**MANAGEMENT INFORMATION SYSTEM PROGRAM**

**PROGRAM OVERVIEW**

Bachelor of Science degree in Management Information System at Duy Tan University focuses on the uses of computers in business. Students will study not only business and information technology but also solutions to business problems by using hardware, operating systems, networking, programming and database management. In addition, students will learn how to use technology as a key business driver to manage information technology resources in organizations. During the learning process, students will also work in groups to participate in community organizations and develop their own project. After completing the degree, graduates can look for jobs or continue their further levels of education.

Applicants for the bachelor's degree program in Management Information System need a high school diploma or equivalent. In this degree program, students should complete the core coursework in business and computer information systems first. After that, they may take electives such as information security and systems development. An internship is required in the program for students to get hands-on experience from working with trained professionals. Full-time students generally finish the program in four years.

This program has been in existence since 2009. The Bachelor’s degree program in Management Information System is recognized by the Ministry of Education & Training of Vietnam. Our graduates are readily recruited and can get the exciting positions in computer and software throughout the area and the nation.

**PROGRAM EDUCATIONAL OBJECTIVES**

The PEOs for the MIS undergraduate program are to produce those who can:

1. Advance career path by using Information System skills and by understanding the evolving issues in business and technology,
2. Contribute effectively to organizations as leaders and/or team members to serve the local and international community,
3. Achieve success in Management Information System (MIS) or a related industry, or continue the professional development through further study and research,
4. Be an example of professional character and high standard of ethics,
5. Engage in life-long learning and professional development through self-study, continuing education, or graduate studies.

**STUDENT OUTCOMES**

Upon the completion of the program, graduates should attain:

a)An ability to apply knowledge of computing and mathematics required for the program’s student outcomes and the discipline

b) An ability to analyze a problem, and identify and define the computing requirements to find the appropriate solution

c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs

d) An ability to function as effective team members to accomplish the common goal

e) An understanding of professional, ethical, legal, security and social issues and corresponding responsibilities

f) An ability to communicate effectively with a range of audiences

g) An ability to analyze the local and global impact of computing on individuals, organizations, and society

h) Recognition of the need for and an ability to engage in continuing professional development

i) An ability to use current techniques, skills, and tools necessary for computing practice

j) An understanding of and an ability to support the use, delivery, and management of information systems within an Information Systems environment

**DEGREE REQUIREMENTS**

The program is divided into two levels or subprograms: the pre-professional and the professional programs. Admission into the professional program requires a GPA of 2.0 or better in each of these categories: an overall understanding of Duy Tan University (DTU), MIS courses, and MIS/Math/Business/Economics courses. All pre-professional courses must be passed with at least a C grade. In addition, all co-requisites and prerequisites for professional courses must be passed with at least a D grade.

The graduation requirements for the Bachelor in MIS Degree are:

* Successful completion of a minimum of 140 credit hours: The specific number of credit hours needed for the Management Information System program is currently 144 credit hours. The number of credit hours of MIS program is bigger than other programs in DTU because MIS students need to take three more courses of English for Information Technology (CMU-ENG 130, CMU-ENG 230, and CMU-ENG 330)
* Minimum Cumulative Grade Point Average (GPA) of 2.0 (out of 4.0)
* Minimum Cumulative GPA for the Program’s Core Requirement and Concentration Courses of 2.5 (out of 4.0)
* Average or higher rating for Attitude & Discipline Assessment, i.e. students do not commit any serious academic and/or social violations leading to serious disciplinary actions.

**POPULAR CAREER OPTIONS**

Graduates from bachelor's degree program in Management Information System are prepared to utilize their understanding of business concepts and computer technology in a variety of leadership and management positions. Some typical career titles include:

Data Analyst

Computer Systems Manager

Systems Analysts

Project Managers

Web Developers

Software Engineers

Technical Consultants

1. **General Education Courses**

| **Courses** | **Required/Elective** | **Credits** |
| --- | --- | --- |
| DTE-IS 102 - Career Orientation 1 | R | 1 |
| ENG 126 - Reading - Level 1  | R | 2 |
| ENG 127 - Writing - Level 1  | R | 2 |
| CS 101 - Basic Computer Skills | R | 3 |
| DTE-IS 152 - Career Orientation 2 | R | 1 |
| ECO 151 - Introduction to Microeconomics | R | 3 |
| ENG 128 - Listening - Level 1  | R | 2 |
| ENG 129 - Speaking - Level 1  | R | 2 |
| ENG 226 - Reading - Level 2  | R | 2 |
| CS 201 - Basic Software Applications | R | 3 |
| ENG 227 - Writing - Level 2  | R | 2 |
| ENG 228 - Listening - Level 2  | R | 2 |
| ENG 229 - Speaking - Level 2  | R | 2 |
| CMU-ENG 130 - English for IT/IS 1 (International School) | R | 2 |
| CMU-ENG 230 - English for IT/IS 2 (International School | R | 2 |
| ECO 151 - Introduction to Macroeconomics | R | 3 |
| COM 101 - Professional Speaking | R | 2 |
| COM 102 - Professional Writing | R | 2 |
| PHI 100 - Critical Thinking (including Scientific Research Methodology) | R | 2 |
| CMU-ENG 330 - English for IT/IS 3 (International School) | R | 2 |
| ***Selected Elective courses, 2 out of 5 below:*** | SE | 4 |
| *EVR 205 - Environmental Health* |
| *HIS 221* - *World Civilizations 1* |
| *HIS 222* - *World Civilizations 2* |
| *AHI 392* - *History of Western Architecture* |
| *AHI 391* - *History of Vietnamese and Eastern Asian Architecture* |
| HIS 361 - History of the Communist Party of Vietnam | R | 3 |
| PHI 161 - Marxism - Leninism 1 | R | 2 |
| ***Selected Elective course, 1 out of 3 below:*** | SE | 2 |
| *LAW 201 - Basic Principles of Law (2)* |
| *DTE 201 - Business Ethics (2)* |
| *MED 268 - Medical Ethics (2)* |
| PHI 162 - Marxism - Leninism 2 | R | 3 |
| POS 361 - Ho Chi Minh’s Ideology | R | 2 |
| **Total:** | **58** |

