ECE 36400: Software Engineering Tools Lab

Fall 2018

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Lab Admin: Dr. Mark Johnson <mcjohnso@purdue.edu>

Questions about course content and policies must be sent via Piazza.
Messages marked private will be visible only to course staff.
Use email only for scheduling or especially private matters.

Meetings

Lecture:	Mon	3:30 PM – 4:20 PM	FRNY G140	Everyone (aka "Lab prep")
Labs:	Tue	9:30 AM – 11:20 AM	EE 206	section 007
	Tue	11:30 AM – 1:20 PM	"	section 008
	Tue	1:30 PM – 3:20 PM	"	section 001
	Tue	3:30 PM – 5:20 PM	"	section 006
	Wed	9:30 AM – 11:20 AM	"	section 004
	Wed	1:30 PM – 3:20 PM	"	section 009

You must attend every lecture and lab for which you are registered, unless otherwise announced.

Resources

Piazza:	https://piazza.com/purdue/fall2018/ece364	⇐ Questions, notes, assignments, documents
Home page:	http://engineering.purdue.edu/ee364	⇐ Schedule
Blackboard:	http://mycourses.purdue.edu	⇐ Grades

Contents

Topics

- Bash – shell scripting, text processing
- Python – collections, object-oriented programming, regular expressions, GUIs, etc.

Course Objectives

This course is designed to help you achieve the following course objectives:

CO1 Student has successfully written a Bash script which interacts with the operating system.
CO2 Student has successfully written a Python script which interacts with the operating system.
CO3 Student has successfully tested a Python program for software reliability and correctness.
CO4 Student has successfully written a Python script which uses an interactive user interface.
CO5 Student has successfully written a Python script which requires the use of regular expressions.
CO6 Student has successfully written a Python program which requires the design and use of Python classes.
CO7 Student has successfully written a Python program which requires the design and use of associative arrays.

Grading

Grades will be based on the following weights and scale.

Description	Weight
Prelabs exercises	20%
Lab exercises	20%
Project	20%
Quizzes	10%
Exam #1	12%
Exam #2	18%
Total	100%

Course Grade	Letter Grade
(see below)	A+
≥90%	A
≥86%	A-
≥83%	B+
≥80%	B
≥76%	B-
≥73%	C+
≥70%	C
≥67%	C-
≥63%	D+
≥60%	D
≥57%	D-
< 57%	F

A+

The A+ grade will be assigned if you meet the threshold for an A (≥90%) and meet *any* of the following criteria:

- Outstanding participation in ways that benefit other students and that Prof. Quinn can observe.
- Among top 2% of students in the course by overall performance.

Outstanding participation may be demonstrated by answering others students' questions on Piazza, alerting us to previously unreported bugs in assignments that might cause others students confusion, asking insightful questions in lecture, sharing helpful resources, or other tangible contributions that benefit other students and that Prof. Quinn can observe via Piazza or in class. If you think you might be in range of an A and would like to be considered for an A+, send a private message to Prof. Quinn at the end of the semester with the subject "PARTICIPATION NOTES" with a summary of your contributions.

We expect to convert at least 20% of the A grades to A+. If many demonstrate excellent participation, this may be increased to as much as 50% of the A's.

Base requirements

The following requirements apply to all exercises (where applicable), and are in addition to the requirements given in the assignment description. Any submission not meeting any of these requirements will receive **zero credit**.

- Code runs as is on ecegrid with **Python 3.4.1**, **bash 4.1.2**, and other default software versions for lab accounts.
- Code must not depend on user input, files, or directories, except as specified in the assignment description.
- Function signatures and data types precisely match the specification given in the assignment (where applicable).
- Required files must be named exactly as specified in the assignment, and included in a single submission.
- Code finishes in a reasonable amount of time (default: 2.0 secs).
- Approach follows the intent of the exercise. (Just be reasonable. This rarely comes up. If unsure, you can ask.)
- Code follows our policy on academic integrity.

⚠ Code written for Python 2 will most likely result in syntax errors under Python 3.4, resulting in zero credit.

Code quality

Code quality is central to software engineering. For this course, we have established a set of *Code Quality Standards,* which can be found here: **https://goo.gl/AiFomm**

Follow these all the time, from the moment you start writing code. In case of violations, we will deduct 1% per rule violated (not per violation) on all Prelabs, Labs, and Exams. Only the "rules" (denoted with "♦") will be enforced.

