NEW YORK CITY COLLEGE OF TECHNOLOGY/CUNY
Computer Systems Technology Department

CST3601 – Development of Advanced Mobile Applications
(3 credits, 2 class hours, 2 lab hours)

INSTRUCTOR: OFFICE:

E-MAIL: PHONE:

OFFICE HOURS:

1. Course Description:
This course focuses on advanced mobile applications for two of the major platforms: Android (Google) and iOS (Apple). These applications are supported by a cross-platform programming language.

2. Course Objectives:
Upon successful completion of the course, the student should be able to:
1. Understand the Java/Swift environment and their use of GUI libraries and events for mobile devices.
2. Be familiar and experienced with the Android Studio and XCode development environment.
3. Create simple to complex applications to illustrate the Android and iOS based applications.
4. Solve complex applications using both programming languages.

3. General Education Outcomes:
1. Skill/Inquiry/Analysis: Students will employ scientific reasoning & logical thinking.
2. Skill/Communication: Students will communicate in diverse settings and groups, using written (reading and writing), oral (speaking and listening), and visual means
3. Values/Ethics/Relationships/ Professional/Personal Development: Students will work with team to build consensus, respect and the use of creativity.

4. Prerequisite:
CST3513 Object-Oriented Programming in Java and CST2301 Multimedia and Mobile Device Programming or CET3640 Software for Computer Control

5. Required Text:
Beginning App Development with Flutter: Create Cross-Platform Mobile Apps, Rap Payne, 2019, Apress, ISBN: 978-1484251805

6. Evaluation and Grading:

Midterm	30%
Final	35%
Project	25%
Participation, Tests, Homeworks	10%

7. Grade System*:

Grade	A	A-	B+	B	B-	C+	C	D	F
Range	93-100	90-92.9	87-89.9	83-86.9	80-82.9	77-79.9	70-76.9	60-69.0	<= 59.9

* All CST students must attain a grade of C or better in all CST courses

8. Academic Integrity Policy:

Students and all others who work with information, ideas, texts, images, music, inventions, and other intellectual property owe their audience and sources accuracy and honesty in using, crediting, and citing sources. As a community of intellectual and professional workers, the College recognizes its responsibility for providing instruction in information literacy and academic integrity, offering models of good practice, and responding vigilantly and appropriately to infractions of academic integrity. Accordingly, academic dishonesty is prohibited in The City University of New York and at New York City College of Technology and is punishable by penalties, including failing grades, suspension, and expulsion. The complete text of the College policy on Academic Integrity may be found in the catalog.

9. Course Syllabus

Week	TOPIC	LAB
1, 2	Why Mobile Apps? App Design Issues and Considerations	Identify and explain how a specific business process might be automated with mobile technology
3	Using Eclipse for Android Development	Create a new Virtual device that uses a bigger device to test your app on a different screen size.
4,5	Android Navigation and Interface Design	Create a contact list that will update the contact address.
6, 7	Persistent Data in Android, Lists in Android: Navigation and Information Display	Create a layout that displays the latitude, longitude, and accuracy for the network sensor and for the GPS sensor.
8	Maps and location in Android, Access to hardware in Android	Develop an app that displays the proximity sensor readings and use it to send text (ShortMessageService).
9	UsingXcode for iOS development **Midterm**	Create the User Interface in iOS
10, 11	IOS Navegation and Interface Design, Persistent data in iOS	Develop an app that uses Core Data and Picker View for additional user interface controls.
12	Tables in iOS: Navigation and Information Display	Create an iOS app that provides navigation using tables.
13, 14	Maps and Location in iOS, Access to Hardware and Sensors in iOS	Develop an app for a long-press recognizer for the cell phone field, but instead of calling the number, send a message
15	Monetizing Apps, Publishing Apps, iOS & Android: Review **FINAL**	Write a business plan for the contact list app. How would you monetize the app? Include a test plan for the app for both the Android and the iOS platforms.

11. Course Assessment:

For the successful completion of this course a student should be able to:	Evaluation methods and criteria
Describe the challenges, opportunities and constraints working with Java GUI libraries and events	Students will have developed/modified in-class programs that illustrate principles of Java based GUI applications
Design a user interface on a mobile device to capture user input and take business action	Through completion of homeworks students will demonstrate ability to create user interfaces using forms and canvas techniques
Create applications that handle events	Students will use Java based event listeners and handlers to respond to user actions in in-class exams.
Learn the challenges of handling game playing applications	Students will document/answer test questions on issues of animation within game playing
Utilize an iOS application to perform an animation based procedure.	Students will use the Xcode IDE to complete assignments using iOS classes.

12. General Education Outcomes and Assessment:

Learning Outcomes	Assessment Method
SKILLS/Inquiry/Analysis Students will employ scientific reasoning and logical thinking.	Students will describe problem, identify inputs, processes and desired outcomes in assignments, class work and tests. Students will solve problems in assignments, class work and tests. Students will identify coding paradigms in assignments, class work and tests
SKILLS/Communication Students will communicate in diverse settings and groups, using written (both reading and writing), and visual means	Students will present their analysis of mobile apps in written/oral form. Students will display the Catalog project to the class detailing key technical objectives met.
Values, Ethics, Relationships/ Professional/Personal Development Students will work with teams, including those of diverse composition. Build consensus. Respect and use creativity.	Students will demonstrate creativity in an assigned cross-platform mobile application project.

13. Bibliography

1. J. Iversen, M. Eierman, "*Learning Mobile App Development: A Hands-on Guide to Building Apps with iOS and Android / Edition 1",* Addison-Wesley Professional, 2014, ISBN: 9780321947864

2. F. Zammetti, "*Pro iOS and Android Apps for Business: with jQuery Mobile, node.js, and MongoDB"*, Apress, 2013, ISBN: 978-1-4302-6070-7

3. T. J. Duffy, "Programming with Mobile Applications: Android, iOS, and Windows Phone 7", Cengage Learning, 2012, ISBN: 9781133628132

4. T. Cornez, R. Cornez,"*Android Programming Concepts*", Jones & Bartlett Learning, 2017, ISBN: 9781284070705

5. M. Neuburg, "i*OS11 Programming Fundamentals with Swift*", O'Reilly, 2018, ISBN: 978-1491999318

6. A. J. Wagner, G. Scalzo, J. Hoffman, "*Swift: Developing iOS Applications",* Packt Publishing Limited, 2016, ISBN: 9781787120242

7. J. Horton, H. Vasconcelos, R. Portales, "*Android: Programming for Developers*", Packt Publishing Limited, 2016, ISBN: 9781787123694

8. H. Franceschi, "*Android App Development*", Jones & Bartlett Learning, 2018, ISBN: 9781284092127

9. J. Hoffman, "*Mastering Swift 3*", Packt Publishing Limited, 2016, ISBN: 9781786466129

10. J. Horton, "Learning Java by Building Android Games", Packt Publishing Limited, 2015, ISBN: 9781784398859