

DEPAUL  
UNIVERSITY

---



## **Course Catalog**

**School of Computer Science Telecommunications**

**Winter/Spring 2007-2008**

# Table of Contents

Table of Contents	2
General Information	3
Catalog Version	3
General Information	3
Facilities	3
Admission	4
Academic Advisement	4
Professional Development	5
Transfer Credit	6
Grades	6
Administration	7
Administration	7
Faculty	8
Faculty	8
Academic Programs	12
Liberal Studies Program and Modern Language Option	12
CTI Liberal Studies Courses	13
Bachelor of Science in Computer Games Development	18
Bachelor of Science in Computer Graphics and Motion Technology	21
Bachelor of Science in Computer Science	24
Bachelor of Arts Digital Cinema	28
Bachelor Of Science in Digital Cinema	31
Bachelor of Science in E-Commerce Technology	33
Bachelor of Science in Interactive Media	35
Bachelor of Science in Information Assurance and Security Engineering	36
Bachelor of Science in Information Systems	38
Bachelor of Arts in Information Technology	39
Bachelor of Science in Information Technology	41
Bachelor of Science in Network Technologies	43
Bachelor of Science in Mathematics / Computer Science	46
Bachelor of Arts in Computing	50
Accelerated Degrees	50
Special Programs	52
Minors	52
Courses	58
Courses	58
Programs in CTI	59
Current Degree Descriptions	59

# General Information

School of Computer Science, Telecommunications & Information Systems - Undergraduate Studies □ General Information

## Catalog Version

### **UNDERGRADUATE UPDATE: OCTOBER 15, 2007**

Please use the menu items to the left for current catalog navigation. Access archived catalogs by choosing the link to the right.

School of Computer Science, Telecommunications & Information Systems - Undergraduate Studies □ General Information □ General Information

## General Information

DePaul CTI features 14 degree programs designed to keep pace with the latest developments in technology while remaining grounded in the liberal arts and sciences. DePaul students can also explore their academic curiosity through 18 minor concentrations that reflect the diverse offerings of CTI's majors.

Catalog Version

School of Computer Science, Telecommunications & Information Systems - Undergraduate Studies □ General Information □ Facilities

## Facilities

DePaul University maintains an extensive technological infrastructure which is available for students, faculty and staff. In addition, many schools and departments maintain their own resources dedicated for use by their own constituents.

The School of CTI itself operates specialized laboratories in the following:

- Requirements Engineering Lab
- Mobile Commerce Lab
- Solid Objects and Graphics Lab
- Animation Lab
- Network Security Lab
- Game Development Lab
- Console Gaming Lab
- Digital Cinema Advanced Editing Lab
- High Definition Editing Suite
- Medical Informatics Lab
- Digital Cinema Studio
- Usability Testing Lab
- Intelligent Multimedia Processing Lab
- Supercomputing Cluster Lab
- Software Research Lab
- Multimedia Networking Lab

- Centr for Web Intelligence
- E-Commerce Technology Lab

School of Computer Science, Telecommunications & Information Systems - Undergraduate Studies □ General Information □ Admission

## **Admission**

### **First Year Student Applicants**

#### Deadlines And Requirements

1. We recommend you apply by February 1st for Priority/Regular admission or by November 15 for Early Action Program admission. Applications are considered on a space available basis until August 15 by rolling notification. (Applications to The Theatre School must be submitted by January 15th. Notification of Music and Theatre admission decisions will be made in late March.)
2. Either the SAT or ACT is required. If your ACT or SAT scores do not appear directly on your high school transcript, request the testing agency to forward a score report to De Paul , if you have not already done so. Our college code number for ACT is 1012 and for SAT is 1165.
3. If you have earned college credit while in high school, request the college or Advanced Placement service which granted you credit to forward your official record to De Paul .
4. Send all materials to:  
Office of Admission  
1 E. Jackson Blvd.  
Chicago, IL 60604

NOTE: If you have ever enrolled in another college or university (regardless if you earned any credit) after high school graduation, please fill out the Transfer Student application.

### **Transfer Student Applicants**

Transfer students (under age 24) who currently attend another college/university and plan to complete a baccalaureate degree at De Paul should complete and submit this application, the \$40 application fee (\$25 if you apply online) and official transcripts from every college/university attended. Students who have earned fewer than 30 semester (44 quarter) hours of transferable college work at the time of application submission must additionally provide an official high school transcript and an ACT/SAT score report. If you are currently in college, please indicate (on a separate sheet of paper) what courses you will be enrolled in for the current term or for a future term. (Example: Eng 101/English Composition I - 3 semester hours.)

Note: Students educated outside the United States or with international credit, and students with F1 or J1 visa status should apply for admission a minimum of two months before the beginning of the desired quarter using the application for international student admission.

School of Computer Science, Telecommunications & Information Systems - Undergraduate Studies □ General Information □ Academic Advisement

## **Academic Advisement**

The school believes that academic advising is necessary for the vitality and success of the student's undergraduate education. Students are assigned a faculty advisor upon admission to the school. All students are encouraged to meet with their faculty advisor at least once each year for assistance in planning a course

of study that best reflects their academic and career interests, skills, and lifestyle.

School of Computer Science, Telecommunications & Information Systems - Undergraduate Studies □ General Information □ Professional Development

## 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 Chicagoland 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. Certificate programs are typically taught by a team of instructors, that includes both full-time faculty and part-time instructors from industry. The programs require a substantial commitment of time, as most meet two nights per week and in the morning on approximately 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.

Current certificate program offerings include:

### **IPD 360/460 SQL Server Business Intelligence Program**

An 11-week in-depth program covering SQL Server 2005 analysis services, integration services, and reporting services

### **IPD 361/461 SQL Server Database High Availability Program**

An 11-week comprehensive overview of the various high availability solutions available with the latest edition of Microsoft's SQL Server

### **IPD 362 Open-Source Web Development Program**

A 5-week program addressing rapid and efficient development of business-critical Web applications using Linux, Apache, PostgreSQL and Python

### **IPD 363 SQL Server Database Administration Program**

An 11-week in-depth program covering database administration using SQL Server

### **IPD 364 Lightweight Java Web Development Program**

An 8-week comprehensive program covering open-source, lightweight Java enterprise Web development using POJOs (Plain Old Java Objects)

### **IPD 365 Ruby on Rails Program**

A 7-week in-depth program covering Web development using Ruby on Rails

### **IPD 370 Advanced SQL Program**

A 2-week program covering advanced SQL features

### **IPD 380 IT Project Management Program**

A 10-week comprehensive program covering best practices in information systems project management

### **IPD 390 Information Systems Security Management Program**

A 10-week comprehensive program covering best practices in designing, implementing and maintaining an organizational information security plan

### **IPD 394 Java EE Developer Program**

A 10-week in-depth program covering enterprise-wide applications development using Java EE

### **IPD 382 Java Developer Program**

A 10-week comprehensive program covering object-oriented applications development using Java

### **IPD 366 Java Web Services Program**

A 7-week concentrated program covering service-oriented architecture and the development of Web services using Java

### **IPD 389 .NET Developer Program**

A 10-week comprehensive program covering .NET technologies

### **IPD 368/468 .NET Mobile Applications Development Program**

A 10-week focused program covering the basic skills and techniques for successfully building mobile applications using the .NET platform

**IPD 398 .NET Web Services Program**

An 8-week concentrated program covering service-oriented architecture and the development of Web services using the .NET platform

**IPD 392 Telecommunications Program**

An 11-week intensive program focusing on the configuration, implementation and ongoing support of telecommunications systems and networks

School of Computer Science, Telecommunications & Information Systems - Undergraduate Studies □ General Information □ Transfer Credit

**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 DePaul CTI Admissions . 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 students academic advisor.

