

SCHOOL OF COMPUTER

SCIENCE, TELECOMMUNICATIONS

AND INFORMATION SYSTEMS

SCHOOL OF COMPUTER SCIENCE, TELECOMMUNICATIONS AND INFORMATION SYSTEMS

ADMINISTRATION

HELMUT EPP, PH.D.

Dean

GREGORY BREWSTER, PH.D.

Associate Dean

MARTIN KALIN, PH.D.

Associate Dean

LINDA V. KNIGHT, PH.D.

Associate Dean

DAVID MILLER, PH.D.

Associate Dean

ANNE B. MORLEY

Assistant Dean

TERRY SKWAREK

Director, Institute for Professional Development

Assistant Dean

FACILITIES

FACULTY

ADMISSION

ACADEMIC PROGRAMS

BACHELOR OF SCIENCE IN COMPUTER GAMES DEVELOPMENT

BACHELOR OF SCIENCE IN COMPUTER GRAPHICS AND ANIMATION

- I. Developer
- II. Technical Designer

BACHELOR OF SCIENCE IN COMPUTER SCIENCE

- I. Computer Science Concentration
- II. Honors in Software Engineering

BACHELOR OF ARTS AND BACHELOR OF SCIENCE IN DIGITAL CINEMA

BACHELOR OF SCIENCE IN E-COMMERCE TECHNOLOGY

BACHELOR OF SCIENCE IN HUMAN-COMPUTER INTERACTION

BACHELOR OF SCIENCE IN INFORMATION ASSURANCE ENGINEERING

BACHELOR OF SCIENCE IN INFORMATION SYSTEMS

BACHELOR OF ARTS AND BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY

BACHELOR OF SCIENCE IN MATHEMATIC AND COMPUTER SCIENCE

- I. Theory
- II. Computational Methods
- III. Graphics
- IV. Artificial Intelligence
- V. Data Analysis

BACHELOR OF SCIENCE IN NETWORK TECHNOLOGY

- I. Standard
- II. Network Security

COMBINED BACHELOR OF SCIENCE AND MASTER OF SCIENCE DEGREES

- I. BS/MS in Computer Science
 - II. BS/MS in Network and Telecommunications
 - III. BS in Math/Computer Science and MS in Computer Science
 - IV. BS in Computer Science and MS in Software Engineering
 - V. BS IS / MS CINS – Information Systems Security track
 - VI. BS CS / MS CINS – Computer Security track
 - VII. BS MATH-CS / MS CINS – Computer Security track
 - VIII. BS NT / MS CINS – Network Security track
- I.

BACHELOR OF ARTS IN COMPUTING (JOINT DEGREE WITH SCHOOL OF NEW LEARNING)

SPECIAL PROGRAM: TEACHER OF COMPUTER SCIENCE: SECONDARY LEVEL

MINORS

COURSES

GENERAL INFORMATION

The School of Computer Science, Telecommunications and Information Systems offers a course of studies leading to the degrees of Bachelor of Science in Computer Graphics and Animation, Bachelor of Science in Computer Science, Bachelor of Science in E-Commerce Technology, Bachelor of Science in Information Systems, Bachelor of Science in Human-Computer Interaction, Bachelor of Science in Math and Computer Science, Bachelor of Science in Network Technology and Bachelor of Arts in Computing. The purpose of each curriculum is to prepare the student with the requisite theoretical, technical, and practical knowledge for a professional career in various computer or computer-related fields. Each degree program develops an informed view of the relationship between computer science and its allied fields while equipping the student with the technical expertise necessary to enter a computer-related career.

FACILITIES

DePaul's Information System Division (ISD) houses a large network of computers and allows students, access to a rich computing environment. The configuration includes several Sun SPARCcenters for student use. In addition, students have access to IBM PC laboratories and Macintosh laboratories at the Loop and Lincoln Park campuses. There are numerous dial-up phone numbers available for off-campus work. DePaul's suburban campuses, in the Naperville, O'Hare and South areas also offer excellent student laboratory facilities. Permanent student Internet access accounts are available along with dial-in SLIP connections.

The School itself operates specialized laboratories in the following:

- Requirements Engineering Lab
- Mobile E-Commerce Lab
- Solid Objects Lab
- Software Research Lab
- Multimedia Networking Lab
- Artificial Intelligence Lab
- American Sign Language Lab
- E-Commerce Technology Lab
- Information Systems Lab

FACULTY

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Kent State University

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University of Chicago

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ERIC SEDGWICK, PH.D.,
Associate Professor
University of Texas

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AMBER SETTLE, PH.D.,
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The University of Hong Kong

JAMES YU, PH.D.,
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Purdue University

LU ZHANG, PH.D.,
Assistant Professor
Iowa State University

ADMISSION

Candidates interested in admission to the school should direct all inquiries to the Office of admission, DePaul University, 1 E. Jackson Boulevard, Chicago, Illinois 60604. Telephone (312) 362-8300; e-mail: admitdpu@depaul.edu. The Office of Admission will provide each candidate with the required forms and instructions for filing the application or visit the web site at www.depaul.edu to apply on-line. A non-refundable application fee of \$25.00 is required of each applicant. For further information on the regulations and procedures governing admission, consult page 441 of the Bulletin.

ACADEMIC ADVISEMENT

The school believes that academic advisement is necessary for the vitality and success of the student's undergraduate education. The purposes of liberal education require that the education of the student form a coherent whole. Therefore, the requirements of the Liberal Studies Program and to a degree the major field of study are determined by the individual student's intellectual interests, needs and abilities.

Students will be assigned a faculty advisor upon admission to the school. Academic approval of a course of study is required of all students in the school. All students are encouraged to meet with their faculty advisor at least once each year to plan their course of study.

PROGRAM AND CURRICULUM INFORMATION

PROFESSIONAL DEVELOPMENT

The School of Computer Science, Telecommunications and Information Systems established the Institute for Professional Development in 1985 to offer certificate programs designed to meet the needs of both individuals and businesses in the Chicago land area. These non-degree offerings provide intensive training in a wide variety of areas, with each standalone certificate program addressing a different set of theoretical concepts and practical skills. Emphasis is placed on gaining practical experience through a combination of lectures and demonstrations complemented by laboratory exercises and homework assignments. Each certificate program is taught by a team of instructors, that includes full-time faculty with consulting experience and part-time instructors from industry. Each program requires a substantial commitment of time, as classes meet two nights per week and in the morning on half of the Saturdays during the program.

For application and registration information pertaining to the certificate programs offered by the Institute for Professional Development, please call the Institute office at (312) 362-6282.

TRANSFER CREDIT

Prospective students may transfer credit from an accredited college to DePaul University. All transfer credit will be initially evaluated by an Admission counselor; final course placement will be made by an academic advisor in the School of Computer Science, Telecommunications and Information Systems (CTI). For specific information governing transfer admission and evaluation of credit, please consult page 442 of this Bulletin. Current CTI students may take courses at another accredited college either in the summer or during the regular school year and transfer the credit back to DePaul University only with prior approval from the student's academic advisor.

GRADES

Students must earn grades of 'C' or above in all courses taken for credit in the major field. Grades of 'C-' may be accepted for major field credit provided the overall grade point average within the major is 2.0 or above. All other courses require grades of 'D' or better. In addition, all students must fulfill the graduation requirements as noted on page 469 of this Bulletin.

