

COMPUTER SCIENCE-- INFORMATION SYSTEMS

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The Department of Computer Science-Information Systems offers the Bachelor of Business Administration degree with a major in information systems and the Bachelor of Science degree with a major in computer science. All students seeking baccalaureate degrees in either computer science or information systems must be admitted to the Kelce College. See page 155 for Kelce College admission requirements.

Students already admitted to the Kelce College of Business wishing to transfer their major to computer science or information systems must have a 2.5000 GPA on all hours attempted at that time.

A minor in computing is offered which may be applied to either the Bachelor of Science or the Bachelor of Arts degree.

A graduate program is not available in Computer Science-Information Systems. Students enrolled in the Master of Business Administration (MBA) program and graduate students majoring in other areas (especially those seeking graduate degrees in economics or mathematics and those whose undergraduate minor was computing) may be interested in the following courses: CSIS 540 Programming Languages, CSIS 615 Data Base Management, and CSIS 660 Expert Systems.

UNDERGRADUATE DEGREE PROGRAMS

Computer science is concerned with the study of computing machines, communication between man and the machine, and with methods of problem solving, especially in the area of mathematics, the sciences, and engineering. Information systems is concerned with the study and analysis of information flow in an organization and the design of an information gathering and processing system using computers, which will facilitate planning and decision making in the organization.

The typical graduate finds employment in business, industry, or government as a programmer. Some choose to continue their study as a graduate student. With experience or further study, a graduate may advance to positions such as systems analyst, software engineer, project manager, database administrator, or manager of information systems.

Community College Transfers

Many Computer Science-Information Systems majors transfer from a community college. Students seeking to transfer from any college should consult the requirements for general education at Pittsburg State University as well as the specific degree requirements for their chosen major.

Changes in Requirements

Core Courses.....17

Baccalaureate degree curriculums offered by the Department of Computer Science-Information Systems are periodically revised and updated. Such revisions will be communicated by the department to currently enrolled students majoring in its programs. Each student is required to graduate under the most recent curriculum in effect at the time of that student's graduation, unless those revisions would extend the student's graduation date. Requests for exceptions to such curriculum revisions should be filed in writing with the department chairperson.

Junior Standing Prerequisite

Some undergraduate courses offered in the Department of Computer Science-Information Systems numbered 300 and above have a junior standing prerequisite. For purposes of this prerequisite, junior standing is defined as the completion of 55 semester hours applicable to the student's degree program.

Admission to Computer Science-Information Systems Programs

In addition to Kelce admission requirements, students seeking to major in computer science must have a 2.5000 grade point average on all hours attempted at the time they apply for admission to the Kelce College of Business. Students already admitted to the Kelce College of Business wishing to transfer their major to computer science must have a 2.5000 grade point average on all hours attempted at that time.

BBA DEGREE REQUIREMENTS

Major in Information Systems

This degree program is suggested for those students interested in business applications of computing.

Students seeking the BBA degree with a major in information systems must complete the following curriculum. Please note that in meeting these requirements each student is required to complete 50 percent of the course work applicable to the BBA degree outside the Kelce College of Business.

At least 50 percent of the upper division business credit hours (i.e. the credit hours from the areas of accounting, economics, finance, management, marketing, and information systems) that are required for the Bachelor in Business Administration degree must be earned at Pittsburg State University.

General Requirements

Basic Skills	16
ENGL 101 English Composition.....	3
ENGL 103 English Composition or	
ENGL 299 Introduction to Research Writing.....	3
COMM 207 Speech Communication.....	3
MATH 113 College Algebra.....	3
HPER 150 Lifetime Fitness Concepts.....	1
CSIS 130 Computer Information Systems*.....	3

