

Information and Communication Technology Programme Course Description

Compulsory courses

308-101 Fundamentals of Information and Communication Technology

Prerequisite: none

Evolution of information and communication technology; main components of information and communication technology management; data systems and representations for computing and communication; algorithms of systematic problem solving; data processing methods with new technologies such as computers; information systems; data communication and networking via new technologies

308-121 Visual Arts and Graphic Design with Computers

Prerequisite: none

Basic concepts of graphics design and application of art with computers; the basic elements of visual art; principles of graphic design; color theory; computer programs for graphic design; practice for graphic design and applied art in computer work

308-201 Discrete Mathematics

Prerequisite: none

Sets; relations and functions; sequences and strings; number systems; logics and boolean algebra; permutations and combinations; pigeonhole principle; generating function and recursion; graph and tree

308-221 Information and Communication Technology Integrated Laboratory I

Prerequisite: none

The aim of this course is to develop ability of students by integrating most skills and knowledge learned in the first year (semester II) and the second year (semester I)

308-231 Structured Programming and Applications

Prerequisite: 308-101 or with the approval of programme committee

Programming principles and methods for software development; algorithms and Problem solving; data types and expression; commands in programming; subprogram and parameter; recursion; block-structured program; file organization and operation; introduction to high-level programming languages such as C

308-251 Computer System Organization and Architectures

Prerequisite: none

Computer architectures and computer components such as central processing unit; main memory ; secondary storage; input unit and output unit ; bus system and interfacing; logic circuit design ; data representation ;program execution and data reference; machine language and assembly language commands

308-222 Information and Communication Technology Integrated Laboratory II)

Prerequisite: none

The aim of this course is to develop ability of students by integrating most skills and knowledge learned in the second year (semester II)

308-223 Web Programming and Applications

Prerequisite: 308-231

Concepts of web technology; design and program development on web; connection to database; installation and maintenance; examples of implementation

308-232 Algorithms and Data Structures

Prerequisite: 308-231

Algorithm process and implementation tools; programming and algorithm principles; recursion; array; list; stack; queue; tree; graph; sorting and searching

308-241 Operating Systems

Prerequisite: 308-251

Concepts and evolution of operating systems; operating system components and process functions; CPU scheduling ; inter-process communication; deadlock; main memory management; virtual memory; file system management and secondary storage; protection; security; introduction to Unix systems and applications

308-301 Introduction to Research Methodology in Information and Communication Technology

Prerequisite: 347-202 or with the approval of programme committee

Meaning and the importance of research; research categories; research methodology in ICT; general research process; problem identification for research and project proposal writing; literature reviews; hypothesis and research design; data management; statistical analysis and interpretation; report writing and publication; ethics for researchers

Note: 347-202 Basic Statistics by Statistics Program

308-311 Information Systems Analysis and Design

Prerequisite: 308-231

Data and information; types of information systems; roles of system analysts; system development life cycle and methodologies; data and information collecting techniques; information system analytical and designing tools; project proposal; feasibility study and reports; system analysis; system design; development and maintenance of designed prototypes

308-312 Principles of Business Administration and Accounting Information System

Prerequisite: none

Principles of accounting; inventory systems; accounting and financial information related to the organization of accounting systems; accounting information system and its applications

308-321 File and Database Systems

Prerequisite: 308-101, 308-251

Fundamental characteristics of file storage devices; files and databases; sequential file organization; index sequential file organization; multiple index file organization; random file organization and multi-list file organization; file systems and implementation; file system maintenance and security; objectives and components of database systems; data modeling and database models; relational data model and relational database management systems (RDBMS); database languages; Structured Query Language (SQL); database design; database protection and security; database integrity

308-323 Seminar in Information and Communication Technology

Prerequisite: Enroll no less than 75 credits

Seminar and presentation of interesting topics in Information and Communication Technology field

308-331 Object-Oriented Programming and Applications

Prerequisite: 308-231

Concepts of object-oriented orientation; principles of object-oriented design and object-oriented programming; introduction to object-oriented programming languages and applications

308-341 Data Communication and Computer Networks

Prerequisite: 308-101, 308-251

Local area and wide area data communication; data transmission methods and media; network system objectives; applications of ISO-OSI architecture; computer network topologies

308-322 Project in Information and Communication Technology I

Prerequisite: Enroll no less than 75 credits

Investigating for project topics; project proposal; literature review and related research work survey; study of tools that will be used in the projects; analysis and design of proposed project topics

308-332 Software Engineering

Prerequisite: 308-311

Introduction to software engineering principles; desirable software characteristics and process; software development process; tools and environments for software engineering; requirements engineering; software design; Unified Modeling Language (UML); programming for reliability; software testing and maintenance; project management; software assurance and quality management