Example: If you violate R5 × 15 times and R9 × 1 time, you will lose 2%. Checking will be done mostly using automated tools, such as Pylint and/or our own custom scripts.

Due to limitations in those tools (and our time to make checkers for everything), we cannot enforce every rule in the Code Quality Standards every time. As the semester progresses, we may develop more checkers. Also, to catch the rules that can't be checked automatically, we may do manual checks on any assignment, without warning.

These are for your benefit, because they make programming easier and faster (once you practice them), and they contribute to the skills you are here to learn. Follow every rule all of the time.

For this semester (Fall 2018), there are no penalties for Code Quality violations prior to Prelab 4 and Lab 4.

Regrade requests

If you believe your score is incorrect due to a flaw in our scoring process, and you are sure your submission meets the base requirements (above), we will be happy to review it. Regrade requests **must** be submitted **via Piazza** as a **private post** within **one (1) week of receiving the grade**, and must include the following:

- Subject line: **"Regrade: ▒▒▒▒▒▒"**
- Score you received
- Reason why you disagree (Around 10-50 words is usually a good length, but it's up to you.)
- Score you believe would be correct (if known)

Lab Accounts

You will be assigned a special account to use in this lab. It is separate from your Purdue Career Account, and is strictly for your lab work. Course staff may access the content of your 364 account at the discretion of the instructor or lab director. **(Reminder: We will never grade any code that was not submitted through SVN.)**

Prelab exercises

Prelab submissions are subject to the Base Requirements (p. 3). You must read and follow them.

Prelabs are due at 11:59 PM on the published due dates, regardless of what lab section you belong to.

We will accept up to one late prelab if you send a private note via Piazza with the subject line "Late prelab {#} from {PurdueLogin} / {364 Login}" (e.g., “Late prelab 4 from aq / ee364aq”). Your submission and the private note must be received within 24 hours of the deadline. (In Fall 2018, late submissions of Prelab 1 were accepted up to 9/2.)

The 24 hour timeframe is to ensure that people are ready for the associated lab. This may be utilized on any one prelab during this semester. There is no penalty. You don't have to give a reason, but keep in mind that we do not have an automated system for handling late submissions; each must be handled manually, causing extra work for a TA. Try not to use this unnecessarily.

This late policy applies only to Prelabs (not Labs).

Lab exercises

Procedures

- The lab exercise document will be distributed at the beginning of each lab section, and will be collected at the end of the lab period. Failure to give your lab document back may result in a grade penalty.
- The lab session is timed. You must log out within 1 hour 50 minutes from the start time of your session.
- Try to arrive a few minutes early to ensure that you have time to log in and obtain the document.
- To ensure fairness among lab sections, TAs/ULAs are not permitted to give extra time.
- You are not allowed to access the internet during your lab session. You are, however, permitted to access the Python Documentation PDF. You are also allowed to access your own previous scripts.
- We can only grade the scripts in SVN. Failure to check in your scripts into SVN **on time** will result in a penalty or possibly a grade of 0.
- Always log out of your lab account before you leave and/or if you will be away from your terminal.
- **We can only grade your script if it compiles. If your script does not compile, you will get a grade of 0.**
- Lab submissions are subject to the Base Requirements (p. 3). You must read and follow them.

If you cannot attend a lab, see page 6 of this syllabus for conditions and instructions regarding make-up labs.

Quizzes

Quizzes may be held in lecture (likely) or lab (less likely), with or without notice. They will be ≈5-10 minutes and may cover anything covered in lectures, labs, or prelabs prior to that date. There is no set start time, but most will be at the end of a lecture. If any flags are needed for bash commands (e.g., “-l”) we will give you the description from the man file and/or the slides.

If you cannot attend a quiz, see page 7 for conditions and instructions regarding make-up quizzes.

Practical exams

There will be two practical exams. Content may include anything covered in labs or lectures prior to the exam.

Do not bring any material or electronic devices to any exam. Exams are closed-book.

You will be allowed to use the following:

1. All lecture notes in electronic form
2. Your own lab scripts
3. The Python Documentation PDF

Exam procedures

Bring photo ID to every exam. We reserve the right to check IDs and reject exams from any student who cannot prove their identity at the time the exam is submitted.

