Subject Description Form

Subject Code	COMP2021
Subject Title	Object-oriented Programming
Credit Value	3
Level	2
Pre-requisite / Co-requisite / Exclusion	**Pre-requisite**: COMP1011
Objectives	The objectives of this subject are to: • introduce students the basic elements of object-oriented programming; • teach students how to program computer systems using an object-oriented programming language; and • familiarize students the tools that streamline object-oriented development.
Intended Learning Outcomes	Upon completion of the subject, students will be able to: *Professional/academic knowledge and skills* (a) Use an object-oriented programming language to solve computer problems; and (b) Use an object-oriented programming language to build computer systems. *Attributes for all-roundedness* (c) build computer systems in groups and develop group work; and (d) cooperate with team members in problem solving.
Subject Synopsis/ Indicative Syllabus	**Topic** **1.** Object-based programming. Concept of objects and classes. Correspondence between software objects and real-world objects. Object life cycle. **2.** “Has-a” relationships and encapsulation. Data hiding and protection. **3.** Object-oriented programming. Concept of class hierarchies. “Is-a” relationships and inheritance. Overriding of methods. Polymorphism. Run-time binding. Abstract classes and methods. **4.** Multiple inheritance/Interfaces **5.** Exception handling. **6.** Generic programming. **7.** Concurrency. **8.** Use of UML to model OO projects.

<table>
<tr><td><b>Teaching/ Learning Methodology</b></td><td>This subject emphasizes both the conceptual elements in computer programming and practical experiences. A high- level, object-oriented programming language, such as C++ or Java, will be used for illustration purposes.
The lectures will be used to deliver course material that will be practiced/reinforced during the tutorials/labs. Individual/Group projects will be given to give students hand-on development experience.</td></tr>
<tr><td><b>Assessment Methods in Alignment with Intended Learning Outcomes</b></td><td>
<table>
<tr><td rowspan="2">Specific assessment methods/tasks</td><td rowspan="2">% weighting</td><td colspan="5">Intended subject learning outcomes to be assessed (Please tick as appropriate)</td></tr>
<tr><td>a</td><td>b</td><td>c</td><td>d</td><td></td></tr>
<tr><td><b>Continuous Assessment</b></td><td rowspan="2"><b>60%</b></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>1. Assignments, Quizzes & Projects</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td><td></td></tr>
<tr><td><b>Final Examination</b></td><td><b>40%</b></td><td>✓</td><td>✓</td><td></td><td></td><td></td></tr>
<tr><td>Total</td><td>100%</td><td colspan="5"></td></tr>
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A pass in both the continuous assessment and final examination portions are required to pass this subject.</td></tr>
<tr><td><b>Student Study Effort Expected</b></td><td>
<table>
<tr><td colspan="2">Class contact:</td></tr>
<tr><td>▪ Lecture</td><td>39 Hrs.</td></tr>
<tr><td>▪ Tutorial/Lab</td><td>13 Hrs.</td></tr>
<tr><td colspan="2">Other student study effort:</td></tr>
<tr><td>▪ Assignments, Quizzes, Projects, Exam</td><td>68 Hrs.</td></tr>
<tr><td>Total student study effort</td><td>120 Hrs.</td></tr>
</table></td></tr>
<tr><td><b>Reading List and References</b></td><td><b>Reference Books:</b>
1. Horstmann, Cay S., <i>Core Java Volume I – Fundamentals</i>, 10th Edition, Prentice Hall, 2016.
2. Bates, Bert and Sierra, Kathy, <i>Head First Java</i>, 2nd Edition, O’Reilly Media, 2005.
3. Bloch, Joshua, <i>Effective Java</i>, 2nd Edition, Addison-Wesley, 2008.
4. Larman, Craig, <i>Applying UML and Patterns: An Introduction to Object-Oriented Analysis and Design and Iterative Development</i>, 3rd Edition, Prentice Hall, 2004.</td></tr>
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