CMPSC 591
Principles of Mobile Applications
Fall 2014

Syllabus

Course Instructor

Dr. Gregory M. Kapfhammer
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Instructor's Office Hours

- Monday: 2:30 pm – 4:30 pm (15 minute time slots)

- Tuesday: 2:30 pm – 4:30 pm (15 minute time slots)

- Wednesday: 10:00 am – 12:00 noon (15 minute time slots) *and*
        4:30 pm - 6:00 pm (15 minute time slots)

- Thursday: 10:30 am - 11:00 am (10 minute time slots)

- Friday: 11:00 am – 12:00 noon (10 minute time slots) *and*
        3:30 pm – 4:30 pm (10 minute time slots)

To schedule a meeting with me during my office hours, please visit my Web site and click the "Schedule" link in the top right-hand corner. Now, you can browse my office hours or schedule an appointment by clicking the correct link and then reserving an open time slot.

Course Meeting Schedule

Discussion, Presentations, and Group Work in Alden 109:
Monday, 1:30 pm – 2:20 pm and/or Tuesday, 1:30 pm - 2:20 pm

Course Description

A study of the concepts, principles, and skills needed to successfully describe, design, implement, test, deploy, use, and document mobile applications. Investigated in the context of Android-based mobile applications running on the Google Nexus 7, topics include conditional logic, iteration, modularity, parameter passing, user interaction, graphical user interfaces, and network communication. Students practice the principles of mobile application development by participating as members of groups tasked with the creation of mobile applications. One required class session per week. No background in computer science is required. Prerequisites: Permission of the instructor.
Two credit group study.

Course Objectives

The process of developing mobile software involves the application of a number of interesting concepts, tools, techniques, and methodologies. In this class we will explore the steps taken to develop mobile applications and examine the tools, concepts, and challenges associated with each step. We will delve into the details of describing, designing, implementing, testing, deploying, using, and documenting mobile applications through a discussion of book chapters and articles from the literature on mobile application development. Moreover, students will enhance their ability to clearly and concisely write about software in general and mobile applications in specific. Finally, students will gain practical software development experience through group projects that yield a wide variety of different mobile applications. Students will complete a final project with the ultimate goal of releasing a mobile application on the Google Play store

Performance Objectives

At the completion of this class, a student should be aware of the fundamental challenges associated with the development of mobile applications. Furthermore, students should be familiar with a wide array of concepts, methodologies, techniques, and tools that they can apply to the problem of developing simple mobile applications. However, a successful student will emerge with more than an understanding of the tools (e.g., text editors, compilers, debuggers, and integrated development environments) that a mobile application developer uses. A student also should have a basic understanding of the steps that must be taken to develop a mobile application for the Android operating system. During the process of mobile application development, the student should also be able to work in a group and interact with prospective users of their mobile application.

Required Textbooks

This course does not have a required textbook. Instead, the instructor will prepare an annotated reading list and release it on the course Web site. Students who want to learn more about the general principles of software development may consult the following book.

Software Engineering: Theory and Practice. Shari Lawrence Pfleeger and Joanne M. Atlee. Fourth Edition, ISBN-10: 0136061699, ISBN-13: 978-0136061694, 792 pages, 2009.

Students who want to improve their technical writing skills may consult the following books.

BUGS in Writing: A Guide to Debugging Your Prose. Lyn Dupré. Second Edition, ISBN-10: 020137921X, ISBN-13: 978-0201379211, 704 pages, 1998.

Writing for Computer Science. Justin Zobel. Second Edition, ISBN-10: 1852338024, ISBN-13: 978-1852338022, 270 pages, 2004.

Class Policies

Grading

The grade that a student receives in this class will be based on the following categories. All percentages are approximate and, if the need to do so presents itself, it is possible for the assigned percentages to change during the academic semester.

| Class Participation | 10% | Laboratory Assignments | 60% |
| Instructor Meetings | 10% | Final Project | 20% |

These grading categories have the following definitions:

- *Class Participation and Instructor Meetings*: All students are required to actively participate during all of the class sessions. Your participation will take forms such as answering questions about the required reading assignments, asking constructive questions of your group members, giving presentations, and leading a discussion session. Furthermore, all students are required to meet with the course instructor during office hours for a total of sixty minutes during the Fall 2014 semester. These meetings must be scheduled through the course instructor's reservation system and documented on a meeting record that you submit on the last day of classes. A student will receive an interim and final grade for these categories.

- *Laboratory Assignments*: These assignments invite students to explore the concepts, tools, and techniques that are associated with the development of mobile applications. All of the laboratory assignments require the use of the provided tools to describe, design, implement, test, deploy, use, and document mobile applications. To ensure that students are ready to develop software in both other classes at Allegheny College and after graduation, the instructor will assign individuals to teams for each of the laboratory assignments. Unless specified otherwise, each laboratory assignment will be due at the beginning of the following week's class session. Many of the laboratory assignments in this course will invite students to give both a presentation and a demonstration of the software that they described, designed, implemented, tested, and documented. Often, students will also be asked to survey potential users about the strengths and weaknesses of their mobile applications.