ENGL 113 General Literature.....3

HIST 201 American History.....	3
PSYCH 155 General Psychology.....	3
SOSCI 100 Introduction to Sociology.....	3
SOSCI 101 American Government.....	3
GT 190 Introduction to Technological Systems.....	2
Mathematics.....	6
MATH 143 Elementary Statistics.....	3
MATH 153 Introduction to Analytic Processes.....	3
Natural Sciences.....	8
BIOL 113 Environmental Life Science.....	3
PHYS 171 Physical Science.....	3
AND	
BIOL 114 Environmental Life Science Laboratory <i>or</i>	
PHYS 172 Physical Science Laboratory.....	2
Languages and Cultures (choose one).....	3
FLANG 124 French I.....	5
FLANG 134 German I.....	5
FLANG 154 Spanish I.....	5
SOSCI 103 Basic Philosophy.....	3
SOSCI 105 Ethics.....	3
SOSCI 106 World Regional Geography I.....	3
SOSCI 107 World Regional Geography II.....	3
WOMEN 200 Introduction to Women in Society.....	3
WOMEN 299 Issues in Women's Studies.....	3
Fine Arts (choose one).....	3
ART 102 Introduction to Art Concepts ().....	3
ART 103 Introduction to Art Studio ().....	3
COMM 105 Performance Appreciation.....	3
COMM 205 Performance Studies I.....	3
MUSIC 120 Music Appreciation ().....	3
Economy and Society.....	6
ECON 200 Economics.....	3
ECON 201 Economics.....	3
General Electives.....	2
.....	61
*CSIS 130 is an approved general education substitution for CSIS 101 Computer Applications for the BBA degree program.	
<i>Common Body of Knowledge</i>	
ACCTG 201 Financial Accounting.....	3
ACCTG 202 Managerial Accounting.....	3
ECON 326 Business Finance.....	3
MGMKT 327 Organizational Theory and Behavior.....	3
MGMKT 330 Basic Marketing.....	3
ECON - Three hours selected from.....	3
ECON 330 Money and Banking.....	3
ECON 418 Intermediate Microeconomics**.....	3
ECON 419 Intermediate Macroeconomics.....	3
ECON 640 International Trade.....	3
CSIS 420 Management Information Systems.....	3
MGMKT 320 Business Statistics.....	3
MGMKT 444 Legal and Social Environment of Business.....	3
MGMKT 477 Quantitative Decision Making.....	3
MGMKT 626 Operations Management.....	3
MGMKT 645 Business Policy.....	3
.....	36
**Students planning to enter the MBA program should take ECON 418.	
<i>Information Systems Major Requirements</i>	
CSIS 240 C++ Programming.....	3
CSIS 250 Principles of Software Design.....	3
CSIS 280 System Analysis and Design.....	3
CSIS 290 Concepts of Computer Systems.....	3
CSIS 322 COBOL Programming.....	3
CSIS 470 Distributed Computing Systems.....	3
CSIS 615 Data Base Management.....	3
CSIS 640 Software Engineering.....	3
CSIS Elective numbered 200 and above.....	3
.....	27
Total.....	124

BS DEGREE REQUIREMENTS

Major in Computer Science

This degree program is recommended for those students who wish to enter the areas of systems programming, or mathematical and scientific applications of computing, or to prepare for graduate study in computer science. Students seeking the Bachelor of Science (BS) degree with a major in computer science must complete the following curriculum.

At least 50 percent of the CSIS upper division credit hours that are required for the Computer Science Major for the Bachelor of Science degree must be earned at Pittsburg State University.

