


Course Outline	
COMP6175 Object Oriented Programming (2)	
Effective Date 01 February 2019	Study Program Computer Science
	Revision 2

1. Course Description

OOP is the latest of programming paradigms and now almost all of the industry uses these paradigms to develop the application program. The main features are ADT, inheritance, dynamic binding to perform true polymorphism, generic programming and others. This course is related to T0016 Programming Algorithm and T0152 Programming Language Concept

2. Graduate Competency

Each course in the study program contributes to the graduate competencies that are divided into employability and entrepreneurial skills and study program specific outcomes, in which students need to have demonstrated by the time they complete their course.

BINUS University employability and entrepreneurial skills consist of planning and organizing, problem solving and decision making, self management, team work, communication, and initiative and enterprise.

2.1. Employability and Entrepreneurial Skills

Aspect	Key Behaviour

2.2. Study Program Specific Outcomes

Study Program Specific Outcomes

3. Topics

- Introduction
- Simple Program in Java
- Wrapper Class and Method
- Array, ArrayList, Vector
- Object Oriented Concept, Class, Object, and Package
- Quiz 1
- Inheritance
- Polymorphism
- Interface and Abstract Class
- Quiz 2
- Generic and Review
- Introduction to Java Programming
- Wrapper Class, Arithmetic Operation, Logic and Relational Operation

- Array, ArrayList, Vector
- Object Oriented Concept, Class, Object, and Package
- Class Relationships
- Inheritance
- Polymorphism
- Interface and Abstract Class
- Generic
- Multi-Threading Programming
- Review

4. Learning Outcomes

On successful completion of this course, student will be able to:

- LO 1: Differentiate between conventional programming and OOP
- LO 2: Describe the main features of OOP
- LO 3: Describe the additional features of OOP
- LO 4: Construct a program using additional features of OOP

5. Teaching And Learning Strategies

In this course, the lecturers might deploy several teaching learning strategies, including Group Discussion, Group Presentation, Exercise and solve problem with students, Project Work.

6. Textbooks and Other Resources

6.1 Textbooks

1. Paul Deitel,Harvey Deitel. (2012). ***C++ how to program***. 08. Prentice Hall. Harlow. ISBN: 9780273752769.
2. Y. Daniel Liang. (2015). ***Introduction to Java Programming***. 10. Pearson Education. Essex. ISBN: 9781292070018.

The book in the first list is a must to have for each student.

6.2 Other Resources

1. Array, ArrayList, Vector
2. C++
3. Class Relationships
4. Constructor and Destructor
5. Constructors and Destructor
6. Data and Function Specifiers
7. Data and Function Specifies
8. Generic
9. Generic and Review
10. Generic Programming
11. <http://www.cplusplus.com/reference/stack/stack/>
12. <http://www.catonmat.net/blog/cpp-polymorphism/>
13. <http://www.cplusplus.com/reference/map/map/>
14. <http://www.cplusplus.com/reference/vector/vector/>
15. <http://www.learncpp.com/cpp-tutorial/115-inheritance-and-access-specifiers/>
16. <http://www.youtube.com/watch?v=akidmtTRcTw>
17. <http://www.youtube.com/watch?v=Cg9XZLJtoXw>
18. <http://www.youtube.com/watch?v=G-g49Dx3iSo>
19. <http://www.youtube.com/watch?v=InIOEY0HXCE>
20. <http://www.youtube.com/watch?v=qMPmwyA8ILQ>
21. http://www.youtube.com/watch?v=R_PPA9eejDw

Course Outline

22. <http://www.youtube.com/watch?v=U2QvTsMvWmM>
23. <http://www.youtube.com/watch?v=V7yU-WAS2as>
24. <http://www.youtube.com/watch?v=x-m0CqATsDM>
25. <http://www.youtube.com/watch?v=zW1hwU83cJo>
26. I/O Stream
27. Inheritance
28. Inheritance & Composition 1
29. Inheritance & Composition 2 and Generic Programming
30. Inheritance and Composition
31. Interface and Abstract Class
32. Introduction
33. Introduction to Java Programming
34. Multi-Threading Programming
35. Object Oriented Concept, Class, Object, and Package
36. Overloading Operator
37. Overloading Operators
38. Paul Deitel,Harvey Deitel. 2012. C++ how to program. Prentice Hall. Harlow. ISBN:9780273752769
39. Polymorphism
40. Quiz 1
41. Quiz 2
42. Reference, Pointer and Passing Parameters
43. Review
44. Simple Program in Java
45. String Class
46. Wrapper Class and Method
47. Wrapper Class, Arithmetic Operation, Logic and Relational Operation
48. www.youtube.com/watch?v=F-7Rpt2D-zo
49. www.youtube.com/watch?v=MTfWr7o7Q4U
50. www.youtube.com/watch?v=tXFqS31ZOFM

