Survey/Questionnaire**

Preferred First Name: \_\_\_\_\_

Last Name: \_\_\_\_\_

Preferred Pronouns: \_\_\_\_\_

Two Topics you would like to see covered in this class (can be general or specific):  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Any food allergies? If so, please list:  
\_\_\_\_\_  
\_\_\_\_\_

Severity: \_\_\_\_\_

Do you carry an EpiPen? \_\_\_\_\_

Two favorite diet/sugar-free beverages:  
\_\_\_\_\_  
\_\_\_\_\_

Will you be using your notebook computers to compile code for labs? \_\_\_\_\_  
If Yes, is it a Mac, Windows, or other? \_\_\_\_\_

# Course Goals

- Meet Your Expectations
- Learn Different Approaches to Software for Real Time Systems
  - When Simple Systems are Best
  - When Complex RTOS are Best
- Learn Techniques for Debugging Real Time Systems
  - Software Tools
  - Lab Equipment - Conventional and Otherwise
- Requirements Assessment
- Good and Bad Management
- Communications and Working Habits

## Course Topics - Design

- Real-time systems approach
  - Data consistency in RTOS
  - Deterministic Programming
  - Tailoring of RTOS
- Project scope and appropriate design approach
- Sampling Theory
- Integration of DSP/FPGA and other interfaces
- User Interface Design (support)

# Course Topics - Business and Management

- Software Development in Corporate/Business Environment
- Requirements analysis
- Time to market, cost of delay, cost of errors
- Schedule Recovery techniques
- Software Management
- Software planning

# Information

## Syllabus

- Course Description
- Prerequisites
- Instructor
- Office Hours
- Background
- Course Topics
- Communications
- Course Logistics
- Course Grading

## Policies

- Accommodations
- Medical Face Masks
- Not Well? Stay Home
- Lecture Recording - Audio or AI
- Portable Computers
- Phone Use - Emergency
- Need to Leave Classroom
- Academic Honesty and Collaboration
- Course Grading

National Suicide & Crisis Lifeline 988



# Policies

- Accommodations
- Medical Face Masks
- Not Well? Stay Home
- Lecture Recording - Audio or AI
- Portable Computers
- Phone Use - Emergency
- Need to Leave Classroom
- Academic Honesty and Collaboration
- Academic Advisory Notice

## Syllabus (Continued)

- Attendance
- Late Submissions
- Teaching Philosophy
- Habits That Help

## Useful Things That Could Help

### Useful Things That Could Help

#### Quantitative Skills Center

The Quantitative Skills Center (QSC) provides academic support to Pomona College students in courses that feature a large degree of quantitative and/or scientific thinking. The QSC also offers support for writing projects, research methods, and projects where students are provided support for a variety of Pomona courses for science-specific help.

The QSC also provides support for students who are interested in quantitative consulting for projects and those involving quantitative methods. Additionally, Dr. Thomas H. Clegg, Director of the QSC, is available to provide quantitative consulting services for students. The QSC is available to meet with you regarding your success in STEM at Pomona College. If you have any questions about the QSC, please contact Dr. Clegg or contact us, or contact us at [qsc@pomona.edu](mailto:qsc@pomona.edu). The QSC is located in KCC (Smith Campus Center) 228.

Academic, Wellness, and Peer-Mentoring Support for Students

Pomona College is committed to helping every student to succeed and thrive. Below are a few of the specific academic support services we offer, and pre-existing connections we have to our students. Helpdesk is available to answer questions about those who require electronic support. In some cases, we expect to direct you to websites rather than provide answers ourselves. If you have any questions about how to support about a student, it's always a good idea to contact the Dean of Student's Office. You can email them at [deanofstudents@pomona.edu](mailto:deanofstudents@pomona.edu) or if you know someone who to contact, send an email to Assistant VP of Student Affairs, Dunn Arnett.

Center for Speaking, Writing, and the Image

The Center for Speaking, Writing, and the Image (CSWI, formerly the Writing Center) provides an inclusive space for students to work individually or in groups to talk about their work and projects. The Center for Speaking, Writing, and the Image offers writing workshops, one-on-one writing consultations, and video critiques and processes. There is no need to work or speak about the workplace; all have stages of development projects, including creative, professional, and academic writing. The Center for Speaking, Writing, and the Image also offers specialized writing and speaking support for multilingual students navigating English as a second language. To learn more about the Center for Speaking, Writing, and the Image, please log onto the Portal and go to Academics > Writing Center or contact us at [writingcenter@pomona.edu](mailto:writingcenter@pomona.edu). We have regular drop-in hours in Smith Commons Center 140. The CSWI Instagram account is @pomona\_CSWI.

