COMP 415 Mobile Computing - SYLLABUS

BASIC INFORMATION

Course

Name:	COMP 415 Mobile Computing
Credits:	4
Prerequisites:	None
Term:	Spring 2017
Class Meetings:	Thursday 1 -- 4
Location:	P132, Pandora Mill building
Discovery Category:	Environment, Technology, and Society

Instructor

Name:	John Blumberg
Program:	Computing Technology, Division of Science and Technology, UNH Manchester
Phone:	via text 603 296 7880
Email:	meanoleprofessor@comcast.net
Office hours:	by appointment.

How to get in touch with me

Course-related communication outside class takes place by email or text. For in-person, one-on-one communication, see me after or before class, or by appointment.
If you have personal issues, questions, or concerns see me or email me at meanoleprofessor@comcast.net. I'll reply no later than next weekday.

Course Description

This course examines how mobile computing is transforming our everyday lives and the society and environment in which we live. In this course the students will engage mobile computing by inventing apps and solving problems. Students will learn computational thinking skills and create mobile apps using App Inventor 2, a free and open source visual blocks-based programming environment. Students will share their creative apps with peers and communities. They will also exercise inclusion, and peer learning in the context of innovating with free and open source software that empower individuals and communities.
4 cr. ETS.

Resources

Textbook DO NOT BUY

App Inventor 2: Create Your Own Android Apps
David Wolber, Hal Abelson, Ellen Spertus, and Liz Looney
ISBN-13: 978-1491906842 ISBN-10: 1491906847 Edition: 2nd
It's ~around $25 on Amazon or you can get an online copy of the book's PDF chapters at http://www.appinventor.org/book2.
or it is available via UNH Library Databases Safari Books

Phones

You will be loaned an unlocked Android phone with a memory card (secure digital SD) for the duration of the semester. You are expected to return the phone the last week of the semester when you take the final exam. If you lose the device, you'll be charged $100. If you don't pay this balance by the end of the semester, final grade submission will be on hold until the payment is done. You may use your own Android phones, if you have one. The phone must have a SD card or enough memory to store your apps.

Computing Tools

App Inventor for Android is a web-based development environment that lets you build apps for Android devices using a browser on your computer (http://ai2.appinventor.mit.edu). To have access to MIT App Inventor 2, you need to have a Google Account. Design of the app interface and coding of the app logic will be done completely in a browser.

Free and open source tools will be used to create multimedia resources for the apps, such as pictures and graphics, audio, and video resources. There are also free mobile apps that you need to install on your development phone do "live testing" of your app, side-loading of apps, QR code reading, and more.

Computing Resources

Most of the technical instructions for packaging and deploying apps and troubleshooting development problems are available on the MIT App Inventor Explore site. There are many other online computing resources out there. We'll collectively explore and share them.

Dave Wolber's site at **http://www.appinventor.org/** is our main resource for learning how to build apps with App Inventor.

Course Site

The course site is in Blackboard. It is the repository of course materials in digital form: syllabus, schedule, class agendas, assignments, practice questions, class notes, reading notes, and exam practice problems.

Acknowledgments

Thanks to Ralph Morelli, Professor of Computer Science at Trinity College, and Dave Wolber, Professor of Computer Science at University of San Francisco, for openly sharing their course materials and inspiring many educators who believe in excellent education for all. Thanks go to Chinma Uche, Computer Science high school teacher in Hartford, CT, who believes that the higher the expectations are set for her students, the more they achieve when they work hard and are inspired by passionate teachers and supportive peers.

Instructional Approach
Each of you will be assigned to a project task force of two or three persons. This task force will work together to prepare presentations, perform in class app creation and accomplish the course creative project.
.
Each class there will be new concepts covered in five ways.

1. Before class each student will work an assigned tutorial app from the app inventor 2 textbook. This will not be graded
2. Before class an assigned task force will study and prepare a brief presentation covering the new concepts and material for that class; see schedule.
3. The instructor will lecture, demonstrate and discuss the new material. As well as, answer questions from the class. Ask questions! The head that does not speak is cabbage.
4. The class, working in teams, will accomplish an app project that reinforces the new concepts and material presented for this class.
5. Each student will accomplish a homework app project that extends the in class project. These are the graded homework assignments.

Learning in this class depends heavily on active participation and open collaboration in and outside class with peers and the instructor. The course has 15 weeks with 3-hour class meetings. You are expected to study at least 9 hours outside class.

