### Subject Description Form

<table>
<thead>
<tr>
<th>Subject Code</th>
<th>COMP 5228</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject Title</td>
<td>Embedded Software Engineering</td>
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<tr>
<td>Credit Value</td>
<td>3</td>
</tr>
<tr>
<td>Level</td>
<td>5</td>
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<tr>
<td>Pre-requisite/ Exclusion</td>
<td>Nil</td>
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**Objectives**  
This subject aims to provide students with comprehensive knowledge on embedded software design, modelling, implementation, simulation, testing, and verification.

**Intended Learning Outcomes**  
After completing this subject, the students should be able to:

- (a) have an understanding of definitions, scope and common properties of embedded systems from a variety of embedded applications in different industrial domains;
- (b) possess the ability to represent behaviour of embedded applications with computation models;
- (c) possess the knowledge of basic organization and architecture of embedded systems;
- (d) have an understanding of basic design flows for implementing embedded systems with hardware/software co-design;
- (e) have an understanding of pros and cons of major programming languages for embedded systems;
- (f) design and implement embedded software for application-specific systems by utilizing specialized compilers, real-time operating systems, and application software development platforms; and
- (g) design and conduct experiments with basic simulation, testing and verification techniques for embedded systems.

**Subject Synopsis/Indicative Syllabus**
- Introduction to embedded systems.
- Introduction to models of computation for representing behaviours for embedded applications.
- Organizations and architectures of embedded systems.
- Implementation of embedded systems with hardware/software codesign.
- Introduction to programming languages for embedded systems.
- Design and optimization for embedded software.
- Simulation, testing and verification.

**Teaching/Learning Methodology**  
Class activities including lecture, tutorial, lab, workshop seminar where applicable.

**Assessment Methods in Alignment with Intended Learning Outcomes**

<table>
<thead>
<tr>
<th>Specific Assessment Methods/Tasks</th>
<th>% Weighting</th>
<th>Intended subject learning outcomes to be assessed</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>b</td>
<td>c d e f g</td>
</tr>
<tr>
<td>Assignments, Tests &amp; Projects</td>
<td>55</td>
<td>✔️</td>
</tr>
<tr>
<td>-------------------------------</td>
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<td>----</td>
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<tr>
<td>Final Examination</td>
<td>45</td>
<td>✔️</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>100</td>
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</table>

**Student study effort expected**

**Class Contact:**
Class activities (lecture, tutorial, lab) 39 hours

**Other student study effort:**
Assignments, Quizzes, Projects, Exams 65 hours

**Total student study effort** 104 hours

**Reading list and references**