General Requirements

Basic Skills.....	18
ENGL 101 English Composition.....	3
ENGL 103 English Composition <i>or</i>	
ENGL 299 Introduction to Research Writing.....	3
COMM 207 Speech Communication.....	3
MATH 150 Calculus I*.....	5
HPER 150 Lifetime Fitness Concepts.....	1
CSIS 235 Pascal** <i>or</i>	
CSIS 245 Java Programming.....	3
Core Courses.....	17
ENGL 113 General Literature.....	3
HIST 201 American History.....	3
PSYCH 155 General Psychology.....	3
SOSCI 100 Introduction to Sociology.....	3
SOSCI 101 American Government.....	3
GT 190 Introduction to Technological Systems.....	2
Mathematics.....	13
MATH 155 Calculus II.....	5
MATH 212 Matrix Algebra.....	2
MATH 513 Discrete Structures.....	3
MATH 543 Probability and Statistics.....	3
Natural Sciences.....	13
BIOL 113 Environmental Life Science.....	3
PHYS 104 Engineering Physics I.....	4
PHYS 130 Elementary Physics Laboratory I***.....	1
PHYS 105 Engineering Physics II.....	4
PHYS 131 Elementary Physics Laboratory II.....	1
Languages and Cultures (choose one).....	3
FLANG 124 French I.....	5
FLANG 134 German I.....	5
FLANG 154 Spanish I.....	5
SOSCI 103 Basic Philosophy.....	3
SOSCI 105 Ethics.....	3
SOSCI 106 World Regional Geography I.....	3
SOSCI 107 World Regional Geography II.....	3
WOMEN 200 Introduction to Women in Society.....	3
WOMEN 299 Issues in Women's Studies.....	3
Fine Arts (choose one).....	3
ART 102 Introduction to Art Concepts ().....	3
ART 103 Introduction to Art Studio ().....	3
COMM 105 Performance Appreciation.....	3
COMM 205 Performance Studies I.....	3
MUSIC 120 Music Appreciation ().....	3
Economy and Society (choose one).....	3
ACCTG 201 Financial Accounting.....	3
ECON 191 Issues in Today's Economy.....	3
CSIS 230 Consumer Education.....	3
MGMKT 101 Introduction to Business.....	3
.....	70
*MATH 150 will satisfy the General Education Basic Skills requirement for MATH 113.	
**CSIS 235 or CSIS 240 are approved general education substitutes for CSIS 101 Computer Applications for the Computer Science major.	
***PHYS 104/130 satisfy PHYS 171/172 general education requirement.	
General Electives.....	15
Electives either in the Kelce College or outside the Kelce College.	
Upper division electives may be required to meet university requirements.	
<i>Major</i>	
CSIS 240 C++ Programming.....	3
CSIS 250 Principles of Software Design.....	3
CSIS 280 Systems Analysis and Design.....	3
CSIS 340 Digital Computer Design.....	3
CSIS 410 Machine Organization (Assembler).....	3
CSIS 435 Fundamentals of Operating Systems.....	3
CSIS 510 Information Structures.....	3
CSIS 540 Programming Languages.....	3
CSIS 640 Software Engineering.....	3
12 hours of electives chosen from the following. A minimum of nine hours must be numbered 300 or above.....	12
CSIS 225 Computer Applications for Science and Technology.....	3
CSIS 235 Pascal <i>or</i>	
CSIS 245 Java Programming.....	3
CSIS 299 Topics in Computing ().....	1-3
CSIS 322 COBOL Programming.....	3
CSIS 420 Management Information Systems.....	3
CSIS 470 Distributed Computing Systems.....	3
CSIS 590 Directed Reading ().....	1-3
CSIS 615 Data Base Management.....	3
CSIS 660 Expert Systems.....	3
CSIS 690 Topics in Computer Science ().....	1-3
MATH 569 Numerical Analysis I.....	3
.....	39
Total.....	124

A minor in mathematics is achieved by completing the above requirements.	
Minor in Computing	
The minor in Computing is available to students seeking the Bachelor of Arts or the Bachelor of Science degree. This minor will consist of a minimum of 21 semester hours chosen from Computer Science courses. At least six hours must be upper	

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division courses (numbered above 299). Students are required to complete the following program:

CSIS 240 C++ Programming	3
CSIS 250 Principles of Software Design.....	3
CSIS 290 Concepts of Computer Systems.....	3
Electives from Computer Science-Information Systems numbered above 199 (six hours above 299)	12
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Second Teaching Field--Computer Studies

For individuals who wish to teach computing at the secondary level, the Department of Computer Science-Information Systems, in conjunction with the Department of Curriculum and Instruction, provides a second teaching field in Computer Studies.

Computer Studies is a second teaching field, and a person must be certified in another secondary area before Computer Studies can be added or included on a teaching certificate.