MODERN LANGUAGE OPTION

Students in the School of Computer Science, Telecommunications and Information Systems (CTI) may choose to study a modern language and use the credit earned from the language courses to satisfy Liberal Studies domain requirements. Students reduce their Liberal Studies domain requirements by two courses if they complete a three-course language sequence. From the

following combinations of learning domains, students can select their two course reduction: Philosophical Inquiry or Religious Dimensions; Understanding the Past or Self, Society and the Modern World; Arts and Literature (at most one course from each combination).The third course in the three-course language sequence may apply as open elective credit only.

BACHELOR OF SCIENCE

LIBERAL STUDIES PROGRAM

The student's course of study in the Liberal Studies Program is part of the undergraduate program devoted exclusively to liberal education. The program seeks to balance and, when necessary, augment the student's course in the major field. In addition to the 24 quarter hours required in the liberal studies core, all students in the School are required to complete 52 quarter hours distributed through 6 learning domains as part of one degree program. The number and distribution of courses in each of the areas are as follows:

Liberal Studies Core: 6 courses/24 quarter hours required

First Year Program: (16 quarter hours required) Discover Chicago or Explore Chicago, Focal Point Seminar, and Composition and Rhetoric I and II.

Sophomore Seminar: (4 quarter hours required) Sophomore Seminar on Multiculturalism in the United States

Junior Year Experiential Learning: (4 quarter hours required) If your junior year experiential learning requirement also fulfills a major field requirement, you may substitute a liberal studies domain elective (from outside your major field area) or the third course in the modern language option for this requirement.

Senior capstone: All CTI majors require that students complete the senior capstone in their major field.

Liberal Studies Learning Domains: 13 courses/52 quarter hours required

Arts and Literature: 12 quarter hours required. At most 2 courses from the same department or program. (ART 102 is required for the Bachelor of Science in Computer Graphics and Animation technical designer concentration.)

Philosophical Inquiry: 8 quarter hours required.

Religious Dimensions: 8 quarter hours required; 4 quarter hours in "Patterns and Problems," and 4 quarter hours in "Traditions in Context." Note: One course from either Philosophical Inquiry or Religious Dimensions must be a course in ethics. PHL/REL/MGT 228 is strongly recommended.

Scientific Inquiry: 4 quarter hours required. The course must be designated as a lab course. Courses in mathematics or CTI are not acceptable.

Self, Society and the Modern World: 12 quarter hours required. At most 2 courses from the same department or program. (Psychology 105 is required for the Human-Computer Interaction degree).

Understanding the Past: 8 quarter hours required; 4 quarter hours of history pre-1800 and 4 quarter hours of history 1800-1945. In addition, courses must be from two different categories:

- 1) Asia, 2) Latin America, 3) Africa, 4) North America or Europe; 5) intercontinental or comparative.

Although study in CTI courses contributes to a student's liberal education, courses offered through CTI may not be applied towards liberal studies requirements.

ACADEMIC PROGRAMS

BACHELOR OF SCIENCE IN COMPUTER GAMES DEVELOPMENT

The B.S. degree in Computer Games Development reflects the fact that the field of computer games development is tremendously multidimensional and requires expertise from such areas as: mathematics, physics, programming languages, operating system, computer graphics, artificial intelligence, art, graphics to name only a few. The program emphasizes technical components of the game development process. Students graduating from this program will be well prepared for the process

CSC 261 Programming Languages I: C/C++
CSC 262 Programming Languages II: C/C++
CSC 373 Computer Systems I
CSC 393 Data Structures in C++
DC 201 Narrative Techniques in Digital Cinema
GAM 224 Strategies in Game Design
GAM 244 Game Development I
GAM 245 Game Development II
GAM 350 Physics for Game Developers
GAM 374 Action Games Programming
GAM 376 Artificial Intelligence for Computer Games
GAM 378 Strategy Games Programming
GAM 394 Game Development Project I
GAM 395 Game Development Project II
GPH 211 Perceptual Principles for Digital Environments I
GPH 212 Perceptual Principles for Digital Environments II
GPH 325 Survey of Computer Graphics
GPH 329 Computer Graphics Development
GPH 372 Principles of Computer Animation
GPH 389 Real-Time Graphics Techniques
MAT 140 Discrete Mathematics I
MAT 150 Calculus I
MAT 151 Calculus II
MAT 220 Linear Algebra with Applications

- Gaming Electives (5)

Gaming Electives

CSC 374 Computer Systems II
DC 215 Digital Sound Design
DC 230 Foundations of Digital Cinema
DC 231 Digital Cinema Practicum
GAM 250 Digital Sound for Computer Games
GAM 341 Artifact, Level and Terrain Design
GAM 380 Console Game Development Environments
GAM 382 Educational and Children's Games
GAM 385 Introduction to Game Programming in Java
GAM 386 Game Development for Mobile Devices
GAM 390 Multiplayer Game Development
GPH 213 Perceptual Principles for Digital Environments III
GPH 250 Digital Modeling I
GPH 259 Design Geometry
GPH 325 Survey of Computer Graphics
GPH 339 Advanced Rendering Techniques
GPH 350 Digital Modeling II
GPH 360 Modeling Spaces
GPH 375 Advanced Graphics Development
SE 325 Principles and Practices of Software Engineering

SE 330 Object Oriented Modeling

Open Electives

Open Electives may be taken from any department or program. These are the only courses that may be taken under the pass/fail option (see the undergraduate Bulletin for details). If you wish to pursue a minor, most minor field courses will be credited as open electives.

Note: Grades for all courses in the students major (i.e. non-Liberal Studies and non-Open Elective) must be 'C' or better. Grades of 'C-' may be accepted provided the overall grade point average in the major is 2.0 or better.

BACHELOR OF SCIENCE IN COMPUTER GRAPHICS AND ANIMATION

I. DEVELOPER CONCENTRATION

The developer concentration in the B.S. in Computer Graphics and Animation degree emphasizes software development for such areas as computer animation, video gaming, multimedia, and special effects. It prepares students for such careers as games development, visualization, and modeling.

CMN 220 Public Speaking
CSC 261 Programming Languages I: C/C++
CSC 262 Programming Languages II: C/C++
CSC 321 Design and Analysis of Algorithms
CSC 393 Data Structures in C++
ENG 204 Technical Writing
GPH 211 Perceptual Principles for Digital Environments I
GPH 212 Perceptual Principles for Digital Environments II
GPH 213 Perceptual Principles for Digital Environments III
GPH 325 Survey of Computer Graphics
GPH 329 Computer Graphics Development
GPH 339 Advanced Rendering Techniques
GPH 372 Principles of Computer Animation
GPH 375 Advanced Graphics Development
GPH 395 Computer Graphics Senior Project
HCI 315 Theory and Perception of Color
MAT 140 Discrete Mathematics I
MAT 150 Calculus I
MAT 151 Calculus II
MAT 220 Linear Algebra with Applications

- Graphics Electives (6) (See list below)
- Open Electives (3)

II. TECHNICAL DESIGNER CONCENTRATION

The technical designer concentration in the B.S. in Computer Graphics and Animation degree prepares students to support and engage in the visual aspects of the graphics and entertainment industry, including such careers as technical director for computer animation, games designer and new media consultant.