The best place to stay up to date on news about workshops and special events: <https://www.instagram.com/cesmawg/>

#### Foreign Language Resource Center

Foreign Language Resource Center (FLRC) is a place that can be reserved for language classes, study groups, and other activities. It is used with the Oldenberg Language Program, study, meet with student groups, printout assignments, or simply sit and enjoy a nice cup of coffee. The FLRC is a quiet, comfortable space that is perfect for holding a physical space. They provide professional development, research, and instructional language support. The FLRC also has a computer lab for students to use. The FLRC also provides information on the language placement exams offered at Pomona and the other Claremont Colleges. The FLRC is open to Pomona College students and Pomona Language Requirement. Finally the FLRC is also a social space, where students and faculty can drop in during our open hours during our office hours or can be reserved for classes and presentations and the whole center can be used for events and meetings. The FLRC is located in Shaw Hall 101.

#### Sage Fellows

Sage Fellows Program offers peer academic coaches to help Pomona students become more successful and efficient learners. This program offers individual coaching, weekly one-on-one office hours, appointment scheduling, and workshops designed to help students succeed. Sage Fellows are selected through a competitive application process, management organization, study skills and strategies, reading and note-taking skills training, and a variety of other support services. Sage Fellows are trained to support fully assessing campus resources. Pomona College students may apply to meet with a Sage Fellow or connect with the Sage Fellows Advisor, Alison Feller. To learn

# Assignment - Watch and Collaborative Quiz

- Cultural Backfill - Why?
- “Who’s on First?” Abbot and Costello
- <https://www.youtube.com/watch?v=sShMA85pv8M>
- Types of Collaboration
  - Workplace Model
  - Learning/Teaching
  - Train to Replace

*Collaboration is the process of two or more people, entities or organizations working together to complete a task or achieve a goal.*

# Assignment - Readings

- Lecture Reading

Course Syllabus

<https://www.intel.com/content/www/us/en/robotics/real-time-systems.html>

<https://www.windriver.com/solutions/learning/rtos>

[NOTE: Skip marketing material at the end]

- Lab Reading

CURIOSITY PIC32MZ EF 2.0 DEVELOPMENT BOARD

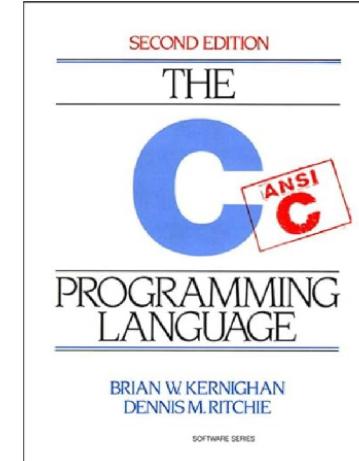
Microchip Part Number: DM320209

<https://www.microchip.com/en-us/development-tool/DM320209>

<https://ww1.microchip.com/downloads/aemDocuments/documents/MCU32/ProductDocuments/UserGuides/PIC32MZ-EF-2.0-Development-Board-Users-Guide-DS70005400.pdf>

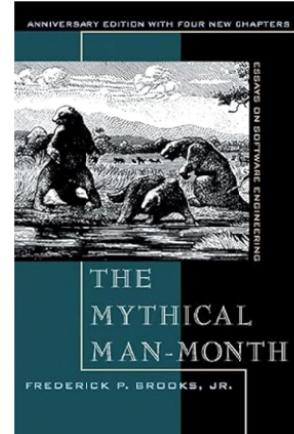
# Readings Texts

C Programming Language, 2nd Edition 2nd Edition  
by [Brian W. Kernighan](#) (Author), [Dennis M. Ritchie](#) (Author)  
Approximately \$70 new, \$50 Kindle, \$40 and lower used.

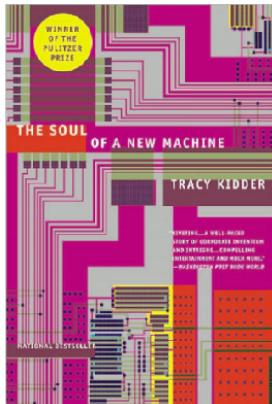


Mythical Man-Month, The: Essays on Software Engineering, Anniversary Edition

by [Frederick Brooks Jr.](#) (Author)  
\$35 New, \$31 Kindle, \$30 and lower used.



The Soul of A New Machine  
by [Tracy Kidder](#)  
\$20 New



## Look Ahead

- Discuss ‘Who’s On First’
- Student Questions
- Discuss Readings
- Lab Planning
- Simplest Software for a Real-Time System

## Schedule Note

- No Lab Tomorrow, Wednesday January 22, 2025

# Action Items and Discussion

AI#:	Owner	Slide #	Document	Action