

Cleveland State University
Department of Electrical Engineering and Computer Science

CIS 470: Mobile Application Development

Catalog Description:

CIS 470: Mobile Application Development (3 credits)

Pre-requisite: CIS 345/545

The course provides an in-depth review of concepts, design strategies, tools and APIs needed to create, test and deploy advanced applications for mobile phones and occasionally connected mobile devices. Topics include: design of mobile user interfaces, application life-cycle, multi-threading, inter-process communication, data persistency, content providers, background services, geo-location and mapping, networking and web services, telephony, messaging, peer-to-peer communication. The target computing environment changes overtime; currently the course explores the Android Operating System and its supporting SDK.

Textbook:

Lecture Notes by V. Matos (available from <http://grail.cba.csuohio.edu/~matos/notes/cis-493/2011-fall/Android-Syllabus-2011-fall.pdf>).

References:

1. The Busy Coder's Guide to Android Development by Mark L. Murphy. Commons Ware Pub, 2014, ISBN: 978-0-9816780-0-9 (available at: <http://commonsware.com/Android/index.html>)
2. Android Developer's Guides – available at: <http://developer.android.com/>

Coordinator:

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Expected Outcomes:

At the end of the course the student will be able to (1) engineer effective software systems for cell phones and other occasionally connected mobile devices based on the selected operating system, (2) understand the life-cycle mechanism of mobile software, (3) construct rich multi-threaded graphical interfaces sensitive to tactile, oral, and positional interactions, (4) manage advanced mobile data-stores, (5) integrate multimedia objects in their solutions, (6) develop location-aware applications.

Fulfillment of EE, CE and CIS Program Objectives and Outcomes:

Objectives:

1. Graduates will apply the concepts of the discipline including analysis, design, and implementation of information and computing systems.
2. Graduates will be employed in the computing profession, and will be engaged in life-long learning, understanding, and applying new ideas and technologies as the field evolves.

3. Graduates will be informed and involved members of their communities, and responsible engineering and computing professionals.

Outcomes:

1. An ability to apply knowledge of computing and mathematics appropriate to the program's student outcomes and to the discipline
2. An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution
3. An ability to function effectively on teams to accomplish a common goal
5. An ability to translate fundamental computing concepts to a variety of emerging technologies
6. An ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices.
7. An ability to apply design and development principles in the construction of software systems of varying complexity.

Student Characteristics:

- (a) An ability to apply knowledge of computing and mathematics appropriate to the program's student outcomes and to the discipline
- (b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution
- (c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs
- (d) An ability to function effectively on teams to accomplish a common goal
- (i) An ability to use current techniques, skills, and tools necessary for computing practice.
- (j) An ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices. [CS]
- (k) An ability to apply design and development principles in the construction of software systems of varying complexity. [CS]

Topics:

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| 1. Targeting Android | 1 |
| 2. Development Environment | 1 |
| 3. User interfaces | 3 |
| 4. Intents and services | 1 |
| 5. Storing and retrieving data | 2 |
| 6. Networking and web services | 1 |
| 7. Telephony | 1 |

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| 8. Notifications and alarms | 1 |
| 9. Graphics and animation | 1 |
| 10. Multimedia | 1 |
| 11. Location Services | 2 |
| 12. Final Exam | 1 |
| Total Weeks | <hr/> 16 |

Computer Usage:

Android applications can be made using the Windows XP/Vista, Mac OS X (Intel only) or Linux environment. Students could (for free) download the Google Android and the Eclipse environment along with the Android Developer Tools plug-in for Eclipse.