308-333 Visual Programming and Applications

Prerequisite: 308-121, 308-231 or with the approval of programme committee

Basic principles of visualization; human factors of visualization and computer interactions; principles of visual design; concepts of visual programming; introduction to visual programming languages; and applications

308-411 Ethical and Legal in Information and Communication Technology Profession

Prerequisite: none

Ethics in usage of information and information technology; regulations and laws related to information and information technology; international agreements related to information technology such as the communication and telecommunication laws; the monitoring and supporting of the internet usage laws; electronic trading laws; intellectual property laws; and privacy and security laws; the responsibility of people related to information management; comparable study of Thai laws and international laws related to information technology

308-412 Management of Information Technology in Organization

Prerequisite: 308-311

Organization and management; strategy and strategic management; organizational cultures and behaviors; information systems and organization/enterprise; information and knowledge management in organization;

information technology and organization; management of information technology resources in organization; organizational management towards the leaders in technology; information assurance and systems security management

308-422 Project in Information and Communication Technology II

Prerequisite: 308-322

System prototype development as designed; system testing; system and project evaluation; project report writing

308-421 Innovation and Enterprise Enhancement for Information and Communication Technologists

Prerequisite: none

Information and communication technology body of knowledge; necessarily basic knowledge for learning integration; roles of information and communication technologists in societies; innovative creation; professional creation; skills and psychology for information and communication technologists; comprehensive testing and evaluation

308-473 Preparation for Cooperative Education

Prerequisite: none

Field experience concepts; procedure and process; basic knowledge in professional area about hardware and software; useful knowledge for job training such as communication skills and human relations; presentation and report writing

308-475 Cooperative Education

Prerequisite: 304-473 and enroll no less than 6 semesters

Organization of cooperative education; students work as interns in government or private organizations for a semester

308-476 Comprehensive Test for Information and Communication Technologists

Prerequisite: none

Body of knowledge for information and communication technology; professional test concepts; necessary competency for information and communication technologists; examples of professional tests for information

Elective Courses

308-361 Principles of Human Interactions in Information and Communication Technology

Prerequisite: 308-121 or with the approval of programme committee

Fundamental characteristics of human anatomy and physiology; human cognition; structure of human memory and processing; reading; listening; speaking and writing process for human cognition; problem solving; innovation; and reasoning skills; human factors and psychology; forms of interactions between human and information and communication technology; principles of design and evaluation of user interfaces; supporting systems; issues of human disability and computer interactions

308-366 Computer and Information Technology Applications for Multimedia Production

Prerequisite: 308-121 or with the approval of programme committee

Multimedia categories; multimedia technology; planning and preparation for production of multimedia; multimedia design; multimedia production; multimedia assignments and case studies

308-367 Management and Decision Support System

Prerequisite: 308-311

Operational information systems and organization; management/operational process; decision making process; architecture of management information system (MIS) and decision support system (DSS); development of operational systems; examples of MIS and DSS applications

308-370 Mobile Computing and Programming

Prerequisite: none

Introduction to mobile computing and programming; infrastructures for mobile computing applications; mobile computing and programming technologies; application program development for mobile computing

308-365 Internet Technologies and Applications

Prerequisite: 308-341 or with the approval of programme committee

Concepts of the Internet; protocols; security management; application programs on the Internet; eXtensible Markup Language (XML); applications on the Internet

308-364 Advanced Web Programming

Prerequisite: 308-223

Concepts of multi – tier distributed web application; J2EE technology; java script; dynamic page development using CGI interface low and high network protocol; HTML; PHP and XML advanced features

308-470 Computer System Security Management

Prerequisite: 308-341

General concepts of systems security; Legal and ethical issues and standards for security in information and communication technology; types and sources of system threats; security policy; security mechanisms and technology; intrusion detection; security management and information assurance

308-478 Image Processing

Prerequisite: 308-232

Concepts of image processing; image processing categories; digital characteristics and formats; histogram techniques; algebraic and geometric operations; random technique; filtering design; transformation; storage and compression; software for image processing and its applications

308-471 Data Warehousing and Data Mining

Prerequisite: 308-232

Basic concepts of data warehouse and data mining; related mathematical and statistical theories; components of data warehouse and tools; creation of meta data; online analytical processing (OLAP); association rules; classification and clustering; patterns and ranking of pairing; techniques and tools for data mining; examples of applications

308-472 Geographic Information Systems

Prerequisite: 308-311

Definition and principles of geographic information systems (GIS); components of GIS; types of GIS; types of data and data management in GIS; types of database; applications of GIS in various fields