CSE 1325: Object Oriented Programming
Fall 2018

Instructor: Shawn N. Gieser, Ph.D.

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Office Hours: MW 1:00 PM – 2:20 PM

Section Information: CSE 2100-001, CSE 2100-002, CSE 2100-003, CSE 2100-004, CSE 2100-005, CSE 2100-006, CSE 2100-007, CSE 2100-008, CSE 2100-009

Time and Place of Class Meetings: All sections in ERB 132
- 001: F 9:00 AM – 11:50 AM
- 002: T 5:30 PM – 8:30 PM
- 003: W 5:30 PM – 8:30 PM
- 004: R 5:30 PM – 8:30 PM
- 005: F 5:30 PM – 8:30 PM
- 006: W 9:00 AM – 11:50 AM
- 007: F 1:00 PM – 3:50 PM
- 008: T 9:30 AM – 12:30 PM
- 009: R 9:30 AM – 12:30 PM

Description of Course Content: A practical approach to hands-on computer hardware and software systems in a laboratory environment. Students will be exposed to basic design concepts using off-the shelf hardware components and to tools that enable the design of complex software systems.

Student Learning Outcomes: Students successfully completing this course will be able to:
- Use software versioning systems
- Work on embedded Linux computers and understand the file system
- Write shell scripts for scheduling tasks
- Create simple microcontroller based LED control circuit and program it
- Make two computers (computing units) talk through a serial interface
- Use PWM signals for power control of actuators (LEDs, motors)
- Acquire simple analog signals with a microcontroller
- Use cmake to create "make" files; understand "make" concepts
- Use IDEs such as Eclipse for development and debugging
- Build event driven graphical user interfaces
- Compile code for a different system (than the development system)
- Obtain network traces and provide basic analysis over them
- Create basic LateX documents and compile them into pdf
- Set up a virtual machine with an operating system on a host system
- Use Doxygen to create simple code documentation

Required Textbooks and Other Course Materials: There is no required textbook for the course, however, all students need a Raspberry Pi 3 with an appropriate power supply, microSD card, etc. Additional components may be required to work on lab assignments at home, depending on your setup. Be sure to check the course website for details.

Descriptions of major assignments and examinations: Course assignments are based on lab sessions and their corresponding written reports. There will be 10 laboratory sessions throughout the semester, organized into three modules:

- Module 1: Embedded Linux Computers: Raspberry Pi 3.
  - Raspberry Pi basics, setup, basic LaTeX
  - Essential Linux shell commands, shell scripting
  - Development tools: Git/SVN,cmake,make
- Module 2: User-Friendly Microcontrollers (Arduino) and Basic Electronics
  - Arduino IDE, programing Arduinos
  - Serial communication: the basis of interfacing embedded applications
  - Basic Electronics, Analog/Digital Conversion, and PWM basics
- Module 3: Software System Development
  - IDE (e.g., Eclipse, Atom) and debugging
  - Graphical User Interfaces
- Module 4: Useful Tools
  - 3D modeling and CAD
  - LaTeX and Doxygen

Attendance: Attendance is required for all lab sessions. Any missed lab sessions will result in a grade of zero for that lab (this includes both the in person and written report grade components for the lab). Missing 3 or more labs will result in an automatic grade of F for the course. No food or drink is allowed in the lab, and please refrain from cell phone use and loud talking.

Grading: The final letter grade for this course will be based on scores received on in class lab assignments and corresponding written reports. A total of 10 labs and reports will be assigned, with each accounting for 10% of the final grade. Lab reports submitted after the deadline will incur a 20% penalty per day late. Letter grades will be assigned based on the following scale:

A: 100-90%, B: 89-80%, C: 79-70%, D: 69-60%, F: < 60%

2-Week Grade Grievance Policy: Once a grade has been posted, you will have 2 weeks to contest your grade with whoever graded that assignment. The GTA will grade the Homework, and the Instructor will grade quizzes and exams. Once a grade has been posted for 2 weeks, the grade is final and will not be changed.

Make-up Labs: Make-up labs will only be allowed under extraordinary circumstances and must be approved by the instructor, who's decision is final. If a lab is missed due to unavoidable circumstances, the instructor must be notified of the situation via email as soon as possible. Travel will not be considered as a valid excuse for missing a lab, unless for the purpose of representing the university or department. Any labs that are missed due to unexcused reasons will receive an automatic grade of zero.

