COURSE SYLLABUS
CSC10003 – Objected Oriented Programming

1. GENERAL INFORMATION

Course name: Object-Oriented Programming

Course name (in Vietnamese): Phương pháp Lập trình hướng đối tượng

Course ID: CSC10003

Knowledge block:

Number of credits: 4

Credit hours for theory: 45

Credit hours for practice: 30

Credit hours for self-study: 90

Prerequisite:

Prior-course:

Instructors: Nguyen Van Vu, Tran Duy Quang

2. COURSE DESCRIPTION

This course provides students fundamental knowledge of object-oriented programming (OOP). Students will learn core concepts of OOP such as class, object, reuse, constructor, destructor, operator, encapsulation, inheritance, polymorphism, overloading and overriding. They will obtain knowledge and thinking in object-oriented methodology. Students will practice object-oriented programming skills using C++ language and/or Java through individual and group-based projects

3. COURSE GOALS

At the end of the course, students are able to

ID	Description	Program LOs
G1	Differenciate the difference between procedural programming and OOP	
G2	Understand and describe core concepts of OOP such as class, object, reuse, constructor, destructor, operator, encapsulation, inheritance, polymorphism, overloading and overriding	
G3	Model simple real-world problems using UML class-diagrams	
G4	Apply the understanding of core concepts of OOP to implement programs using C++	
G5	Understand the difference between C++ and Java in implementing OOP concepts	

4.

5. COURSE OUTCOMES

CO	Description	I/T/U
G1.1	Able to differentiate the difference between procedural programming and OOP	T
G2.1	Understand core concepts of OOP class, object, reuse, constructor, destructor, operator, encapsulation, inheritance, polymorphism, overloading and overriding	T, U
G2.2	Describe core concepts of OOP class, object, reuse, constructor, destructor, operator, encapsulation, inheritance, polymorphism, overloading and overriding	T, U

G3.1	Understand basic class-related notations of Unified Modeling Language (UML)	T, U
G3.2	Use UML class diagram notations to model real-world problems	T, U
G4.1	Write OOP programs to implement real-world problems using C++	T, U
G5.1	Describe the difference between C++ and Java in implementing OOP concepts	T
G5.2	Write simple programs using Java	U

6. TEACHING PLAN

No.	Topic	Course outcomes	Teaching/Learning Activities
1	Introduction to OOP	G1.1, G2.1	Lecture. Practice.
2	UML and class diagram Constructor and Destructor	G3.1, G3.2 G2.1, G2.2	Lecture. Practice.
3	Operators	G2.1, G2.2, G5.1, G5.2	Lecture. Practice.
4	Law of the Big Three	G2.1, G2.2	Lecture. Practice.
5	Inheritance	G2.1, G2.2	Lecture. Practice.
6	Midterm		Exam
7	Polymorphism	G2.1, G2.2	Lecture. Practice.

8	Exception Handling	G2.1, G2.2	Lecture. Practice.
9	Templates and STL	G2.1, G2.2	Lecture. Practice.
10	Patterns	G2.1, G2.2, G3.2, G3.2	Seminar. Practice.
11	Review and summary	G2.1, G2.2, G5.1, G5.2	Lecture.

7. ASSESSMENTS

ID	Topic	Description	Course outcomes	Percentage
Quiz	Short tests and exercises in theory lectures.	From 3 to 4 quizzes/assignments that are given randomly, without prior notice. This assignment is used to check student attendance and attention.	G2.1, G2.2	**10%**
LabA	Lab assignment	Assignments given in lab sessions	G4.1, G2.1	**10%**
LabP1	Lab project 1	A mid-term project given in lab sessions	G4.1, G5.2, G3.2	**15%**
LabP2	Lab project 2	A final project given in lab sessions	G4.1, G5.2	**15%**
Midterm	Midterm	Short exam in the middle of the class	G1, G2, G3	**15%**

Final	Final exam	Final exam covers all theory lectures and lab exercises	G1, G2, G3, G5	**35%**
Bonus	Extra credit	Bonus of up to 10% for optional extra work performed during theory lectures or lab sessions		**10%**

8. RESOURCES

- Main Text
  - Object Oriented Programming using C++, Pohl, Addison Wesley.
- Additional Materials
  - C++ FAQ Lite, Marshall Cline, http://parashift.com/c++-faq-lite/
  - C++ Primer Plus, 4th Edition, Stephen Prata, SAM, 2001.
  - Effective and More Effective C++, Scott Meyers.
  - The C++ Programming Language, Bjarne Stroustrup, Addison-Wesley.
  - Lập trình hướng đối tượng, Trần Đan Thư, Đinh Bá Tiến, Nguyễn Tấn Trần Minh Khang.

9. GENERAL REGULATIONS & POLICIES

- Students are responsible for reading and following strictly the regulations and policies of the Faculty and University.
- Students who are absent for more than 3 theory sessions are not allowed to take the final exam.
- Any kind of cheating and plagiarism is prohibited. Students committing cheating and plagiarizing will receive zero for the course. Incidents are then submitted to the school and university for further review.
- Students are encouraged to form study groups to discuss. However, individual work must be done and submitted by each student individually.