**Mathematics and Sciences Courses**

|  |  |  |
| --- | --- | --- |
|  **Courses** | **Required/Elective**  | **Credits** |
| MTH 101 - Advanced Mathematics C1 | R | 3 |
| CMU-CS 316 - Fundamentals of Computing 2 | R | 1 |
| MTH 102 - Advanced Mathematics C2 | R | 2 |
| MGO 403 - Decision-Making Models | R | 3 |
| STA 151 - Principles of Statistics & Probabilities | R | 3 |
| **Total:** | **12** |

1. **Core Courses Requirements**

|  |  |  |  |
| --- | --- | --- | --- |
| **Courses** | **Required/ Elective**  | **Credits** | **Fundamental (F)/ Advanced (A)** |
| CS 211 - Fundamentals of Programming | R | 4 | F |
| CMU-CS 252 - Introduction to Network & Telecommunications Technology | R | 3 | F |
| CMU-CS 303 - Fundamentals of Computing 1 | R | 3 | F |
| CMU-CS 316 - Fundamentals of Computing 2 | R | 2 | A |
| CMU-SE 214 - Requirements Engineering | R | 3 | A |
| CMU-CS 297 - CDIO Project  | R | 1 | F |
| CMU-IS 251 - Information System Theories & Practices | R | 3 | F |
| CMU-IS 432 - Software Project Management | R | 3 | A |
| IS 301 - Database | R | 3 | F |
| ***Selected Elective course, 1 out of 2 below:*** | SE | 3 | A |
| *CMU-CS 462 - Software Measurements & Analysis* |
| *CMU-SE 303 - Software Testing (Verification & Validation)* |
| CMU-CS 376 - Elements of Network Security | R | 3 | F |
| CMU-CS 447 - CDIO Project  | R | 1 | F |
| ***Selected Elective courses, 2 out of 4 below:*** | SE | 6 | A |
| *CS 414 - Winforms Programming VB.NET / C#.NET* |
| *CR 424 - Mobile Application Development* |
| *CS 366 - L.A.M.P. (Linux, Apache, MySQL, PHP)* |
| *IS 384 - E-Commerce Technologies (ASP.NET)* |
| CMU-IS 401 - Information System Applications | R | 3 | A |
| CMU-IS 450 - Capstone Project for Information Systems 1 | R | 3 | A |
| CMU-SE 433 - Software Process & Quality Management | R | 3 | A |
| CMU-IS 451 - Capstone Project for Information Systems 2 | R | 3 | A |
| **Total:** |  **50** |

**Information Systems Environment Courses**

| **Courses** | **Required/****Elective** | **Credits** |
| --- | --- | --- |
| ACC 201 - Principles of Accounting 1 | R | 3 |
| CMU-IS - 100 Introduction to Information Systems | R | 3 |
| ***Selected Elective course, 1 out of 2 below***: | SE | 3 |
| *MKT 251 - Principles of Marketing* |
| *MKT 253 - Principles of Marketing in Hospitality & Tourism* |
| ***Selected Elective course, 1 out of 2 below:*** | SE | 3 |
| *HRM 301 - Human Resource Management* |
| *HRM 303 - Human Resource Management in Hospitality & Tourism* |
| FIN 301 - Financial Management 1 | R | 3 |
| CMU-IS 482 - Business Value & Relationship Management | R | 3 |
| CMU-CS 445 - System Integration Practices | R | 3 |
| IS 402 - Decision Support Systems | R | 3 |
| **Total:** | **24** |

**Core Courses Description of MANAGEMENT INFORMATION SYSTEM PROGRAM**

**CMU-IS 100 - INTRODUCTION TO INFORMATION SYSTEMS (3).** This course provides students with an introduction to Information Systems (IS), Information Technology (IT), and its use in the business world. The course also focuses on the practical aspects of how technology can be used to create business value as well as the potential benefits and limitations of IT/IS. *Prerequisite: N/A*

**CS 211 - FUNDAMENTALS OF PROGRAMMING (4, 3-1).** This course equips students with the basic skills and knowledge of computer programming with the C/C++ programming language. Students will first learn about basic data types, storage classes, block structures, data hiding and data initialization. They will then move on with topics on pointers and storage allocation as well as arrays and dynamic memory allocation. Later in the course, students will learn how to write functions or subroutines with the emphasis on command line arguments, environment variables, recursion and reentrancy. By the end of the course, students will be introduced to structures and file structures: how to define and declare structures, how to access members, how to pass a structure to a function, etc. *Prerequisite: N/A.*