CSIS 130 Computer Information Systems.....	3
CSIS 235 Pascal or	
CSIS 240 C++ Programming	3
CSIS 290 Concepts of Computer Systems.....	3
CSIS 420 Management Information Systems.....	3
College of Education computer course.....	3
One of the following.....	3
CSIS 121 Programming in BASIC.....	3
CSIS 250 Principles of Software Design.....	3
CSIS 470 Distributed Computing Systems.....	3
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DESCRIPTION OF COURSES

CSIS 101. Computer Applications. 2 hours. An introduction to the use of computer systems, components of a computer system, and basic computer applications including word processing, spreadsheet, database, graphics, and networking. May not be taken by students who have received credit for CSIS 130 Computer Information Systems.

CSIS 121. Programming in BASIC. 3 hours. Introductory computer programming course using the language BASIC. Prerequisites: 1.5 years high school algebra or MATH 019 Intermediate Algebra or equivalent.

CSIS 130. Computer Information Systems. 3 hours. An introduction to the use of computer systems in business and industry. Computer hardware and software, data communications, and computer based information systems. Introduction to word processing, spreadsheets, data bases, and a survey of programming languages.

CSIS 225. Computer Applications for Science and Technology. 3 hours. Development of computer techniques for applications in the engineering sciences and applied technology. Documentation of algorithms. Programming in FORTRAN 77 to include arrays, matrix operations, subroutine usage, file handling, program libraries, and related topics. Prerequisites: MATH 113 College Algebra or MATH 110 College Algebra with Review or MATH 126 Pre-Calculus or equivalent.

CSIS 235. Pascal. 3 hours. Fundamentals of Pascal programming. Algorithms, program definition, documentation, and applications of Pascal language. Prerequisites: MATH 113 College Algebra or MATH 110 College Algebra with Review or MATH 126 Pre-Calculus and one semester of high school computer programming or CSIS 121 Programming in BASIC. Not open to students with credit in CSIS 211 Introduction to Pascal.

CSIS 240. C++ Programming. 3 hours. An introduction to programming using the C++ language. Prerequisite: Math 113 College Algebra or MATH 110 College Algebra with Review or MATH 126 Pre-Calculus or permission of instructor.

CSIS 245. Java Programming. 3 hours. An introduction to programming using the Java language. Prerequisite: CSIS 240 C++ Programming or permission of the instructor.

CSIS 250. Principles of Software Design. 3 hours. Development of discipline in programming using structured programming, algorithmic design, data abstraction using objects, testing, and implementation of basic data structures and algorithms used in computing. C++ will be used for programming assignments. Prerequisite: CSIS 240 C++ Programming.

CSIS 280. System Analysis and Design. 3 hours. Overview of analysis and design phase of systems development life cycle. Topics include survey and analysis, interfacing management requirements with the programming task, functional specification, interface specification, data design, program design, system testing and implementation. Prerequisite: CSIS 250 Principles of Software Design or permission of instructor.

CSIS 290. Concepts of Computer Systems. 3 hours. A survey of fundamental computer system constructs--compilers, assemblers, linking, loading, input and output, system monitors, memory organization, processor structure, and

resource allocation. Prerequisite CSIS 240 C++ Programming, CSIS 245 Java Programming or CSIS 235 Pascal.

CSIS 299. Topics in Computing (____). 1-3 hours. Study of selected topics in computer science. A specific programming language or application area will be listed as a subtitle. May be repeated if topic is different. Prerequisite: Permission of instructor or as noted in class listing.

CSIS 322. COBOL Programming. 3 hours. Business-oriented programming using COBOL with emphasis on the use of tables, files, searching, and sorting techniques. Prerequisite: CSIS 250 Principles of Software Design or permission of instructor. Not open to students with 6 hours of credit in courses using COBOL.

CSIS 340. Digital Computer Design. 3 hours. Fundamentals of switching algebra, logic design of combination and sequential circuits with applications to computer systems. Topics include flip-flops, timers, registers, digital arithmetic, register and memory, bus systems. Prerequisites: CSIS 240 C++ Programming or CSIS 235 Pascal or permission of instructor. May be taken for honors.

