### Subject Description Form

<table>
<thead>
<tr>
<th>Subject Code</th>
<th>EIE3109</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject Title</td>
<td>Mobile Systems and Application Development</td>
</tr>
<tr>
<td>Credit Value</td>
<td>3</td>
</tr>
<tr>
<td>Level</td>
<td>3</td>
</tr>
<tr>
<td>Pre-requisite / Co-requisite / Exclusion</td>
<td>Nil</td>
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</table>

**Objectives**

This course aims at providing students with an understanding of the real-time embedded and mobile systems, and the techniques essential to the design and implementation of mobile applications.

**Intended Subject Learning Outcomes**

Upon completion of the subject, students will be able to:

**Category A: Professional/academic knowledge and skills**

1. Understand the structure of real-time operating systems for modern mobile computer systems.
2. Understand the programming techniques and tools for developing software that is run in modern mobile computer systems.
3. Apply the knowledge to develop practical applications for modern real-time mobile computer systems.

**Category B: Attributes for all-roundedness**

4. Understand the creative process when designing solutions to a problem.

**Subject Synopsis/Indicative Syllabus**

1. **Introduction**
   - Introduction to Embedded Systems – embedded real-time systems, embedded programming and program models, real-time operating system (RTOS).
   - Introduction to Mobile Systems and Mobile Application Development – advancement of mobile devices, comparison of various mobile platforms (iOS, Android, Windows Phone, Blackberry, etc.), application design process.

2. **iOS Application Development**
   - Introduction to iOS – system architecture, development environment (Xcode), MVC architecture.
   - Introduction to Objective-C Programming – message passing, delegate pattern, retain/release.

3. **Android Application Development**
   - Introduction to Android OS – development environment (Eclipse), Android application basic (activity, service, content provider, broadcast receiver, intent resolution).
   - User Interface – layout overview, user interface widget, user interface event handling, user notification.
   - Data Storage – shared preference, internal storage, external storage, SQLite, content provider.
   - Networking – Android network overview and management, socket and HTTP, Wi-Fi and Bluetooth, GPS & telephony.
   - Multimedia – voice recording, image capturing, basic drawing & animation.

**Teaching/Learning Methodology**

Lectures: The subject matters will be delivered through lectures. Students will be engaged in the lectures through Q&A, discussions and specially designed classroom activities.
During tutorials, students will work on/discuss some chosen topics in small group. This will help strengthen the knowledge taught in lectures.

Laboratory and assignments: During laboratory exercises, students will perform hands-on tasks to practice what they have learned. They will evaluate performance of systems and design solutions to problems. The assignments will help students to review the knowledge taught in class.

While lectures and tutorials will help to achieve the professional outcomes, the open-ended questions in laboratory exercises and assignments will provide the chance to students to exercise their creativity in problem solving.

<table>
<thead>
<tr>
<th>Assessment Methods in Alignment with Intended Subject Learning Outcomes</th>
<th>Specific Assessment Methods/Tasks</th>
<th>% Weighting</th>
<th>Intended Subject Learning Outcomes to be Assessed (Please tick as appropriate)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. Continuous Assessment (total: 50%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Homework and assignments</td>
<td>10%</td>
<td>✓ ✓ ✓ ✓ ✓</td>
</tr>
<tr>
<td></td>
<td>• Tests</td>
<td>10%</td>
<td>✓ ✓ ✓</td>
</tr>
<tr>
<td></td>
<td>• Laboratory exercises</td>
<td>30%</td>
<td>✓ ✓</td>
</tr>
<tr>
<td></td>
<td>2. Examination</td>
<td>50%</td>
<td>✓ ✓ ✓ ✓</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>100%</td>
<td></td>
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</table>

Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:

Assignment, homework and laboratory exercises will require students to apply what they have learnt to solve problems. There will be open-ended questions that allow students to exercise their creativity in making design.

Examination and tests: They assess students’ achievement of the learning outcomes more rigorously.

Class contact (time-tabled):

- Lecture 24 Hours
- Tutorial/Laboratory/Practice Classes 15 hours

Other student study effort:

- Lecture: preview/review of notes; homework/assignment; preparation for test/quizzes/examination 36 Hours
- Tutorial/Laboratory/Practice Classes: preview of materials, revision and/or reports writing 30 Hours

Total student study effort: 105 Hours

Reference Books:

<table>
<thead>
<tr>
<th>Last Updated</th>
<th>June 2015</th>
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<tbody>
<tr>
<td>Prepared by</td>
<td>Dr Ivan Ho</td>
</tr>
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</table>