- *Final Project*: This project will afford you the opportunity to complete a useful and interesting mobile application with the intention of presenting it to the class and releasing it on the Google Play store. The final project in this class will require you to apply all of the knowledge and skills that you have accumulated throughout the semester to finish a working Android application and, whenever possible, make it publicly available. The project will invite you to draw upon both your problem solving skills and your knowledge of the programming languages and tools that support the development of mobile applications. The final project will be completed in groups chosen in consultation with the course instructor.

Assignment Submission

All assignments will have a stated due date. The printed version of the assignment is to be turned in at the beginning of the class on that due date; the printed materials must be dated and signed with the Honor Code pledge of all the students in the group. The electronic version of the assignment must be made available to the course instructor when the printed version is submitted. Late assignments will be accepted for up to one week past the assigned due date with a 15% penalty. All late assignments must be submitted at the beginning of the session that is scheduled one week after the due date. Unless special arrangements are made with the course instructor, no assignments will be accepted after the late deadline. In addition to submitting the required deliverables for any assignment developed in a group, students must turn in a one-page document that describes each group member's contribution to the completion of the submitted deliverables.

Attendance

Students may choose to attend one or both of the Monday and Tuesday class sessions. However, students attending the Monday session should anticipate covering similar material during Tuesday's class. It is mandatory for all students to attend at least one class session every week. If you will not be able to attend a session, then please see the course instructor at least one week in advance to describe your situation. Students who miss more than five unexcused class sessions or group project meetings will have their final grade in the course reduced by one letter grade. Students who miss more than ten of the aforementioned events will automatically fail the course.

Use of Laboratory Facilities

Throughout the semester, we will experiment with many different tools that mobile application developers use. The course instructor and the department's systems administrator have invested a considerable amount of time to ensure that our laboratories support the completion of both the laboratory assignments and the final project. To this end, students are required to complete all assignments and the final project while using the department's laboratory facilities. The course instructor and the systems administrator will only be able to devote a limited amount of time to the configuration of a student's personal computer or mobile device. Finally, students must take great care when using the mobile devices — you should not store personal data or files on them and you should handle them very carefully to avoid causing any damage.

Class Preparation

In order to minimize confusion and maximize learning, students must invest time to prepare for the class sessions. During the class periods, the course instructor will often pose demanding questions that could require group discussion, the creation of a mobile application, a vote on a thought-provoking issue, or a group presentation. Only students who have prepared for class by reading the assigned material and reviewing both the current and recent assignments will be able to effectively participate in these discussions. More importantly, only prepared students will be able to acquire the knowledge and skills that they need to be successful in both this course and the field of mobile application development. In order to help students both remain organized and effectively prepare for classes, the course instructor will maintain a class schedule with reading assignments and presentation slides. During the class sessions students will also be required to download, use, and modify programs that are made available through the course Web site.

Email

Using your Allegheny College email address, I will sometimes send out class announcements about matters such as assignment clarifications or changes in the schedule. It is your responsibility to check your email at least once a day and to ensure that you can reliably send and receive emails. This class policy is based on the following statement in *The Compass*, the College's student handbook.

> "The use of email is a primary method of communication on campus. ... All students are provided with a campus email account and address while enrolled at Allegheny and are expected to check the account on a regular basis."

Disability Services

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. Students with disabilities who believe they may need accommodations in this class are encouraged to contact Disability Services at 332-2898. Disability Services is part of the Learning Commons and is located in Pelletier Library. Please do this as soon as possible to ensure that approved accommodations are implemented in a timely fashion.

Honor Code

The Academic Honor Program that governs the entire academic program at Allegheny College is described in the Allegheny Course Catalogue. The Honor Program applies to all work that is submitted for academic credit or to meet non-credit requirements for graduation at Allegheny College. This includes all work assigned for this class (e.g., laboratory assignments and the final project). All students who have enrolled in the College will work under the Honor Program. Each student who has matriculated at the College has acknowledged the following pledge:

> I hereby recognize and pledge to fulfill my responsibilities, as defined in the Honor Code, and to maintain the integrity of both myself and the College community as a whole.

Welcome to an Adventure in Mobile Application Development

In reference to software, Frederick Brooks, Jr. wrote in Chapter One of *The Mythical Man Month*, "The magic of myth and legend has come true in our time." Computer software — especially software delivered as a mobile application — is a pervasive aspect of our society that changes how we think and act. High quality mobile applications also have the potential to positively influence the lives of people. Moreover, the description, design, implementation, testing, deployment, use, and documentation of mobile software are exciting and rewarding activities! At the start of this class, I invite you to pursue with enthusiasm and vigor this adventure in mobile application development.