Photographs or video recordings may be taken by course staff to document who was present.

Use the restroom before you enter the exam room. Bathroom breaks are not allowed.

The following items must be left ≥5 feet (1½ meters) away from you or any other student: bags, backpacks, purses, phone, laptop, smart watch, calculator, digital watch, any other student's exam.

Cell phones must be turned off or placed in silent mode—not vibate—and left in your bag ≥5 feet (1½ meters) from you or any student, or else left at home.

Using or looking at any electronic device or unauthorized resource during an exam may result in immediate ejection from the exam, even if there is no evidence that you were using it to cheat. This is because we cannot accurately determine what was on the device (or other item).

Attempting to cheat and/or helping any other student(s) cheat will be treated the same as cheating.

Code submitted for practical exams is subject to the Base Requirements (p. 3). You must read and follow them.

Read the full policy on academic integrity (p. 7) carefully.

If you cannot attend an exam, see page 6 of this syllabus for conditions and instructions regarding make-up exams.

Disabilities

Purdue University is required to respond to the needs of the students with disabilities as outlined in both the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990 through the provision of auxiliary aids and services that allow a student with a disability to fully access and participate in the programs, services, and activities at Purdue University.

If you have a disability that requires special academic accommodation, please make an appointment to speak with me during the first week of the semester in order to discuss any adjustments. It is important that we talk about this at the beginning of the semester. It is the student's responsibility to notify the Disability Resource Center of an impairment/condition that may require accommodations and/or classroom modifications.

Campus emergencies

In the event of a major campus emergency, course requirements, deadlines and grading percentages are subject to changes that may be necessitated by a revised semester calendar or other circumstances beyond the instructor's control. If a campus shutdown is announced by Purdue University officials, an ECE 364 course announcement will be posted in the Blackboard ECE 364 discussion groups and a Blackboard email message will be emailed to the entire class with instructions. You may also reach course staff at the phone numbers and email addresses listed at the top of this document.

See the University's website for more on emergency preparedness:
http://www.purdue.edu/ehps/emergency_preparedness/

Attendance

There may be a quiz or graded exercise during any meeting–including lectures (lab prep) and labs–unless otherwise announced via a message on Piazza or email to the class.

Only the instructor can excuse a student from a course requirement or responsibility. When conflicts or absences can be anticipated, such as for many University sponsored activities and religious observations, the student should inform the instructor of the situation as far in advance as possible. For unanticipated or emergency absences when advance notification to an instructor is not possible, the student should contact the instructor as soon as possible by email, or by contacting the main office that offers the course. When the student is unable to make direct contact with the instructor and is unable to leave word with the instructor's department because of circumstances beyond the student's control, and in cases of bereavement, the student or the student's representative should contact the Office of the Dean of Students.

Due to scheduling issues with holidays and project-specific needs, we might designate a small number of labs and/or lab prop sessions (lectures) as "project support", "review", or "remediation".

Influenza and serious illness

If you are experiencing symptoms of influenza or serious illness, **do not come to class, lab, or office hours.**

Notify Prof. Quinn *and* your TA as soon as possible via email or telephone. We will work with you to determine a schedule for completion of your work.

A doctor's note will be required in most cases. Contact Prof. Quinn if obtaining such a note would be impossible or inappropriate due to your circumstances.

Lab makeups

If you miss a lab, you must contact the TA and schedule a makeup to take that lab.

- Lab makeups must be completed **no later** than exactly **one (1) week** after the session you missed.
- Makeups can be done during office hours or during another lab section, with prior approval from the TA(s).
- You are permitted one (1) "free" makeup of any regular lab exercise (i.e., *not* exam, quizzes, or the project).
- Subsequent makeups will require a valid excuse (a doctor's note for illness and instructor approval or instructor approval for other extenuating circumstances).
- If you are taking a planned trip (for an interview, course-related event, or anything else) you must notify the course staff **at least 48 hours prior** to your absence for approval.
- In other cases, you must provide a doctor's note to the course staff. Please do not come to lab ill!
- If you fail to notify us within seven calendar days of the deadline affected by your illness you will forfeit the right to the make up the missed work. (Exceptions to this rule may be made in extreme cases.)