ART 102 Principles of Art History
ART 106 Beginning Drawing
ART 242 Survey of Asian Art
ART 322 Contemporary Art
CMN 220 Public Speaking
CSC 211 Programming in Java I
CSC 212 Programming in Java II
ENG 204 Technical Writing
GPH 211 Perceptual Principles for Digital Environments I
GPH 212 Perceptual Principles for Digital Environments II
GPH 213 Perceptual Principles for Digital Environments III
GPH 250 Digital Modeling I

GPH 325 Survey of Computer Graphics
GPH 338 Survey of 3-D Animation
GPH 339 Advanced Rendering Techniques
GPH 395 Computer Graphics Senior Project
HCI 210 Introduction to Human-Computer Interaction
HCI 315 Theory and Perception of Color
IT 130 The Internet and the Web
IT 236 User Interface Development
MAT 140 Discrete Mathematics I

- Graphics Elective (4) (See list below)
- Open Electives (4)

Graphics Electives List

Students may take any of the following courses as long as they were not previously used to satisfy the computer graphics and animation core:

ART 225 Beginning Photography
ART 329 Digital Photography
ART 360 Illustration
ART 373 History of Design
GPH 250 Digital Modeling I
GPH 259 Design Geometry
GPH 329 Computer Graphics Development
GPH 336 Smooth Surface Modeling for Graphics and Animation
GPH 350 Digital Modeling II
GPH 360 Modeling Spaces
GPH 374 Computer Games
GPH 375 Advanced Graphics Development
GPH 376 Artificial Intelligence in Computer Games
GPH 380 Visualization
GPH 389 Real-Time Graphics Techniques
HCI 210 Introduction to Human-Computer Interaction
HCI 270 Formatting Digital Pages I
HCI 271 Formatting Digital Pages II
HCI 322 Multimedia
HCI 341 Usability Issues for Electronic Commerce
IT 223 Data Analysis
IT 236 User Interface Development
MAT 150 Calculus I
MAT 151 Calculus II
MAT 152 Calculus III

Open Electives

Open Electives may be taken from any department or program. These are the only courses that may be taken under the pass/fail option (see the undergraduate Bulletin for details). If you wish to pursue a minor, most minor field courses will be credited as open electives.

Note: Grades for all courses in the students major (i.e. non-Liberal Studies and non-Open Elective) must be 'C' or better. Grades of 'C-' may be accepted provided the overall grade point average in the major is 2.0 or better.

BACHELOR OF SCIENCE IN COMPUTER SCIENCE

I. COMPUTER SCIENCE CONCENTRATION

CMN 212 Small Group Communication or CMN 220 Public Speaking
CSC 211 Programming in Java I and CSC 212 Programming in Java II
Or CSC 261 Programming Languages I: C/C++ and or CSC 262 Programming Languages II:
C/C++
CSC 309 Object-Oriented Programming in C++ or CSC 224 Java for Programmers
CSC 321 Design and Analysis of Algorithms
CSC 373 Computer Systems I
CSC 374 Computer Systems II
CSC 383 Data Structures and Algorithms in Java or CSC 393 Data Structures in C++
CSC 390 Fundamentals of Information Assurance or IT 378 Host and Information Security
CSC 394 Software Projects
ENG 204 Technical Writing or ENG 301 Writing in the Professions
IT 130 The Internet and the Web
IT 223 Data Analysis
IT 240 Introduction to Desktop Databases
IT 263 Applied Networks and Security
MAT 140 Discrete Mathematics I
MAT 141 Discrete Mathematics II
MAT 150 Calculus I
MAT 151 Calculus II
SE 325 Principles and Practices of Software Engineering
SE 350 Object-Oriented Software Development

- 300-level CTI Electives (2) chosen in consultation with student's advisor.
- Open Electives (6)

Open Electives

Open Electives may be taken from any department or program. These are the only courses that may be taken under the pass/fail option (see the undergraduate Bulletin for details). If you wish to pursue a minor, most minor field courses will be credited as open electives.

Note: Grades for all courses in the students major (i.e. non-Liberal Studies and non-Open Elective) must be 'C' or better. Grades of 'C-' may be accepted provided the overall grade point average in the major is 2.0 or better.

II. SOFTWARE ENGINEERING HONORS CONCENTRATION

The Honors Software Engineering (HSE) concentration has been designed for students who are interested in studying advanced software development techniques and technologies. Because of its advanced nature, much of this material is normally accessible only to graduate students. It is therefore only available to students with a strong academic background. Furthermore, students must apply for admission to the program.

Students should apply for the HSE concentration by the end of the winter quarter of their sophomore year, and will be notified of their acceptance (pending completion of requirements) in the spring quarter. Progress will be reviewed at the end of the third year to determine eligibility for continuing to the fourth year. Review is automatic for all students, but students may opt out of review and voluntarily change to another concentration.

NOTE: For each graduate course listed below you will participate in a graduate section as an undergraduate. You will receive undergraduate credit and be charged an undergraduate tuition rate. The course number will also be an undergraduate course number to be determined.

CMN 212 Small Group Communication or CMN 220 Public Speaking
CSC 211 Programming in Java I and CSC 212 Programming in Java II
Or CSC 261 Programming Languages I: C/C++ and or CSC 262 Programming Languages II:
C/C++
CSC 309 Object-Oriented Programming in C++ or CSC 224 Java for Programmers
CSC 373 Computer Systems I
CSC 374 Computer Systems II
CSC 383 Data Structures and Algorithms in Java or CSC 393 Data Structures in C++
CSC 390 Fundamentals of Information Assurance or IT 378 Host and Information Security
ENG 204 Technical Writing or ENG 301 Writing in the Professions
IT 130 The Internet and the Web
IT 223 Data Analysis
IT 240 Introduction to Desktop Databases
IT 263 Applied Networks and Security
MAT 140 Discrete Mathematics I
MAT 141 Discrete Mathematics II
MAT 150 Calculus I
MAT 151 Calculus II
SE 325 Principles and Practices of Software Engineering
SE 350 Object-Oriented Software Development
SE 391 Software Engineering Studio I
SE 392 Software Engineering Studio I
SE 430 Object Oriented Modeling
SE 431 Formal Software Specification And Development
SE 452 Object-Oriented Enterprise Computing

- Software Engineering Electives (3 – from a restricted list)
- CTI Electives (1)
- Open Elective (1)

Software Engineering Electives

CSC 348 Introduction to Compiler Design
CSC 358 Symbolic Programming
CSC 380 Artificial Intelligence
CSC 389 Theory of Computation
SE 354 Enterprise Component Architecture
SE 355 Distributed Software Development
SE 356 Software Development for Mobile Systems
SE 357 Concurrent System Development
SE 358 Software Development for Limited and Embedded Devices
SE 360 Structured Document Interchange and Processing
SE 368 Software Measurement and Project Estimation
SE 375 Design and Architecture of Secure Software Systems
SE 380 Design of Object-Oriented Languages

Open Electives

Open Electives may be taken from any department or program. These are the only courses that may be taken under the pass/fail option (see the undergraduate Bulletin for details). If you wish to pursue a minor, most minor field courses will be credited as open electives.

Note: Grades for all courses in the students major (i.e. non-Liberal Studies and non-Open Elective) must be 'C' or better. Grades of 'C-' may be accepted provided the overall grade point average in the major is 2.0 or better.

BACHELOR OF ARTS AND BACHELOR OF SCIENCE IN DIGITAL CINEMA

Digitization has caused the convergence of cinema, computer graphics, animation, and gaming. Digital Cinema is the realization that computer-generated images and animations can be inserted convincingly into realistic images; and real images can be brought into computer-generated models to provide photo-realistic effects. The convergence of cinema, computer graphics, animation and gaming in the BS and BA in Digital Cinema will train you to redefine cinematic reality.

- The B.A. degree, with its greater number of electives, offers the student a chance to create an interdisciplinary program of study.
- The B.S. degree, with its increased technical emphasis, provides students with more comprehensive training in the three areas of digital cinema.

Please note: Students in the both Digital Cinema programs are required to take 4 quarter hours in Quantitative Reasoning (ISP120) in addition to the nineteen (19) liberal studies courses other CTI majors must take.

