18-642:
Course Information
8/29/2019

http://www.ece.cmu.edu/~ece642/
ece642-staff@lists.andrew.cmu.edu
Course Goals

- **Embedded software engineering concepts**
  - Practical code quality
  - Practical, industry-strength software engineering process
  - Embedded System Safety, Embedded-specific Security
  - Generally, the things that grads from other schools don’t know

- **Hands-on practice at applying concepts**
  - Software project material; small but high quality code
  - Emphasis on improving software, not clean-sheet design

- **Learn how to think about embedded systems**
  - Homework & discussions to encourage critical thinking

- **NON-Goals (things that are not course goals):**
  - There is no embedded hardware platform (you should already have that experience)
  - Not about specific software technology; especially not about Android/IOS/Embedded Linux/…
  - Not about wireless networking, sensor networks, etc.
  - **Not about hacking crazy-complicated code**
Course Format

Thu Lectures (3-4 hours)
- Watch 1 or 2 videos BEFORE lecture
- Generally two live lecture segments
- Generally 2 in-class exercises
- Lecture attendance is mandatory
  - You shall attend all lectures possible
  - Skipping 4 will result in failing grade

Fri Recitations (1 hour)
- Discuss projects
- Review homeworks
- Answer questions
- You should attend recitations

Homeworks
- Individual answers to questions
- Questions generally extend lecture topics

Projects
- Individual software assignments
  - Programming
  - Other related activities
- Emphasis on small-scale experience that samples industry practices
- Emphasizes code quality (first half of course)
- Cumulative work
18-642 Fall 2018 Weekly Hours

12 hrs/week
Course Schedule

http://www.ece.cmu.edu/~ece642/

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Everything except test dates subject to change.

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In-Class Participation

- Attendance is required
  - Missing a couple classes affects your grade
  - If you miss more than three (25%), no course credit

- Everyone is going to have to stand up and talk in front of class
  - Presenting class exercise results
  - Presenting homework answers
  - “Randomly” selected for 1-3 minutes at a time
  - Multiple students at each lecture & recitation

- These are low-stakes presentations
  - Preparation is not expected beyond being able to talk about your own homework
  - Emphasis on good faith participation, not perfection
  - Expectation is adequate English & improvement over semester

https://www.flickr.com/photos/xverges/3092873536
100 point straight scale
- A = 90% and above; B = 80%; C = 73%; below 73% is failing
- No “curving.” Everyone can get an A. Or not.
- Grades normalized (e.g., all homeworks have same weight)

Video Lectures: 10 points
- Watch video BEFORE class; complete quiz; NO free “late”

Homework: 10 points
- Due Wed night week AFTER class. (Hand in by 7 AM Thu morning) 3 free “late”

In-Class Work: 10 points
- Hand-in DURING class. (Lowest 3 grades dropped, ~ one week of participation)

Programming Projects: 20 points
- Due Fri nights. (Hand in by 7 AM Sat. morning) 1 free “late”

Tests: 2 @ 25 points = 50 points
- Multiple choice. Historically mean test grade about 80-85%
- You can bring a single notes sheet of letter size paper in your own handwriting

Late penalty: 10 percentage points per day; max 50% penalty
- Applies to video, homework, projects. NO late in-class work, tests.
Homework & Projects

Homework

- Each homework corresponds to a lecture topic
- A few general questions, which might have sub-parts
- Recitation includes some homework presentations
  - Homework hand-in format is slides (PPT, PPTX, PDF)
  - First homework will establish format and set expectations

Projects

- Mostly code modification & other hands-on activities
  - Some non-trivial programming, but emphasis is on code quality
  - Projects build upon each other; slacking off early will hurt you later
  - Significant increase in project difficulty at project #5 – you have been warned!
- Will use Robot Operating System (ROS) module as an example, but not ROS-heavy
  - Mostly about code quality and design; projects not specifically about security/safety
- More about this at recitation on Friday
Academic Integrity Overview

- Zero-tolerance policy for cheating
  - Failure in course for first offense of cheating
  - Yes, we are serious
  - Per CMU policy, both giver and receiver equally guilty

- What’s not cheating?
  - Asking course staff for help
  - Using an acceptable resource and citing it (e.g., give us the URL)
    - See next slide for “acceptable resource”
    - OK: materials on the course web page/course Canvas account with no citation
  - Asking your friends for help with background activities
    - Understanding what the lecture was saying
    - Understanding what the assignment wants you to do (not how to do it; not the answer)
    - Help with getting tools, infrastructure, and so on running
    » But not doing things for you if doing that thing is a project assignment

