

COMP 1610 Interactive Computing for Visual Communication (3,3,0)

Media convergence has transformed the computational machine into an unprecedented rich multimedia communication medium with ubiquitous connectively and interactive capability. This new medium presents endless possibilities with applications full of dynamic contents and rich visual user interface experience. Expertise in both computer science and visual communication are needed in order to fulfil the application demands. This course aims to address these demands and prepare the students with all-around trainings and skills to master the challenges. Unlike traditional courses which are merely designed for one specific discipline of students, this course offers a unique platform for students without and prerequisites in mathematics, computer programming or visual design to acquire and establish the knowledge necessarily for the challenges. This course introduce high-level programming concepts and approaches visual design on the new medium using approachable and intuitive computational visual building block environment such as Processing developed by MIT.

COMP 2010 Structured Systems Analysis and Design (3,3,0)

Prerequisite: COMP 1160 Database Management and COMP 1180 Structured Programming

In this course, students will learn some methodological approaches to the development of properly designed and documented information systems using the structured approach. This course is incorporated with COMP 2031-2 Group Project to let students learn how to work as a team for developing software systems.

COMP 2020 Object Oriented Systems Analysis and Design (3,2,1)

Prerequisite: COMP 1150 Object-Oriented Programming and COMP 1160 Database Management

In this course, students will learn some methodological approaches to the development of properly designed and documented information systems. The object-oriented approach will be covered. This course is incorporated with COMP 2031-2 Group Project to let students learn how to work as a team.

COMP 2031 Group Project (1,1,2)**COMP 2032 Group Project (2,0,2)**

Co-requisite: COMP 2010 Structured Systems Analysis and Design

The aim of the group project is to (1) develop students' ability to apply a methodological approach to the development of systems, by thorough analysis, good systems design and comprehensive documentation; (2) simulate a real-life working environment in the classroom, so that students gain experience of working as team members participating in systems development; and (3) improve the students' presentation and communication skills.

COMP 2040 Applied Information Systems Laboratory I (1,0,3)

Prerequisite: COMP 1180 Structured Programming

This laboratory provides practical hands-on experience on network and server administration, server-side web programming, and CASE tool.

COMP 2050 Applied Information Systems Laboratory II (1,0,3)

Prerequisite: COMP 1180 Structured Programming

This laboratory provides practical hands-on experience on state-of-the-art software including various system and networking tools, multimedia tools, and modelling tools.

COMP 2220 Software Engineering (3,2,1)

Prerequisite: COMP 1210 Data Structures and Algorithms and MATH 1130 Discrete Structures

This course discusses principles and practical aspects of software development.

COMP 2230 Design and Analysis of Algorithms (3,3,0)

Prerequisite: COMP 1210 Data Structures and Algorithms and MATH 1130 Discrete Structures

This course builds on the study of the analysis and implementation of algorithms and data structures from COMP 1210. The goal is to introduce a number of important algorithms that are interesting both from a practical and theoretical point of view. Algorithm design paradigms such as divide-and-conquer and dynamic programming will be discussed, and algorithms for e.g. sorting, searching and graph problems will be developed.

COMP 2320 Operating Systems (3,3,1)

Introduces the fundamentals of operating systems design and implementation. Topics include an overview of the components of an operating system, mutual exclusion and synchronization, deadlock and starvation, implementation of processes and threads, resources scheduling algorithms, memory management, and file systems.

COMP 2330 Data Communications and Networking (3,3,1)

Prerequisite: COMP 1170 Introduction to Structured Programming or COMP 1180 Structured Programming

Students will learn the principles of data communications, computer networks and network programming.

COMP 2550 Internship (0,0,0)

Prerequisite: Year II standing in BSc (Hons) in Computing Studies (Information Systems) or the consent of the Department

Through internship work, students are expected to acquire the following kinds of experience: (1) application of academic and professional information technology/information system knowledge to real-world problems; (2) interaction with clients and/or technical workers; and (3) the stringent requirements in the work environment. This experience prepares students for employment as professional practitioners upon graduation. Students are required to work for at least six weeks full time or equivalent.

COMP 2600 Software Development Workshop II (0,2,2)

Prerequisite: COMP 1180 Structured Programming, COMP 1160 Database Management and COMP 2330 Data Communications and Networking

This workshop introduces the state-of-the-art technologies in Internet and Web applications. Practical hands-on experience on various system tools, networking tools, web programming, and modelling tools will be provided.

COMP 3040 Internet and the World Wide Web (3,2,1)

Prerequisite: COMP 2330 Data Communications and Networking

Students will learn the principles of the Internet and the World Wide Web, study some real-world Internet systems and applications, and learn some current topics.

COMP 3050 Distributed Computing Systems (3,3,0)

Prerequisite: COMP 2330 Data Communications and Networking

This course introduces the needs, key concepts, and techniques underlying the design and engineering of distributed computing systems. The discussion will be emphasis on communications, synchronization and concurrency control, process management, distributed file services, and case studies. Also included is an introduction to clustering computing and parallel algorithms.