**COM 101 - PROFESSIONAL SPEAKING (2).** Oral communication, especially in the public, is an important requirement in life. Giving speeches, as a performative act, helps individuals connect themselves with other individuals. As a result, it is important that students are taught on how to express their ideas to different groups of the audience with using effective body language, how to read the reactions of their audience, and how to defend and justify for their viewpoints in a positive manner. Students in this class will learn about different types of speeches in the public such as informative speech, persuasive speech, argumentative speech, and commemorative speech. *Prerequisite: N/A.*

**COM 102 - PROFESSIONAL WRITING (2).** Writing is a complementary, but essential skill to for students to be successful in college as well as in the working environment later on. Students need to be able to express their ideas clearly and concisely in different formats of writing. In this course, students will learn about major types of college essays including cause-and-effect essay, argumentation essay, classification essay and compare-and-contrast essay. They also will have the opportunity to learn about various office and business writing styles for memos, emails, letters, formal petitions, etc. *Prerequisite: N/A.*

**STA 151 - PRINCIPLES OF STATISTICS & PROBABILITIES (3**). Foundation material in probability and statistical inference. Topics include sample spaces, conditional probability and Bayes' rule, random variables, discrete and continuous probability distributions, expectation, estimation, and hypothesis testing. *Prerequisite: N/A.*

**CMU-CS 303 - FUNDAMENTALS OF COMPUTING 1 (3, 2-1).** This course introduces basic programming using the JAVA programming language with object-oriented programming principles. There will be a revisit to basic concepts of programming but the emphasis is placed on object-oriented programming principles, the use of some of the common Java libraries from the core Java APIs and event-driven programming. The purpose is to help students develop programming skills and form object-oriented thinking which serves as the foundation for becoming a software engineer. *Prerequisite: N/A.*

**CMU-CS 316 - FUNDAMENTALS OF COMPUTING 2 (3).** This course introduces the student to fundamental data structures & algorithms and the tradeoffs between different implementations of the following abstractions of array lists, linked lists, stacks, queues, heaps, trees, binary search trees and balanced trees. This course also introduces algorithm designs including searching, sorting, and recursion as well as the basic performance and analysis (i.e., the best case, worse case, average case, linear and non-linear algorithms and their impact on performance). *Prerequisite: CMU-CS 303.*

**ACC 201 - PRINCIPLES OF ACCOUNTING 1 (3).** The course of Principles of Accounting 1 provides an introduction to the principles and techniques that accountants employ in measuring, processing, evaluating and communicating information about the financial performance and position of a business. This course helps students to develop an understanding of a range of theoretical and practical techniques being used in accounting. It helps develop skills that should enable students to possess a firm understanding of standard accounting practices and several accounting information systems as well as how they together make the impact upon various core business processes in modern-day financial accounting services at many companies. *Prerequisite: N/A.*

**CMU-IS 251 - INFORMATION SYSTEM THEORIES & PRACTICES (3).** This course covers the theories and practices of Information Systems Management as it is being applied in the industry today. It identifies roles, responsibilities and authorities of the Chief Information Officer (CIO) and senior management (middle-level managers, directors). It also covers the concept of offering Information Technology (IT) as a service to the business instead of the traditional IT operation and maintenance. *Prerequisite: CMU-IS 100.*

**CMU-SE 214 - REQUIREMENTS ENGINEERING (3).** The course presents basic concepts and techniques in requirements engineering. Students will learn to systematically establish, define and manage the requirements of software systems, from technical, organizational and management perspectives. The course also focuses on various techniques of elicitation, analysis, specification, documentation, validation, verification and requirement change management in software development. *Prerequisite: Sophomore status or above.*

**CMU-CS 376 - ELEMENTS OF NETWORK SECURITY (3).** This course provides a deeper coverage of major security issues. A brief review of all related topics is provided to ensure that the new material is accessible for students without security background. The course is focused on practical security issues in application development and system administration, and related theoretical background, along with historic and societal prospective. The first half of the course includes foundations of encryption and security protocols, and discussion of the main modern threats and defenses. The second half is focused on specific security techniques for application development and system administration. *Prerequisite: CMU-CS 252.*

**CMU-IS 432 - SOFTWARE PROJECT MANAGEMENT (3).** This course provides engineering students with a comprehensive understanding of how to plan, optimize and efficiently manage projects (or tasks) to implement products, services or developments. This includes building the structures, processes, components and linkages in a team for successful project delivery within schedule, budget and quality requirements. *Prerequisite: Sophomore status or above.*

**CMU-SE 303 - SOFTWARE TESTING (Verification & Validation) (3).** Major topics of this course include practical software testing goals and approaches to testing software through all phases of the Software Testing Lifecycle. Practical testing tools are discussed and used in assignment work. In particular, students learn how to apply the tools that come in open-source package in order to gain a solid understanding of how testing is done in practice. The course also covers the difference between ideal testing practice and real-life scenarios where standards are not always given appropriate levels of importance. *Prerequisite: CMU-CS 303.*

**FIN 301 - FINANCIAL MANAGEMENT 1 (3).** This course presents financial concepts, terms, and functions of finance in a business organization. Topics of focus include Time Value of Money (TVM), interest rate, bond/stock valuation, financial budgeting, decision making, and forecasting. It also equips students with the skills and knowledge in developing a systematic process of analytics, as a “*best practice*”, that helps find proper solutions to various financial problems. In addition, this course introduces students to the use and roles information systems in modern-day financial services, including exposure to and experience with different kinds of financial services software applications. *Prerequisite: ECO 151/ PSU-ECO 151.*

