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FIT5140 Advanced mobile systems - Semester 2, 2015

This unit focuses theoretical concepts, applications and research issues of mobile software. Students will learn techniques to design and develop mobile applications. A number of different toolkits/development environments will be discussed and used for the practical component of the unit. Interaction between mobile applications and other systems such as sensor networks or web systems will also be explored.

Mode of Delivery

Caulfield (Day)

Workload Requirements

Minimum total expected workload equals 12 hours per week comprising:

(a.) Contact hours for on-campus students:

• Two hours of lectures
• One 2-hour tutorial

(b.) Additional requirements (all students):

• A minimum of 8 hours independent study per week for completing tutorial and project work, private study and revision.

See also Unit timetable information

Unit Relationships

Prerequisites

FIT5046

Chief Examiner

Mr Elliott Wilson

Campus Lecturer

Caulfield

Elliott Wilson

Tutors
Monash is committed to excellence in education and regularly seeks feedback from students, employers and staff. One of the key formal ways students have to provide feedback is through the Student Evaluation of Teaching and Units (SETU) survey. The University’s student evaluation policy requires that every unit is evaluated each year. Students are strongly encouraged to complete the surveys. The feedback is anonymous and provides the Faculty with evidence of aspects that students are satisfied and areas for improvement.

For more information on Monash’s educational strategy, see:

www.monash.edu.au/about/monash-directions/ and on student evaluations, see:
www.policy.monash.edu/policy-bank/academic/education/quality/student-evaluation-policy.html
Academic Overview

Learning Outcomes

On successful completion of this unit, students should be able to:

1. describe the principles and theoretical concepts of mobile software systems;
2. explain different mobile systems toolkits and development environments;
3. utilise techniques for developing mobile applications;
4. develop mobile applications;
5. integrate mobile applications with other systems, such as sensor network systems or web systems.
## Unit Schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>Activities</th>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td>No formal assessment or activities are undertaken in week 0</td>
</tr>
<tr>
<td>1</td>
<td>Unit Introduction - IoT and Mobile Architecture</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>iOS Basics - Objective C and Swift</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Model-View-Controller and Mobile Interfaces</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Mobile Data Management</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>On-Board Sensors</td>
<td>iOS Application due Friday</td>
</tr>
<tr>
<td>6</td>
<td>Web Networking</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Embedded Computing 1</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Embedded Computing 2</td>
<td>Embedded Systems Application due Friday</td>
</tr>
<tr>
<td>9</td>
<td>IoT Web Servers</td>
<td>Final Project Proposal due Friday</td>
</tr>
<tr>
<td>10</td>
<td>Embedded Web Networking</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Guest Lecture TBA</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Guest Lecture TBA</td>
<td>Final Project submission Friday Week 14. Project Demo and Interviews during week 15</td>
</tr>
<tr>
<td></td>
<td>SWOT VAC</td>
<td>No formal assessment is undertaken during SWOT VAC</td>
</tr>
</tbody>
</table>

*Unit Schedule details will be maintained and communicated to you via your learning system.

## Teaching Approach

### Lecture and tutorials or problem classes

This teaching and learning approach helps students to initially encounter information at lectures, discuss and explore the information during tutorials, and practice in a hands-on lab environment.

## Assessment Summary

In-semester assessment: 100%

<table>
<thead>
<tr>
<th>Assessment Task</th>
<th>Value</th>
<th>Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1: iOS Application</td>
<td>30%</td>
<td>Friday of Week 5</td>
</tr>
<tr>
<td>A2: Embedded System Application</td>
<td>20%</td>
<td>Friday of Week 8</td>
</tr>
<tr>
<td>A3a: Final Project Proposal</td>
<td>10%</td>
<td>Friday of Week 9</td>
</tr>
<tr>
<td>A3b: Final Project Demonstration</td>
<td>40%</td>
<td></td>
</tr>
</tbody>
</table>
Code Submission: Friday of week 14. Demos and Interviews during week 15
Assessment Requirements

Assessment Policy

Faculty Policy - Unit Assessment Hurdles

Academic Integrity - Please see resources and tutorials at
http://www.monash.edu/library/skills/resources/tutorials/academic-integrity/

Assessment Tasks

Participation

• Assessment task 1

  Title: A1: iOS Application
  Description: Students will be required to develop an iOS application using the iOS SDK and the Swift programming language. Specific details regarding the assignment will be included in an assignment specification released to Moodle, however it is expect that students will demonstrate an understanding of the first 4 weeks of content, including:
  ♦ Mobile Application Architecture
  ♦ The Swift Programming Language
  ♦ MVC and Mobile Interfaces
  ♦ Mobile Data Management

  A submission link will be made available on Moodle closer to submission date.

  This assessment relates to Learning Outcomes 1, 2, 3 and 4
  Weighting: 30%
  Criteria for assessment: Students will be interviewed and required to explain their application. A formal marking guide will be released before the submission date.
  Due date: Friday of Week 5

• Assessment task 2

  Title: A2: Embedded System Application
  Description: Students will be required to develop a physical computing device using an Arduino compatible development board (provided). Specific details regarding the assignment will be included in an assignment specification released to Moodle, however it is expect that students will demonstrate an understanding of:
  ♦ Embedded Systems Architecture
  ♦ The Arduino Wiring language
Simple component hookup wiring

A submission link will be made available on Moodle closer to submission date.