School of Computer Science, Telecommunications & Information Systems - Undergraduate Studies □ General Information □ Grades

**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 complete a minimum of 192 quarter hours of college credit.

# Administration

School of Computer Science, Telecommunications & Information Systems - Undergraduate Studies □ Administration

## **Administration**

DAVID MILLER, Ph.D.  
Dean

GREGORY BREWSTER, Ph.D.  
Associate Dean

LUCIA DETTORI, Ph.D.  
Associate Dean

MARTIN KALIN, Ph.D.  
Associate Dean

LINDA V. KNIGHT, Ph.D.  
Associate Dean

# Faculty

School of Computer Science, Telecommunications & Information Systems - Undergraduate Studies □ Faculty

## Faculty

DAVID MILLER, Ph.D.

Dean

University of Chicago

OLAYELE ADELAKUN, Ph.D.

Associate Professor

Turku School of Economics & Business Adm.

EHAB AL-SHAER, Ph.D.

Associate Professor

Old Dominican University

GARY ANDRUS, Ph.D.

Associate Professor

Wayne State University

DAVID ANGULO, M.S.

Instructor

Loyola University Chicago

ANDRE BERTHIAUME, Ph.D.

Associate Professor

University of Montreal

GIAN MARIO BESANA, Ph.D.

Associate Professor

University of Notre Dame

GREGORY BREWSTER, Ph.D.

Associate Professor and Associate Dean

University of Wisconsin, Madison

JACEK BRZEZINSKI, Ph.D.

Assistant Professor

DePaul University

ROBIN BURKE, Ph.D.

Associate Professor

Northwestern University

ALAN BURNS, Ph.D.

Assistant Professor

Kent State University

SUSY CHAN, Ph.D.

Professor

Syracuse University

I-PING CHU, Ph.D.

Associate Professor

State University of New York at Stony Brook

ANTHONY CHUNG, Ph.D.

Associate Professor

University of Maryland Baltimore County

LUCIA DETTORI, Ph.D.

Associate Professor and Associate Dean

University of Paris XI

MASSIMO DIPIERRO, Ph.D.

Assistant Professor

University of Southampton , UK

CLARK ELLIOTT, Ph.D.

Associate Professor

Northwestern University

RONALD ELTANAL, MFA

Visiting Associate Professor

University of Southern California

HELMUT EPP, Ph.D.

Professor

Northwestern University

SCOTT ERLINDER, MFA



Assistant Professor  
Columbia College  
XIAOWEN FANG, Ph.D.  
Associate Professor  
Purdue University  
ROBERT FISHER, Ph.D.  
Associate Professor  
Harvard University  
JACOB FURST, Ph.D.  
Associate Professor  
University of North Carolina at Chapel Hill  
GERALD GORDON, Ph.D.  
Associate Professor  
University of California , Berkeley  
HENRY HARR, Ph.D.  
Professor Emeritus  
Illinois Institute of Technology  
DANA HODGDON, M.A.  
Visiting Professor  
Northwestern University  
JANE HUANG, Ph.D.  
Assistant Professor  
University of Illinois at Chicago  
LOUIS IBARRA, Ph.D.  
Assistant Professor  
University of Victoria  
MATT IRVINE, MFA  
Assistant Professor  
Columbia College  
RADHA JAGADEESAN, Ph.D.  
Professor  
Cornell University  
XIAOPING JIA, Ph.D.  
Professor  
Northwestern University  
JOSHUA JONES, MFA  
Assistant Professor  
University of Southern California  
STEVE JOST, Ph.D.  
Associate Professor  
Northwestern University  
MARTIN KALIN, Ph.D.  
Professor and Associate Dean  
Northwestern University  
IYAD KANJ, Ph.D.  
Associate Professor  
Texas A & M University  
LOUIS KLEINMAN, B.A.  
Visiting Associate Professor  
Oberlin  
LINDA KNIGHT, Ph.D.  
Associate Professor and Associate Dean  
DePaul University  
JEAN-PHILIPPE LABRUYÈRE, M.S.  
Instructor  
Illinois Institute of Technology  
GLENN LANCASTER, Ph.D.  
Associate Professor  
University of California , Irvine  
JOSEPH LINHOFF, J.D.  
Visiting Assistant Professor  
University of Colorado at Boulder School of Law  
STEPHEN LUECKING, M.F.A.  
Professor  
Miami University  
EVELYN LULIS, Ph.D.  
Associate Professor  
Illinois Institute of Technology

STEVEN LYTINEN, Ph.D.  
Professor  
Yale University

WILFREDO MARRERO, Ph.D.  
Associate Professor  
Carnegie Mellon University

JOHN MCDONALD, Ph.D.  
Associate Professor  
Northwestern University

CRAIG MILLER, Ph.D.  
Associate Professor  
University of Michigan

DANIEL MITTLEMAN, Ph.D.  
Associate Professor  
The University of Arizona

BAMSHAD MOBASHER, Ph.D.  
Associate Professor  
Iowa State University

JAMI MONTGOMERY, Ph.D.  
Assistant Professor  
Illinois Institute of Technology

ASHLEY MORRIS, Ph.D.  
Associate Professor  
Tulane University

THOMAS MUSCARELLO, Ph.D.  
Associate Professor  
University of Illinois at Chicago

MAKOTO NAKAYAMA, Ph.D.  
Associate Professor  
University of California , Los Angeles

GARY NOVAK, MFA  
Assistant Professor  
American Film Institute

LJUBOMIR PERKOVIC, Ph.D.  
Associate Professor  
Carnegie Mellon University

JOSEPH PHILLIPS, Ph.D.  
Assistant Professor  
University of Michigan

CORIN PITCHER, Ph.D.  
Assistant Professor  
University of Oxford

DANIELA RAICU, Ph.D.  
Assistant Professor  
Oakland University

JAMES RIELY, Ph.D.  
Associate Professor  
University of North Carolina at Chapel Hill

SCOTT ROBERTS, M.F.A., M.A.  
Associate Professor  
University of Wisconsin - Madison