Exam makeups

If you are unable to attend an exam, you must contact Prof. Quinn at least 2 weeks prior to the exam (unless specific circumstances make that impossible). Makeup exams will be provided in case of serious or infectious illness or documented grief absences. At the discretion of Prof. Quinn, we may also accommodate immovable Purdue-sponsored activities, immovable job interviews, child or elder care emergencies, or other conflicts beyond your control that would cause harm if not heeded. Documentation will be required, where appropriate.

Quiz makeups

If you are unable to attend class, send email to **aq@purdue.edu** *before* the class with subject line "Will miss lecture {#/#} [364]" (e.g., "Will miss lecture 9/17 [364]") If there is a quiz during that lecture, we will schedule a make-up for you—but only if you informed me in advance. You do not need a "good" reason (e.g., illness).

This policy is lenient. We reserve the right to decline requests and/or tighten or discontinue it, at the instructor's discretion (i.e., if there is a sense that it is being overused or abused). Please do your best to attend every class.

Academic integrity

Motivation

The vast majority of students at Purdue do their work honestly and with integrity. The value of their grades and their ultimate degree is based on the expectation that earning a good grade always requires learning the material well, and demonstrating that in a way that can be measured (e.g., exams and assignments). Those who cheat are eroding that value, the reputation of Purdue, and ultimately the value of your diploma.

Cheating is unfair to those who do their work honestly, and even to the few who do not. It defeats the purpose of being a student at Purdue and our dual purpose as instructors in this course: (1) to teach you skills that will contribute to your proficiency as engineer, and (2) to ensure that good grades in Purdue ECE courses remain a dependable indicator of ability. If students are able to cheat, we have failed at both of those goals. For all of these reasons, we have a very strict stance against cheating.

Definitions

For purposes of defining cheating for this course, the following definitions apply:

"Copying" means reproducing any kind of data (including code, text, etc.) by any means (including copy-paste, copying files, hand-typing, etc.) from one source to another.

"Trivial modifications" – include differences in whitespace, variable names, function order, or other changes that affect the appearance but not the function or intellectual content of the material.

"Attribution" means explicitly acknowledging the source of copied content with a comment in exactly this format: /* Credit: <author>, <description>, <url_or_location> */.

"Authorized sources" include:

✓ code that you have written yourself
✓ starter code provided with the exercise instructions for *this* semester
✓ names of standard library functions (e.g., `re.match(…)`) and keywords (e.g., `def`)
✓ any other source explicitly allowed by the instructor (with attribution).

"Unauthorized sources" include any of the following (unless explicitly allowed):

✗ code from Stackoverflow, Wikipedia, or any other web site
✗ code from the textbook or any other book
✗ test cases given in assignment descriptions
✗ any other source that is not an authorized source

"Unauthorized aid" means any resource that provides information or functionality relevant to a quiz or exam that was not explicitly allowed by the instructor. Unauthorized aids include:

✗ hidden note sheets (on a closed-book exam or quiz)
✗ other students' papers
✗ calculator
✗ watch
✗ any other resource not explicitly allowed

"Cheating" includes doing—or attempting to do—any of the following:

✗ Copying any amount of code from another students' code, the web, a book, or any other unauthorized source, even if you change the variable names or rearrange expressions or lines of code. You may use code from the course reference sheet or code that you wrote yourself.
✗ Allowing another student to copy your code.
✗ Using any resource on any quiz or exam that is not explicitly allowed.
✗ Using unauthorized means to access exam contents.
✗ Using unauthorized means to alter or affect grades, submission timestamps, or submission contents, or anything else that might affect grades.
✗ Supporting any other student's attempts to cheat (as defined above) through direct assistance or negligence.

Be careful not to reveal your code to others inadvertently. It is your responsibility to log out when you leave, and guard any printed copies of your work. If we discover two assignment submissions that are identical or very similar, both may be penalized.

Gray areas

✓ Sharing abstract ideas about homework assignments—without code—is allowed, though we expect you to use good judgment. For example, standing together at a whiteboard and discussing a problem with spoken words and diagrams is allowed. Of course, in some cases sharing too much may deprive other students of the opportunity to learn and develop their problem-solving abilities. We leave this middle ground to your discretion.
✓ Learning from code on the web or other sources is allowed, as long as you do not copy it by any means (including looking and typing it). Again, learning abstract ideas is allowed, though you should use good judgment to ensure that you learn how to solve programming problems.
✓ Very generic code snippets (e.g., `if __name__ == "__main__":` …) and the names of library functions should not require any copying. You should know those from memory.

