ENTERED 2/22/18 -mlc

CM-3935

APPROVED GCC 1/25/18 CGSP 2/7/18

VirginiaTech

Office of the University Registrar (MC 0134)

Cover Sheet – Proposal for New and Revised Courses

General Information			
Proposal Date	10/17/2017	*15-Day Review End Date*	
Department	Computer Science		
Course Designator and Number	CS 5254		
Title of Course	Mobile Application Development	*Credit Hours*	3
Please refer to Office of University Registrar for guidelines and policy requirements https://www.registrar.vt.edu/faculty/teaching/instructional-minutes.html			
Course Transcript Title (ADP) (30 Character Maximum)	Mobile App Development		
Instructor and/or Departmental Contact	Gregory Kulczycki		
Contact Phone	703-538-3758	*Contact E-Mail*	gregwk@vt.edu

Please count this course toward the following scorecard metrics area:

☐ Study Abroad ☐ Service Learning ☐ Experiential

☐ Undergraduate Research

Scorecard Metrics Definitions can be found here: http://www.registrar.vt.edu/faculty/forms/scorecard-metrics.html

Please check below if this course should count toward First-Year Experience:

☐ FYE

Check ONLY ONE of the following boxes

☒ New Course ☐ Revised Course (*Revision > 20%* _____ *Revision < 20%* _____)

☐ New Course & Inclusion in the GE Core Outcome Area _____ ☐ Other _____ Include Attachment if Needed

☐ Revised Course for Inclusion in the GE or GE Area Change

A:	Attach statement from Dean or Departmental Representative as to whether Teaching this course, and/or inclusion of the course in the Pathways General Education Curriculum, will require or generate the need for additional departmental resources.			
B:	Attach appropriate letters of support from affected departments and/or colleges.			
C:	***Effective Semester:***	Fall 2018		
D:	***Change in Title From:***			
	To:			
E:	***Change in Lecture and/or Lab Hours From:***		***To:***	
F:	***Change in Credit Hours From:***		***To:***	
G:	***Percentage of Revision from Current Syllabus:***			
Revision Summary:				
H:	***Course Number(s) and Title(s) to be deleted from the Catalog with APPROVAL:***			

Approval Signatures

Department Representative		*Date*	10/17/2017
College Curriculum Committee Representative		*Date*	10/24/17
College Dean		*Date*	10/31/17

Mobile Application Development
CS 5254

I – Catalog Description

Languages and technologies needed to develop applications for modern mobile devices. Mobile infrastructure and devices. Interactive graphical user interfaces for mobile devices. Protocols and standards for using mobile device features such as sensors, networking, location, camera, and audio. Mobile app architecture, performance considerations, and asynchronous programming. Principles and technologies for mobile security. Pre: 5044 (3C, 3H)

Course Number: 5254
Transcript (ADP) Title: Mobile App Development

II – Learning Objectives

Having successfully completed this course, the student will be able to:

- Implement a mobile application such as a game or a web client that uses the mobile device's sensors, networking, location, camera and/or audio.
- Design an interactive graphical user interface for a mobile application.
- Apply asynchronous programming techniques in the implementation of a mobile application.
- Determine fundamental distinctions and similarities between mobile apps, web applications, and standard applications.
- Address mobile application security factors such as confidentiality, integrity, and authentication to design or assess a mobile application.
- Apply performance considerations to analyze performance of mobile applications.

III – Justification

The smartphone and mobile devices market has brought about a paradigm shift in how we interact with technology. Over a billion smartphones are sold globally every year. They are highly integrated in people's lives and are viewed as an essential tech device, even more than traditional computers. Students are aware of the popularity of mobile devices and are interested in gaining skills and knowledge needed to develop mobile applications. This course is needed to provide students with core skills in mobile app development. In the context of the MIT (Masters of Information Technology) program, it complements the Web Application Development course CS5244. Both web development and mobile app development rely on a similar model-view-controller architecture. And mobile applications can serve as clients to data-centric web services.

Graduate credit is required for this course. Students need a background at the graduate level in object-oriented programming (as in CS 5044). Students working independently will demonstrate the ability to adapt and innovate to solve problems in the design and

implementation of mobile applications that can leverage the unique capabilities of mobile devices. They will master the capacity to critically analyze protocols, tools, security strategies, and architectures used in the development of mobile applications. Because this course is aimed primarily at employed professionals the concepts and techniques are presented in a more mature and informed manner, drawing on the experience of the student in a way not possible with undergraduate students. The course topics are more directly connected with the pragmatic aspects of mobile application development that are important to a community of employed professionals.

IV – Prerequisites and Corequisites

Pre: 5044

V – Texts and Special Teaching Aids

No required text. Examples of required or recommended text are:

Phillips, B., Stewart, C., & Marsicano, K. (2016). Android Programming: The Big Nerd Ranch Guide (3rd ed.). Big Nerd Ranch Guides. Pp. xxii, 624.
Griffiths, D. & Griffiths, D. (2017). Head First Android Development (2nd ed.). O'Reilly. Pp, xl, 928.

VI – Syllabus

Topic	Description/Examples	Percent of Course
Development Environment	Android or iOS SDK Java or Swift/XML	10%
Interactive GUI	User Interface Buttons/Events Responsive Design	20%
Mobile Hardware Usage	Sensors/Networking Location/Camera Audio	20%
Asynchronous Programming and Performance	Threads Information Exchange Background Operations	20%
App Architecture	Model-View-Controller	10%
Security and Advanced Topics		20%
Total		100%

Virginia Tech
VIRGINIA POLYTECHNIC INSTITUTE
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July 6, 2017

TO: Course Approval Committees

FROM: Cliff Shaffer
Associate Department Head for Graduate Studies

RE: CS 5254

The Department of Computer Science is requesting approval for a new course, CS5254 "Mobile Application Development".

No additional resources will be required in order to offer this course.