JOHN ROGERS, Ph.D.  
Associate Professor  
University of Chicago

MARCUS SCHAEFER, Ph.D.  
Associate Professor  
University of Chicago

ERIC SCHWABE, Ph.D.  
Associate Professor  
Massachusetts Institute of Technology

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

RAFFAELLA SETTIMI, Ph.D.  
Associate Professor  
University of Perugia

AMBER SETTLE, Ph.D.  
Associate Professor

University of Chicago  
PAUL SISUL, M.DIV.  
Instructor  
DeAndreis Institute of Theology  
ADAM STEELE, Ph.D.  
Associate Professor  
Concordia University  
THERESA STEINBACH, M.B.A., M.S.  
Assistant Professor  
DePaul University  
ALEXANDER STEWART, M.F.A.  
Instructor  
School of the Art Institute of Chicago  
DAVID STONE, BFA  
Visiting Associate Professor  
Cornell University  
HAROLD STREETER, M.S.  
Instructor  
Brown University  
NORMA SUTCLIFFE, Ph.D.  
Associate Professor  
University of California at Los Angeles  
NORIKO TOMURO, Ph.D.  
Associate Professor  
DePaul University  
CURT WHITE, Ph.D.  
Associate Professor  
Wayne State University  
PETER WIEMER- HASTINGS, Ph.D.  
Associate Professor  
University of Michigan , Ann Arbor  
CHARLES WILCOX, B.A.  
Instructor  
Southern Illinois University  
ROSALEE WOLFE, Ph.D.  
Professor  
Indiana University  
JAMES YU, Ph.D.  
Assistant Professor  
Purdue University  
LU ZHANG, Ph.D.  
Visiting Assistant Professor  
Iowa State University  
JOANNE ZIELINSKI, M.F.A.  
Associate Professor  
Rutgers University

# Academic Programs

School of Computer Science, Telecommunications & Information Systems - Undergraduate Studies □ Academic Programs

## Liberal Studies Program and Modern Language Option

### LIBERAL STUDIES PROGRAM

There are two components to the Liberal Studies Program. The first, called the Common Core, emphasizes communication, quantitative skills and intellectual abilities, as well as an introduction to the urban and Vincentian nature of the University. Integration of the general education program is further enhanced by a series of common experiences throughout the student's educational career. These experiences are the First Year Program (including: Chicago Quarter, Focal Point Seminar, and Writing); Sophomore Seminar on Multiculturalism in the United States; Junior Year Experiential Learning; and Senior Year Capstone.

The second part of the program, called Learning Domains, is concerned mainly with the subjects that make up the conventional liberal arts and sciences curriculum. Breadth of learning is assured by asking students to do course work in six learning domains: Arts and Literature (AL); Philosophical Inquiry (PI); Religious Dimensions (RD); Scientific Inquiry (SI); Self, Society, and the Modern World (SSMW); and Understanding the Past (UP); .

The domains of the Liberal Studies Program represent possible ways of grouping the various kinds of courses taught in the University. They identify and focus attention on areas of inquiry that are significantly similar are to be found, though not all activities carried on within a domain are identical. A person who has received a liberal education has experienced in both practical and theoretical ways the many types of intellectual inquiry represented in the university community. These particular domains facilitate that experience. They represent society's intellectual life in its theoretical, practical, and artistic moments.

Through the programs of study within the domains, students are invited to create or discover for themselves, however provisionally, a map of the intellectual world.

Finally, pre-collegiate skills in communication and computation are a prerequisite for domain study. Some students are required to take certain skills courses before they can begin the Liberal Studies Program. Moreover, since these writing and computation skills are an integral part of all college work, all liberal studies courses seek to develop these skills further.

### MODERN LANGUAGE OPTION

Students who wish to study a Modern Language may do so for liberal studies credit. Those who begin the language at the introductory or intermediate level must complete a three-course sequence for liberal studies credit.

Students who complete a three-course sequence may substitute two of the three courses for liberal studies credit. Students can select one course each from two of the following learning domain combinations: Arts and Literature or Scientific Inquiry (cannot substitute for the lab science requirement); Philosophical Inquiry or Religious Dimensions; Self, Society, and the Modern World or Understanding the Past. The third course of the sequence fulfills open elective credit. Students interested in this option should consult the listing for their college or school in this course catalog to determine the Liberal Studies courses for which the Modern Language Option will substitute.

**Note:** The Modern Language Option may not be used to meet the language requirement for Bachelor of Arts students in the College of Liberal Arts and Sciences or School of Education . It may be used for advanced study once the requirement is met. The introductory language sequence will not fulfill the Modern Language Option and will not be counted for Liberal Studies credit for students who are native speakers of the language. The intermediate sequence will not fulfill the Modern Language Option and will not be counted for Liberal Studies credit for students who are native speakers of the language unless the chair of the Modern Languages Department so recommends.

Interested students should contact their academic advisor or their college office for information concerning the regulations and procedures governing the exercise of this option.

Bachelor of Arts Digital Cinema

Bachelor Of Science in Digital Cinema

Bachelor of Science in Network Technologies

Bachelor of Science in Mathematics / Computer Science

Bachelor of Arts in Computing

Bachelor of Science in Information Technology

CTI Liberal Studies Courses

School of Computer Science, Telecommunications & Information Systems - Undergraduate Studies □ Academic Programs □ CTI Liberal Studies Courses

## **CTI Liberal Studies Courses**

Have you ever been interested in learning how to create interactive web environments, put together computer animation, or do you want to know more about codes and ciphers as featured in the movies Enigma or Windtalkers? Then CTI has some great courses for you!

CTI offers dozens of courses in many domains of the Liberal Studies Program. You can experiment with computer graphics, programming and e-commerce technology and fulfill a requirement at the same time. Many of these courses also serve as gateway courses into more advanced CTI courses. Who knows, you might just like it and want to come back for more!

If you have a specific interest, in something like how the Internet functions, you can click here for a list of courses by topic .

---

### **CTI Liberal Studies Courses for CTI students**

#### *-Rule 1-*

A CTI student can take any CTI course approved for liberal studies credit and use it to satisfy a domain of the liberal studies program (LSP) provided:

1. The course is NOT required as part of the students major

#### EXAMPLES:

- a CGMT student cannot use GPH 211 to satisfy the arts and literature requirement of LSP, as GPH 211 is required by all CGMT tracks.
  - An ECT major CAN take GPH 211 to satisfy the arts and literature requirement of the LSP
2. The course qualifies for a liberal studies program domain that is required by the students major
- #### EXAMPLES:
- a CS student CAN take GPH 259 to satisfy the Scientific Inquiry (SI)-Quantitative-Lab requirement of LSP because the course is not required by the CS major AND it counts for SI-Lab which is a required domain for CS students
  - any CTI student CANNOT take CSC 250 to satisfy SI because, although the course is not required by any of our programs, it qualifies for SI-quantitative (not Lab) which is NOT a required domain for CTI students

#### *-Rule 2-*

No double counting allowed for CTI classes by CTI students.

