

of different types of medical images. Students are then able to apply different classical image processing techniques to different types of medical images. In the second part, students will learn the structure and components of a medical imaging management system. Students will be able to apply the picture archiving and communication systems to the medical images.

**COMP 3860 Clinical Decision Support and Information Systems (3,2,1) (E)**

Prerequisite: Year III standing

In this course, students will learn the methodology and techniques of medical data information management, and the models and algorithms used in computer-based clinical decision making. They will also learn the architectural design, structure, functions and components of clinical decision support systems and medical information systems.

**COMP 4005 Information Systems Theory, Methodology and Architecture (3,2,1)**

Prerequisite: Year IV standing in Computer Science or Computing and Information Systems

To extend students' knowledge of information systems and development methodology through the study of advanced theories and methodologies, and to provide students an integrative perspective of information systems and development. Also, more advanced system design related concepts will be introduced.

**COMP 4006 Information Technology Professional Practices (3,2,1)**

Prerequisite: Year IV standing in Computer Science

This course examines important professional issues in contemporary practice to help students become an effective participant in a team of IT professionals.

**COMP 4007 Software Design, Development and Testing (3,2,1)**

Prerequisite: COMP 3006 Software Engineering, or COMP 3007 Systems Analysis and Design

This course is aimed to further develop students' knowledge and skills in software engineering, and to introduce and discuss state-of-the-art techniques and advanced topics in developing reliable software systems.

**COMP 4015 Artificial Intelligence and Machine Learning (3,2,1)**

Prerequisite: COMP 2015 Data Structures and Algorithms, MATH 1205 Discrete Mathematics and MATH 2005 Probability and Statistics for Computer Science

This course aims to introduce the principles and fundamental techniques of artificial intelligence, and in particular, machine learning. Students will learn the fundamentals and state-of-the-art techniques and acquire practical insights into the current development of this field.

**COMP 4016 Clinical Decision Support and Information Systems (3,2,1) (E)**

Prerequisite: COMP 2015 Data Structures and Algorithms, COMP 2016 Database Management

In this course, students will learn the methodology and techniques of medical data information management, and the models and algorithms used in computer-based clinical decision making. They will also learn the architectural design, structure, functions and components of clinical decision support systems and health care information systems.

**COMP 4017 Computer and Network Security (3,3,0)**

Prerequisite: COMP 2015 Data Structures and Algorithms, COMP 3015 Data Communications and Networking

This course introduces fundamental concepts and techniques in computer and network security. Topics include basic encryption techniques, cryptographic algorithms, authentication and digital signature, public key infrastructure, security models, network

security, as well as their applications (e.g. IP security, Web security, trusted operating systems). Popular cryptographic standards and libraries will be introduced. Other advanced topics in computer security will also be discussed (e.g. intrusion detection, access control, secure programming, computer virus).

**COMP 4025 Interactive Computer Graphics (3,2,2) (E)**

Prerequisite: COMP 2015 Data Structures and Algorithms

Students will learn (i) the mathematical foundation and algorithms for creating computer graphics including transformation, rendering, and (ii) the algorithms for enabling Human-Object interaction in virtual environment. Students will also gain practical experience on these topics by using graphics application programming interface (API) and develop a graphics application prototype.

**COMP 4026 Computer Vision and Pattern Recognition (3,2,1)**

Prerequisite: COMP 2015 Data Structures and Algorithms, MATH 1005 Calculus and MATH 2005 Probability and Statistics for Computer Science

This course gives students a broad knowledge on, and techniques used in contemporary research on computer vision and pattern recognition.

**COMP 4027 Data Mining and Knowledge Discovery (3,2,1) (E)**

Prerequisite: COMP 2015 Data Structures and Algorithms, COMP 2016 Database Management and MATH 2005 Probability and Statistics for Computer Science

This course is aimed at providing an overview of concepts and techniques in knowledge discovery and data mining. Relevant applications in specific domains such as medicine and health care will be covered.

**COMP 4035 Database System Implementation (3,3,0) (E)**

Prerequisite: COMP 2015 Data Structures and Algorithms and COMP 2016 Database Management

This course provides an in-depth knowledge of relational database management systems (RDBMSs). Topics include data storage, index structures, query evaluation and optimization, transaction management, concurrency control and crash recovery. In addition, advanced topics such as database security, access control, distributed databases and data warehouses will also be covered.

**COMP 4036 Digital Media Computing and Communications (3,2,1)**

Prerequisite: COMP 3015 Data Communications and Networking

Students will learn the properties of digital media, the principles of digital media compression, the principles of digital media communication, and the protocols and methods for transporting digital media through the Internet.

**COMP 4037 E-Technology Architectures, Tools and Applications (3,2,1)**

Prerequisite: COMP2007 Object Oriented Programming and COMP 3015 Data Communication and Networking

This course will develop students' understanding of recent developments in e-technologies, including XML, Web services, service-oriented architecture, Web-enabled business processes, as well as related architectures, tools, and applications. It will also enable students to acquire the capability to design and develop software systems based on e-technologies and to apply them to some domain applications.

**COMP 4045 Human-Computer Interaction (3,2,1)**

Prerequisite: *For Computer Science Programme:* COMP 3006 Software Engineering  
*For Computing and Information Systems Programme:* COMP 3007 Systems Analysis & Design

This course provides an introduction to and overview of the field of human-computer interaction (HCI).