**HRM 301 - HUMAN RESOURCE MANAGEMENT (3).** This course covers the study of human resource management (HRM) within an organization and emphasizes how each of the functional activities of HRM can support the organization’s strategy, including Planning, Staffing, Training/Development, Total Rewards (Compensation, Benefits, and Bonuses), Performance Management, Employee Relations, Labor Relations, and Risk Management (Health-Safety-Security). Labor law topics are also embedded within the discussion about each of these functions. *Prerequisite: Junior status or above.*

**IS 301 – DATABASE (3).** This course presents the database concept with extensive coverage on data modeling, database design, data definition language, relational algebra, and SQL. The course also covers relational design principles based on dependencies and normal forms (Boyce-Codd Normal Form: 1NF, 2NF, 3NF). Students will have the chance to practice with SQL 2000, T-SQL, indexes, views, and constraints in a small database design project. *Prerequisite: CS 101.*

**CMU-IS 401 - INFORMATION SYSTEM APPLICATIONS (3).** The course aims to provide students with knowledge about the Relational DataBase Management Systems such as data structure, file organization, the Structured Query Language (SQL), transaction management, concurrent access management mechanisms, security and data recovery after an incident, optimization as well as questions of organizational structure and access methods. *Prerequisite: IS 301.*

**IS 384 - E-COMMERCE TECHNOLOGIES (ASP.NET) (3).** In this course, students will learn about major technologies for ecommerce such as ASP.NET (C#), CSS, JavaScript, XML and SQL Server. Students, in teams of 3 to 5 members, will also engage in a full-scale group project to develop an ecommerce application of their own design. A brief introduction to GUI design and database optimization for web applications is also given in this course. *Prerequisite: CS 211.*

**CMU-SE 433 - SOFTWARE PROCESS & QUALITY MANAGEMENT (3).**  The course is designed to provide students with the basic concepts of process justification, identification, implementation, and software development, the different process improvement models, and how organizations can be evaluated for adherence to high quality processes that generate high quality products. The course offers an understanding of how to evaluate, instantiate, and analyze a development process in an organization. *Prerequisite: CMU-IS 432.*

**CMU-IS 482 - BUSINESS VALUE & RELATIONSHIP MANAGEMENT (3).** Business value expands the concept of a firm’s value beyond its economic value to include other forms of value such as employee value, customer value, supplier value, channel partner value, alliance partner value, managerial value, and societal value. Many of these forms of value are not directly measured in monetary terms. The goal of this course is to introduce all forms of value that determine the long-term health and well-being of an organization or a business, especially IT firms and to understand how employees impact these forms of value. *Prerequisite: Senior status required*

**CMU-CS 445 - SYSTEM INTEGRATION PRACTICES (3).** This course gives students an understanding about many of the problems encountered when integrating two or more applications into a single system following the System Integration Life cycle. Based on the case studies, students can recognize the challenges of integrating different applications with different database schemas and different security services. Students also learn when it is appropriate to apply integration models and middleware technologies. *Prerequisite: CS 211, CMU-CS 316.*

**DTE 201 - BUSINESS ETHICS (2).** This course introduces contemporary and controversial ethical problems and issues facing the business community. Topics include moral reasoning, moral dilemmas, law and morality, equity, justice and fairness, ethical standards, and moral development. Students are expected to develop their moral responsibilities and obligations as members of the workforce and society. *Prerequisite: N/A.*

**CMU-IS 450 - CAPSTONE PROJECT FOR INFORMATION SYSTEMS 1 (3).** This Capstone project focuses on a ***simulation*** project. It emphasizes team collaboration and application of modern engineering approaches to software construction/services. The main objective is the development by each team of an original, industry-strength and system-intensive product. The teams report on their project’s progress by giving presentations and submitting deliverables related to the project. The teams deliver and present project parts at the following stages of project development: (1) topic proposal (*concept*), (2) software/system specification (*requirements*), (3) design (*model*), and (4) implemented software/system (*in-progress* & *final product/service*). At the beginning of the semester, the teams set up a communication protocol between team and its mentor(s), which will be updated regularly to reflect the projects’ progress and team meetings. At the end of the semester, there is a Senior Projects Defense with project demos, posters, and presentations. *Prerequisite: CMU-SE 214, CMU-IS 432, CMU-CS 316, CMU-SE 303 or CMU-CS462.*

**CMU-IS 451 - CAPSTONE PROJECT FOR INFORMATION SYSTEMS 2 (3).** This Capstone project focuses on a ***real-world*** project, a continue-on of the CMU-IS 450 course. The capstone course is a method of summative evaluation in which the student is given an opportunity to demonstrate integrated knowledge and growth in the major. The course will assess a student’s cognitive and intellectual growth in their major and
also the overall academic learning experience. The course will provide an opportunity
for students to integrate and applied learning from their academic career in a comprehensive manner. The capstone provides an opportunity for students to integrate and apply knowledge from their academic studies; through the comprehensive evaluation of core curriculum of finance and accounting, economics, marketing, management, human resource, and all learned fields. *Prerequisite: CMU-IS 450.*

**SOFTWARE ENGINEERING (ADVANCED PROGRAM)**

**Overview**

The **Software Engineering Program** was
initiated in 2009 in the International School at Duy
Tan University. This is a general program of study
in the field of information technology, subfield of
software development, in service of the Central
and national economy of Vietnam. A bachelor’s
degree of Software Engineering is considered the
minimum requirement for most entry-level software
engineering positions. Students who pursue this
degree will learn how to perform key processes at
different stages of software creation, along with the
fundamental theories that guide this cutting-edge
field.
Bachelor’s in **Software Engineering Program**culminate with a capstone course, which allows
students to demonstrate the knowledge and skills
they have gained with a comprehensive research
project. **Software Engineering Program** at Duy
Tan University has long been recognized around the
country as one of the top 5 programs in the discipline.