#### EXAMPLES:

- A CS student takes GPH 211 for arts and literature LSP. Although GPH 211 is allowed as an elective even if it is not a 300 level course, the student CANNOT count the course both as satisfying an LSP domain AND as an elective for the CS program
-

## **CTI Liberal Studies Courses by Liberal Studies Area**

### Arts and Literature

#### **DC 125** *Digital Still Photography for Non-Majors*

This course is an introduction to the history and aesthetics of still photography and to the concept of photography as a descriptive and interpretive artistic medium. Students studying photographs in this context will discover relationships between individual photographers choices and their own understanding of meaning. Students will learn the fundamental concepts necessary to shoot, edit, manipulate, and print digital still photographs.

#### **DC 201** *Introduction to Screenwriting*

This course focuses on narrative storytelling and encourages students to find their unique voices, while emphasizing the critical importance of working as part of a creative team.

#### **DC 205** *Foundations of Cinema*

Acquisition and computer representation of sound and image. Sound and video standards. Lossy and Lossless compression. Basic computer graphics and rendering. Distribution of digital information.

#### **DC 250** *Working with Actors 1*

This course is an introduction and examination of the collaborative process between the actor and director. Methods of study include lecture, discussion, assignments, and in-class acting exercises.

#### **GAM 224** *Introduction to Game Design*

Students will learn about a game's "hook", its "high concept" and the crucial needs of marketing for a successful game design. Students will also learn to design a game's component pieces.

#### **GPH 211** *Perceptual Principles for Digital Environments I*

#### **GPH 212** *Perceptual Principles for Digital Environments II*

#### **GPH 213** *Perceptual Principles for Digital Environments III*

These three foundational courses in computer animation take you through the process of creating 2-D and 3-D representations on the computer. The last course teaches you how to animate them!

#### **ANI 101** *Animation for Non-Majors*

Course introduces a variety of basic animation techniques for cinema and gaming, such as hand-drawn, cutout, stop-motion and (very basic) 3D, with an emphasis on the use of computer technology.

#### **ANI 206** *History of Animation*

History of Animation: This course is an introduction to the history and development of the field of animation.

### Junior Experiential Learning Credit

#### **CSC 298** *Internship*

Computer Science Internship In cooperation with local employers this course offers students the opportunity to integrate their academic experience with on-the-job training in computer related work areas.

#### **CSC 378** *Software Projects for Community Clients*

#### **CSC 379** *Technology Partnerships in Urban Schools*

Students in this course will have the opportunity to assess urban community needs in the technology arena and develop skills in assisting and developing methods for bridging the digital divide that exists.

#### **DC 380** *Project Bluelight*

Production of a feature-length digital motion picture written by students or faculty within the Digital Cinema program.

#### **IT 300** *Research Experience*

This course involves the exploration of a research topic under the supervision of a research advisor.

#### **GPH 360** *Modeling Spaces*

The digital design and modeling of environmental spaces with attention to human use parameters.

### Scientific Inquiry: Elective

#### **CSC 235** *Problem Solving*

How do you solve a problem? In this course we discuss different problem solving techniques and strategies such as modeling, establishing subgoals, and searching and pruning.

**CSC 200** *Survey of Computing*

Learn about careers using computers and pick up some skills to help you manage your own PC or network!

**CSC 210** *Introduction to Computing*

A brief history of computers and an introduction to programming.

**CSC 211** *Programming in Java I*

**CSC 212** *Programming in Java II*

Two courses in programming JAVA, a cross-platform, web-enabled language.

**CSC 261** *Programming Languages I: C/C++*

**CSC 262** *Programming Languages II: C/C++*

Two courses in programming C++

**CSC 233** *Codes and Ciphers*

A history of code making and breaking and the math and (computer) science behind it

**ECT 250** *Internet, Commerce, and Society*

Ever shop online? Learn the basics behind how these kinds of web sites function

**IT 130** *The Internet and the Web*

Learn to design your own web site!

**IT 236** *User Interface Development*

**IT 240** *Introduction to Desktop Databases*

Learn introductory concepts in constructing databases and networking files.

**IT 263** *Applied Networks and Security*

**TDC 361** *Basic Communication Systems*

Learn about how networks work and how they impact your daily life.

Scientific Inquiry: Lab/Quantitative

**GPH 259** *Design Geometry (cross-listed as ART 295)* Learn the basics of Computer Aided Design.

Scientific Inquiry: Quantitative

**CSC 239** *Personal Computing*

You will learn how to use Excel to analyze data and how to publish data and retrieve it from the World Wide Web.

**IT 223** *Data Analysis*

**CSC 250** *Computers and Human Intelligence*

Study how computers are designed to think like people.

**HCI 201** *Multimedia and the World Wide Web*

Overview of the Web, its origins and capabilities. Create your own sample web page.

Self, Society, and the Modern World

**DC 105** *Digital Media Literacies*

This course is designed to help students develop an informed, critical and practical understanding of new communication media, including ways to read, write and produce in a digital environment.

**IT 201** *Introduction to Information Systems*

This course examines how various types of computer-based information systems form a critical part of modern organizations, how they work, and how they impact workers, organizations and the economy.

**IS 208** *IT, Economy and Society*

This course broadly surveys the history of IT applications and information systems from the historical perspective, and critically assesses the digital impact on industry, the economy, workers, citizens, social class and the future.

**CSC 223** *The Impact of Computing Technology On Our Lives*

This course will introduce students to an overview of social analysis techniques and the theories of social change.

Understanding the Past: Intercontinental/Comparative

**GAM 206** *History of Games*

This class will examine particular games and game genres in their historical context using a case study format.

**GPH 205** *Historical Foundations of Visual Technology*

This course is a survey of the development, application and meaning of visual technologies in a wide range of world cultures from pre-history to the present.

Philosophical Inquiry

**CSC 208** *The Computer and Social Responsibility*

This course will research the impact technology has had in various areas of our lives, the new responsibilities technology presents, and our ability to deal with these changes in an ethical manner

---

**CTI Liberal Studies Courses by Course Topic**

The Internet and How It Works

**HCI 201** *Multimedia and the World Wide Web* : Scientific Inquiry: Quantitative

Overview of the Web, its origins and capabilities. Create your own sample web page.

**ECT 250** *Internet, Commerce, and Society* : Scientific Inquiry: Elective

Ever shop at Gap.com? Learn the basic behind how these kinds of web sites function.

**IT 130** *The Internet and the Web*

Learn to Design Your Own Website

**IT 263** *Applied Networks and Security*

Programming and Basic Computer Know-How

**CSC 200** *Survey of Computing* : Scientific Inquiry: Elective

Learn about Careers using computers and pick up some skills to help you manage your own PC or network!