BACHELOR OF ARTS IN DIGITAL CINEMA

CMN 348 Film Genres: Variable Topics
CMN 349 Topics in Film History
DC 201 Narrative Techniques in Digital Cinema
DC 206 Introduction to Film History
DC 210 Digital Cinema Production I
DC 215 Digital Sound Design
DC 220 Non-Linear Editing I
DC 230 Foundations of Digital Cinema
DC 231 Digital Cinema Practicum
DC 273 Film/Video Aesthetics I
DC 275 Cinematography and Lighting
DC 310 Digital Cinema Production II
DC 320 Non-Linear Editing II
DC 390 Topics in Directing
DC 395 Topics in Production
DC 399 Digital Cinema Capstone
ENG 385 Mythology and the Dramatic Arts
GAM 224 Strategies in Game Design
GPH 211 Perceptual Principles for Digital Environments I
GPH 212 Perceptual Principles for Digital Environments II
GPH 213 Perceptual Principles for Digital Environments III
GPH 250 Digital Modeling I
GPH 338 Survey of 3-D Animation

- Open Electives (5)

BACHELOR OF SCIENCE IN DIGITAL CINEMA

DC 201 Narrative Techniques in Digital Cinema
DC 206 Introduction to Film History
DC 210 Digital Cinema Production I
DC 215 Digital Sound Design
DC 220 Non-Linear Editing I
DC 230 Foundations of Digital Cinema
DC 231 Digital Cinema Practicum
DC 273 Film/Video Aesthetics I
DC 275 Cinematography and Lighting
DC 310 Digital Cinema Production II
DC 315 Advanced Digital Sound Design

DC 320 Non-Linear Editing II
 DC 375 High Definition Cinematography
 DC 390 Topics in Directing
 DC 395 Topics in Production
 DC 399 Digital Cinema Capstone
 ENG 385 Mythology and the Dramatic Arts
 GAM 224 Strategies in Game Design
 GAM 344 Game Development I
 GAM 345 Game Development II
 GPH 211 Perceptual Principles for Digital Environments I
 GPH 212 Perceptual Principles for Digital Environments II
 GPH 213 Perceptual Principles for Digital Environments III
 GPH 250 Digital Modeling I
 GPH 338 Survey of 3-D Animation
 GPH 378 Compositing and Special Effects

- Open Electives (2)

Open Electives

Open Electives may be taken from any department or program. These are the only courses that may be taken under the pass/fail option (see the undergraduate Bulletin for details). If you wish to pursue a minor, most minor field courses will be credited as open electives.

Note: Grades for all courses in the students major (i.e. non-Liberal Studies and non-Open Elective) must be 'C' or better. Grades of 'C-' may be accepted provided the overall grade point average in the major is 2.0 or better.

BACHELOR OF SCIENCE IN E-COMMERCE TECHNOLOGY

Students earning the Bachelor of Science program in E-Commerce Technology will acquire computer programming, user-centered design, and E-Commerce system development skills, as well as knowledge of the technology of databases, networking, and middleware.

CMN 212 Small Group Communication or CMN 220 Public Speaking
 CSC 211 Programming in Java I
 CSC 212 Programming in Java II
 ECT 353 Server Side Web Application Development
 ECT 355 E-Commerce Application Models
 ECT 359 E-Commerce Technology Senior Project
 ECT 360 Introduction to Xml
 ECT 365 Web Server Operations
 ECT 372 Software Project Development and Management
 ENG 204 Technical Writing or ENG 301 Writing in the Professions
 HCI 210 Introduction to Human-Computer Interaction
 IT 130 The Internet and the Web
 IT 201 Introduction to Information Systems
 IT 215 Analysis and Design Techniques
 IT 223 Data Analysis
 IT 230 Building Internet Applications
 IT 240 Introduction to Desktop Databases
 IT 263 Applied Networks and Security
 MAT 140 Discrete Mathematics I or BMS 125 Business Calculus I
 SE 330 Object Oriented Modeling

- 300-level CTI elective (2) - chosen in consultation with student's advisor.
- Open Electives (7)

Open Electives

Open Electives may be taken from any department or program. These are the only courses that may be taken under the pass/fail option (see the undergraduate Bulletin for details). If you wish to pursue a minor, most minor field courses will be credited as open electives.

Note: Grades for all courses in the students major (i.e. non-Liberal Studies and non-Open Elective) must be 'C' or better. Grades of 'C-' may be accepted provided the overall grade point average in the major is 2.0 or better.

BACHELOR OF SCIENCE IN HUMAN-COMPUTER INTERACTION

The Bachelor of Science in Human-Computer Interaction is a multidisciplinary degree program designed to study methods that improve the working relationship between humans and computers. HCI practitioners enable individuals and groups to make more effective use of computers by creating better user interfaces and supportive surrounding environments. Drawing on principles from such diverse disciplines as art, psychology, engineering and computer science, HCI involves the analysis, design, development and evaluation of interfaces that are easy to use but powerful enough to accomplish complex tasks.

CMN 212 Small Group Communication or CMN 220 Public Speaking
CSC 211 Programming in Java I
CSC 394 Software Projects
ENG 204 Technical Writing or ENG 301 Writing in the Professions
GPH 211 Perceptual Principles for Digital Environments I
HCI 210 Introduction to Human-Computer Interaction
HCI 270 Formatting Digital Pages I
HCI 360 Evaluating Human-Computer Interaction
IT 130 The Internet and the Web
IT 201 Introduction to Information Systems
IT 215 Analysis and Design Techniques
IT 223 Data Analysis
IT 230 Building Internet Applications
IT 236 User Interface Development
IT 240 Introduction to Desktop Databases
PSY 241 Research Methods I
PSY 242 Research Methods II

- HCI Electives (4)
- Open Electives (8)
- ART 105 is a required Liberal Studies Course

HCI Elective List

The degree requires 4 electives chosen from the list of courses below, at least one per group.

Design:

ART 261 Art and Design II: Word and Image
ART 264 Typography I
ART 359 Publication Design
GPH 212 Perceptual Principles for Digital Environments II
GPH 250 Digital Modeling I
HCI 271 Formatting Digital Pages II
HCI 315 Theory and Perception of Color
HCI 322 Multimedia

Technology:

CSC 212 Programming in Java II
ECT 353 Server Side Web Application Development
GAM 244 Game Development I
GPH 325 Survey of Computer Graphics
IT 263 Applied Networks and Security

Methods and human factors:

ANT 201 Ethnographic Research Methods
CSC 324 Data Analysis and Statistical Software II
PSY 360 Theories of Learning and Cognition
PSY 375 Sensation and Perception

PSY 380 Industrial and Organizational Psychology
PSY 383 Psychology of Design

Open Electives

Open Electives may be taken from any department or program. These are the only courses that may be taken under the pass/fail option (see the undergraduate Bulletin for details). If you wish to pursue a minor, most minor field courses will be credited as open electives.

Note: Grades for all courses in the students major (i.e. non-Liberal Studies and non-Open Elective) must be 'C' or better. Grades of 'C-' may be accepted provided the overall grade point average in the major is 2.0 or better.

Note: Liberal Studies: Required: PSY 105 Introductory Psychology I

BACHELOR OF SCIENCE IN INFORMATION ASSURANCE ENGINEERING

The Bachelor of Science in Information Assurance and Security Engineering prepares students for many possible careers in the rapidly growing Information Assurance and Security industry.

The program of study allow the student to learn the necessary foundations of Information Assurance theory, technology , and technique as well as the knowledge of Security Engineering processes used to implement, support and manage them in real-world systems.

A graduate will be prepared to join an information security team and perform risk assessment, security infrastructure design, network security administration, vulnerability assessment/scanning and incident response as well as any technology position where information security is an important part of the work function.

