New York City College of Technology, CUNY

CURRICULUM MODIFICATION PROPOSAL FORM

This form is used for all curriculum modification proposals. See the [Proposal Classification Chart](http://openlab.citytech.cuny.edu/collegecouncil/files/2014/08/2013-10-09-Proposal_Classification_Chart.pdf) for information about what types of modifications are major or minor. Completed proposals should be emailed to the Curriculum Committee chair.

|  |  |
| --- | --- |
| **Title of Proposal** | New course on development of advanced mobile applications |
| **Date** | 3/2/2018 |
| **Major or Minor** | Major |
| **Proposer’s Name** | Marcos S. Pinto |
| **Department** | Computer Systems Technology |
| **Date of Departmental Meeting in which proposal was approved** | 11/17/17 |
| **Department Chair Name** | Hong Li |
| **Department Chair Signature and Date** |  |
| **Academic Dean Name** | Kevin Hom |
| **Academic Dean Signature and Date** | 3/1/18 |
| **Brief Description of Proposal**  (Describe the modifications contained within this proposal in a succinct summary. More detailed content will be provided in the proposal body. | This is followed-up course for the existing associate-level course, CST2301 Multimedia and Mobile Devices Programming which is one of the pre-requisite courses for the proposed one. It complements CST2301 by including the development of iOS mobile applications |
| **Brief Rationale for Proposal**  (Provide a concise summary of why this proposed change is important to the department. More detailed content will be provided in the proposal body). | Students that took the associate-level mobile course, CST2301 will be taught how to develop advanced applications for both mobile platforms: Android (Google) and iOS(Apple). |
| **Proposal History**  (Please provide history of this proposal: is this a resubmission? An updated version? This may most easily be expressed as a list). | New proposal  1st submission: 3/2/2018  2nd revision: 3/14/2019  3rd revision: 4/4/2019 |

New York City College of Technology, CUNY

NEW COURSE PROPOSAL FORM

|  |  |
| --- | --- |
| **Course Title** | Development of Advanced Mobile Applications |
| **Proposal Date** | 03/02/18 |
| **Proposer’s Name** | Marcos S. Pinto |
| **Course Number** | CST3601 |
| **Course Credits, Hours** | 3 credits, 2 lecture hours, 2 lab hours |
| **Course Pre-Requisites** | CST2301Multimedia and Mobile Device Programming and CST3513 Object-Oriented Programming in Java or CET3640 Software for Computer Control |
| **Catalog 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. |
| **Brief Rationale**  Provide a concise summary of why this course is important to the department, school or college. | The proposed course is designed to teach the students the basics of developing iOS applications and then move into the creation of more complex applications for both platforms: Android and iOS. This new course is proposed based on the following considerations:  1. The current associate-level mobile course CST2301, Multimedia and Mobile Device Programming, is an introduction to the development of basic mobile applications for devices running Google's Android operating system. The new proposed course gives the student the means to develop mobile applications for the two major mobile platforms: Android and iOS. Students will develop advanced (more complex) applications alternating between these two operating systems.  2. The proposed course will cover the syntax and semantic of a cross-platform solution that abridges the differences of the technologies used in applications for both mobile platforms: iOS and Android. |
| **CUNY – Course Equivalencies**  Provide information about equivalent courses within CUNY, if any. | NO |
| **Intent to Submit as Common Core**  If this course is intended to fulfill one of the requirements in the common core, then indicate which area. | NO |
| **For Interdisciplinary Courses:**   * Date submitted to ID Committee for review * Date ID recommendation received   - Will all sections be offered as ID? Y/N | N/A |
| N/A |
| N/A |
| **Intent to Submit as a Writing Intensive Course** | NO |

**Proposed Course Name: Development of Advanced Mobile Applications**

**Course Overview & Rationale**

The proposed course is designed to teach the students the basics of developing iOS applications using Swift and then move into the creation of more complex applications for both platforms: Android and iOS. This new course is proposed based on the following considerations:

1. The current associate-level mobile course CST2301, Multimedia and Mobile Device Programming, is an introduction to the development of basic mobile applications for devices running Google's Android operating system. The new proposed course gives the student the means to develop mobile applications for the two major mobile platforms: Android and iOS. Students will develop advanced (more complex) applications in a cross-platform environment.
2. To focus on giving the students the tools to build advanced mobile applications with the inclusion of mobile games and animations.
3. The proposed course will cover the syntax and semantic of a cross-platform technology that can be used to build applications for both mobile technologies: Android and iOS.

**Course Need**

**Students who would take this class:** students in the BTech program

**Department**: Computer Systems Technology

**Program**: Bachelors in Technology

**The number of section (s) anticipated:** one section for the first year

**Projected headcount:** 24students

**Physical Resources required:** Basicsmartroomset**-**up**:** a screen, and an overhead projector/a TV set that is run by and connected to a computer

**Course overlap:** None

**Faculty** **qualified** **for** **teaching** **this** **course**: Yes, there are faculty members who have doctoral degrees in Computer Science with the concentration in computer application development for various domains.

**Course design**

**Course context:** This course will be offered as an elective in the BTech program. Students are required to develop an independent project at the end of the semester.

**Course** **structure**: This course will be offered in a lecture style/format.

**Anticipated** **Pedagogical** **Strategies** **and** **Instructional** **Design**: This class will be run in a lecture-activity style/format. The class will start with a lecture, and then move on to creative in-class activities, such as using Java-based and Swift-based programming languages to develop mobile applications for the two most known platforms of mobile devices: Android and iOS.