**CSC 210** *Introduction to Computing* : Scientific Inquiry: Elective

A brief history of computers and an introduction to programming

**CSC 211** *Programming in Java I* : Scientific Inquiry: Elective

**CSC 212** *Programming in Java II* : Scientific Inquiry: Elective

Two courses in programming JAVA, a cross-platform, web-enabled language.

**CSC 261** *Programming Languages I: C/C++*

**CSC 262** *Programming Languages II: C/C++*

Two courses in programming C++.

**TDC 361** *Basic Communication Systems*

The Computer and Society

**IT 201** *Introduction to Information Systems*

This course examines how various types of computer-based information systems form a critical part of modern organizations, how they work, and how they impact workers, organizations and the economy.

**IS 208** *IT, Economy and Society*

This course broadly surveys the history of IT applications and information systems from the historical



perspective, and critically assesses the digital impact on industry, the economy, workers, citizens, social class and the future.

**CSC 223** *The Impact of Computing Technology On Our Lives : Self, Society, and the Modern World*

This course will introduce students to an overview of social analysis techniques and the theories of social change.

**CSC 208** *The Computer and Social Responsibility*

This course will research the impact technology has had in various areas of our lives, the new responsibilities technology presents, and our ability to deal with these changes in an ethical manner

Computer Graphics and Motion Technology

**GPH 205** *Historical Foundations of Visual Technology*

This course is a survey of the development, application and meaning of visual technologies in a wide range of world cultures from pre-history to the present.

**GPH 211** *Perceptual Principles for Digital Environments I : Arts and Literature*

**GPH 212** *Perceptual Principles for Digital Environments II : Arts and Literature*

**GPH 213** *Perceptual Principles for Digital Environments III : Arts and Literature*

These three foundational courses in computer animation take you through the process of creating 2-D and 3-D representations on the computer. The last course teaches you how to animate them

**GPH 259** *Design Geometry* (cross-listed as ART 295)

Learn the basics of Computer Aided Design.

**GPH 360** *Modeling Spaces*

The digital design and modeling of environmental spaces with attention to human use parameters

**ANI 101** *Animation for Non-Majors*

Course introduces a variety of basic animation techniques for cinema and gaming, such as hand-drawn, cutout, stop-motion and (very basic) 3D, with an emphasis on the use of computer technology

**ANI 206** *History of Animation*

History of Animation: This course is an introduction to the history and development of the field of animation

Data Analysis and Retrieval

**CSC 235** *Problem Solving*

How do you solve a problem? In this course we discuss different problem solving techniques and strategies such as modeling, establishing subgoals, and searching and pruning

**CSC 239** *Personal Computing : Scientific Inquiry: Quantitative*

You will learn how to use Excel to analyze data and how to publish data and retrieve it from the World Wide Web.

**IT 223** *Data Analysis*

**IT 240** *Introduction to Desktop Databases: Personal Computing for*

*Programmers* : Scientific Inquiry: Elective

Learn introductory concepts in constructing databases and networking files.

Design your own web site

**HCI 201** *Multimedia and the World Wide Web: Scientific Inquiry : Quantitative*

Overview of the Web, its origins and capabilities. Create your own sample web page

**ECT 250** *Internet, Commerce, and Society : Scientific Inquiry: Elective*

Ever shop at Gap.com? Learn the basic behind how these kinds of web sites function

**IT 130** *The Internet and the Web* (formerly ECT 270): Scientific Inquiry: Elective

Learn to design your own complex web site!

Codes, Ciphers and Computer Intelligence

---

**CSC 250 Computers and Human Intelligence** : Scientific Inquiry: Quantitative  
Study how computers are designed to think like people

**CSC 233 Codes and Ciphers** : Scientific Inquiry: Elective  
A history of code making and breaking and the math and (computer) science behind it

### Digital Cinema and Gaming

#### **DC 105 Digital Media Literacies**

This course is designed to help students develop an informed, critical and practical understanding of new communication media, including ways to read, write and produce in a digital environment

#### **DC 125 Digital Still Photography for Non-Majors**

This course is an introduction to the history and aesthetics of still photography and to the concept of photography as a descriptive and interpretive artistic medium. Students studying photographs in this context will discover relationships between individual photographers choices and their own understanding of meaning. Students will learn the fundamental concepts necessary to shoot, edit, manipulate, and print digital still photographs

#### **GAM 206 History of Games**

This class will examine particular games and game genres in their historical context using a case study format

#### **DC 201 Introduction to Screenwriting**

This course focuses on narrative storytelling and encourages students to find their unique voices, while emphasizing the critical importance of working as part of a creative team.

#### **DC 205 Foundations of Cinema**

Acquisition and computer representation of sound and image. Sound and video standards. Lossy and Lossless compression. Basic computer graphics and rendering. Distribution of digital information.

#### **DC 250 Working with Actors 1**

This course is an introduction and examination of the collaborative process between the actor and director. Methods of study include lecture, discussion, assignments, and in-class acting exercises.

#### **GAM 224 Introduction to Game Design**

Students will learn about a game's "hook", its "high concept" and the crucial needs of marketing for a successful game design. Students will also learn to design a game's component pieces.

#### **ANI 101 Animation for Non-Majors**

Course introduces a variety of basic animation techniques for cinema and gaming, such as hand-drawn, cutout, stop-motion and (very basic) 3D, with an emphasis on the use of computer technology.

#### **ANI 206 History of Animation**

History of Animation: This course is an introduction to the history and development of the field of animation.

School of Computer Science, Telecommunications & Information Systems - Undergraduate Studies □ Academic Programs □  
Bachelor of Science in Computer Games Development

## **Bachelor of Science in Computer Games Development**

The **Bachelor of Science in Computer Games Development** is ideal for creative-minded and technically adept individuals with a passion for crafting interactive experiences. It offers career opportunities for skilled, creative programmers, designers, and animators.

The **BS in Computer Games Development** prepares students to work in the multi-disciplinary field of computer gaming and interactive media. This program also requires strong mathematical and programming skills.

CTI's Computer Game Development program combines coursework in game programming, game design, 3D Modeling, animation, physics, and artificial intelligence. Students work in cross-disciplinary teams to design and develop games.

The BS in Computer Games Development offers a Standard concentration and a concentration in Game Programming.

What students will learn from this degree program:

- game programming
  - game physics and game engines
  - computer graphics and rendering
  - 3D modeling and animation
  - game design and level design
- 

The Liberal Studies program is the general education portion of the curriculum at DePaul. Click here to view the CTI courses that qualify for liberal studies credit.

