WINONA STATE UNIVERSITY
PROPOSAL FOR NEW COURSES

Department __________________ Computer Science ____________________________

Course No. __________________Course Name ________________ Credits _______

345 Mobile Application Development ____________ 3 __________

This proposal is for a(n) __________ Undergraduate Course __________ Graduate Course

Applies to: __________ Major __________ Minor __________ General Education* __________

Prerequisites ________ Required ________ Elective __________

Prerequisites ________ CS 250

Grading method ________ Grade only ________ P/NC only ________ Grade and P/NC Option

Frequency of offering ________ Every year ________

*For General Education Program course approval, the form Proposal for General Education Courses must also be completed and submitted according to the instructions on that form.

Provide the following information (attach materials to this proposal):

A. Course Description

1. Catalog description.
2. Course outline of the major topics and subtopics (minimum of two-level outline).
3. Basic instructional plan and methods.
4. Course requirements (papers, lab work, projects, etc.) and means of evaluation.
5. Course materials (textbook(s), articles, etc.).
6. List of references.

B. Rationale

1. Statement of the major focus and objectives of the course.
2. Specify how this new course contributes to the departmental curriculum.
3. Indicate any course(s) which may be dropped if this course is approved.

C. Impact of this Course on other Departments, Programs, Majors, or Minors

1. Does this course increase or decrease the total credits required by a major or minor of any other department? If so, which department(s)?
2. List the departments, if any, which have been consulted about this proposal.

D. General Education Course Proposals

The form Proposal for General Education Course must also be completed and submitted according to the instructions on that form.

Attach a Financial and Staffing Data Sheet.

Attach an Approval Form.

Department Contact Person for this Proposal:

Tim Gegg-Harrison ____________________ x5381 __________ tgeggharrison@winona.edu

Name (please print) __________ Phone __________ e-mail address __________
A. Course Description

1. Catalog description.

**CS 345 – Mobile Application Development 3 S.H.**

This course is a mini-capstone in object-oriented development, reinforcing fundamental concepts from CS 234 and CS 250 and introducing advanced programming concepts including memory management and the model-view-controller design pattern. In addition, design considerations for mobile devices are discussed including utilizing the touch interface, programming for multiple devices, and programming with limited resources. New development tools are introduced including a new object oriented development language and a new IDE. Students are also asked to make extensive use of the available API. Prerequisite: CS 250.

2. Course outline of the major topics and subtopics (minimum of two-level outline).

   I. Introduction to Mobile Application Development
      i. Creating a mobile app in an IDE
      ii. Running the Simulator
      iii. Working with the Debugger
   
   II. Programming a Smartphone
      i. Variables, numeric values and operators, strings, assignment statements
      ii. Classes
      iii. Methods, parameters, and return values
      iv. Conditional and looping statements
      v. Collections
      vi. Memory management
   
   III. Model-View-Controller
      i. Views
      ii. Controls
      iii. View Controllers
   
   IV. Touch Interface
      i. Event Handling
      ii. Gestures
   
   V. File Management
   
   VI. Accelerometer
   
   VII. Undo Management
   
   VIII. Game Development

**Course Objectives and Student Learning Outcomes:**

Upon entering CS 345, students should have

- Knowledge of the and object-oriented programming language like Java, as given in CS 234 and CS 250
- Motivation to study application development on mobile devices
- Some ability for precise communication and reasoning

Upon completing CS 345, students should be able to

- Using a programming language like Objective-C, be able to create smartphone applications
- Provide evidence of an understanding of object-oriented design and development, in particular the appropriate use of the model-view-controller design pattern
- Understand memory management issues
- Understand event handling as related to touch gestures

3. Basic instructional plan and methods.

This class will have heavy emphasis on hands-on lab work. The majority of the in-class lab work will be done collaboratively, although some independent project work will be assigned. The instructor will present new concepts along with examples and then students will work collaboratively on additional examples that are provided.

4. Course requirements (papers, lab work, projects, etc.) and means of evaluation.

The primary form of evaluation for this course will be a large programming project and a set of smaller projects. The class will also include 2-3 exams.
5. Course materials (textbook(s), articles, etc.).


6. List of references.


D. Mark and J. LaMarche. *Beginning iPhone 4 Development: Exploring the iPhone SDK*, APress, 2011.


B. Rationale

1. Statement of the major focus and objectives of the course.

   This course will reinforce the object-oriented concepts taught in the introductory programming sequence (CS 234 and CS 250) by introducing a new object-oriented programming language and IDE and extend the student’s knowledge of formal problem solving by introducing concepts of memory management, the model-view controller design pattern, and issues specific to programming a smartphone.

2. Specify how this new course contributes to the departmental curriculum.

   Smartphones are becoming more and more prevalent. Although small, these devices are robust computational devices. There is a growing need for individuals with competence in programming these devices.

3. Indicate any course(s) which may be dropped if this course is approved.

   None, this course serves a new need.

C. Impact of this Course on other Departments, Programs, Majors, or Minors

1. Does this course increase or decrease the total credits required by a major or minor of any other department? If so, which department(s)?

   No, it is another option for one of the CS Electives for the Computer Science major and minor.

2. List the departments, if any, which have been consulted about this proposal.

   None.
WINONA STATE UNIVERSITY
FINANCIAL AND STAFFING DATA SHEET

Course or Program  CS 345

Include a Financial and Staffing Data Sheet with any proposal for a new course, new program, or revised program.

Please answer the following questions completely. Provide supporting data.

1. Would this course or program be taught with existing staff or with new or additional staff? If this course would be taught by adjunct faculty, include a rationale.

   Existing staff will cover this new course.

2. What impact would approval of this course/program have on current course offerings? Please discuss number of sections of current offerings, dropping of courses, etc.

   No impact.

3. What effect would approval of this course/program have on the department supplies? Include data to support expenditures for staffing, equipment, supplies, instructional resources, etc.

   No impact.
## WINONA STATE UNIVERSITY
### APPROVAL FORM

Routing form for new and revised courses and programs.

| Course or Program | CS 345 |

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