**PROGRAM
EDUCATIONAL
OBJECTIVES
The Software Engineering Program at
International School expects the graduates within
three to five years of graduation to attain the
following**:
» Strive for professional practices in the design,
implementation, operation, and maintenance
of computer software and systems in their
future career under constantly-changing
environments;
» Excel in their everyday work environment and
to continue their professional development
through expertise exchange, continuing
education and/or graduate studies;
» Function effectively as a team-player with
strong personal and interpersonal skills and a
high level of ethics and social responsibility.

**STUDENT OUTCOMES
The students are expected to be able to do by
the time of graduation from Software Engineering
Program**:
(*a) an ability to apply knowledge of mathematics,
science, and engineering,
(b) an ability to design and conduct experiments,
as well as to analyze and interpret data,
(c) an ability to design systems, components, or
processes meeting desired needs within realistic
constraints that can be economic, environmental,
social, political, or ethical, or that can concern health
and safety, manufacturability, or sustainability,
(d) an ability to function in multidisciplinary teams,
(e) an ability to identify, formulate, and solve
engineering problems,
(f) an understanding of professional and ethical
responsibility,
(g) an ability to communicate effectively,
(h) the broad education necessary to understand
the impact of engineering solutions in a global,
economic, environmental, and societal context,
(i) a recognition of the need for, and the ability to
engage in life-long learning,
(j) a knowledge of contemporary issues,
(k) an ability to use the techniques, skills, and
modern engineering tools necessary for engineering.*

**CURRICULUM OF SOFTWARE ENGINEERING**

1. **general education courses**

|  |  |  |
| --- | --- | --- |
| **Courses** | **Required or Selected Elective or Elective** | **Credits** |
| COM 101 Professional Speaking | R | 2 |
| COM102 Professional Writing | R | 2 |
| CS 101 Basic Computer Skills | R | 3 |
| CS 201 Basic Software Applications | R | 3 |
| DTE-IS 102 Career Orientation 1 | R | 1 |
| DTE-IS 152 Career Orientation 2 | R | 1 |
| ENG 126 Reading - Level 1 (International School) | R | 2 |
| ENG 127 Writing - Level 1 (International School) | R | 2 |
| ENG 128 Listening - Level 1 (International School) | R | 2 |
| ENG 129 Speaking - Level 1 (International School) | R | 2 |
| ENG 226 Reading - Level 2 (International School) | R | 2 |
| ENG 227 Writing - Level 2 (International School) | R | 2 |
| ENG 228 Listening - Level 2 (International School) | R | 2 |
| ENG 229 Speaking - Level 2 (International School) | R | 2 |
| HIS 361 History of the Communist Party of Vietnam | R | 3 |
| PHI 100 Critical Thinking (including Scientific Research Methodology) | R | 2 |
| PHI 161 Marxism - Leninism 1 | R | 2 |
| PHI 162 Marxism - Leninism 2 | R | 3 |
| POS 361 Hồ Chí Minh’s Ideology | R | 2 |
| Selected Eelective course, one of three below:  | SE | 2 |
| LAW 201 Basic Principles of Law (2) |
| DTE 201 Business Ethics (2) |
| MED 268 Medical Ethics (2) |
| Selected Elective course, one of three below:  |  SE | 2 |
| HIS 221 World Civilizations 1(2)  |
| AHI 392 History of Eastern Architectures (2) |
| AHI 391 History of Western Architectures (2) |
| **Total**  | **44** |

1. **math and basic sciences**

|  |  |  |
| --- | --- | --- |
| **Courses** | **Required or Selected Elective or Elective** | **Credits** |
| CHE 101 Introduction to Chemistry | R | 3 |
| CMU-CS 297 CDIO Project | R | 1 |
| CMU-CS 303 Fundamentals of Computing 1 | R | 1 |
| CMU-CS 311 Object-Oriented Programming C++ (Advanced Concepts in Computing) | R | 1 |
| CMU-CS 316 Fundamentals of Computing 2 | R | 1 |
| CMU-SE 252 Computer Science for Practicing Engineers (Software Construction) | R | 1 |
| EVR 205 Environmental Health | R | 2 |
| MTH 103 Advanced Mathematics A1 | R | 3 |
| MTH 104 Advanced Mathematics A2 | R | 4 |
| MTH 254 Discrete Mathematics & Applications | R | 3 |
| MTH 291 - Applied Mathematics for Information Technology 1 | R | 3 |
| MTH 341 Applied Mathematics for Information Technology 2 | R | 3 |
| PHY101 Introduction to Physics 1 | R | 3 |
| STA 151 Principles of Statistics & Probabilities | R | 3 |
| **Total**  | **32** |