---

Four-year schedule of courses for the **Standard Concentration**

### **First Year**

*Major Field Courses (5)*

GAM 224 Introduction to Game Design  
GAM 244 Game Development I  
GAM 245 Game Development II  
ANI 101 Animation for Non-Majors  
or ANI 201 Animation I  
ANI 105 Intro to Visual Design

*Liberal Studies (7) (DC 201 required as one of the LS courses)*

### **Second Year**

*Major Field Courses (7)*

MAT 150 Calculus I  
GAM 341 Artifact, Level and Terrain Design  
ANI 230 3d Modeling for Animation and Gaming  
CSC 261 Programming Languages I: C/C++  
CSC 262 Programming Languages II: C/C++  
IM 220 Interactive Media I

*Gaming Elective (1)*

*Liberal Studies (5)*

### **Third Year**

*Major Field Courses (7)*

ANI 231 3d Animation for Cinema and Gaming  
GAM 350 Physics for Game Developers  
GAM 374 Action Games Programming

*Gaming Electives (4)*

*Liberal Studies (4) - (IT 228 Required as one of the LS courses)*

### **Fourth Year**

*Major Field Courses (6)*

ANI 300 3d Character Animation

or ANI 310 Motion Capture Workshop  
or ANI 330 Advanced 3d Modeling for Animation and Gaming  
GAM 376 Artificial Intelligence for Computer Games  
GAM 392 Game Modification Workshop  
GAM 394 Game Development Project I  
GAM 395 Game Development Project II

*Gaming Electives (1)*  
*Liberal Studies (3)*  
*Open Electives (4)*

---

Four-year schedule of courses for the **Game Programming Concentration** :

### **First Year**

*Major Field Courses (5)*

ANI 105 Intro to Visual Design  
GAM 224 Introduction to Game Design  
GAM 244 Game Development I  
MAT 150 Calculus I  
MAT 151 Calculus II

*Liberal Studies (7)* - (DC 201 and ANI 101 Required as two of the LS courses)

### **Second Year**

*Major Field Courses (5)*

CSC 261 Programming Languages I: C/C++  
CSC 262 Programming Languages II: C/C++  
CSC 393 Data Structures in C++  
GAM 245 Game Development II  
ANI 230 3d Modeling for Animation and Gaming

*Gaming Electives (2)*  
*Liberal Studies (5)*

### **Third Year**

*Major Field Courses (6)*

CSC 373 Computer Systems I  
CSC 374 Computer Systems II  
GPH 321 Computer Graphics Development I  
GPH 329 Computer Graphics Development II  
GAM 350 Physics for Game Developers  
GAM 374 Action Games Programming

*Gaming Electives (2)*  
*Liberal Studies (4)* - (IT 228 required as one of the LS courses)

### **Fourth Year**

*Major Field Courses (5)*

GPH 389 Real-Time Graphics Techniques  
GAM 376 Artificial Intelligence for Computer Games  
GAM 392 Game Modification Workshop  
GAM 394 Game Development Project I  
GAM 395 Game Development Project II

*Gaming Electives (1)*  
*Liberal Studies (3)*

## Open Electives (3)

---

### Gaming Electives

Any 200-level ANI, DC, GAM, GPH or IM Course

Any 300-level CTI Course

---

### 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.

School of Computer Science, Telecommunications & Information Systems - Undergraduate Studies □ Academic Programs □  
Bachelor of Science in Computer Graphics and Motion Technology

## Bachelor of Science in Computer Graphics and Motion Technology

The **Bachelor of Science in Computer Graphics and Motion Technology** unites the technical and aesthetic principals of digitally created motion graphics and animation. Graduate of the program may find opportunities in diverse fields, from motion pictures or architecture to computer gaming or medicine.

The **BS in Computer Graphics and Motion Technology** provides DePaul students with an interest in mathematics/computer science as well as visual design, an academic foundation in both the technical and aesthetic elements of computer graphics.

The Bachelor of Science degree program offers two options of study:

- The Developer concentration is geared toward students who are considering careers in graphic software development, with course work focused in programming languages (C/C++) and mathematics (calculus and algebra), in addition to animation and computer graphics.
- The Technical Designer concentration is geared toward students interested in the visual aspects, including lighting setup, shader development and character rigging.

What students learn in this degree program:

- Design and analysis of mathematics/computer science principals for computer graphic design.
  - Beginning and advance digital photography.
  - History and theory of graphic design (color theory, perception).
  - Usability and human-computer interaction.
- 

The Liberal Studies program is the general education portion of the curriculum at DePaul. Click [here](#) to view the CTI courses that qualify for liberal studies credit.

---

Four-year schedule of courses for the **Developer Concentration** :

### **First Year**

#### *Major Field Courses (9)*

CSC 261 Programming Languages I: C/C++  
CSC 262 Programming Languages II: C/C++  
CSC 393 Data Structures in C++

GPH 211 Perceptual Principles for Digital Environments I  
GPH 212 Perceptual Principles for Digital Environments II  
ANI 201 Animation I  
MAT 140 Discrete Mathematics I  
MAT 150 Calculus I  
MAT 151 Calculus II

*Liberal Studies (3)*

### **Second Year**

*Major Field Courses (5)*

GPH 325 Survey of Computer Graphics  
GPH 329 Computer Graphics Development II  
GPH 339 Advanced Rendering Techniques  
GPH 321 Computer Graphics Development I  
or MAT 220 Linear Algebra with Applications  
CMN 220 Public Speaking

*Liberal Studies (7)*

### **Third Year**

*Major Field Courses (4)*

GPH 372 Principles of Computer Animation  
CSC 321 Design and Analysis of Algorithms  
IM 315 Theory and Perception of Color  
WRD 204 Technical Writing [formerly Eng 204]

Graphics Electives (3) - from the list at the bottom of the page.

*Liberal Studies (5)*

### **Fourth Year**

*Major Field Courses (4)*

GPH 375 Advanced Graphics Development  
GPH 388 Production Pipeline Techniques  
GPH 389 Real-Time Graphics Techniques  
GPH 395 Computer Graphics Senior Project

Graphics Electives (1) - from the list at the bottom of the page.

*Liberal Studies (4)*

*Open Electives (3)*

---

Four-year schedule of courses for the **Technical Designer Concentration** :

### **First Year**

*Major Field Courses (6)*

CSC 211 Programming in Java I [Self Placement Test Available!](#)  
and CSC 212 Programming in Java II  
OR CSC 261 Programming Languages I: C/C++  
and CSC 262 Programming Languages II: C/C++  
GPH 211 Perceptual Principles for Digital Environments I  
GPH 212 Perceptual Principles for Digital Environments II  
ANI 201 Animation I  
MAT 140 Discrete Mathematics I

*Liberal Studies (4)* - ART 102 and ART 106 are required.

## **Second Year**

### *Major Field Courses (7)*

GPH 250 Digital Modeling I  
GPH 325 Survey of Computer Graphics  
IT 236 User Interface Development  
ART 242 Survey of Asian Art  
IM 210 Introduction to Human-Computer Interaction  
CMN 220 Public Speaking  
GPH 255 Hand Prototyping for Graphic Visualization

### *Liberal Studies (5)*

## **Third Year**

### *Major Field Courses (5)*

ART 322 Modernism to Postmodernism  
IM 315 Theory and Perception of Color  
GPH 338 Survey of 3-D Animation  
GPH 339 Advanced Rendering Techniques  
WRD 204 Technical Writing [formerly Eng 204]

*Graphics Electives* (1) - from the list at the bottom of the page.

