Title (Units): **COMP 2020 Object Oriented Systems Analysis and Design (3,2,1)**

Course Aims: To learn some methodological approaches to the development of properly designed and documented information systems. The object-oriented approach will be covered and to let students learn how to work as a team for developing software systems for their COMP2031-2 Group Project.

Prerequisite: COMP 1150 Object Oriented Programming
COMP 1160 Database Management

Learning Outcomes (LOs):
Upon successful completion of this course, students should be able to:

No.	Learning Outcomes (LOs)
	Knowledge
1	Explain fundamental concepts of object-oriented analysis and design approach
2	Describe Unified Modeling Language Notation
3	Explain models for object-oriented system development
4	Identify system development design patterns
	Professional Skill
5	Create use case diagram to represent the scope of development problem domain
6	Develop domain model, sequence diagram, activity diagram and statechart diagram based on use case narrative
7	Apply Unified Modeling Language Notation to object-oriented models
	Attitude
8	Build up experience on adopting object-oriented approach as an alternative methodology for system development

Calendar Description: In this course, students will learn some methodological approaches to the development of properly designed and documented information systems. The object-oriented approach will be covered. This course is incorporated with COMP2031-2 Group Project to let students learn how to work as a team.

Assessment:

No.	Assessment Methods	Weighting	Remarks
1	Continuous Assessment	30%	Continuous assessments are designed to measure how well students have learned the concepts of object-oriented approach and creation of object-oriented models.
2	Examination	70%	Final examination questions are designed to determine to what extent the students have achieved the expected learning outcomes. Examination questions will focus on evaluating students' ability to apply the object-oriented analysis and design approach to different domains.

Rubrics:

	Excellent (A)	Good (B)	Satisfactory (C)	Marginal Pass (D)	Fail (F)
Concepts of object oriented	• Show thorough understanding of object oriented concepts	• Show good understanding of object oriented concepts	• Show sufficient understanding of object oriented concepts	• Show limited understanding of object oriented concepts	• Show little or no understanding of object oriented concepts
Unified modeling language	• Demonstrate thorough understanding and mastering of unified modeling language	• Demonstrate good understanding and mastering of unified modeling language	• Demonstrate sufficient understanding and mastering of unified modeling language	• Demonstrate limited understanding and mastering of unified modeling language	• Demonstrate little or no understanding and mastering of unified modeling language
Object oriented modeling	• Demonstrate thorough understanding of object oriented	• Demonstrate good understanding of object oriented	• Demonstrate sufficient understanding of object oriented	• Demonstrate limited understanding of object oriented	• Demonstrate little or no understanding of object oriented

	Excellent (A)	Good (B)	Satisfactory (C)	Marginal Pass (D)	Fail (F)
	models • Able to construct object oriented models without error	models • Able to construct object oriented models with minor errors	models • Able to construct some object oriented models with a few major errors	models • Able to construct a few object oriented models with many major errors	models • Not able to construct acceptable object oriented models
Object oriented systems development process	• Show thorough understanding of object oriented systems development process	• Show good understanding of object oriented systems development process	• Show sufficient understanding of object oriented systems development process	• Show limited understanding of object oriented systems development process	• Show little or no understanding of object oriented systems development process
Design pattern	• Show thorough understanding of basic design pattern concepts	• Show good understanding of basic design pattern concepts	• Show sufficient understanding of basic design pattern concepts	• Show limited understanding of basic design pattern concepts	• Show little or no understanding of basic design pattern concepts

Learning Outcomes and Weighting:

Content	**LO No.**
I. Object-oriented (OO) Concepts	1
II. Introduction to OO Analysis and Design	1, 8
III. Introduction to Unified Modeling Language (UML) Notation	2, 5, 6, 7, 8
IV. Modeling for Systems Analysis and Design	3, 5, 6, 7, 8
V. Introduction to Design Patterns for System Development	3

References:

R. V. Stumpf, L. C. Teague, Object-Oriented Systems Analysis and Design with UML, Prentice Hall. 2005.

S. R. Schach, Introduction to Object-Oriented Analysis and Design with UML and the Unified Process, McGraw-Hill, 2004.

J. F. George, D. Batra, J. Valacich, J. A. Hoffer, Object-Oriented Systems Analysis and Design, Prentice Hall. 2004.

S. Schach, Introduction to Object-Oriented Analysis and Design (1st Edition), McGraw-Hill, 2003.

C. Larman, Applying UML and Patterns – An Introduction to Object-Oriented Analysis and Design and the Unified Process (2nd Edition), Prentice Hall, 2002.

J. Arlow, I. Neustadt, UML and the Unified Process: Practical Object-Oriented Analysis and Design (1st Edition), Addison Wesley, 2001.

S. Bennett, J.Skelton and K.Lunn, Schaum's Outlines: UML, McGraw-Hill, 2001.

Course Content in Outline:

Topic

I. Object-oriented (OO) Concepts

II. Introduction to OO Analysis and Design

III. Introduction to Unified Modeling Language (UML) Notation

IV. Systems Analysis and Design based on
A. Use-case modeling (actors, use cases, use case diagram)
B. Domain modeling (class, relationship, inheritance, generalization)
C. Activity modeling (activity diagram)
D. Behavior modeling (sequence / collaboration diagram)
E. State change modeling (statechart diagram)

V. Introduction to Design Patterns for System Development
(e.g., cohesion, coupling, controller)