7. Schedule**Laboratory**

Session/Mode	Related LO	Topics	References
1 F2F	LO 1 LO 4	Introduction <ul style="list-style-type: none"> • Arithmetic operator • Data Type • Input Output • Logical Operator • My First Program in Java 	<ul style="list-style-type: none"> • Introduction • Paul Deitel,Harvey Deitel. 2012. C++ how to program. Prentice Hall. Harlow. ISBN: 9780273752769
2 F2F	LO 1 LO 4	Simple Program in Java <ul style="list-style-type: none"> • Repetition • Selection 	<ul style="list-style-type: none"> • Simple Program in Java • Paul Deitel,Harvey Deitel. 2012. C++ how to program. Prentice Hall. Harlow. ISBN: 9780273752769

3 F2F	LO 1 LO 2 LO 4	Wrapper Class and Method <ul style="list-style-type: none"> • Exception Handling • Math Method • Math • String • String Method • Wrap Class Method • Wrapper Class Introduction 	<ul style="list-style-type: none"> • Wrapper Class and Method • Paul Deitel,Harvey Deitel. 2012. C++ how to program. Prentice Hall. Harlow. ISBN: 9780273752769
4 F2F	LO 1 LO 4	Array, ArrayList, Vector <ul style="list-style-type: none"> • Array Definition and Declaration • ArrayList Method • ArrayList • Two Dimensional Array • Vector • Vector Method 	<ul style="list-style-type: none"> • Array, ArrayList, Vector • Paul Deitel,Harvey Deitel. 2012. C++ how to program. Prentice Hall. Harlow. ISBN: 9780273752769
5 F2F	LO 1 LO 2 LO 3 LO 4	Object Oriented Concept, Class, Object, and Package <ul style="list-style-type: none"> • Access Modifier • Class Relationship (Composition and Aggreation) • Class to Object • Constructor • Method • Static Variables and Method 	<ul style="list-style-type: none"> • Object Oriented Concept, Class, Object, and Package • Paul Deitel,Harvey Deitel. 2012. C++ how to program. Prentice Hall. Harlow. ISBN: 9780273752769
6 F2F	LO 1 LO 2 LO 4	Quiz 1 <ul style="list-style-type: none"> • Quiz 1 	<ul style="list-style-type: none"> • Quiz 1 • Paul Deitel,Harvey Deitel. 2012. C++ how to program. Prentice Hall. Harlow. ISBN: 9780273752769
7 F2F	LO 2 LO 4	Inheritance <ul style="list-style-type: none"> • Final Class and Method • Inheritance Example • Inheritance Introduction • Overloading VS Overriding • Subclass Feature • Super Keyword • Superclass and subclass 	<ul style="list-style-type: none"> • Inheritance • Paul Deitel,Harvey Deitel. 2012. C++ how to program. Prentice Hall. Harlow. ISBN: 9780273752769
8 F2F	LO 2 LO 4	Polymorphism <ul style="list-style-type: none"> • Abstract Base Class • Ad hoc Polymorphism • Introduction • Overriding • Parameterized Polymorphism 	<ul style="list-style-type: none"> • Polymorphism • Paul Deitel,Harvey Deitel. 2012. C++ how to program. Prentice Hall. Harlow. ISBN: 9780273752769

9 F2F	LO 2 LO 4	Interface and Abstract Class <ul style="list-style-type: none"> • Abstract Class • Abstract Method • Interface VS Abstract Class • Interfaces Example 	<ul style="list-style-type: none"> • Interface and Abstract Class • Paul Deitel,Harvey Deitel. 2012. C++ how to program. Prentice Hall. Harlow. ISBN: 9780273752769
10 F2F	LO 2 LO 3 LO 4	Quiz 2 <ul style="list-style-type: none"> • Quiz 2 	<ul style="list-style-type: none"> • Quiz 2 • Paul Deitel,Harvey Deitel. 2012. C++ how to program. Prentice Hall. Harlow. ISBN: 9780273752769
11 F2F	LO 2 LO 4	Generic and Review <ul style="list-style-type: none"> • Generic Classes and Interfaces • Generic Methods • Introduction • Material Review 	<ul style="list-style-type: none"> • Generic and Review • Paul Deitel,Harvey Deitel. 2012. C++ how to program. Prentice Hall. Harlow. ISBN: 9780273752769

