COMPUTER INFORMATION SYSTEMS

Academic Year

2011-2012

School

School of Science, Engineering and TechnologySchool Web site

School Dean

Winston F. Erevelles, Ph.D. werevelles@stmarytx.edu

Department

Computer Science

Department Chair

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Description of Program/Major

Computer Science studies digital computer hardware and software and emphasizes the software development process (computer programming) used to solve problems. A computer program implements an algorithm which specifies exactly how input data is converted to output data required by the problem being solved. The computer science major learns about computer architecture and about how to write programs to solve problems important to industry, government, military, and entertainment. Computers are ubiquitous in today's society, so entry-level job opportunities abound for computer science graduates, including writing business and scientific applications, developing operating systems, programming database applications, writing software for embedded control systems, and developing smart phone apps.

The **Department of Computer Science** offers four undergraduate degree programs. The four degrees are identical with respect to upper division Computer Science and St. Mary's Core curriculum requirements, but differ with respect to minor:

- ***Bachelor of Science in Computer Science*** with a minor in Mathematics for students interested in a career writing scientific and/or gaming programs.
- ***Bachelor of Arts in Computer Information Systems*** (minor in Business) for students interested in applying computers to business-related problems.
- ***Bachelor of Arts in Computer Science/Application Systems*** (unrestricted minor) for students who want the flexibility to choose their minor.
- ***Bachelor of Technology in Information Technology*** for students who already have up to 27 technical hours, knowledge of a programming language, and wish to obtain a degree in information technology.

Degree Requirements

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Core Curriculum (SMC)

St. Mary's University Core (30 Hours)
All St. Mary's Core SMC13## "Reflection" courses must be completed before registering for SMC23## "Practice" courses. "Reflection" courses can be taken in any order followed by "Practice" courses in any order.

SMC 1301	Foundations of Civilization	3
SMC 1311	Foundations of Reflection: Self (Formerly PL 1310)	3
SMC 1312	Foundations of Reflection: Nature	3
SMC 1313	Foundations of Reflection: Others	3
SMC 1314	Foundations of Reflection: God (Formerly TH 2301)	3
SMC 2301	Foundations of Practice: Ethics (Formerly PL 2332)	3
SMC 2302	Foundations of Practice: Civic Engagement and Social Action	3
SMC 2303	Foundations of Practice: Fine Arts and Creative Process (Formerly FA 1101, FA 1102, FA 1103)	3
SMC 2304	Foundations of Practice: Literature	3
SMC 4301	Capstone Seminar: Prospects for Community and Civilization	3

School Specific Core (SSC)

School of Science, Engineering, and Technology Specific Core (21 Hours)

Speech	SE 1321 (for international students), SE 1341, SE 2333, SE 3391	3
Composition and Rhetoric (grade of "C" or better)	EN 1311, EN 1313 (for international students)	3
Foreign Languages	Six hours at the sophomore level (2311, 2312) in a Foreign Language previously studied for a minimum of one year; Or, 6 hours of introductory level (1311, 1312) in a Foreign Language not previously studied; Or, 12 hours of CLEP credit for a language previously studied.	6
Social Science	BA 1310, BA 3325, CJ 2300, CJ 3300, EC 2301, EC 2303, PO 1311, PO 1312, PO 1314, PS 1301, PS 3386, SC/CR 1311, SC 3321, HU 3300, HU 3303	3
Theology	Advanced Theology 33XX	3
Fine Arts	AR, DM, MU or Literature: EN 2321, 2322, 2353, 2354, 2355, 2356	3

Four Year Degree Plan

Sample 4-year degree plan

Department Courses and Descriptions

Introduction to Computers (3)

CS 1300
Survey of computer systems and their integration and application in society. The fundamentals of software are discussed and applied through word processing, data base and spread sheet applications. (Note: Successful completion of this course does not meet University IT proficiencies requirement.)

Programming I (4)
CS 1310
Fundamentals of the software development process with emphasis on program design (algorithm development), structured programming techniques and code and test using a structured, modular programming language.

Programming II/Data Structures (4)
CS 1311
Properties, representation, and manipulation of internal information structures including lists, queues, stacks, trees, and net works. Prerequisite: CS 1310.

Topics in Programming Languages (3)
CS 1320
Designing, coding and testing computer programs using language specific commands. May be repeated as topics change.

Object Oriented Programming I (3)
CS 2313
Object oriented programming (OOP) using C++. Prerequisite: CS 1311.

Algorithms (3)
CS 2315
The theory, design, analysis, implementation and application of fundamental and advanced computer algorithms. Prerequisite: CS 1311.

Object Oriented Programming II (3)
CS 2323
Fundamentals of Object Oriented modeling, analysis (OOA) and design (OOD) techniques including process and notation. Using C++ for graphical user interface development with MFC. Prerequisite: CS2313

Computer Architecture (3)
CS 2350
Logical organization and design of digital computer hardware. Prerequisite: CS2315

Intro to Systems Analysis and Design (3)
CS 3310
An introduction to the use of current methodologies for the analysis and design of various types of systems. Methodologies studied involve the traditional approach as well as the object-oriented approach to analysis and design, which includes use of Universal Markup Language (UML).

Compilers (3)
CS 3311
Design and implementation of compilers. Prerequisite: CS1311

Survey of Programming Languages (3)
CS 3335
Survey of existing high-level programming languages with emphasis on language concepts. Prerequisite: CS2323

Software Engineering (3)
CS 3340
Engineering approach to software development including techniques for software planning, systems analysis, design, structured programming, program testing and program maintenance. Prerequisite: CS2315

Operating Systems (3)
CS 3350
The study of the design and implementation of computer-based operating systems, including issues in process, memory, and storage management, as well as security. Prerequisites: CS1311 and CS2350

Advanced Topics (1)
CS 4175
Advanced topics in Computer Science. May be repeated for credit when topics vary. Prerequisite: Instructor permission.

Advanced Topics (2)
CS 4275
Advanced topics in Computer Science. May be repeated for credit when topics vary. Prerequisite: Instructor permission.

Artificial Intelligence (3)
CS 4315
Survey of computer systems designed to exhibit intelligent behavior. Prerequisite: CS1311.

Files & Databases (3)
CS 4320
The design, implementation, and manipulation of files, data bases, and DBMS. Prerequisite: CS2315

Computer Graphics (3)
CS 4325
The study and implementation of computer imaging and techniques for representation, manipulation and display of graphical objects. Prerequisite: CS1311

Data Communication (3)
CS 4330

The study of designing, implementing, and manipulating data communications with special emphasis on networks and their protocols. Prerequisite: CS2315

Advanced Topics (3)
CS 4375
Advanced topics in Computer Science. May be repeated for credit when topics vary. Prerequisite: CS1311.

Senior Project (3)
CS 4395
Application of software engineering techniques to a comprehensive computer software development project. Prerequisite: CS 3340 and Senior standing or higher.

Department Faculty

Computer Information Systems Faculty Website

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