Drop Policy: Students may drop or swap (adding and dropping a class concurrently) classes through self-service in MyMav from the beginning of the registration period through the late registration period. After the late registration period, students must see their academic advisor to drop a class or withdraw. Undeclared students must see an advisor in the University Advising Center. Drops can continue through a point two-thirds of the way through the term or session. It is the student's responsibility to officially withdraw if they do not plan to attend after registering. **Students will not be automatically dropped for non-attendance**. Repayment of certain types of financial aid administered through the University may be required as the result of dropping classes or withdrawing. For more information, contact the Office of Financial Aid and Scholarships (http://wweb.uta.edu/aao/fao/).

Disability Accommodations: UT Arlington is on record as being committed to both the spirit and letter of all federal equal opportunity legislation, including *The Americans with Disabilities Act (ADA), The Americans with Disabilities Amendments Act (ADAAA),* and *Section 504 of the Rehabilitation Act.* All instructors at UT Arlington are required by law to provide "reasonable accommodations" to students with disabilities, so as not to discriminate on the basis of disability. Students are responsible for providing the instructor with official notification in the form of **a letter certified** by the Office for Students with Disabilities (OSD). Only those students who have officially documented a need for an accommodation will have their request honored. Students experiencing a range of conditions (Physical, Learning, Chronic Health, Mental Health, and Sensory) that may cause diminished academic performance or other barriers to learning may seek services and/or accommodations by contacting: **The Office for Students with Disabilities, (OSD)** http://www.uta.edu/disability/ or calling 817-272-3364. Information regarding diagnostic criteria and policies for obtaining disability-based academic accommodations can be found at www.uta.edu/disability.

Counseling and Psychological Services (CAPS) www.uta.edu/caps/ or calling 817-272-3671 is also available to all students to help increase their understanding of personal issues, address mental and behavioral health problems and make positive changes in their lives.

Non-Discrimination Policy: The University of Texas at Arlington does not discriminate on the basis of race, color, national origin, religion, age, gender, sexual orientation, disabilities, genetic information, and/or veteran status in its educational programs or activities it operates. For more information, visit uta.edu/eos.

Title IX Policy: The University of Texas at Arlington ("University") is committed to maintaining a learning and working environment that is free from discrimination based on sex in accordance with Title IX of the Higher Education Amendments of 1972 (Title IX), which prohibits discrimination on the basis of sex in educational programs or activities; Title VII of the Civil Rights Act of 1964 (Title VII), which prohibits sex discrimination in employment; and the Campus Sexual Violence Elimination Act (SaVE Act). Sexual misconduct is a form of sex discrimination and will not be tolerated. *For information regarding Title IX, visit* www.uta.edu/titleIX or contact Ms. Michelle Willbanks, Title IX Coordinator at (817) 272-4585 or titleix@uta.edu

Academic Integrity: Students enrolled all UT Arlington courses are expected to adhere to the UT Arlington Honor Code:

> *I pledge, on my honor, to uphold UT Arlington's tradition of academic integrity, a tradition that values hard work and honest effort in the pursuit of academic excellence.*

> *I promise that I will submit only work that I personally create or contribute to group collaborations, and I will appropriately reference any work from other sources. I will follow the highest standards of integrity and uphold the spirit of the Honor Code.*

UT Arlington faculty members may employ the Honor Code in their courses by having students acknowledge the honor code as part of an examination or requiring students to incorporate the honor code into any work submitted. Per UT System *Regents' Rule* 50101, §2.2, suspected violations of university's standards for academic integrity (including the Honor Code) will be referred to the Office of Student Conduct. Violators will be disciplined in accordance with University policy, which may result in the student's suspension or expulsion from the University. Additional information is available at https://www.uta.edu/conduct/. Faculty are encouraged to discuss plagiarism and share the following library tutorials http://libguides.uta.edu/copyright/plagiarism and http://library.uta.edu/plagiarism/

Electronic Communication: UT Arlington has adopted MavMail as its official means to communicate with students about important deadlines and events, as well as to transact university-related business regarding financial aid, tuition, grades, graduation, etc. All students are assigned a MavMail account and are responsible for checking the inbox regularly. There is no additional charge to students for using this account, which remains active even after graduation. Information about activating and using MavMail is available at http://www.uta.edu/oit/cs/email/mavmail.php.