Lecture

Session/Mode	Related LO	Topics	References
1 F2F	LO 1	Introduction to Java Programming <ul style="list-style-type: none"> • A Simple Java Program (Selection, Repetition) • Creating, Compiling, and Executing a Java Program • Introduction • Programming Errors • Programming Style and Documentation • The Java Language Specification, API, JDK, and IDE 	<ul style="list-style-type: none"> • Introduction to Java Programming • Introduction to Java Programming

2 F2F	LO 1 LO 2	Wrapper Class, Arithmetic Operation, Logic and Relational Operation <ul style="list-style-type: none"> • Arithmetic Expressions • Boolean / Logic Operation • Boolean / Logic Operator • Data type in Wrapper Class • Exception Handling • Increment / decrement Operator • Math • Math Method • Relational / Comparison Operation • Relational / Comparison Operator • String • String Method • Truth Table • Wrap Class Method • Wrapper Class Introduction 	<ul style="list-style-type: none"> • Wrapper Class, Arithmetic Operation, Logic and Relational Operation • Paul Deitel,Harvey Deitel. 2012. C++ how to program. Prentice Hall. Harlow. ISBN: 9780273752769
3 F2F	LO 1	Array, ArrayList, Vector <ul style="list-style-type: none"> • Array Definition and Declaration • ArrayList • ArrayList Method • Two Dimensional Array • Vector • Vector Method 	<ul style="list-style-type: none"> • Array, ArrayList, Vector
4 GSLC	LO 1	Array, ArrayList, Vector <ul style="list-style-type: none"> • Array Definition and Declaration • ArrayList • ArrayList Method • Two Dimensional Array • Vector • Vector Method 	<ul style="list-style-type: none"> • Array, ArrayList, Vector
5 F2F	LO 1 LO 2	Object Oriented Concept, Class, Object, and Package <ul style="list-style-type: none"> • Access Modifier • Class to Object • Constructor • Creating and Naming Package • Introduction of Package • Method • Static Variables and Method • Using Package 	<ul style="list-style-type: none"> • Object Oriented Concept, Class, Object, and Package • Paul Deitel,Harvey Deitel. 2012. C++ how to program. Prentice Hall. Harlow. ISBN: 9780273752769
6 F2F	LO 2 LO 3	Class Relationships <ul style="list-style-type: none"> • Aggregation • Composition 	<ul style="list-style-type: none"> • Class Relationships • Paul Deitel,Harvey Deitel. 2012. C++ how to program. Prentice Hall. Harlow. ISBN: 9780273752769

7 F2F	LO 2 LO 4	Inheritance <ul style="list-style-type: none"> • Final Class and Method • Inheritance Example • Inheritance Introduction • Overloading VS Overriding • Subclass Feature • Super Keyword • Superclass and subclass 	<ul style="list-style-type: none"> • Inheritance • Paul Deitel,Harvey Deitel. 2012. C++ how to program. Prentice Hall. Harlow. ISBN: 9780273752769 • Inheritance
8 F2F	LO 2 LO 4	Polymorphism <ul style="list-style-type: none"> • Abstract Base Class • Ad hoc Polymorphism • Introduction • Overriding • Parameterized Polymorphism 	<ul style="list-style-type: none"> • Polymorphism • Paul Deitel,Harvey Deitel. 2012. C++ how to program. Prentice Hall. Harlow. ISBN: 9780273752769
9 GSLC	LO 4	Interface and Abstract Class <ul style="list-style-type: none"> • Abstract Class • Abstract Method • Interface VS Abstract Class • Interfaces Example 	<ul style="list-style-type: none"> • Interface and Abstract Class • Paul Deitel,Harvey Deitel. 2012. C++ how to program. Prentice Hall. Harlow. ISBN: 9780273752769
10 F2F	LO 2 LO 4	Generic <ul style="list-style-type: none"> • Generic Classes and Interfaces • Generic Methods • Introduction 	<ul style="list-style-type: none"> • Generic • Paul Deitel,Harvey Deitel. 2012. C++ how to program. Prentice Hall. Harlow. ISBN: 9780273752769
11 F2F	LO 2 LO 4	Multi-Threading Programming <ul style="list-style-type: none"> • Creating Tasks and Threads • Introduction • Thread Concept 	<ul style="list-style-type: none"> • Multi-Threading Programming • Paul Deitel,Harvey Deitel. 2012. C++ how to program. Prentice Hall. Harlow. ISBN: 9780273752769
12 GSLC	LO 2 LO 4	Multi-Threading Programming <ul style="list-style-type: none"> • Creating Tasks and Threads • Introduction • Thread Concept 	<ul style="list-style-type: none"> • Multi-Threading Programming • Paul Deitel,Harvey Deitel. 2012. C++ how to program. Prentice Hall. Harlow. ISBN: 9780273752769