### *Liberal Studies (6)*

## **Fourth Year**

### *Major Field Courses (2)*

GPH 395 Computer Graphics Senior Project  
GPH 388 Production Pipeline Techniques

*Graphics Electives* (4) - from the list at the bottom of the page.

### *Liberal Studies (4)*

### *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:

ANI 300 3d Character Animation  
ANI 310 Motion Capture Workshop  
ART 225 Beginning Photography  
ART 329 Advanced Digital Photography  
[prereq: Art 225 and Art 101 Or Art 227  
Or Instructor Consent]  
ART 360 Illustration  
ART 373 History of Design  
IT 223 Data Analysis [Self Placement Test Available!](#)  
IT 236 User Interface Development  
GPH 336 Smooth Surface Modeling for Graphics and Animation  
GPH 340 Procedural Shading  
GPH 341 Advanced Lighting Techniques  
GPH 348 Rigging for Animation  
GPH 376 Artificial Intelligence in Computer Games  
GPH 380 Visualization  
GPH 389 Real-Time Graphics Techniques  
GPH 250 Digital Modeling I  
GPH 259 Design Geometry  
GPH 329 Computer Graphics Development II  
GPH 350 Digital Modeling II  
GPH 360 Modeling Spaces

GPH 374	Computer Games
GPH 375	Advanced Graphics Development
IM 270	User-Centered Web Design
IM 210	Introduction to Human-Computer Interaction
IM 322	Multimedia
MAT 150	Calculus I
MAT 151	Calculus II
MAT 152	Calculus III [prereq MAT 151 or MAT 161 or MAT 171]

---

### 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.

School of Computer Science, Telecommunications & Information Systems - Undergraduate Studies □ Academic Programs □ Bachelor of Science in Computer Science

## Bachelor of Science in Computer Science

Graduates of the **Bachelor of Science in Computer Science** program are skilled problem solvers, sought-after programmers and software developers, and computer systems experts. They use their skills to improve or develop computer applications in a wide variety of areas.

Computer Science is a field that spans diverse areas including:

- Security and Cryptography
- Robotics
- Data Mining and Databases
- Distributed and Mobile Systems
- Intelligent Systems and gaming
- Computation Biology, and more

The **BS in Computer Science** at DePaul CTI provides essential training in the foundations of computing, data storage and information processing. With this foundation, graduates of the program can easily adapt to and create new information technologies, new computing paradigms, and new ideas for applying computer systems.

The Software Engineering concentration provides students with skills, knowledge, and experiences in state-of-the-art software engineering methodologies, techniques, and applications.

What students learn in the BS in Computer Science program:

- Programming and software development skills, the technical tools of the IT trade
- An understanding of modern Computer Systems, which you will use to develop computer applications
- Skills in application areas such as security and cryptography, robotics and computer vision, data mining and databases, distributed and mobile systems, intelligent systems and gaming, computational biology, etc.

---

The Liberal Studies program is the general education portion of the curriculum at DePaul. Click [here](#) to view the CTI courses that qualify for liberal studies credit.

---

The coursework for the B.S. in Computer Science consists of:



- The DePaul University Liberal Studies Program: (19 courses, not including the Senior Capstone),
- Major Field courses (24 courses or 96 credits, including the Senior Capstone), and
- Open Elective courses (5 courses or 20 credits).

**Note :** CSC 208 The Computer and Social Responsibility must be taken to satisfy the PI liberal studies requirement.

The Major Field courses for the B.S. in Computer Science consist of 18 required (4 credit) courses and 6 Major Field elective courses (or 24 credits) chosen from the list below.

The 18 required courses provide training in the following fundamental areas:

- mathematical tools
- problem solving, algorithms, and structured programming
- modeling and object-oriented programming
- computer systems

They also include:

- the senior capstone course
- the communication requirement

#### **A. Mathematical Tools (5 Courses)**

MAT 140 Discrete Mathematics I  
 MAT 141 Discrete Mathematics II  
 IT 223 Data Analysis

AND any of the following calculus sequences (160/161 or 170/171 are highly recommended):

MAT 150 Calculus I  
 AND MAT 151 Calculus II  
 OR MAT 160 Calculus for Mathematics and Science Majors I  
 AND MAT 161 Calculus for Mathematics and Science Majors II  
 OR MAT 170 Calculus I with Scientific Applications  
 AND MAT 171 Calculus II with Scientific Applications

#### **B. Problem Solving, algorithms, and structured programming (3 Courses):**

CSC 241 Introduction to Computer Science I  
 CSC 242 Introduction to Computer Science II  
 CSC 321 Design and Analysis of Algorithms

#### **C. Modeling and Object-Oriented Programming (3 courses):**

CSC 224 Java for Programmers Self Placement Test Available!  
 CSC 383 Data Structures and Algorithms in Java  
 or CSC 393 Data Structures in C++  
 SE 350 Object-Oriented Software Development

#### **D. Computer Systems (4 courses):**

CSC 309 Object-Oriented Programming in C++  
 CSC 373 Computer Systems I  
 CSC 374 Computer Systems II  
 CSC 347 Concepts of Programming Languages

#### **E. Capstone :**

CSC 394 Software Projects

#### **F. Communication :**

*Major Field Elective Courses (6)*

At least 4 of the 6 Major Field elective courses (i.e. 16 out of 24 credits) must be taken from the list of "**ADVANCED MAJOR FIELD COURSES**" (see below).

**Introductory Major Field Courses**

IT 130 The Internet and the Web  
IT 209 Introduction to Programming Through Animation  
IT 230 Building Internet Applications  
IT 236 User Interface Development  
IT 240 Introduction to Desktop Databases  
IT 263 Applied Networks and Security  
IM 210 Introduction to Human-Computer Interaction  
GAM 244 Game Development I  
GAM 245 Game Development II  
CSC 233 Codes and Ciphers  
CSC 235 Problem Solving

**Advanced Major Field Courses**

The courses are listed by area; there is NO requirement that the 4 courses must be from the same or from different areas.