1. **core** *courses* **requirements**

|  |  |  |
| --- | --- | --- |
| **Courses** | **Required or Selected Elective or Elective** | **Credits** |
| CMU-CS 246 Application Development Practices | R | 3 |
| CMU-CS 252 Introduction to Network & Telecommunications Technology | R | 3 |
| CMU-CS 303 Fundamentals of Computing 1 | R | 2 |
| CMU-CS 311 Object-Oriented Programming C++ (Advanced Concepts in Computing) | R | 3 |
| CMU-CS 316 Fundamentals of Computing 2 | R | 2 |
| CMU-CS 397 CDIO Project | R | 1 |
| CMU-CS 462 Software Measurements & Analysis | R | 3 |
| CMU-IS 432 Software Project Management | R | 3 |
| CMU-IS401 Information System Applications | R | 3 |
| CMU-SE 100 Introduction to Software Engineering | R | 2 |
| CMU-SE 214 Requirements Engineering | R | 3 |
| CMU-SE 252 Computer Science for Practicing Engineers (Software Construction) | R | 2 |
| CMU-SE 303 Software Testing (Verification & Validation) | R | 3 |
| CMU-SE 403 Software Architecture & Design | R | 4 |
| CMU-SE 433 Software Process and Quality management | R | 3 |
| CMU-SE 450 Capstone project for Software Engineering 1 | R | 3 |
| CMU-SE 451 Capstone project for Software Engineering 2 | R | 3 |
| CS 211 Fundamentals of Programming | R | 4 |
| CS 414 Winform programming VB.NET / C#.NET | R | 3 |
| IS 301 Database  | R | 3 |
| IS 384 e-Commerce Technologies (ASP.NET) | R | 3 |
| ***Selected Elective course, one of two below:*** | SE | 3 |
| CMU-CS 445 System Integration Practices |
| CMU-SE 445 Software Reuse and Integration  |
| ***Selected Elective course, one of three:*** | SE | 2 |
| CS 366 L.A.M.P. (Linux, Apache, MySQL, PHP) |
| CS 466 Perl & Python |
| CR 424 Mobile Application Development |
| **Total**  | **64** |

**// Ở phần này, nếu được em copy thay toàn bộ lại cho anh cho nhanh – để y nguyên vậy chỉ format là xong.**

**COURSE DESCRIPTION**

**CMU-SE 100 – INTRODUCTION TO SOFTWARE ENGINEERING (3).** This course aims at helping students to build up an understanding of how to develop a software system from scratch by guiding them through the step-by-step in-software development process and giving them the knowledge of fundamental principles and discipline of a software engineer. The course will provide students with overview about all phrases in a software life cycle such as requirement, analysis, design, coding, testing and maintenance. *Prerequisite: N/A.*

**CS 211 - FUNDAMENTALS OF PROGRAMMING (4, 3-1).** This course equips students with the basic skills and knowledge of computer programming with the C/C++ programming language. Students will first learn about basic data types, storage classes, block structures, data hiding and data initialization. They will then move on with topics on pointers and storage allocation as well as arrays and dynamic memory allocation. Later in the course, students will learn how to write functions or subroutines with the emphasis on command line arguments, environment variables, recursion and reentrancy. By the end of the course, students will be introduced to structures and file structures: how to define and declare structures, how to access members, how to pass a structure to a function, etc. *Prerequisite: N/A*

**MTH 254 – DISCRETE MATHEMATICS & APPLICATIONS (3, 2+1).** Discrete mathematics is a branch of mathematics that studies discrete objects and it is a required subject for Information Technology students. This course not only gives students an understanding and application for the problems encountered in the foundation of basic discrete structures such as sets, relations, graphs, but also helps students create conditions to understand storing and processing data in computers where discrete progresses are the essentials.

**CMU-CS 252 – INTRODUCTION TO NETWORK & TELECOMMUNICATIONS TECHNOLOGY (3).** This course will focus on the following key issues: Understand the basic concepts of computer network technology. The ability to design, implement, operate and evaluate a network system to meet desired needs and analyze the local and global impact of computer network on individuals, organizations, society and all requirements of the curriculum. *Prerequisite: N/A.*

**CMU-CS 303 - FUNDAMENTALS OF COMPUTING 1 (3, 2-1).** This course introduces basic programming using the JAVA programming language with object-oriented programming principles. There will be a revisit to basic concepts of programming but the emphasis is placed on object-oriented programming principles, the use of some of the common Java libraries from the core Java APIs and event-driven programming. The purpose is to help students develop programming skills and form object-oriented thinking which serves as the foundation for becoming a software engineer. *Prerequisite: N/A.*

**CMU-CS 316 - FUNDAMENTALS OF COMPUTING 2 (3).** This course introduces the student to fundamental data structures & algorithms and the tradeoffs between different implementations of the following abstractions of array lists, linked lists, stacks, queues, heaps, trees, binary search trees and balanced trees. This course also introduces algorithm designs including searching, sorting, and recursion as well as the basic performance and analysis (i.e., the best case, worse case, average case, linear and non-linear algorithms and their impact on performance). *Prerequisite: CMU-CS 303.*

**CMU-SE 214 - REQUIREMENTS ENGINEERING (3).** The course presents basic concepts and techniques in requirements engineering. Students will learn to systematically establish, define and manage the requirements of software systems, from technical, organizational and management perspectives. The course also focuses on various techniques of elicitation, analysis, specification, documentation, validation, verification and requirement change management in software development. *Prerequisite: Sophomore status or above.*

**CMU-CS 311– OBJECT ORIENTED PROGRAMMING AND C++ (Advanced Concepts in Computing) (4, 3+1).** This course provides in-depth coverage of object-oriented programming principles and techniques using C++. Topics include classes, overloading, data abstraction, information hiding, encapsulation, inheritance, polymorphism, file processing, templates, exceptions, container classes, and low-level language features. The course also covers GUI and the C++11 language standard. *Prerequisite: CS 211.*