Graduates' possible career paths include Information Security Engineer, Technical Security Auditor, Network Security Engineer, Information Assurance Analyst and Forensics Engineer.

ACC 101 Introduction to Accounting I
or FIN 290 Finance for Non-Commerce Majors
CMN 212 Small Group Communication
or CMN 220 Public Speaking
CNS 320 Computer Forensic and Incident Response
CNS 330 Legal, Ethical and Social Issues in Information Security
CNS 340 Fundamentals of Information Assurance
CNS 394 Information Systems Security Engineering I
CNS 395 Information Systems Security Engineering II
CSC 211 Programming in Java I
CSC 212 Programming in Java II
or CSC 261 Programming Languages I: C/C++
CSC 262 Programming Languages II: C/C++
CSC 233 Codes and Ciphers
CSC 373 Computer Systems I
ENG 204 Technical Writing
IT 130 The Internet and the Web
IT 230 Building Internet Applications
IT 240 Introduction to Desktop Databases
IT 263 Applied Networks and Security
IT 378 Host and Information Security
MAT 140 Discrete Mathematics I
TDC 362 Principles of Data Communications
TDC 365 Network Interconnection Technologies
TDC 377 Fundamentals of Network Security

- 300-Level CTI electives (2) - chosen in consultation with your advisor.
- Open Electives (4)

Open Electives

Open Electives may be taken from any department or program. These are the only courses that may be taken under the pass/fail option (see the undergraduate Bulletin for details). If you wish to pursue a minor, most minor field courses will be credited as open electives.

Note: Grades for all courses in the students major (i.e. non-Liberal Studies and non-Open Elective) must be 'C' or better. Grades of 'C-' may be accepted provided the overall grade point average in the major is 2.0 or better.

BACHELOR OF SCIENCE IN INFORMATION SYSTEMS

Information Systems is devoted to the application of computers and related technologies to organizational and business problems. IS professionals apply their knowledge of hardware, software, business processes and procedures to help organizations improve performance and meet tactical and strategic goals. IS graduates gain employment in a wide variety of positions, including business application programmers, help desk analysts, end user training and support personnel, database analysts, process consultants, user liaisons, and business system analysts.

CMN 212 Small Group Communication or CMN 220 Public Speaking

CSC 211 Programming in Java I

CSC 212 Programming in Java II

CSC 324 Data Analysis and Statistical Software II

CSC 390 Fundamentals of Information Assurance

ENG 204 Technical Writing or ENG 301 Writing in the Professions

HCI 210 Introduction to Human-Computer Interaction

IS 371 Introduction to I.T. System Management

IS 372 Fundamentals of Software Project Management

IS 373 Introduction to Large Systems Implementation

IS 375 Object-Oriented Analysis and Design

IS 376 Information Systems Project

IT 130 The Internet and the Web

IT 201 Introduction to Information Systems

IT 215 Analysis and Design Techniques

IT 223 Data Analysis

IT 230 Building Internet Applications

IT 236 User Interface Development

IT 240 Introduction to Desktop Databases

IT 263 Applied Networks and Security

- 300-Level CTI electives (2) - chosen in consultation with your advisor.
- Open Electives (7)

Open Electives

Open Electives may be taken from any department or program. These are the only courses that may be taken under the pass/fail option (see the undergraduate Bulletin for details). If you wish to pursue a minor, most minor field courses will be credited as open electives.

Note: Grades for all courses in the students major (i.e. non-Liberal Studies and non-Open Elective) must be 'C' or better. Grades of 'C-' may be accepted provided the overall grade point average in the major is 2.0 or better.

BACHELOR OF ARTS AND BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY

BACHELOR OF ARTS

The Bachelors of Arts in Information Technology program will give students a broad education in current areas of information technology, with a focus on producing educated and sophisticated consumers of information technology.

CMN 212 Small Group Communication or CMN 220 Public Speaking

CSC 223 The Impact of Computing Technology On Our Lives

CSC 378 Software Projects for Community Clients
ENG 204 Technical Writing or ENG 301 Writing in the Professions
HCI 210 Introduction to Human-Computer Interaction
ICS 200 Introduction to Business
IT 130 The Internet and the Web
IT 140 Visual Communication Using Information Technologies
IT 201 Introduction to Information Systems
IT 223 Data Analysis or CSC 239 Personal Computing
IT 230 Building Internet Applications
IT 240 Introduction to Desktop Databases
IT 263 Applied Networks and Security or TDC 361 Basic Communication Systems
SOC 394 Sociology and Society (Also counts as a liberal studies course)

- 300-Level CTI electives (8)
- Open Electives (4)
- Technical Grounding Courses (3)

Technical Grounding Courses

CSC 211 Programming in Java I
CSC 212 Programming in Java II
CSC 261 Programming Languages I: C/C++
CSC 262 Programming Languages II: C/C++
ECT 353 Server Side Web Application Development
GAM 244 Game Development I
GAM 245 Game Development II
GPH 211 Perceptual Principles for Digital Environments I
GPH 212 Perceptual Principles for Digital Environments II
HCI 322 Multimedia
IT 215 Analysis and Design Techniques
IT 230 Building Internet Applications
IT 236 User Interface Development
SE 325 Principles and Practices of Software Engineering
TDC 363 Introduction to Local Area Networks

Open Electives

Open Electives may be taken from any department or program. These are the only courses that may be taken under the pass/fail option (see the undergraduate Bulletin for details). If you wish to pursue a minor, most minor field courses will be credited as open electives.

Note: Grades for all courses in the students major (i.e. non-Liberal Studies and non-Open Elective) must be 'C' or better. Grades of 'C-' may be accepted provided the overall grade point average in the major is 2.0 or better.

BACHELOR OF SCIENCE

The Bachelor of Science in Information Technology is a technical degree that will instruct students in core competencies in the areas of problem solving and programming, networks and communications systems, databases, Internet and Web technologies, security, and project management, along with a foundation in business concepts and technical communication. The proposed degree is suitable background for employment in the area of software development and testing, application support, network maintenance, database development, IT management, technical sales, technical liaison within a business or operational unit, and IT services.

ACC 101 Introduction to Accounting I or FIN 290 Finance for Non-Commerce Majors
CMN 212 Small Group Communication or CMN 220 Public Speaking
CSC 211 Programming in Java I and CSC 212 Programming in Java II
or CSC 261 Programming Languages I: C/C++ and CSC 262 Programming Languages II:
C/C++
CSC 309 Object-Oriented Programming in C++ (Take this if you took JAVA programming.)
or CSC 224 Java for Programmers (Take this if you took C++ programming.)
CSC 352 Database Programming

CSC 373 Computer Systems I
 CSC 383 Data Structures and Algorithms in Java or CSC 393 Data Structures in C++
 ENG 204 Technical Writing or ENG 301 Writing in the Professions
 ICS 200 Introduction to Business
 IS 372 Fundamentals of Software Project Management
 IT 130 The Internet and the Web
 IT 215 Analysis and Design Techniques
 IT 223 Data Analysis
 IT 230 Building Internet Applications
 IT 240 Introduction to Desktop Databases
 IT 263 Applied Networks and Security
 IT 378 Host and Information Security
 MAT 140 Discrete Mathematics I
 MKT 301 Principles of Marketing

- Capstone (Any CTI Capstone)
- Open Electives (5)
- Expansion Area (4)

EXPANSION AREA

GAM 244 Game Development I
 GAM 245 Game Development II
 GPH 211 Perceptual Principles for Digital Environments I
 GPH 212 Perceptual Principles for Digital Environments II
 GPH 213 Perceptual Principles for Digital Environments III
 GPH 250 Digital Modeling I
 GPH 259 Design Geometry
 HCI 210 Introduction to Human-Computer Interaction
 HCI 270 Formatting Digital Pages I
 HCI 271 Formatting Digital Pages II

Open Electives

Open Electives may be taken from any department or program. These are the only courses that may be taken under the pass/fail option (see the undergraduate Bulletin for details). If you wish to pursue a minor, most minor field courses will be credited as open electives.