13 F2F	LO 2 LO 3 LO 4	Review <ul style="list-style-type: none"> • Class Relationships • Generic • Inheritance • Multi-Threading Programming • Polymorphism 	<ul style="list-style-type: none"> • Review • Paul Deitel,Harvey Deitel. 2012. C++ how to program. Prentice Hall. Harlow. ISBN: 9780273752769
-----------	----------------------	---	---

8.Evaluation

Laboratory

Assessment Activity	LO			
	1	2	3	4
ASSIGNMENT				
FINAL EXAM	✓			
MID EXAM				

Lecture

Assessment Activity	LO			
	1	2	3	4
ASSIGNMENT				
FINAL EXAM	✓			
MID EXAM				

Final Evaluation Score




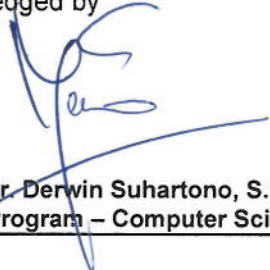
Aspects	Weight
Practicum	30%
Theory	70%

9. Assessment Rubric (Study Program Specific Outcomes)

LO	Indicators	Proficiency Level			
		Excellent (85 - 100)	Good (75 - 84)	Average (65 - 74)	Poor (<= 64)
LO 1	1.1. Ability to explain the paradigms of programming language	The explanation is stated clearly and correctly with relevant examples	The explanation is stated clearly and correctly with partially relevant examples	The explanation is correct	The explanation is incorrect

	1.2. Ability to distinguish the different between procedural programming and OOP	The distinction of Procedural Programming and OOP is stated correctly with relevant examples	The distinction of Procedural Programming and OOP is stated correctly with partially relevant examples	The distinction of Procedural Programming and OOP is correct	The distinction of Procedural Programming and OOP is incorrect
	1.3. Ability to identify the examples of OOP	The identification is stated clearly with complete examples	The identification is stated clearly with partially complete examples	The identification is correct	The identification is incorrect
LO 2	2.1. Ability to explain the concept of inheritance	The explanation is stated clearly and correctly with relevant examples	The explanation is stated clearly and correctly with partially relevant examples	The explanation is correct	The explanation is incorrect
	2.2. Ability to explain the concept of (true) polymorphism	The explanation is stated clearly and correctly with relevant examples	The explanation is stated clearly and correctly with partially relevant examples	The explanation is correct	The explanation is incorrect
	2.3. Ability to explain the concept of generic programming	The explanation is stated clearly and correctly with relevant examples	The explanation is stated clearly and correctly with partially relevant examples	The explanation is correct	The explanation is incorrect
LO 3	3.1. Ability to explain the concept of data and function modifiers	The explanation is stated clearly and correctly with relevant examples	The explanation is stated clearly and correctly with partially relevant examples	The explanation is correct	The explanation is incorrect
	3.2. Ability to explain the concept of reference, pointer and passing parameters	The explanation is stated clearly and correctly with relevant examples	The explanation is stated clearly and correctly with partially relevant examples	The explanation is correct	The explanation is incorrect
	3.3. Ability to explain the concept of the string class	The explanation is stated clearly and correctly with relevant examples	The explanation is stated clearly and correctly with partially relevant examples	The explanation is correct	The explanation is incorrect
LO 4	4.1. Ability to construct a simple program using additional features of OOP	The construction program is complete with correct syntax of additional OOP features	The construction program is not complete with correct syntax of additional OOP features	The construction program is not complete with some correct syntax of additional OOP features	The construction program is not complete and with incorrect syntax of additional OOP features

	4.2. Ability to construct a complete program using full features of OOP	The construction program is complete with correct syntax of OOP features	The construction program is not complete with correct syntax of OOP features	The construction program is not complete with some correct syntax of OOP features	The construction program is not complete and with incorrect syntax of OOP features
--	---	--	--	---	--

Prepared by  D5542 - Fidelson Tanzil, S.Kom., M.TI	Checked by  D5542 - Fidelson Tanzil, S.Kom., M.TI Acting as Subject Content Specialist
Approved by  D5542 - Fidelson Tanzil, S.Kom., M.TI Acting as Subject Content Coordinator	Acknowledged by  D3690 - Dr. Derwin Suhartono, S.Kom., M.T.I. Head of Program - Computer Science