**CMU-SE 252 – COMPUTER SCIENCE FOR PRACTICING ENGINEERS (Software Construction)(3).** This course introduces the concepts which are related to the design and analysis of algorithms. It covers in detail algorithm complexity such as greedy strategies, divide and conquer techniques, dynamic programming, and approximation algorithms. It also covers some abstract data types and their attributes. *Prerequisite: CMU-CS 316.*

**CMU-CS 462 – SOFTWARE MEASUREMENT AND ANALYSIS (3).** This course provides the basic skills needed to define, capture and analyze software processes and product measurements in support of management information needs. Including: Basic of measurement, data analysis and reporting, software project measurement and analysis, the relationship between metrics and project processes, the relationship between metrics and product quality, measuring and managing risk, the software project measurement process, defining software project and product measures, capturing and storing software project and product measures, data analysis techniques, status reporting, collecting and using information for historical purposes, ROI (return of investment) associated with software project measurement and analysis. *Prerequisite: CMU-IS 432.*

**CMU-IS 432 - SOFTWARE PROJECT MANAGEMENT (3).** This course provides engineering students with a comprehensive understanding of how to plan, optimize and efficiently manage projects (or tasks) to implement products, services or developments. This includes building the structures, processes, components and linkages in a team for successful project delivery within schedule, budget and quality requirements. *Prerequisite: Sophomore status or above.*

**CMU-SE 303 - SOFTWARE TESTING (Verification & Validation) (3).** Major topics of this course include practical software testing goals and approaches to testing software through all phases of the Software Testing Lifecycle. Practical testing tools are discussed and used in assignment work. In particular, students learn how to apply the tools that come in open-source package in order to gain a solid understanding of how testing is done in practice. The course also covers the difference between ideal testing practice and real-life scenarios where standards are not always given appropriate levels of importance. *Prerequisite: CMU-CS 303.*

**IS 301 – DATABASE (3).** This course presents the database concept with extensive coverage on data modeling, database design, data definition language, relational algebra, and SQL. The course also covers relational design principles based on dependencies and normal forms (Boyce-Codd Normal Form: 1NF, 2NF, 3NF). Students will have the chance to practice with SQL 2000, T-SQL, indexes, views, and constraints in a small database design project. *Prerequisite: CS 101.*

**CMU-IS 401 - INFORMATION SYSTEM APPLICATIONS (3).** The course aims to provide students with knowledge about the Relational DataBase Management Systems such as data structure, file organization, the Structured Query Language (SQL), transaction management, concurrent access management mechanisms, security and data recovery after an incident, optimization as well as questions of organizational structure and access methods. *Prerequisite: IS 301.*

**IS 384 - E-COMMERCE TECHNOLOGIES (ASP.NET) (3).** In this course, students will learn about major technologies for ecommerce such as ASP.NET (C#), CSS, JavaScript, XML and SQL Server. Students, in teams of 3 to 5 members, will also engage in a full-scale group project to develop an ecommerce application of their own design. A brief introduction to GUI design and database optimization for web applications is also given in this course. *Prerequisite: CS 211.*

**CMU-SE 433 - SOFTWARE PROCESS & QUALITY MANAGEMENT (3).**  The course is designed to provide students with the basic concepts of process justification, identification, implementation, and software development, the different process improvement models, and how organizations can be evaluated for adherence to high quality processes that generate high quality products. The course offers an understanding of how to evaluate, instantiate, and analyze a development process in an organization. *Prerequisite: CMU-IS 432.*

**CMU-CS 445 - SYSTEM INTEGRATION PRACTICES (3).** This course gives students an understanding about many of the problems encountered when integrating two or more applications into a single system following the System Integration Life cycle. Based on the case studies, students can recognize the challenges of integrating different applications with different database schemas and different security services. Students also learn when it is appropriate to apply integration models and middleware technologies. *Prerequisite: CS 211, CMU-CS 316.*

**CMU-SE 403 – SOFTWARE ARCHITECTURE AND DESIGN (4).** This course is targeted at those practicing professionals who design, develop, and/or manage the construction of software-intensive systems. It provides an overview of architecture design for practicing engineers and provides insights on the latest thinking in architecture design. The topics such as “Why architecture design is important, what is architecture, how to design and do documentation, how to create architecture, how to evaluate the architecture and what is its role in system development” will be discussed in the class. Students should have prior experience in the development of software-intensive systems and some familiarity with modern software engineering concepts. *Prerequisite: CMU-CS 311, CMU-SE 214.*

**CMU-CS 246 – APPLICATION DEVELOPMENT PRACTICES (3).** In this course, students will play a variety of roles in the software industry, including: team leader, project manager, and quality assurance manager. With such roles, students will learn to know-how each position in the software industry.Also, this course helps students to deal with critical issues in the process of working as technical review and configuration management. *Prerequisite: N/A.*

**CS 424 – MOBILE APPLICATION DEVELOPMENT (3).** This course is designed to introduce students how to develop smartphone apps on major platforms. The course includes hands-on tutorials with screenshots and step-by-step instructions to guide students in developing applications for Google Android, Apple iOS and Windows Phone. Featured topics are installation and setup, best practices for small device programming, Android Studio, Apple iOS, Microsoft Windows Phone and Cross-Platform Development with Phone-Gap or Unity. *Prerequisite: CMU-CS 303.*