Note: Grades for all courses in the students major (i.e. non-Liberal Studies and non-Open Elective) must be 'C' or better. Grades of 'C-' may be accepted provided the overall grade point average in the major is 2.0 or better.

BACHELOR OF SCIENCE IN MATH/COMPUTER SCIENCE

The Mathematics and Computer Science major is meant for mathematics students with talent and interest in computer science and computer science students with talent and interest in mathematics to develop the necessary background to be able to work in areas which depend on knowledge from both fields. It is designed to prepare the student for graduate study in various areas of computer science such as theoretical computer science, graphics, and computational methods and in areas in applied mathematics such as numerical analysis or discrete mathematics. It is also a good preparation for the more intellectually demanding jobs in computer software development.

CSC 211 Programming in Java I or CSC 261 Programming Languages I: C/C++
 CSC 212 Programming in Java II or CSC 262 Programming Languages II: C/C++
 CSC 321 Design and Analysis of Algorithms
 CSC 373 Computer Systems I
 CSC 374 Computer Systems II or CSC 347 Concepts of Programming Languages
 CSC 378 Software Projects for Community Clients
 or CSC 394 Software Projects
 or GPH 395 Computer Graphics Senior Project
 or MAT 398 Senior Capstone Seminar
 CSC 383 Data Structures and Algorithms in Java or CSC 393 Data Structures in C++

IT 130 The Internet and the Web
 MAT 140 Discrete Mathematics I
 MAT 141 Discrete Mathematics II
 MAT 150 Calculus I
 or MAT 160 Calculus for Mathematics and Science Majors I
 or MAT 170 Promath Calculus for Mathematics and Science Majors I
 or MAT 147 Calculus with Integrated Precalculus I
 MAT 151 Calculus II
 or MAT 161 Calculus for Mathematics and Science Majors II
 or MAT 171 Promath Calculus for Mathematics and Science Majors II
 or MAT 148 Calculus with Integrated Precalculus II
 MAT 152 Calculus III
 or MAT 162 Calculus for Mathematics and Science Majors III
 or MAT 172 Promath Calculus for Mathematics and Science Majors III
 or MAT 149 Calculus with Integrated Precalculus III
 MAT 260 Multivariable Calculus I
 MAT 262 Linear Algebra

- Math Elective (3)
- Math or CTI Elective (1)
- CTI Elective (3)

Students choose seven courses from the following area lists. At least three of the courses have to be in computer science (or graphics) and at least three in mathematics. Courses not on this list need to be approved by an advisor. In particular, students are encouraged to take an independent study (MAT 399 or CSC 399).

I. THEORY CONCENTRATION

The theory concentration is aimed at students with an interest in the mathematical and foundations of computer science.

CSC 333 Cryptology
 CSC 344 Automata Theory and Formal Grammars
 CSC 348 Introduction to Compiler Design
 CSC 358 Symbolic Programming
 CSC 387 Operations Research I: Linear Programming
 or MAT 387 Operations Research I: linear Programming
 CSC 389 Theory of Computation
 MAT 302 Combinatorics
 MAT 303 Theory of Numbers
 MAT 310 Abstract Algebra I
 MAT 311 Abstract Algebra II
 MAT 312 Abstract Algebra III
 MAT 351 Probability and Statistics I
 MAT 370 Advanced Linear Algebra
 MAT 372 Logic and Set Theory

II. COMPUTATIONAL METHODS CONCENTRATION

The computational methods concentration is intended for students with an interest in quantitative and computational methods in computer science.

CSC 385 Numerical Analysis or MAT 385 Numerical Analysis I
 CSC 386 Advanced Numerical Analysis or MAT 386 Numerical Analysis II
 MAT 330 Methods of Computation and Theoretical Physics I
 MAT 331 Methods of Computation and Theoretical Physics II

III. GRAPHICS CONCENTRATION

The graphics concentration is intended for students who want to study the technical and mathematical foundations of computer graphics and animation.

GPH 211 Perceptual Principles for Digital Environments I
GPH 212 Perceptual Principles for Digital Environments II
GPH 325 Survey of Computer Graphics
GPH 329 Computer Graphics Development
GPH 336 Smooth Surface Modeling for Graphics and Animation
GPH 339 Advanced Rendering Techniques
GPH 372 Principles of Computer Animation
MAT 261 Multivariable Calculus II
MAT 337 Complex Analysis
MAT 370 Advanced Linear Algebra
MAT 385 Numerical Analysis I or CSC 385 Numerical Analysis

IV. ARTIFICIAL INTELLIGENCE CONCENTRATION

For students with an interest in the computational relations between syntax and semantics.

CSC 357 Expert Systems
CSC 358 Symbolic Programming
CSC 380 Artificial Intelligence

V. DATA ANALYSIS CONCENTRATION

The graphics courses are intended for students who want to study the technical and mathematical foundations of computer graphics and animation.

CSC 328 Data Analysis for Experimenters
CSC 332 Simulation and Modeling or MAT 359 Simulation Models and the Monte Carlo Method
CSC 334 Advanced Data Analysis or MAT 354 Multivariate Statistics
CSC 367 Introduction to Data Mining
CSC 381 Introduction to Digital Image Processing
CSC 382 Applied Image Analysis
CSC 384 Introduction to Computer Vision
MAT 261 Multivariable Calculus II
MAT 348 Applied Statistical Methods
MAT 351 Probability and Statistics I
MAT 352 Probability and Statistics II
MAT 353 Probability and Statistics III
MAT 355 Stochastic Processes
MAT 356 Applied Regression Analysis
MAT 357 Nonparametric Statistics
MAT 370 Advanced Linear Algebra
MAT 384 Mathematical Modeling

BACHELOR OF SCIENCE IN NETWORK TECHNOLOGIES

I. STANDARD CONCENTRATION

The Bachelor of Science in Network Technologies degree program is designed for students who wish to learn to select, justify, configure, and manage appropriate network technologies for a wide variety of business applications. Course topics include the foundations of networking, local area network design and management, Internet access technologies, routing, and interconnection technologies. There is also a concentration in Network Security.

First Year

CMN 212 Small Group Communication or CMN 220 Public Speaking
CSC 211 Programming in Java I or CSC 261 Programming Languages I: C/C++
CSC 212 Programming in Java II or CSC 262 Programming Languages II: C/C++
ENG 204 Technical Writing or ENG 301 Writing in the Professions
IT 130 The Internet and the Web
IT 201 Introduction to Information Systems
IT 223 Data Analysis
IT 230 Building Internet Applications
IT 240 Introduction to Desktop Databases
IT 263 Applied Networks and Security
MAT 140 Discrete Mathematics I
TDC 311 Computers in Telecommunications Systems
TDC 362 Principles of Data Communications
TDC 363 Introduction to Local Area Networks
TDC 364 Voice Communications Technologies
TDC 365 Network Interconnection Technologies
TDC 376 Network Project
Open Electives (6)

- 300-level TDC elective chosen in consultation with student's advisor (3).

Open Electives

Open Electives may be taken from any department or program. These are the only courses that may be taken under the pass/fail option (see the undergraduate Bulletin for details). If you wish to pursue a minor, most minor field courses will be credited as open electives.

