18-642: Course Information
Fall 2020

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

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Course Goals

- Embedded software engineering concepts
  - Practical code quality
  - Practical, industry-strength embedded SW engineering process
  - Embedded System Safety, Embedded-specific Security
  - Generally, things industry wants that most grads 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 (take an embedded microcontroller course)
  - 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

- Lectures + Quizzes
  - Recorded video (mostly 10-25 min)
  - Canvas quiz at end

- Homeworks
  - Usually create one or two slides
  - Check-off grading
  - Sometimes make a short video

- Group work (usually 1 per week)
  - Usually creating one or two slides
  - Check-off grading
  - Some peer reviews of project code

- Live weekly class meeting
  - Discussion, review
  - Attendance taken (see policies)

- Projects
  - Individual software assignments
    - Programming
    - Industry software practices
  - Emphasizes code quality
  - Cumulative work

- Weekly Status survey
  - Course hours, your questions
In-Class Participation

- Attendance is required
  - Make a point of attending the live class session
    - Attendance taken at every meeting
  - If you have an excused conflict, instructor in office hours *before next class* will count
  - Poor attendance will affect your grade

- You’ll make short presentations
  - Some mixture of live vs. pre-recorded
  - Typical presentation is 60 – 90 seconds long
    - Concentrate on briefly getting the important points across

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

https://www.flickr.com/photos/xverges/3092873536
Projects

- Mostly code modification & other hands-on activities
  - Some non-trivial programming
  - Emphasis is on code quality
  - C++, but emphasis is on plain C in general
  - Light use of Robot Operating System (ROS)
  - Group peer reviews in later project phases

- Projects build upon each other
  - Slacking off early will hurt you later

- Significant increase in project difficulty at project #5
  - You have been warned!
Main course content – web site

- http://www.ece.cmu.edu/~ece642/
- Read the Policies page
- Read the FAQ page
- Points to lecture slides, assignments

Canvas – assignments

- Pay attention to Canvas announcements
- Hand-in for all assignments
  - Canvas deadline is the official deadline
- Lecture & project videos are in the assignment description
- Used for recording grade info
## Course Grade

F2019 medians: Lectures 99% / Project 97%

<table>
<thead>
<tr>
<th>Grade</th>
<th>Lecture Quizzes (graded)</th>
<th>Homework (check-off)</th>
<th>Group Assignments (check-off)</th>
<th>Project (graded)</th>
<th>Weekly Status (check-off)</th>
<th>Attendance</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>All Completed; &gt;=95% average; Maximum 3 late</td>
<td>All completed; Maximum 3 late</td>
<td>Maximum 1 not completed</td>
<td>&gt;=90% average; All project assignments completed; Passes all final acceptance tests; 1 late penalty forgiven</td>
<td>All completed</td>
<td>Miss at most 1 week</td>
</tr>
<tr>
<td>B</td>
<td>All Completed; &gt;=85% average; Maximum 6 late</td>
<td>Maximum 1 not completed (*) plus Maximum 3 late</td>
<td>Maximum 2 not completed</td>
<td>&gt;=80% average; All project assignments completed; Passes majority of final acceptant tests; 1 late penalty forgiven</td>
<td>All completed</td>
<td>Miss at most 2 weeks</td>
</tr>
<tr>
<td>C</td>
<td>All Completed; &gt;=75% average</td>
<td>Maximum 3 not completed (*); No maximum late</td>
<td>Maximum 3 not completed</td>
<td>&gt;=70% average; All project assignments completed; Might not pass acceptance tests; 1 late penalty forgiven</td>
<td>All completed</td>
<td>Miss at most 3 weeks</td>
</tr>
</tbody>
</table>
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/WWW material 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: 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
Not OK: On-line 18-642 “study aid” resources as a starting point

Not OK: Someone else’s solution as a starting point, even if you change it

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
- OK: study group discussion after *all participants* have handed in, and do not revise

Not OK: Accepting step-by-step instructions from another student

- Especially bad if this is done verbally to skirt “copying” rules
- Do not “launder” help by talking as a group to a TA while exchanging peer information

Not OK: Attendance fraud, signing in for another student, etc.

Not OK: Quiz cheating

- Any help from anyone to complete a lecture quiz
- (Note: you get unlimited chances to try the quiz)
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. We won’t wait for stragglers.**

- **No distracting noises**
  - No noisy/messy/smelly food. **NO potato chips, crinkly bags/wrappers.**
  - Clean up after yourself -- leave classroom clean
  - **On-line meetings:** mute microphone unless you’re speaking

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

- **No recording, photo, screen capture, 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/
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
COVID-19 Adjustments

- Lectures & project overviews are all pre-recorded
  - Watch via Canvas outside of class meeting time
- Live class 2 hours Thur nights via Zoom
  - NOT recorded; attendance normally required
  - Contact instructor for special circumstances
- Office hours held based on TA supply & student demand
  - Friday scheduled recitation
  - Other times during week
- If you get sick, we’d still like validation of the situation to grant exceptions
  - Normally this is your ECE staff advisor sending us an e-mail
- See other notes in course policy page

Questions?

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