**CS 366 – L.A.M.P (LINUX, APACHE, MYSQL, PHP) (2).** In this course, students will learn the fundamental of web application with PHP technology. The web solutions of this course are using: Linux as server operation system role, apache web server to operate the web, PHP server-side language to write the code and, MySQL database to store data. This course involves installing and configuring the PHP engine, a MySQL database, and an Apache web server. *Prerequisite: CMU-CS 303, IS 301.*

**CS 414 – WINFORM PROGRAMMING: VB.NET/ C#.NET (3).** This course provides knowledge of Windows form programing, object-oriented programing with C#.NET, and database access with ADO.NET. It helps students analyze real world problems and develop Windows form applications in an object-oriented manner. The objective of this course is to help students to develop the skills of Windows Form application programming and database connectivity a variety of DBMS, especially in developing management applications. *Prerequisite*: *CMU-CS 303, IS 301*

**CMU-SE 450 - CAPSTONE PROJECT FOR SOFTWARE ENGINEERING 1 (3).** This Capstone project focuses on a ***simulation*** project. It emphasizes team collaboration and application of modern engineering approaches to software construction. The main objective is the development by each team of an original, industry-strength and system-intensive product. The teams report on their project’s progress by giving presentations and submitting deliverables related to the project. The teams deliver and present project parts at the following stages of project development: (1) topic proposal (*concept*), (2) software specification (*requirements*), (3) design (*model*), and (4) implemented software/system (*in-progress* & *final product/service*). At the beginning of the semester, the teams set up a communication protocol between team and its mentor(s), which will be updated regularly to reflect the projects’ progress and team meetings. At the end of the semester, there is a Senior Projects Defense with project demos, posters, and presentations. *Prerequisite: CMU-SE 214, CMU-IS 432, CMU-CS 316, CMU-SE 303 or CMU-CS462.*

**CMU-SE 451 – CAPSTONE PROJECT FOR SOFTWARE ENGINEERING 2 (3).** This capstone course focuses on a ***real-world project***. It emphasizes team collaboration and application of modern engineering approaches to software construction. The development by each team of an original, industry-strength software-intensive product is the main objective of the course. The teams will report on their project’s progress by giving *presentations* and submitting deliverables related to the project. The teams will deliver and present project parts at the following stages of project development: topic proposal (*concept*), software specification (*requirements*), design (*model*), and implemented software (*in-progress* & *final product*). At the beginning of the semester the teams will set up a communication protocol between team and mentor, which will be updated regularly to reflect the projects’ progress and team meeting. At the end of the semester there will be a Capstone Projects Defense with project *demos, posters,* and *presentations. Prerequisite: CMU-SE 450.*

**Student Admissions**

The admission process at Duy Tan University follows the college admission regulations of the Ministry of Education & Training of Vietnam (MoET) as well as the admission requirements of Duy Tan University. It should be noted that the college admission regulations of Vietnam can be revised from one year to another. All Duy Tan University (DTU)’s Management Information System (MIS) freshman students are admitted and enrolled in the Undergraduate University Level (UUL) and the International School (IS).

The following admission requirements must be met by domestic students:

1. Passing the High School Graduation Examination held by the Ministry of Education & Training of Vietnam;
2. Achieving either of:
	1. The minimum passing grade for National College Entrance from the High School Graduation Examination as required by the Ministry of Education & Training of Vietnam, or
	2. The minimum of 18 out of 30 grade points for three high-school courses of the National College Entrance course sets for certain undergraduate disciplines as specified by the Ministry of Education & Training of Vietnam;
3. Registering with Duy Tan University before October 31st of the intake year and while its annual freshman student quota is still available.

The following admission requirements must be met by international students:

1. Achieving cumulative high-school grade point average (GPA) of 2.5 or higher on a 4.0 scale;
2. Having no criminal history or records as certified by the home country.

**Program Delivery Modes**

Programs of International School are offered in the day mode with courses offered in traditional lecture and laboratory formats. The classes take place from 7:00 am to 5:00 pm during the weekdays. Occasionally, some courses are offered in the evening from 5:45 pm to 9:00 pm. The academic calendar at Duy Tan University comprises of two 16-week main semesters, two midterm exams and 2-week final exams in addition to the summer course (one 6-week and one final exam). Students are allowed to enroll from 16 to 20 credits for the main semester and a maximum of 8 credits for the summer semester. Typically, students take 5-7 courses per semester. No significant distance-learning or web-based component makes up the program even though e-learning resources are widely used in a blended mode to support traditional course format. Students are required to carry out a graduation Capstone Project while internships are optional.

**Graduation Requirements**

The graduation requirements for the Degree of the Bachelor in Management Information System and Sofware Engineering are:

* Successful completion of a minimum of 140 credit hours. The specific number of credit hours needed for the Management Information System program is currently 144 credit hours. The number of credit hours required for the MIS, SE programs are higher than that of other programs in DTU because of additional English training requirement for students in the International School with additional English for IT/IS (International School) courses of CMU-ENG 130, CMU-ENG 230, and CMU-ENG 330.
* Minimum Cumulative Grade Point Average (GPA) of 2.0 (out of 4.0).
* Minimum Cumulative GPA for the Program’s Core Requirement and Concentration Courses of 2.5 (out of 4.0).
* Attitude & Discipline Assessment of average rating or above: i.e., Students did not commit serious academic and/or social violations to cause serious disciplinary actions.

**STUDENT ADVISING**

For each programs of International School are required to be advised by a departmental advisor each semester. Consult the departmental bulletin boards or Web site for advising hours. New and transfer students must also be advised prior to the beginning of the semester in which they first enroll.