Note: Grades for all courses in the students major (i.e. non-Liberal Studies and non-Open Elective) must be 'C' or better. Grades of 'C-' may be accepted provided the overall grade point average in the major is 2.0 or better.

II. NETWORK SECURITY

This concentration is designed to provide focused coursework in network security technologies, including detailed instruction in security infrastructure design, deployment, configuration and support.

While this concentration is designed for students that are planning to start their career as network security engineers, security administrators, security auditors and security infrastructure designers, it is also appropriate for any student that wants to integrate security practice within their career.

CMN 212 Small Group Communication or CMN 220 Public Speaking
CSC 261 Programming Languages I: C/C++
CSC 262 Programming Languages II: C/C++
CSC 390 Fundamentals of Information Assurance

ENG 204 Technical Writing or ENG 301 Writing in the Professions
 IT 130 The Internet and the Web
 IT 201 Introduction to Information Systems
 IT 230 Building Internet Applications
 IT 240 Introduction to Desktop Databases
 IT 263 Applied Networks and Security
 IT 378 Host and Information Security
 MAT 140 Discrete Mathematics I
 TDC 311 Computers in Telecommunications Systems
 TDC 362 Principles of Data Communications
 TDC 363 Introduction to Local Area Networks
 TDC 365 Network Interconnection Technologies
 TDC 368 Network Programming
 TDC 375 Network Protocols
 TDC 376 Network Project
 TDC 377 Fundamentals of Network Security
 TDC 379 Telecommunication and Network Security Practicum

- 300-level TDC elective chosen in consultation with student's advisor (2).
- Open Electives (6)

Note: Grades for all courses in the students major (i.e. non-Liberal Studies and non-Open Elective) must be 'C' or better. Grades of 'C-' may be accepted provided the overall grade point average in the major is 2.0 or better.

Open Electives

Open Electives may be taken from any department or program. These are the only courses that may be taken under the pass/fail option (see the undergraduate Bulletin for details). If you wish to pursue a minor, most minor field courses will be credited as open electives.

Note: Grades for all courses in the students major (i.e. non-Liberal Studies and non-Open Elective) must be 'C' or better. Grades of 'C-' may be accepted provided the overall grade point average in the major is 2.0 or better.

COMBINED BACHELOR OF SCIENCE AND MASTER OF SCIENCE DEGREES

The Combined Degree Programs at CTI are designed to allow academically gifted students to complete both a bachelor and master's degree in a shorter amount of time by taking three Master's level courses in their junior and senior year that count toward both their bachelor and master's degree requirements at same time. Students in this program will receive both a bachelor degree, after 192 undergraduate credit hours, and a master's degree after 10 more graduate courses (40 hours), instead of the standard 13 (52 hours).

Admission criteria are as follows:

Apply to enter the Combined Degree program any time after having achieved Junior standing (at least 88 credit hours completed) by sending an email to ctiadmissions@cti.depaul.edu. Include the words: Combined Degree in the subject.

GPA of 3.5 or better in courses with a CTI label, eg. CSC, ECT, etc.

Overall GPA is at least 3.2

Maintaining Good Standing

Students who fail to maintain academic standards equivalent to the admission criteria will be dismissed from the Combined Degree and returned to normal undergraduate degree seeking status. Any graduate courses passed before dismissal will not be counted toward graduate credit and may not be retaken. If dismissed students wish to apply to a CTI graduate degree program, they may do so following normal CTI admissions procedures, but will still be required to take 13 graduate courses for a MS degree.

Combined Degree Program Requirements

The tables below list which BS requirement is affected by which BS/MS requirement. The top part of the table deals with the three restricted enrollment graduate courses. The bottom part (light blue) deals with any special requirement due to the prerequisite for the MS (if any).

Left column lists the undergraduate course students should not take.

The middle column lists the restricted enrollment courses students should take instead.

The right column lists the actual graduate course corresponding to the restricted enrollment course.

All other BS requirements remain unchanged. Please refer to the program pages for the other courses you must take. You need to receive a grade of B- or higher in each course taken to fulfill MS prerequisite requirements. The 10 courses necessary to complete the Master's Phase of the BS/MS, follow the MS degree program minus the three already taken. For all courses that will be counted toward your MS, you are subject to the same grade requirement as regular MS students. Please work with your advisor to formulate a plan that works best for your circumstances.

BS CS / MS CS

Don't Take	Take Instead	Corresponding to
SE 350	XSE 350	SE 450
CSC 321	XCSC 391	CSC 491
1 CTI 300-level Elective	XCSC 347	CSC 447

BS NT - Standard / MS TDC

Don't Take	Take Instead	Corresponding to
TDC 362	XTDC 360	TDC 460
TDC 364	XTDC 364	TDC 464
TDC 365	XTDC 363	TDC 463

BS MATH-CS / MS CS

Don't Take	Take Instead	Corresponding to
1 CTI 300-level Elective	XSE 350	SE 450
CSC 321	XCSC 391	SE 491
CSC 347 or CSC 374	XCSC 347	SE 447
1 CTI 300-level Elective	CSC 374	Prerequisite phase

BS CS - Standard / MS SE

Don't Take	Take Instead	Corresponding to
SE 350	XSE 330	SE 430
1 CTI 300-level Elective	XSE 350	SE 450
1 CTI 300-level Elective	XSE 377	SE 477

Students with SE325 and SE477 will be considered to have fulfilled the MS-SE SE425 requirement. Students must meet with their faculty advisor to determine an appropriate SE graduate course to substitute for SE425.

BS IS / MS CINS- Information Systems Security track

Don't take	Take Instead	Corresponding to
IS 373	XIS 325	IS 425
1 300-level CTI Elective	XTDC 363	TDC 463
1 300-level CTI Elective	XIS 372	IS 572
1 Open Elective	ECT 353	Prerequisite Phase

BS CS / MS CINS – Computer Security track

Don't take	Take Instead	Corresponding to
SE 350	XSE 350	SE 450
1 300-level CTI Elective	XDS 320	DS 420
1 300-level CTI Elective	XTDC 372	TDC 572

BS MATH-CS / MS CINS – Computer Security track

Don't take	Take Instead	Corresponding to
1 300-level CTI Elective	XSE 350	SE 450
1 300-level CTI Elective	XDS 320	DS 420
1 300-level CTI Elective	XTDC 372	TDC 572
CSC 347 or CSC 374	CSC 374	Prerequisite Phase

BS NT / MS CINS –Network Security track

Don't Take	Take Instead	Corresponding to
TDC 362	XTDC 360	TDC 460
TDC 365	XTDC 363	TDC 463
1 300-level TDC Elective	XTDC 372	TDC 572
1 300-level TDC Elective	CNS 340	Prerequisite Phase

BACHELOR OF ARTS IN COMPUTING

The Bachelor of Arts in Computing is offered jointly by the School of Computer Science, Telecommunications and Information Systems and the School for New Learning. This degree is designed for working adults at least 24 years of age, who wish to obtain credit for their careers as technology professionals, and gain new skills in problem-solving, design, testing and communicating. The BA in Computing differs from the BS in Computer Science in that the BS places heavier emphasis on traditional programming and formal algorithmic analysis. The BA in computing program focuses on relating program design and computing to organizational dynamics and human relations. It helps to prepare students to analyze and negotiate the social, ethical, and technological systems of a business and to act as a liaison between the technical and non-technical sides of a company.

