System Analysis and Design

(IT3120E)

Quang Nhat Nguyen

quang.nguyennhat@hust.edu.vn

Hanoi University of Science and Technology

School of Information and Communication Technology

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Course structure

- Number of weeks: 16
  - Lectures: The first 12 classes
  - Presentation of the course projects' work results: The last 4 classes
- Time and location
  - Wednesday, 06:45-09:10
  - Building B1, Room 402
- Communication on Microsoft Teams

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Course objectives

- Understanding of:
  - Knowledge of object-oriented system analysis and design
  - Process of object-oriented system analysis and design
  - Knowledge of object-oriented modeling
  - Knowledge of software development processes most popularly applied in practice

- Practical experience (through a course project work) on:
  - Analysis and design of a practical software system
  - Writing technical documents required for the analysis and design of the selected practical software system

Syllabus

- Introduction of object-oriented system analysis and design
- Introduction of the modeling language UML
- Introduction of software development process
- Analysis of the environment and needs
- Function analysis
- Structure analysis
- Interaction analysis
- Behavior analysis
- Design of the system’s overall architecture
- Class detail design
- User interface design
- Data design

Course mark

- Progress mark (**P**): By a course project work, Maximum 10 points
  - Each course project group consists of **2-3 students**
  - Freely select one of the recommended software systems, or propose a new one
  - Execute the **object-oriented analysis and design** of the selected software system
- Final exam (**E**): Maximum 10 points
- Course mark (**G**)
  - **G** = 0.4x**P** + 0.6x**E**

Course project: Recommended topics

Object-oriented analysis and design of:

- Library management system
- Job seeking and recruitment support system
- Course enrollment management system
- Online-learning support system
- Personal activities schedule management system
- Information (i.e., news, images, music, movies, travel, etc.) search and sharing system
- E-commerce system
- Retail store management system
- Product distribution management system
- (Flight/Hotel room/etc.) booking support system

Course project: Proposal

- Freely select (from the recommended ones), or propose, a practical software system to be analyzed and designed
- The course project proposal, written in a .PDF/.DOC file, should **explain in details**:
  - Length of maximum **1-2 pages**
  - **Description of a practical software system** (Purpose of use, Usage scenario, Important characteristics, Requirements to be fulfilled, Actors of the system, etc.)
  - **Business functions** to be provided by the system
  - **Execution plan** (Tasks, Involved persons, Start date, End date)
- The course project proposal should be sent to *quang.nguyennhat@hust.edu.vn* / *quangnn@soict.hust.edu.vn* **not later than November 06, 2022**
  - **The attached file** contains the group's course project proposal
  - **Full name, Student code, Email** of each member

Course project: Work results

- **Must be submitted <u>not later than January 10, 2023!</u>**
  - *Send an email* containing *download link* or *.zip file* (if the size < 10MB)
- The course project's final report, written in a .pdf/.doc file, must contain:
  - Description of the software system to be analyzed and designed
  - Details of the (software requirements) analysis results
  - Details of the (system) design results
  - The problems/issues/difficulties occur during the execution of the course project, and how you handled them
  - The discussion, findings, conclusion and proposal for improvement of the solution and the system in future

Course project: Assessment

- The course project's work results are assessed in the following criteria:
  - **The complexity/difficulty of the system to be analyzed and designed**
  - **The quality (i.e., appropriateness) of the results of the system's analysis and design**
  - **The quality of the final report**
  - The quality of your work results presentation
- The work results presentation must be in line with what stated in the final report and the work done
- **If you refer to the work of other persons, then you must <u>declare clearly and precisely</u> their sources (i.e., by citations) in both the final report and the presentation!**
- **<u>Strictly prohibited to copy, even though partially or by translation from Vietnamese to English, the documents of other persons</u>!**

Course materials

- Lecture slides
  - To be found in the folder “Files\Class Materials” in Microsoft Teams group
- Reference books:
  - Nguyễn Văn Ba, "*Phát triển hệ thống hướng đối tượng với UML 2.0 và C++*", NXB ĐHQG Hà Nội, 2008 (*In Vietnamese*)
  - Martin Fowler, Kendall Scott, "*UML Distilled Second Edition A Brief Guide to the Standard Object Modeling Language*", Publisher: Addison Wesley, 2000
  - Kim Hamilton, Russell Miles, "*Learning UML 2.0*", Publisher: O'Reilly, 2006.
  - Terry Quatrani, "*Visual modeling with Rational Rose 2002 and UML*", Publisher: Addison Wesley, 2002.
  - http://www.omg.org
  - http://www.uml.org