

COURSE SYLLABUS

CTT – Introduction to Information Technology

1. GENERAL INFORMATION

| | |
|------------------------------|--|
| Course name: | Introduction to Information Technology |
| Course name (in Vietnamese): | Nhập môn Công nghệ Thông tin |
| Course ID: | CTT |
| Knowledge block: | Fundamental Education |
| Number of credits: | 4 |
| Credit hours for theory: | 45 |
| Credit hours for practice: | 30 |
| Credit hours for self-study: | 90 |
| Prerequisite: | None |
| Prior-course: | None |
| Instructors: | |

2. COURSE DESCRIPTION

The course will give students an overview of the history of the development and formation of the Information Technology (IT). In addition, general knowledge includes basic knowledge of counting systems, computer architecture, operating systems, computer networks, and computer safety are lectured. Students grasp the roles of software development, database systems. Some trends that are becoming popular such as artificial intelligence, natural language processing, image processing, etc. are introduced. The course also helps students orient their study and career orientation through the introduction of majors and careers. Furthermore, the course equips students with the skills (such as teamwork, critical thinking, and creative thinking) and professional ethics necessary to work and communicate in the learning environment and in the company later.

3. COURSE GOALS

At the end of the course, students are able to

| ID | Description | Program LOs |
|----|--|-------------|
| G1 | Work at an individual and team level to implement and present some topics related to the general knowledge, career orientation. Demonstrate critical thinking and creative thinking in the process of implementing topics. | |
| G2 | Present the meaning, role, current status of hardware devices, software. Apply software, technology platforms to collaborate, present, share and backup data. | |
| G3 | Explain the data storage platform in a computer and describe roles of database and database administration system. | |
| G4 | Identify the role of the operating system, the development process, and distinguish different types of operating systems. | |
| G5 | Present basic knowledge about computer networks, internet, network protocols, devices, connection issues and security issues. | |
| G6 | Summarize the main characteristics of artificial intelligence and related fields and describe some emerging technologies. | |
| G7 | List some important rules and regulations in the university environment and in the company environment. Explain some characteristics of professional ethics. | |

4. COURSE OUTCOMES

| CO | Description | I/T/U |
|------|--|-------|
| G1.1 | Organize, operate and manage team in teamwork. | T |

| | | |
|------|---|---|
| G1.2 | Propose ideas, analysis and discuss these ideas. | T |
| G1.3 | Present the topic in class and make a report. | T |
| G2.1 | Present the meaning, role, current status of hardware devices, software. | T |
| G2.2 | Apply software, technology platforms to collaborate, present, share and backup data. | T |
| G3.1 | Explain the data storage platform in a computer. | T |
| G3.2 | Describe roles of database and database administration system | T |
| G4.1 | Identify the role of the operating system, the development process, and distinguish different types of operating systems. | T |
| G5.1 | Present basic knowledge about computer networks, internet, network protocols. | T |
| G5.2 | List devices, connection issues and security issues. | T |
| G6.1 | Summarize the main characteristics of artificial intelligence and related fields. | T |
| G6.2 | Describe some emerging technologies. | T |
| G7.1 | List some important rules and regulations in the university environment and in the company environment. | I |
| G7.2 | Explain some characteristics of professional ethics. | T |

5. TEACHING PLAN

| ID | Topic | Course outcomes | Teaching/Learning Activities (samples) |
|----|-------|-----------------|--|
|----|-------|-----------------|--|

