DIG4634 Wearable and Mobile App Development

Instructor
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Office Location
CSE E428

Office Hours
TBA

Course Number
DIG4634

Semester/Year
Fall 2020

Course Credits
3 credits

Course Location
ONLINE - Async

Course Description
This course will cover the software development protocols for wearable and mobile electronics such as head-mounted displays, watches and cell phones. Several embedded input/output interfaces will be studied including, position and orientation sensors, hand trackers, holographic and stereoscopic displays. Students will develop prototype software applications for such devices.

Pre-Requisites
DIG3878 Applied Digital Media Protocols

Objectives: By the end of this course, students will be able to:

- Understand the characteristics and design elements required for wearable devices and systems to be widely adopted by the mainstream population for use in everyday life.
- Develop software development skills for wearable and mobile devices.
- Use the technologies embedded in contemporary wearable and mobile devices.

Required Materials

- Joseph L. Dvorak (2008). "Moving Wearables into the Mainstream: Taming the Borg", Publisher: Springer. ISBN: 978-1441943392 (Available to download as PDF through UF Libraries)

Recommended Materials

- Dawn Griffiths, David Griffiths (2017). "Head First Android Development: A Brain-Friendly Guide", Publisher: O'Reilly Media; 2 edition, ISBN-10: 9781491974056

Course Schedule

This schedule is only a guide and is subject to change. Unless otherwise indicated, assignments and readings are due the day they are listed on the syllabus, not the following day.

Week	Subject	Assignment/Quizzes	Assignments Due
Week 1	Introduction and Android Studio Overview	Assignment 1	In 1 week
Week 2	Programming Review / Introduction to Wearables I	Quiz	In 1 week
Week 3	Android Layouts and Views / Introduction to Wearables II	Assignment 2	In 1 week
Week 4	Android Activities / Wearable System Applications	Assignment 3	In 1 week
Week 5	GPS and Location Services	Assignment 4	In 1 week
Week 6	SurfaceView and Orientation Sensors / Overview of Wearable Systems	Assignment 5	In 1 week
Week 7	Building a fully developed App / Mainstream Wearable Systems	Midterm Project Proposal	In 1 week
Week 8	Wear OS	Assignment 6	In 1 week
Week 9	3D Graphics using GLSurfaceView Part I / Mainstream Wearable Design in Detail	Midterm Project milestone	In 1 week
Week 10	3D Graphics using GLSurfaceView Part II / Awareness and Immersion	Midterm Project	In 1 week
Week 11	Collaborate with Git in Android Studio / How to develop a 3D app for Wear OS / Brain Computer Interfaces	Assignment 7	In 1 week
Week 12	Developing Apps for Oculus Quest	Final Project Proposal	In 1 week
Week 13	Cameras in Android / Special Topic: CameraX and Machine Learning	Final Milestone 1	In 1 week
Week 14	Special Topic: Writing and Reading from files in Android	Final Milestone 2	In 1 week
Week 15	Special Topic: User Experience Research on Wearables	Final Project	In 1 week

Evaluation of Grades

Assignment	Total Points	% of Grade
Individual project (midterm): Towards the middle of the semester each student is expected to work on an individual project on mobile and/or wearable app development. The app developed by each student will be evaluated in terms of originality and complexity and demonstrated in class.	30	30%
Weekly assignments: There will be weekly or bi-weekly assignments, in which the students will be asked to perform an app development task, such as develop a small-scale app for a mobile device.	30	30%
Attendance and Participation: Students are expected to actively participate in the posted on-line discussions.	10	10%

Assignment	Total Points	% of Grade
Final project (group project): Final project is the final result of the semester long effort in learning. It is expected that in this final assignment, students organized in groups manifest their knowledge on the matter, and successfully deploy this knowledge in the practical format.	30	30%

Grading Scale

Letter Grade	% Equivalency	GPA Equivalency
A	94 – 100%	4.0
A-	90 – 93%	3.67
B+	87 – 89%	3.33
B	84 – 86%	3.00
B-	80 – 83%	2.67
C+	77 – 79%	2.33
C	74 – 76%	2.00
C-	70 – 73%	1.67
D+	67 – 69%	1.33
D	64 – 66%	1.00
D-	60 – 63%	.67
E, I, NG, S-U, WF	0 – 59%	0.00

More information on grades and grading policies is here:
https://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/

Materials and Supply Fees
Material and supply and equipment use fee information is available from the academic departments or from the schedule of courses (Florida Statutes 1009.24). The total course fee for this class is $0.00.

The total course fee for each course is listed on the UF Schedule of Courses. (https://registrar.ufl.edu/soc/).

Course Polices

Attendance Policy, Class Expectations, and Make-Up Policy
We value participation more than mere attendance. The instructor is responsible for communicating the specific details of what percentage of your grade (if any) will be assigned to participation, and how class participation will be measured and graded. Interaction with your peers and the instructor will empower you to greater achievement.