How am I going to help you invest at least 9-hour time of effort and focus in your study and practice time outside class? The answer is that **we will learn together**. I'll "flip the classroom" and use "peer instruction". The underlying principles of this pedagogy are:

1. It is you who does the learning through repeated practice that takes significant amounts of time.
2. It is me (the instructor) who designs activities and prepares materials for student learning.
3. It is you who produces the artifacts that result from the process of learning. This process means thinking about and discussing questions that seem hard, around concepts and strategies that seem difficult.
4. It is us (instructor and students) who provide prompt feedback to questions and solutions, such that all students make progress with their learning.

To implement this pedagogy, your work takes place in two different settings:

1. First-exposure, preparatory work that you do outside class and prior to class meeting. This means you come to class prepared, with your homework done!
2. Class meetings driven by questions and answers that you and your peers attempt, discuss, and refine on their own and in group activities, guided by my interventions.. This means you don't miss class, stay engaged by asking and doing, not only by listening.

Learning activities are structured by **blending *in-person* and *online time*** we spend on course material:

- I use the 3-hour class time to prompt and facilitate discussions and presentations, review solutions, and guide lab activities.
- You use the outside class time to study concepts and techniques, apply them to solve problems, do homework, give feedback to peers, self-evaluate one's work, collaborate with peers, and work on the team project.
- In-class collaboration uses pair programming and group deliberations for designing, coding, and discussion.

GOALS and LEARNING OBJECTIVES

Course Goals

Mobile computing is ubiquitous and fast growing. In 2011 there were 6 billion mobile subscriptions, 1.2 billion mobile Web users, and 1.78 billion mobile devices world-wide. International Data Corporation predicts that global downloads of mobile apps will reach 76.9 billion in 2014 and will be worth $35 billions.

The course introduces mobile computing and teaches you ***computational thinking*** – a fundamental problem-solving skill for everyone, not only for computing professionals. In a larger picture, computational thinking is a problem-solving process that makes extensive use of computing concepts and strategies. Computational thinking skills are built by exercising seven big ideas: **creativity**, **abstraction**, **data analysis, algorithms, programming, digital devices and the Internet,** and **impacts of computing** within economic, social, and cultural contexts.

The course seeks to broaden participation in computing by attracting students from communities with long-standing underrepresentation in computing: women, persons with disabilities, underrepresented students of color, and underserved students, such as low-income and first generation students.

Learning Objectives

Upon completion of this course students should be able to:

1. Create mobile apps using App Inventor visual blocks-based programming environment and mobile devices.
2. Design user experiences and algorithms that solve problems.
3. Communicate and collaborate in the creation of computational artifacts.

COURSE REQUIREMENTS

Homework

There will be weekly outside class homework assignments. Homework is an individual effort.

This work requires reading, watching videos, and a variety of activities, such as:

- Create app tutorials/documentation
- Customize apps developed by others
- Create your own apps
- Present and demonstrate apps
- Do exercises and answer study and review questions
- Solve design and implementation problems
- Write reflection papers
- Setup, configure, and troubleshoot systems and services
- Ask questions and give feedback
- Write self-evaluations of your learning activities.

These assignments must be completed and posted to Blackboard by midnight of the day before our class.

There are **eight** assignments that will be graded on a **3 point-scale** (24% of the final grade).

Creative Projects
There will be a **creative project**, which is a team project to create a mobile app that has to be proposed (pitched), designed, implemented, and presented to a general audience. The project will solve a problem of some significance; that means meanoleprofessor has to approve the project.

There are **two** iterations of the creative project. The first which is **Homework Eight** is an abstract of the creative project that you are proposing to accomplish. It is due as Homework Eight per the course schedule. Detail requirements are posted in Blackboard under Course Information.

The second is a final paper documenting your creative project; worth **20 points**. It is due per the course schedule. Detail requirements are posted in Blackboard under Course Information.

Oral Presentations
There will be several oral presentations during the semester. One during the last class meeting worth **5 points** is your opportunity to present your creative project in some detail to the class your peers.

Each week, each team, will be required to present an overview of the new material for that class to the class. This effort is part of the **10 points** for class participation.

Written Examinations
There will be a **midterm** and **comprehensive final exam. Each of these tests will be worth 18 points** These test may consist of in-class closed book portions and/or at home open book portions

GRADING AND EVALUATION OF STUDENT WORK
To learn in this class you do homework assignments, work on the team creative project, showcase artifacts in their online portfolios, take a midterm and final exam, contribute to the class forum, write self-evaluations of their weekly progress, and make oral and video presentations.