The computer competences in the BA in Computing program cover a variety of topics directly related to current industry practice. These competences include skills and knowledge in information systems, data communications, databases, software engineering, and the design and evaluation of user interfaces. In the general studies area of the program, competences are tied to the humanities, the natural sciences and the social sciences. Students may select competences in the arts, design, ecology, human biology, multicultural relations, and politics and so on that are tailored to their individual goals and interests. The BA in Computing is completed by satisfying a total of fifty (50) competences; this amounts to the equivalent of 140 quarter hours. Typically these competences are satisfied through course work or equivalent work experience.

For a copy of the Program Guide for the Bachelor of Arts in Computing or to make reservations for a BA in Computing Information Session, please call either the School of Computer Science, Telecommunications and Information Systems at (312)362-8381 or the School for New Learning at (312)362-8001.

SPECIAL PROGRAMS

TEACHER OF COMPUTER SCIENCE: SECONDARY LEVEL

In cooperation with the School of Education, the School of Computer Science, Telecommunications and Information Systems (CTI) offers a concentration of study which combines the requirements for a major in Computer Science with certification for teaching computer science at the junior high, middle, and senior high school levels. A student electing such a program should consult the School of Education counselor as soon as possible after entering DePaul.

MINORS

A minor is a combination of courses that provides a cohesive introduction to an area of study. Typically, courses taken to satisfy minor field requirements are credited as open electives; however, there are some instances where minor field courses may be used for credit in other areas of the student's curriculum. Grades for all courses, taken to fulfill a minor field requirement must be 'C' or above. Grades of 'C-' may be accepted for credit in the minor provided the minor GPA is 2.0 or above. A minimum of one-half of the courses required for a minor must be completed at DePaul University.

MINORS IN THE COLLEGE OF COMMERCE

Students enrolled in the School of Computer Science, Telecommunications and Information Systems (CTI) may obtain a minor in Accounting, Business Administration, E-Business, Economics, Management, MIS, Marketing, and Pre-MBA. Please see the College of Commerce Section for Minor Requirements.

MINORS IN THE COLLEGE OF LIBERAL ARTS AND SCIENCES

Students enrolled in the School of Computer Science, Telecommunications and Information Systems (CTI) may obtain a minor through the College of Liberal Arts and Sciences. Most Liberal Arts and Science departments offer minor concentrations of study. In general, a minor in a Liberal Arts and Sciences discipline consists of a set of introductory courses plus another set of more specialized courses. Most minors require six courses, some of which may also be used for credit in the Liberal Studies Program. For a complete list of minors offered through the College of Liberal Arts and Sciences, please consult that section of this online Bulletin

MINORS IN THE COLLEGE OF COMPUTER SCIENCE, TELECOMMUNICATIONS AND INFORMATION SYSTEMS

Minors Within CTI for CTI Students

To obtain a minor in CTI when the major is also in CTI:

1. Satisfy all requirements for the major
2. Satisfy all requirements for the minor
3. Students must take at least 6 courses in the minor area that do not count towards their CTI major

Note: If you have already taken some of the courses listed under your minor on this page, work with your advisor to choose other courses within the same program area, ie. NT minor would look under NT major courses and Computer Graphics Software Development would look under Computer Graphics Courses, in order to have 6 distinct courses.

CTI MINOR REQUIREMENTS FOR NON-CTI MAJORS

Computer Games Development

DC 201 Narrative Techniques in Digital Cinema
GPH 211 Perceptual Principles for Digital Environments I
GPH 212 Perceptual Principles for Digital Environments II
GPH 213 Perceptual Principles for Digital Environments III
GAM 224 Strategies in Game Design
GAM 244 Game Development I
GAM 245 Game Development II

Computer Graphics Software Development

CSC 261 Programming Languages I: C/C++
CSC 262 Programming Languages II: C/C++

GPH 211 Perceptual Principles for Digital Environments I
GPH 212 Perceptual Principles for Digital Environments II
GPH 329 Computer Graphics Development
GPH 339 Advanced Rendering Techniques

Computer Science Minor

CSC 211 Programming in Java I or CSC 261 Programming Languages I: C/C++
CSC 212 Programming in Java II or CSC 262 Programming Languages II: C/C++
CSC 309 Object-Oriented Programming in C++ or CSC 224 Java for Programmers
CSC 393 Data Structures in C++ or CSC 383 Data Structures and Algorithms in Java
IT 130 The Internet and the Web
IT 240 Introduction to Desktop Databases
MAT 140 Discrete Mathematics I

- 1 300-level CTI elective

Data Analysis Minor

CSC 211 Programming in Java I
CSC 212 Programming in Java II
CSC 324 Data Analysis and Statistical Software II
IT 130 The Internet and the Web
IT 223 Data Analysis
IT 240 Introduction to Desktop Databases

One course from the following list:

- CSC 328 Data Analysis for Experimenters
- CSC 334 Advanced Data Analysis

Digital Cinema Minor

DC 201 Narrative Techniques in Digital Cinema
DC 220 Non-Linear Editing I
DC 230 Foundations of Digital Cinema
DC 231 Digital Cinema Practicum

Three courses from the following list:

- DC 210 Digital Cinema Production I
- DC 275 Cinematography and Lighting
- DC 389 The Big Picture: the Entertainment Industry
- GAM 224 Strategies in Game Design
- GAM 244 Game Development I
- GPH 211 Perceptual Principles for Digital Environments I
- TDC 350 Modes of Digital Distribution

E-Commerce Technology Minor

CSC 211 Programming in Java I
CSC 212 Programming in Java II
ECT 353 Server Side Web Application Development
HCI 210 Introduction to Human-Computer Interaction
IT 130 The Internet and the Web
IT 230 Building Internet Applications

One course from the following list:

- ECT 355 E-Commerce Application Models
- ECT 360 Introduction to Xml
- ECT 365 Web Server Operations

Human-Computer Interaction Minor

GPH 211 Perceptual Principles for Digital Environments I
or ART 105 Two-Dimensional Foundations

HCI 210 Introduction to Human-Computer Interaction
HCI 270 Formatting Digital Pages I
or ART 227 Computer Applications for Design I: Illustrator and Photoshop
HCI 360 Evaluating Human-Computer Interaction
IT 130 The Internet and the Web
IT 223 Data Analysis or PSY 240 Statistics I
PSY 105 Introductory Psychology I

One course from the following list:

- CSC 211 Programming in Java I
- HCI 271 Formatting Digital Pages II
- HCI 322 Multimedia
- IT 215 Analysis and Design Techniques
- IT 230 Building Internet Applications
- IT 240 Introduction to Desktop Databases
- PSY 241 Research Methods I

Information Systems Minor

CSC 211 Programming In Java I
HCI 210 Introduction To Human-Computer Interaction
IT 130 The Internet And The Web
IT 201 Introduction To Information Systems
IT 215 Analysis And Design Techniques
IT 230 Building Internet Applications
IT 240 Introduction To Desktop Databases

One course from the following list:

- IS 371 Introduction To I.T. System Management
- IS 372 Fundamentals Of Software Project Management
- IS 373 Introduction To Large Systems Implementation
- IS 374 Management Support Systems

Network Technology Minor

CSC 211 Programming in Java I
or CSC 261 Programming Languages I: C/C++
CSC 212 Programming in Java II
or CSC 262 Programming Languages II: C/C++
IT 130 The Internet and the Web
IT 201 Introduction to Information Systems
IT 263 Applied Networks and Security
TDC 362 Principles of Data Communications
TDC 363 Introduction to Local Area Networks

COURSES

Please visit Campus Connection at <https://campusconnect.depaul.edu> for current course information. If you do not have a password for Campus Connection you may log on as a guest. Once you are on Campus Connection please select Course Catalog followed by the department.