Students are allowed three unexcused absences. If you miss more than three classes during the semester, each additional absence will lower your overall grade by 100 points. If you miss more than six classes, you will fail the course. Exempt from this policy are only those absences involving university-sponsored events, such as athletics and band, and religious holidays, family emergencies, and health issues for which you must provide appropriate documentation in advance of the absence.

Additionally, tardiness will not be tolerated. If you are tardy for three class periods, you will receive an unexcused absence.

Unless discussed at least 72 hours in advance of the deadline, late assignments will not be accepted. Excluded from this policy are any assignments missed due to medical emergencies.

Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at: https://catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/

Course Technology
The students will be required to have access to and use a personal computer with the access to the Internet.
Word editing software will be required for written assignments.
Android Studio is required for the programming assignments.

The University of Florida and Digital Worlds requires that students have access to and on-going use of a laptop/mobile computer for DIG courses in order to be able to function in the current learning environment. Digital Worlds requires each student's laptop computer to meet certain minimum specs for heavy graphics use, the requirements documented below must be met.

DW Technology Requirements

Course Communications
Students can communicate directly with the instructor regarding the course material through the course management system (CANVAS) using "Canvas Mail".

Course Recordings
Some of our class sessions may be audio visually recorded for students in the class to refer back and for enrolled students who are unable to attend live. Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live. The chat will not be recorded or shared. As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited.

Course Technology Support

The Technology Support Center provides computer support for Digital Worlds students who access Zoom, lecture recordings, student equipment, facilities and other technology-based resources.
http://digitalworlds.ufl.edu/support

For computer assistance related to Zoon, lecture recordings, student equipment, and facilities request please Submit a Help Ticket or email support@digitalworlds.ufl.edu.

For support related to account services, technical consulting, mobile device services, software services, administrative support, application support center, and learning support services, please contact the UF Computing Help Desk available 24 hours a day, 7 days a week at 352-392-4357 or helpdesk@ufl.edu.

UF Policies

University Honesty Policy
UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The Honor Code (https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

Class Demeanor
Students are expected to arrive to class on time and behave in a manner that is respectful to the instructor and to fellow students. Please avoid the use of cell phones and restrict eating to outside of the classroom. Opinions held by other students should be respected in discussion, and conversations that do not contribute to the discussion should be held at minimum, if at all.

Students Requiring Accommodations
Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center. Click here to get started with the Disability Resource Center. It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

Netiquette Communication Courtesy
All members of the class are expected to follow rules of common courtesy in all email messages, threaded discussions and chats, more information can be found at: http://teach.ufl.edu/wp-content/uploads/2012/08/NetiquetteGuideforOnlineCourses.pdf

Software Use
All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

Student Privacy

There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see:
http://registrar.ufl.edu/catalog0910/policies/regulationferpa.html

Course Evaluation
Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Click here for guidance on how to give feedback in a professional and respectful manner. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via ufl.bluera.com/ufl/. Summaries of course evaluation results are available to students here.

Campus and Academic Resources

U Matter, We Care: If you or someone you know is in distress, please contact umatter@ufl.edu, 352-392-1575, or visit U Matter, We Care website to refer or report a concern and a team member will reach out to the student in distress.

Counseling and Wellness Center: Visit the Counseling and Wellness Center website or call 352-392-1575 for information on crisis services as well as non-crisis services.

Student Health Care Center: Call 352-392-1161 for 24/7 information to help you find the care you need, or visit the Student Health Care Center website.

University Police Department: Visit UF Police Department website or call 352-392-1111 (or 9-1-1 for emergencies).

UF Health Shands Emergency Room / Trauma Center: For immediate medical care call 352-733-0111 or go to the emergency room at 1515 SW Archer Road, Gainesville, FL 32608; Visit the UF Health Emergency Room and Trauma Center website.

E-learning technical support: Contact the UF Computing Help Desk at 352-392-4357 or via e-mail at helpdesk@ufl.edu.

Career Connections Center: Reitz Union Suite 1300, 352-392-1601. Career assistance and counseling services.

Library Support: Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center: Broward Hall, 352-392-2010 or to make an appointment 352- 392-6420. General study skills and tutoring.

Writing Studio: 2215 Turlington Hall, 352-846-1138. Help brainstorming, formatting, and writing papers.

Student Complaints On-Campus: Visit the Student Honor Code and Student Conduct Code webpage for more information.

On-Line Students Complaints: View the Distance Learning Student Complaint Process.

Disclaimer: This syllabus represents the instructor's current plans and objectives. As we go through the semester, those plans may need to change to enhance the class learning opportunity. Such changes, communicated clearly, are not unusual and should be expected.