COMP 3060 Digital Media Computing (3,2,2)

Prerequisite: COMP 1210 Data Structures and Algorithms and MATH 1140 Computational Mathematics

This course introduces basic properties of different types of digital media, namely audio, image and video in multimedia systems. As data compression is the most important enabling technology that

makes modern multimedia systems possible, data compression algorithms and the international standards of these digital media will be discussed.

COMP 3070 Digital Media Communications (3,2,1)

Prerequisite: COMP 3060 Digital Media Computing
Students will learn the principles of digital media communications, study some multimedia communication systems, and learn some current topics.

COMP 3080 Computer Graphics (3,2,2)

Prerequisite: COMP 1210 Data Structures and Algorithms and MATH 1140 Computational Mathematics

Students will learn the essential mathematical foundation and algorithms for creating computer graphics, and the methods of implementing these algorithms. Students will also gain practical experience on these topics by using graphics application programming interface (API).

COMP 3090 Introduction to Web Intelligence (3,3,0)

Prerequisite: COMP 1180 Structured Programming and COMP 2330 Data Communications and Networking

This course introduces the fundamental concepts as well as practical applications of contemporary artificial intelligence (e.g. incorporating knowledge discovery and data mining, intelligent agents, and social network intelligence) and advanced information technology (e.g. involving wireless networks, ubiquitous devices, social networks, and data/knowledge grids) in the context of Web-empowered systems, environments, and activities. In addition, it discusses the techniques and issues central to the development of Web Intelligence (WI) computing systems.

COMP 3110 Data Mining and Knowledge Discovery (3,2,1)

Prerequisite: COMP 1160 Database Management, COMP 1210 Data Structures and Algorithms, and STAT 1210 Probability and Statistics

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 3120 Intelligent Systems (3,3,0)

Prerequisite: COMP 1180 Structured Programming and Year III standing

This course is aimed at providing an overview of the state-of-the-art computational models and techniques for developing intelligent information systems, software solutions, and human-computer interfaces. Some practical applications in such areas as Web Intelligence, Business Intelligence and Personalized Assistance will be introduced. Related implementation issues will be discussed.

COMP 3130 Information Retrieval and Search Engine (3,2,1)

Prerequisite: COMP 1160 Database Management, COMP 1210 Data Structures and Algorithms and STAT 1210 Probability and Statistics

This course introduces the basic principles of information retrieval and search engine. Advanced models and techniques in information processing and retrieval will be covered.

COMP 3140 Computer and Network Security (3,3,0)

Prerequisite: COMP 1180 Structured Programming, COMP 2330 Data Communications and Networking, and Year III standing

This course introduces the fundamental concepts and techniques in computer and network security. Topics include basic encryption techniques, cryptographic algorithms, authentication and digital signature, public key infrastructure, access control, security models, as well as their applications to, for example, IP security, Web security, and trusted operating systems. In addition, it discusses other system and programming related security issues, including non-malicious errors, computer virus, and intrusion detection.

COMP 3150 E-Technology Architectures, Tools and Applications (3,2,1)

Prerequisite: COMP 2330 Data Communications and Networking and Year III standing

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 3160 Computer Vision and Pattern Recognition (3,2,1)

Prerequisite: COMP 1210 Data Structures and Algorithms and MATH 1140 Computational Mathematics

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

COMP 3170 Artificial Intelligence and Machine Learning (3,2,1)

Prerequisite: COMP 1210 Data Structures and Algorithms, MATH 1130 Discrete Structures and STAT 1210 Probability and Statistics

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 3180 Theory of Computation (3,2,1)

Prerequisite: MATH 1130 Discrete Structures

This course aims to introduce the fundamental concepts in theoretical computer science. The topics include deterministic and non-deterministic finite automata, regular language, context-free language, Turing machines, Church's thesis, halting problem, computability, and complexity. Also, the formal relationships between machines, languages and grammars are addressed.

COMP 3190 Principle of Programming Language (3,2,1)

Prerequisite: COMP 1150 Object Oriented Programming

This course introduces the concepts that underline most of the programming languages students are likely to encounter, and illustrates those concepts with examples from various languages. Topics include syntax and semantic analysis, bindings, type systems, programming paradigms, control abstraction and flow, and runnable program buildup.

COMP 3210 Computer Architecture (3,2,1)

Prerequisite: COMP 1210 Data Structures and Algorithms and MATH 1130 Discrete Structures

This course provides students the ideas and concepts required to understand the architectures of modern microprocessors, including instruction set principles, pipelining, instruction-level parallelism, memory hierarchy design, I/O, and internetworking. It also provides students the analytical tools for assessing processor performance.

COMP 3220 Database System Implementation (3,3,0)

Prerequisite: COMP 1160 Database Management and COMP 1210 Data Structures and Algorithms

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

COMP 3230 Advanced Software Engineering (3,2,1)

Prerequisite: COMP 2220 Software Engineering, or COMP 2010 Structured Systems Analysis and Design and COMP 2020 Object Oriented Systems Analysis and Design