Penalties

Very minor instances (e.g., 1-3 lines of code from the web on a homework) will result in a score of zero for the affected assignment. All other instances will result in an "F" in the course, and a referral to the Office of Student Rights and Responsibilities.

How to report cheating

We encourage you to report any cheating you see or hear about to the instructor. You may do so in person, by email, or anonymously (e.g., non-Purdue email address that does not identify you, note under door, etc.). In doing so, you will be improving the fairness for the entire class, while also teaching the individual(s) a valuable lesson. Even if you do not wish to name an individual, we welcome any feedback you may have about how we can ensure fairness and integrity in this course.

Guarding your code

Students are expected to take reasonable measures to protect their work and to ensure no other students may have access to their work at any time. Do not share any computer account passwords with anyone and do not leave your workstation unlocked when you are not physically present. Exercise caution when printing to public printers and do not leave any printouts unattended. Failure to protect course work may be viewed as academic dishonesty. Students are expected to report lost work or un-authorized access to course accounts immediately to the course staff.

Do not post your code online (e.g., GitHub, home page, etc.) at any time, including after the end of the class.

Violent behavior

Purdue University is committed to providing a safe and secure campus environment for members of the university community. Purdue strives to create an educational environment for students and a work environment for employees that promote educational and career goals. Violent Behavior impedes such goals. Therefore, Violent Behavior is prohibited in or on any University Facility or while participating in any university activity.

Nondiscrimination

Purdue University is committed to maintaining a community which recognizes and values the inherent worth and dignity of every person; fosters tolerance, sensitivity, understanding, and mutual respect among its members; and encourages each individual to strive to reach his or her own potential. In pursuit of its goal of academic excellence, the University seeks to develop and nurture diversity. The University believes that diversity among its many members strengthens the institution, stimulates creativity, promotes the exchange of ideas, and enriches campus life.

Purdue University prohibits discrimination against any member of the University community on the basis of race, religion, color, sex, age, national origin or ancestry, genetic information, marital status, parental status, sexual orientation, gender identity and expression, disability, or status as a veteran. The University will conduct its programs, services and activities consistent with applicable federal, state and local laws, regulations and orders and in conformance with the procedures and limitations as set forth in Executive Memorandum No. D-1, which provides specific contractual rights and remedies. Any student who believes they have been discriminated against may visit www.purdue.edu/report-hate to submit a complaint to the Office of Institutional Equity. Information may be reported anonymously.

Copyright

Among the materials that may be protected by copyright law are the lectures, course materials, this web site, assignments, quizzes, exams, and other material presented in class or as part of the course. Always assume the materials presented by an instructor are protected by copyright unless the instructor has stated otherwise. Students enrolled in, and authorized visitors to, Purdue University courses are permitted to take notes, which they may use for individual/group study or for other non-commercial purposes reasonably arising from enrollment in the course during the semester in which the student was enrolled.

Notes taken in class are, however, generally considered to be “derivative works” of the instructor’s presentations and materials, and they are thus subject to the instructor’s copyright in such presentations and materials. No individual is permitted to sell or otherwise barter notes, either to other students or to any commercial concern, for a course without the express written permission of the course instructor. To obtain permission to sell or barter notes, the individual wishing to sell or barter the notes must be registered in the course or must be an approved visitor to the class. Course instructors may choose to grant or not grant such permission at their own discretion, and may

require a review of the notes prior to their being sold or bartered. If they do grant such permission, they may revoke it at any time, if they so choose.

Changes

This syllabus is subject to change. In particular, exercises, topics, deadlines, and exam dates—may be changed without notice up to 1 week in advance. Exercise weights may be adjusted at any time, to reflect the relative difficulty. The grading scale cutoffs might be adjusted at any time, but any change between the beginning and end of the semester will be in students' favor. Other changes to course policies may be made to ensure the integrity of the course, to ensure fairness to students, or as otherwise deemed necessary by the instructor.

Updates (9/16/2018)

9/16/2018	Added several policies that had previously been communicated by Piazza and/or email. Clarified Base Requirements. Added a table of contents to page 1. Changes (except the table of contents and trivial fixes, such as punctuation) are in green type.