Final grade is calculated by using the following weights for the student work in this class:

- 8 homework assignments @ 3% each: **24%**
- Creative project @ **25%**
- Presentation of creative project: **5%**
- Mid-term exam and final exam @ 18% each: **36%**
- Class participation **10 %.**

There is a spreadsheet in Course Information to allow each student to calculate their own score; as the score in Blackboard is wrong and useless.

COURSE POLICIES REGARDING STUDENT BEHAVIOR
Attendance
Attendance is taken every class. You are responsible for attending all classes and expected to abide by the University Policy on Attendance (as stated in the *UNH Student Rights, Rules, and Responsibilities*).
If you miss a class, you have the responsibility to check Blackboard and contact peers to find out what they missed.
Except for absences due to serious medical reasons or circumstances beyond your control, no more than two such makeups will be accepted. After two absences for no good reason, the **10 point** class participation portion of the grade will lost.

Late submissions and make-up exams
Policy for late submissions and make-up exams is very strict and applies only in exceptional cases of student illness, accident, or emergencies that are properly documented. A late submission or make-up exam may be granted ONLY IF:

- You email me prior to the deadline AND
- You explain and provide evidence for the circumstances that have prevented you from meeting the class requirement.

Failing to comply with these rules results in no credit for the late submission or missed exam.

Late homework will be accepted with penalty depending on the tardiness of the work.

Student use of computing devices
In-class use of any computing device is not allowed unless needed for lab activities and with instructor's permission. Use of computing devices for non-class activities is not allowed. You will be asked to leave the class if you fail to comply with these rules. Students with a learning disability that requires the use of a computing device must provide evidence from the Disabilities Services office.

STATEMENT ON ACADEMIC HONESTY
No collaboration is allowed while taking the exams. Cheating on the exam is penalized with failing the course.

Assignment submissions should be entirely your work and may not include work done by others. Collaboration on assignments is encouraged, but does not include preparing and submitting the final artifacts that are uploaded to your portfolio.

Failing to comply with these rules is considered a violation of academic honesty policy.
See http://www.unh.edu/vpsas/handbook/academic-honesty for more information. There are very serious repercussions if you deviate from the academic honesty policy:

- The penalty for the first occurrence of an instance of academic dishonesty and plagiarism is no credit for the assignment in question. The Associate Dean will be immediately notified of the incident.
- The second attempt is penalized with failing the course.

STUDENTS WITH DISABILITIES
UNH Manchester is committed to providing students with disabilities with a learning experience which assures them of equal access to all programs and facilities of the University, which makes all reasonable academic aids and adjustments for their disabilities and provides them with maximum independence and the full range of participation in all areas of life at UNH Manchester. Students who need to document their disability and determine any accommodations, services, or referrals should schedule an appointment with the UNH Manchester Disability Services Coordinator by calling 641-4170. For more information, please see http://manchester.unh.edu/student/disability.

TENTATIVE COURSE SCHEDULE

This is a **tentative** schedule, subject to change depending on the class pace, student learning needs, and/or unforeseen circumstances, such as school closing due to inclement weather. Check the posts on the class forum for up-to-date information.

Class		Do Before Class	Assignment Due	Tutorial To Do
1/26/2017	Intro & basics	Get a Google Account		
2/2/2017	Input Output Variables and Math	Study textbox, labels, buttons, math and variables	HW one	#1
2/9/2017	Designer, Screen, Sound, Color	Study screens, canvas, arrangement, colors, sound and image objects.	HW two	#2
2/16/2017	Control, Iteration, lists, loops	Study control, lists, logic	HW three	#3
2/23/2017	Animation, Sprite, Balls, Games	Study drawing & animation, sensors, slider	HW four	#4
3/2/2017	Database, Internet, speech and sound	Study media, storage, connectivity	HW five	#5
3/9/2017	Class Projects			#6
3/16/2017	No Class			
3/23/2017	Mid term			
3/30/2017	Procedures Calls Reuse	Study procedures, calls, parameters		#7
4/6/2017	Multiple sceens, notifier	Study screens, noteifier, control	HW six	#8
4/13/2017	Creative Abstract	Have project identified.	HW seven	#9
4/20/2017	Creative Lab		HW eight	#10
4/27/2017	Creative lab			
5/4/2017	Final test		Final Report by 5/10 midnight	
5/11/2017	Creative Present			