This assessment relates to Learning Outcome 5

Weighting:
20%

Criteria for assessment:
Students will be interviewed and required to explain their application. A formal marking guide will be released before the submission date.

Due date:
Friday of Week 8

• Assessment task 3

Title:
A3a: Final Project Proposal

Description:
In teams of 2-3 students will propose an Internet of Things project that will make use of at least two physical sensors, an Arduino-like board and an iOS based application. Students are encouraged to discuss system ideas with Lecturers and Tutors before submission to get a sense of the expected scope of the project.

This assessment relates to Learning Outcome 1 and 2

Weighting:
10%

Criteria for assessment:
Proposals will be marked according to a marking guide that will be made available before submission.

Due date:
Friday of Week 9

• Assessment task 4

Title:
A3b: Final Project Demonstration

Description:
In teams of 2-3 students will develop the application they proposed in A3a. The project will be demonstrated to their tutor at the end of the semester.

Students are expected to consult with their tutors closely regard the breakdown of work and the overall scope of the project.

This assessment relates to Learning Outcomes 1, 2, 3, 4 and 5

Weighting:
40%

Criteria for assessment:
Students will be individually interviewed in week 15 to determine their contribution to the project. A marking criteria will be released before submission.

Due date:
Code Submission: Friday of week 14. Demos and Interviews during week 15
Learning resources

Monash Library Unit Reading List (if applicable to the unit)
http://readinglists.lib.monash.edu/index.html

Feedback to you

Types of feedback you can expect to receive in this unit are:

- Informal feedback on progress in labs/tutes
- Graded assignments with comments
- Interviews

Extensions and penalties

Submission must be made by the due date otherwise penalties will be enforced.

You must negotiate any extensions formally with your campus unit leader via the in-semester special consideration process: http://www.monash.edu.au/exams/special-consideration.html

Any late submissions will be penalised by 5% of the total marks for each day late (including weekends).

Returning assignments

Students can expect assignments to be returned within two weeks of the submission date or after receipt, whichever is later.

Assignment submission

It is a University requirement for students to submit an assignment coversheet for each assessment item. Faculty Assignment coversheets can be found at http://www.infotech.monash.edu.au/resources/student/forms/. Please check with your Lecturer on the submission method for your assignment coversheet (e.g. attach a file to the online assignment submission, hand-in a hard copy, or use an electronic submission). Please note that it is your responsibility to retain copies of your assessments.

Online submission

If Electronic Submission has been approved for your unit, please submit your work via the learning system for this unit, which you can access via links in the my.monash portal.

Technological Requirements

Students will require access to:

- The OSX Yosemite Operating System
- Xcode 6 or Higher
Assessment Requirements

• Intel Arduino IDE 1.5 or Higher (available for free: https://downloadcenter.intel.com/download/24782/Intel-Arduino-1-5-3)

Students will also be making use of the iOS University Developers Program. This requires a free AppleID. Students can sign up here: https://appleid.apple.com/
Other Information

Policies
Monash has educational policies, procedures and guidelines, which are designed to ensure that staff and students are aware of the University’s academic standards, and to provide advice on how they might uphold them. You can find Monash’s Education Policies at: www.policy.monash.edu.au/policy-bank/academic/education/index.html

Faculty resources and policies
Important student resources including Faculty policies are located at http://intranet.monash.edu.au/infotech/resources/students/

Graduate Attributes Policy
http://www.policy.monash.edu/policy-bank/academic/education/management/monash-graduate-attributes-policy.html

Student Charter

Student services
The University provides many different kinds of support services for you. Contact your tutor if you need advice and see the range of services available at http://www.monash.edu.au/students. For Malaysia see http://www.monash.edu.my/Student-services, and for South Africa see http://www.monash.ac.za/current/.

Monash University Library
The Monash University Library provides a range of services, resources and programs that enable you to save time and be more effective in your learning and research. Go to www.lib.monash.edu.au or the library tab in my.monash portal for more information. At Malaysia, visit the Library and Learning Commons at http://www.lib.monash.edu.my/. At South Africa visit http://www.lib.monash.ac.za/.

Disability Liaison Unit
Students who have a disability or medical condition are welcome to contact the Disability Liaison Unit to discuss academic support services. Disability Liaison Officers (DLOs) visit all Victorian campuses on a regular basis.

- Website: http://www.monash.edu/equity-diversity/disability/index.html
- Telephone: 03 9905 5704 to book an appointment with a DLO; or contact the Student Advisor, Student Community Services at 03 55146018 at Malaysia
- Email: dlu@monash.edu
- Drop In: Equity and Diversity Centre, Level 1, Building 55, Clayton Campus, or Student Community Services Department, Level 2, Building 2, Monash University, Malaysia Campus