CSIS 410. Machine Organization (Assembler). 3 hours. Survey of computer structure, machine language, instruction execution, addressing techniques, and digital representation of information. Computer systems organization, logic design, micro-programming, and interpreters. Symbolic coding and assembly language concepts. Several programming projects to illustrate basic machine structure and programming techniques. Prerequisite: CSIS 340 Digital Computer Design or CSIS 290 Concepts of Computer Systems. May be taken for honors.

CSIS 420. Management Information Systems. 3 hours. Survey of the principle concepts with emphasis on computer-based transactional and management information system. Computer systems, files and file processing, systems analysis and design, managerial, organizational and social impacts. Prerequisites: "C" in CSIS 121 Programming in BASIC or CSIS 130 Computer Information Systems, junior standing, or permission of instructor.

CSIS 435. Fundamentals of Operating Systems. 3 hours. Processor communication and allocation, memory management, I/O device management, file systems, and protection. Prerequisite: CSIS 340 Digital Computer Design or CSIS 290 Concepts of Computer Systems. May be taken for honors.

CSIS 470. Distributed Computing Systems. 3 hours. Concepts of communications, computer networking principles, and survey of technical components of a distributed computer system. Prerequisite: CSIS 340 Digital Computer Design or CSIS 290 Concepts of Computer Systems. May be taken for honors.

CSIS 510. Information Structures. 3 hours. Linear lists, strings, linked lists, and trees. Sorting, searching, and retrieval. Storage management algorithms. High level language structures. Prerequisite: CSIS 250 Principles of Software Design. May be taken for honors.

CSIS 540. Programming Languages. 3 hours. Survey of programming language concepts with emphasis on fundamental structures, syntax, semantics, and run time implementations. Formal descriptions of languages and survey of specialized languages and their features. Data abstraction and procedures. Prerequisite: CSIS 340 Digital Computer Design or CSIS 290 Concepts of Computer Systems, and CSIS 250 Principles of Software Design or permission of instructor. May be taken for honors.

CSIS 580. Computing Project (____). 2-3 hours. Individual project in an on-the-job environment in the Computing Center or similar facility. An organized paper including analysis, design, program code, and interpretation of results is required. Prerequisite: Consent of advisor.

CSIS 590. Directed Reading (____). 1-3 hours. Reading under the supervision of an instructor on a topic chosen by the student with the advice of the instructor. May be repeated if subject matter differs. Consent of the department required for enrollment.

CSIS 615. Data Base Management. 3 hours. Analysis and design of large integrated data bases. Design alternatives. Logical and physical representation of data. Storage and retrieval mechanisms and languages. Survey of existing systems. Roles of the Data Base Manager and Analyst. Prerequisite: CSIS 250 Principles of Software Design or permission of instructor. May be taken for honors.

CSIS 640. Software Engineering. 3 hours. Survey of methods for definition, design, development, documentation, and implementation of significant software systems. Formal theories for representation, correctness, and related development tools. Individual and team projects drawn from computer science applications. Prerequisites: Senior standing, CSIS 250 Principles of Software Design and CSIS 280 Systems Analysis and Design.

CSIS 660. Expert Systems. 3 hours. Introduction to expert systems including knowledge acquisition and representation, expert system development environments, problem selection, system development, testing, overview of LISP, and project assignments utilizing an expert systems development shell. Prerequisite: CSIS 250 Principles of Software Design or permission of instructor. May be taken for honors.

CSIS 690. Topics in Computer Science (____). 1-3 hours. Computing topics consistent with current interests of staff and students. May be repeated with different topics for a maximum of 6 hours. Prerequisite: Consent of instructor.

CSIS 809. Management Information Systems. 3 hours. Concepts of information system theory and practice applied to computer-based management control and decision support systems. Waiver: Three hours of computer information systems or computer programming and three hours of undergraduate management information systems.

CSIS 901. Graduate Topics in Information Systems (____). 1-3 hours. A study of an area of Information Systems theory or applications. A specific topic will be defined each time the course is offered. May be repeated if the topic is different. Prerequisite: CSIS 420 Management Information Systems and permission of instructor.