Campus Carry: Effective August 1, 2016, the Campus Carry law (Senate Bill 11) allows those licensed individuals to carry a concealed handgun in buildings on public university campuses, except in locations the University establishes as prohibited. Under the new law, openly carrying handguns is not allowed on college campuses. For more information, visit http://www.uta.edu/news/info/campus-carry/

Student Feedback Survey: At the end of each term, students enrolled in face-to-face and online classes categorized as "lecture," "seminar," or "laboratory" are directed to complete an online Student Feedback Survey (SFS). Instructions on how to access the SFS for this course will be sent directly to each student through MavMail approximately 10 days before the end of the term. Each student's feedback via the SFS database is aggregated with that of other students enrolled in the course. Students' anonymity will be protected to the extent that the law allows. UT Arlington's effort to solicit, gather, tabulate, and publish student feedback is required by state law and aggregate results are posted online. Data from SFS is also used for faculty and program evaluations. For more information, visit http://www.uta.edu/sfs.

Final Review Week: for semester-long courses**,** a period of five class days prior to the first day of final examinations in the long sessions shall be designated as Final Review Week. The purpose of this week is to allow students sufficient time to prepare for final examinations. During this week, there shall be no scheduled activities such as required field trips or performances; and no instructor shall assign any themes, research problems or exercises of similar scope that have a completion date during or following this week *unless specified in the class syllabus*. During Final Review Week, an instructor shall not give any examinations constituting 10% or more of the final grade, except makeup tests and laboratory examinations. In addition, no instructor shall give any portion of the final examination during Final Review Week. During this week, classes are held as scheduled. In addition, instructors are not required to limit content to topics that have been previously covered; they may introduce new concepts as appropriate.

Emergency Exit Procedures: Should we experience an emergency event that requires us to vacate the building, students should exit the room and move toward the nearest exit, which is located [insert a description of the nearest exit/emergency exit]. When exiting the building during an emergency, one should never take an elevator but should use the stairwells. Faculty members and instructional staff will assist students in selecting the safest route for evacuation and will make arrangements to assist individuals with disabilities.

Student Support Services: UT Arlington provides a variety of resources and programs designed to help students develop academic skills, deal with personal situations, and better understand concepts and information related to their courses. Resources include tutoring, major-based learning centers, developmental education, advising and mentoring, personal counseling, and federally funded programs. For individualized referrals, students may visit the reception desk at University College (Ransom Hall), call the Maverick Resource Hotline at 817-272-6107, send a message to resources@uta.edu, or view the information at http://www.uta.edu/studentsuccess/success-programs/programs/resource-hotline.php

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Emergency Phone Numbers: In case of an on-campus emergency, call the UT Arlington Police Department at **817-272-3003** (non-campus phone), **2-3003** (campus phone). You may also dial 911. Non-emergency number 817-272-3381

Course Schedule: An outline of the course schedule and individual topics covered is included in the course syllabus. As the instructor for this course, I reserve the right to adjust this schedule in any way that serves the educational needs of the students enrolled in this course.

Week	Dates	Topic
Week 1	Aug 22 - Aug 28	Orientation
Week 2	Aug 29 - Sept 4	Initial Raspian Set up
Week 3	Sept 5 - Sept 11	Basic Unix Commands
Week 4	Sept 12 - Sept 18	Git Version Control
Week 5	Sept 19 - Sept 25	Introduction to Tinkercad
Week 6	Sept 26 - Oct 2	Arduino IDE and Introduction to Teensy
Week 7	Oct 3rd - Oct 9	USB Serial Communication
Week 8	Oct 10 - Oct 16	Teensy A2D and PWM
Week 9	Oct 17 - Oct 23	Previous week continued or make up labs
Week 10	Oct 24 - Oct 30	Cmake Revisited and GUIs
Week 11	Oct 31 - Nov 6	GUI for a Teensy Controlled LED and Potentiometer
Week 12	Nov 7 - Nov 13	Previous week continued or make up labs
Week 13	Nov 14 - Nov 20	Doxygen
Week 14	Nov 21 - Nov 27	Canceled - Thanksgiving
Week 15	Nov 28 - Dec 4	Make up Labs
Week 16	Dec 5 - Dec 11	No Final

Important Dates:
First day of Class – Aug 22nd
Census Date – Sept 7th
Drop Date – Nov 2nd
Registration for Spring Term – Nov 9th
Last Day of Classes – Dec 4th
Finals – Dec 6th – Dec 12th