**Providing Support to Programmatic Learning Outcomes:** This course requires satisfactory completion of individual assignments, tests, two major exams: midterm and final, and a final term project.

# 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:**

CST3513Object-Oriented Programming in Java and CST2301 Multimedia and Mobile Device Programming or CET3640 Software for Computer Control

**5. Required Text:**

Learning Mobile App Development – A Hands-On Guide to Building Apps with iOS and Android, J. Iversen and Michael Eierman, 2014, Addison-Wesley, ISBN: 978-0-321-94786-4

**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) messages. |
| 9 | Using Xcode 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:**

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| --- | --- |
| **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:**

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| --- | --- |
| **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. |

**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

**Chancellor’s University Reports**

# Section AIV: New Courses

**New courses to be offered in the CST department**

|  |  |
| --- | --- |
| **Department(s)** | Computer Systems Technology |
| **Academic Level** | **[ X ] Regular [ ] Compensatory [ ] Developmental [ ] Remedial** |
| **Subject Area** |  |
| **Course Prefix** | CST |
| **Course Number** | 3601 |
| **Course Title** | Development of Advanced Mobile Applications |
| **Catalog 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. |
| **Prerequisite** | CST3513Object-Oriented Programming in Java and CST2301Multimedia and Mobile Device Programming or CET3640 Software for Computer Control |
| **Co-requisite** | None |
| **Pre- or co-requisite** | None |
| **Credits** | 3 |
| **Contact Hours** | 2 lecture hours and 2 lab hours |
| **Liberal Arts** | **[ ] Yes [ X] No** |
| **Course Attribute (e.g. Writing Intensive, etc)** | N/A |
| **Course Applicability** | **[X ] Major**  **[ ] Gen Ed Required [ ] Gen Ed - Flexible [ ] Gen Ed - College Option**  **[ ] English Composition [ ] World Cultures [ ] Speech**  **[ ] Mathematics [ ] US Experience in its Diversity [ ] Interdisciplinary**  **[ ] Science [ ] Creative Expression [ ] Advanced Liberal Arts**  **[ ] Individual and Society**  **[ ] Scientific World** |
| **Effective Term** | **Spring 2020** |

**Rationale:**

The proposed course is designed to complement the teaching of the development of mobile applications. Currently the course offered at the Associate-level, CST2301, is an elective course where students learn how to create mobile applications for the Android platform which is one of the most used platform for mobile devices. The proposed course not only will include the development of mobile applications for the other platform, iOS, but also the course will teach students how to develop more complex mobile applications in both platforms.

Students taking Bachelors-level courses in the Software Development track are required do take, CST3513, which is one the pre-requisites of the proposed course and the students are required to have two electives 300- or 400-level courses and the proposed course could be one of these elective courses.

**LIBRARY RESOURCES & INFORMATION LITERACY: MAJOR CURRICULUM MODIFICATION**

Please complete for all major curriculum modifications. This information will assist the library in planning for new courses/programs.

Consult with your library faculty subject specialist (http://Citytech/dir) 3 weeks before the proposal deadline.

Course proposer: please complete boxes 1-4. Library faculty subject specialist: please complete box 5.

|  |  |  |
| --- | --- | --- |
| 1 | Title of proposal  New course: CST3601 Development of Advanced Mobile Applications | Department/Program  Computer Systems Technology/Bachelor of Technology |
|  | Proposed by (include email & phone)  Marcos S. Pinto  mpinto@citytech.cuny.edu  (718) 260-5100 | Expected date course(s) will be offered February 1, 2020  # of students 24 |

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| --- | --- |
| 2 | The library cannot purchase reserve textbooks for every course at the college, nor copies for all students. Consult our website (http://Citytech/curriculum) for articles and ebooks for your courses, or our open educational resources (OER) guide (http://Citytech/oer). Have you considered using a freely-available OER or an open textbook in this course?  Yes, the proposed textbook is an ebook |

|  |  |
| --- | --- |
| 3 | Beyond the required course materials, are City Tech library resources sufficient for course assignments? If additional resources are needed, please provide format details (e.g. ebook, journal, DVD, etc.), full citation (author, title, publisher, edition, date), price, and product link.  Yes. The library subscribes to sufficient number of journals and databases in which students will find information and instructions on how to complete the courses' assignments. |

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| --- | --- |
| 4 | Library faculty focus on strengthening students' information literacy skills in finding, critically evaluating, and ethically using information. We collaborate on developing assignments and customized instruction and research guides. When this course is offered, how do you plan to consult with the library faculty subject specialist for your area? Please elaborate.  Most definitely so. This courses is on a very important area of IT, mobile applications, which is constantly changing. As new research papers on this subject are being published we will contact the library for the availability of these papers and in case necessary request for the possibility of having them accessible for our students. |

|  |  |
| --- | --- |
| 5 | Library Faculty Subject Specialist Prof. Junior Tidal  Comments and Recommendations  After surveying the collection, I believe that the library can adequately support this course. Based upon course approval, I would also suggest acquiring more monographs regarding app development, including titles that cover XCode, mobile IDE, and iOS. I would also suggest that the library acquire software to support students’ development including IDEs and emulators. Additional hardware to augment our loanable collection of iPads may also be necessary for students.  Date 11.27.17 |