| | | | |
|---|--|------------|---|
| 1 | <p>Introduce an overview of the development process, the role of IT in life.</p> <p>Learn about computer classification, the basic architecture of a computer. Introduce the characteristics and role of software in the computer.</p> | G2.1 | <p>Lecturing</p> <p>Q&A, Group discussion</p> |
| 2 | <p>Introduce basic hardware devices such as ports, circuits to peripheral devices such as RAM, hard drives, ... in computers. Identify the characteristics, roles and meanings of each device and how they work together.</p> | G2.1 | <p>Lecturing</p> <p>Demonstration</p> <p>QZ1: Quiz 1</p> <p>HW1: Homework 1</p> |
| 3 | <p>Principle of storing information in computers such as number (integer and floating point), text, images, sounds, ...</p> <p>Basic operations on the counting system.</p> | G2.2 | <p>Lecturing</p> <p>QZ2: Quiz 2</p> <p>Demonstration, discussion</p> |
| 4 | <p>How the CPU executes a low-level program. How the CPU works with other devices to make a request.</p> <p>The relationship between low-level languages and high-level programming languages.</p> | G3.1 | <p>Lecturing</p> <p>QZ3: Quiz 3</p> |
| 5 | <p>Operating system (OS): characteristics, roles, and development process on all computer platforms. The basic architecture and components of the operating system.</p> | G4.1 | <p>Lecturing</p> <p>HW2: Homework 2</p> |
| 6 | <p>Computer network: transmission principles, connection protocols, network</p> | G5.1, G5.2 | <p>Lecturing</p> |

| | | | |
|----|--|------------------|--------------------------------------|
| | types, security. Supported devices and software. Computer security such as how to attack and how to protect the computer. | | Demonstration HW3: Homework 3 |
| 7 | Database system: roles, meanings, applications. Database management systems. | G3.2 | Lecturing Demonstration |
| 8 | Introduction to artificial intelligence, machine learning, and applications. | G6.1 | Lecturing Discussion |
| 9 | Emerging technologies: <ul style="list-style-type: none"> - Virtual reality technology - Augmented reality technology - Cloud computing technology - Distributed technology - Network security technology - Blockchain technology | G6.2 | Lecturing, Demonstration |
| 10 | Professional ethics such as copyright laws, privacy and legal documents related to IT. Rules and regulations in university and company. | G7.1, G7.2, G7.3 | Case study, discussion |
| 11 | Project Seminar | | Presentation Project PR1 |

For the practical laboratory work, there are 10 weeks which cover similar topics as it goes in the theory class. Each week, teaching assistants will explain and demonstrate key ideas on the corresponding topic and ask students to do their lab exercises either on computer in the lab or at home. All the lab work submitted will be graded. There would be a final exam for lab work.

6. ASSESSMENTS

| ID | Topic | Description | Course outcomes | Ratio (%) |
|-----------|------------------------------|--|--|------------|
| A1 | Assignments | | | 40% |
| A11 | Quizzes: QZ1, QZ2 and QZ3. | Small quizzes in class for each topic | G2.1, G2.2, G3.1 | 5% |
| A12 | Homework: HW1, HW2, and HW3. | HW1, HW3: reading comprehension and writing reports in English | G2.1, G2.2, G3.1, G4.1, G5.1, G5.2 | 5% |
| A13 | Weekly labwork: LW1–LW10 | Weekly labs | G2.1, G2.2, G3.1, G3.2, G4.1, G5.1, G5.2, G6.2 | 30% |
| A2 | Projects | | | 20% |
| A21 | Project: PR1 | Research on some technologies. | G1.1, G1.2, G1.3, G6.2 | 20% |
| A3 | Exams | | | 40% |
| A31 | Final exam | Closed book exam. Describe the understanding of different topics. | G2.1, G2.2, G3.1, G3.2, G4.1, G5.1, G5.2, G6.1, G6.2, G7.1, G7.2 | 40% |

7. RESOURCES

Textbooks

- Computer science: reflection on the field , reflections from the field, Committee on the Fundamentals of Computer Science, National Academies Press, 2004.
- Computer science: an overview, Gleen Brookshear, Dennis Brylow, 12th edition, 2014
- Computers are your future, Introductory, Catherine Laberta, 12th Edition, 2011
- Ethics for the Information Age, Mike Quinn, 7th Edition, 2016.

8. GENERAL REGULATIONS & POLICIES

- All students are responsible for reading and following strictly the regulations and policies of the school and university.
- Students who are absent for more than 3 theory sessions are not allowed to take the exams.
- For any kind of cheating and plagiarism, students will be graded 0 for the course. The incident is then submitted to the school and university for further review.
- Students are encouraged to form study groups to discuss on the topics. However, individual work must be done and submitted on your own.