Published material, including WWW, is OK if ALL of following are met:

1. You make substantive changes or addition
   - Changes demonstrate mastery of material, not just cosmetic/superficial changes
   - Reword and summarize what you find in your own words and give a citation.
   - Not OK: simply changing variable names and line ordering on code you got somewhere
   - Not OK: block quote copy & pasted from a source unless that is what we asked for
     » OK: pasting a news photo or news article in response to “show us a news article”

2. Sources are not connected to or responsive to this course
   - OK: blog posting that describes a general technique
   - Not OK: homework solutions for 18-642 at a “study guide” or help site

3. It’s not Wikipedia or similar non-authoritative source
   - Wikipedia is OK for informal orientation, but is not a citeable source unless we say OK
   - OK: It’s fine to use Wikipedia references as a starting point
   - Not OK: fraudulent citation, including using Wikipedia summary instead of primary source
Academic Integrity: Concrete Cheating Examples

- **Not OK:** Using a previous-year solution as a starting point
- **Not OK:** Using another current-year solution as a starting point
- **Not OK:** Using on-line 18-642 “study aid” resources as a starting point
- **Not OK:** Working with a group on homeworks/projects unless we say to
  - Homework questions generally graded on “good try”; often there is no single right answer
  - **OK:** study group about concepts *before you start* your homework; before-test study groups
- **Not OK:** Accepting step-by-step instructions from another student
  - Especially bad if this is done verbally to skirt “copying” rules
  - We can tell if you copied, even if it is white-washed or laundered help
- **Not OK:** Attendance fraud, signing in for another student, etc.
- **Not OK:** Test cheating
  - Using electronics of any kind during a test (no calculators, no smart watches, etc.)
  - Looking at another student’s paper during a test
  - Communicating with anyone else during a test other than course staff
Other Polices

- **E-mail to:** ece642-staff@lists.andrew.cmu.edu
  - E-mail direct to instructor or TA might not be read
  - Only e-mail administrative issues, not substantive technical questions/“doubts”/etc.
    - Go to office hours for help understanding course content, homework, project
  - OK to e-mail about infrastructure problems so we can fix them

- **Please be on time to class**
  - Come prepared. Generally you’ll need a laptop or tablet.

- **OK to eat if you didn’t get dinner (e.g., straight from 648 recitation), but:**
  - No noisy/messy/smelly food. **NO potato chips, crinkly bags/wrappers.**
  - Clean up after yourself -- leave classroom clean, or we’ll lose this privilege

- **Mobile devices must not intrude on classroom**
  - In general, only use electronics directly in support of the class activity

- **No recording, streaming, live-tweeting, etc. of the classroom**
  - Course materials (e.g., handouts) are copyright by instructor; no redistribution

- **See CMU Academic Integrity policy:** https://www.cmu.edu/academic-integrity/
Special Circumstances & Wellness

- If you have a special need, let us know the first week of class

- If we’re doing something that’s a problem let us know
  - Anonymous e-mail is fine if you prefer
  - Asking staff advisor to tell us is fine if you prefer

- If you’re experiencing a problem, let us know
  - You might be surprised about the ways we can help
  - Come to us sooner, not later
    - Not much we can do in last week of class

- If in doubt, ask us
  - Especially regarding academic integrity policy
    - Honest mistakes can be corrected if you’re honestly acting in good faith
Course Resources

Course web page  https://www.ece.cmu.edu/~ece642/
- Course schedule with on-line copy of lecture slides
  - Video pointers to segmented Youtube videos. Canvas points to all-in-one-file videos.
  - Last semester: https://users.ece.cmu.edu/~koopman/lectures/index.html#642
- Links to homework assignments & project assignments
- Official course policies & FAQ  (you are responsible for reading these)
- Canvas used for announcements, hand-in, video quizzes, other administrative matters

CMU computing infrastructure
- Lab computers & servers for course projects  (covered in recitation)

WWW
- Finding homework answers on Web is OK so long as done properly

Course staff
- Instructor: office hours after class and by appointment
- TA office hours will be posted on Canvas
As of the weekend:

- Course Capacity: 64
- Historically most, perhaps all will get in
  - Prioritization based on department, program, class year, etc.
- Issues with recitation section balancing and timing
  - We’ll update this as we have more info (see e-mail & Canvas)

Make sure you have signed in to attendance

- Add your name if it’s not there; be sure to include Andrew ID!
- Preference given to students who actually show up to class
Questions?

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