**Theory of Computation**

CSC 333 Cryptology  
CSC 344 Automata Theory and Formal Grammars  
CSC 389 Theory of Computation  
CSC 327 Problem Solving for Contests

**Data Storage**

CSC 352 Database Programming  
CSC 353 Advanced Database Concepts

**Computer Systems**

CSC 343 Introduction to Operating Systems  
CSC 348 Introduction to Compiler Design  
SE 335 Foundations of Distributed Systems I  
SE 336 Foundations of Distributed Systems II  
TDC 368 Network Programming

**Data Analysis and Mining**

CSC 324 Data Analysis and Statistical Software II  
CSC 328 Data Analysis for Experimenters  
CSC 367 Introduction to Data Mining  
CSC 334 Advanced Data Analysis

**Computational Sciences**

CSC 331 Scientific Computing  
CSC 387 Operations Research I: Linear Programming  
CSC 388 Operations Research II: Optimization Theory

**Artificial Intelligence**

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

**Computer Vision**

CSC 381 Introduction to Digital Image Processing  
CSC 382 Applied Image Analysis  
CSC 384 Introduction to Computer Vision

### **Software Engineering**

SE 325 Principles and Practices of Software Engineering  
SE 330 Object Oriented Modeling  
SE 331 Model-Driven Software Development  
SE 333 Software Testing  
CNS 340 Fundamentals of Information Assurance  
SE 352 Object-Oriented Enterprise Application Development  
SE 354 Enterprise Component Architecture  
SE 356 Software Development for Mobile and Wireless 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 385 Software Architecture

### **Human-Computer Interaction**

CSC 305 Graphical User Interface Implementation  
IM 360 User-Centered Evaluation

### **Computer Graphics**

GPH 325 Survey of Computer Graphics  
GPH 329 Computer Graphics Development II  
GPH 336 Smooth Surface Modeling for Graphics and Animation  
GPH 339 Advanced Rendering Techniques  
GPH 372 Principles of Computer Animation  
GPH 375 Advanced Graphics Development  
GPH 380 Visualization  
GPH 389 Real-Time Graphics Techniques  
GPH 395 Computer Graphics Senior Project

### **Computer Gaming**

GAM 350 Physics for Game Developers  
GAM 374 Action Games Programming  
GAM 376 Artificial Intelligence for Computer Games  
GAM 378 Strategy Games Programming  
GAM 380 Console Game Development Environments  
GAM 385 Introduction to Game Programming in Java  
GAM 386 Game Development for Mobile Devices  
GAM 390 Multiplayer Game Development  
GAM 394 Game Development Project I  
GAM 395 Game Development Project II

### **Web Development**

CSC 308 Frameworks for Web Application Development  
ECT 330 Advanced Internet Application Development  
ECT 360 Introduction to Xml  
ECT 365 Web Server Operations

### **Computer Networks**

TDC 362 Principles of Data Communications  
TDC 363 Introduction to Local Area Networks  
TDC 365 Network Interconnection Technologies  
TDC 371 Wireless Communications Networks  
TDC 372 Digital Access Services  
TDC 375 Network Protocols  
TDC 379 Telecommunication and Network Security Practicum

---

## The Bachelor of Science in Computer Science: **Software Engineering Concentration Program**

### Program Requirements

The Software Engineering (SE) Concentration consists of the 18 courses required for the BS in Computer Science (see above) together with an additional 3 required SE courses and 3 SE concentration electives Courses.

**The three required SE courses are :**

SE 325 Principles and Practices of Software Engineering  
SE 330 Object Oriented Modeling  
SE 352 Object-Oriented Enterprise Application Development

**SE Concentration Elective courses (3 courses or 12 credits):**

SE 331 Model-Driven Software Development  
SE 333 Software Testing  
CNS 340 Fundamentals of Information Assurance  
SE 335 Foundations of Distributed Systems I  
CSC 305 Graphical User Interface Implementation  
SE 368 Software Measurement and Project Estimation

Students taking the SE Concentration have the option of taking the below senior capstone 2 course (or 8 credits) sequence in lieu of CSC 394 (which then reduces the Open Elective list to 4 courses):

SE 391 Software Engineering Studio I  
SE 392 Software Engineering Studio II

---

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

**Note:** Grades for all courses in the student's 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.

School of Computer Science, Telecommunications & Information Systems - Undergraduate Studies □ Academic Programs □ Bachelor of Arts Digital Cinema

## **Bachelor of Arts Digital Cinema**

CTI's **Bachelor of Arts program in Digital Cinema** teaches the fundamentals of motion picture theory and history along with technical production skills, using state-of-the-art digital technology.

The **BA in Digital Cinema** is an innovative motion picture production program dedicated to utilizing the latest cutting-edge digital technology while incorporating classic cinema narrative theory and aesthetics. Students receive hands-on experience with the latest production equipment in the first year and get an insiders view of the industry from experienced faculty.

The Bachelor of Arts Program offers three programs of undergraduate study for students:

- The Standard Concentration features a hands-on program in live-action production. With its greater number of electives students may also develop an interdisciplinary program of study in cinema history and theory.
- The Animation Concentration features a program of study in traditional animation (hand-drawn and stop-motion) and 3D modeling and character animation for cinema and game art, in addition to the core cinema courses.
- The Screenwriting Concentration features a program of study in advanced screenwriting in addition to core courses in cinema production, dramatic literature and cinema history/theory.

The curriculum consists of the DePaul University Liberal Studies Program and Major Field Courses.

---

The Liberal Studies program is the general education portion of the curriculum at DePaul. Click here to view the CTI courses that qualify for liberal studies credit.

---

Four-year schedule of courses for the **Standard Concentration** :

Liberal Studies (GAM 224 is required as one of the A&L Liberal Studies Courses)

### **First Year**

*Major Field Courses (5)*

DC 201 Introduction to Screenwriting  
DC 205 Foundations of Cinema  
DC 207 History of American Cinema, 1890-1945  
DC 208 History of American Cinema, 1946-1975  
DC 209 History of American Cinema, 1976-Present

### **Second Year**

*Major Field Courses (6)*

ANI 101 Animation for Non-Majors  
or ANI 201 Animation I  
DC 210 Digital Cinema Production I  
DC 215 Digital Sound Design  
DC 220 Editing I  
DC 225 Digital Still Photography  
DC 270 Topics in Digital Cinema

### **Third Year**

*Major Field Courses (6)*

DC 275 Cinematography and Lighting  
DC 301 Advanced Screenwriting I  
DC 310 Digital Cinema Production II  
DC 311 Music Video Production  
DC 315 Advanced Digital Sound Design  
DC 320 Editing II

### **Fourth Year**

*Major Field Courses (6)*

DC 371 Documentary Production  
DC 378 Compositing and Special Effects  
DC 389 The Big Picture: the Entertainment Industry  
DC 390 Topics in Directing  
DC 395 Topics in Production  
DC 398 Digital Cinema Capstone

*Open Electives (5)*

---

Four-year schedule of courses for the **Animation Concentration**

Liberal Studies

ART 106 Beginning Drawing and ART 239 20th Century Art are required as two of the three A&L Liberal Studies courses. GAM 224 Strategies in Game Design is highly recommended.

### **First Year**

*Major Field Courses (7)*

ANI 105 Intro to Visual Design  
ANI 101 Animation for Non-Majors  
or ANI 201 Animation I \*

ANI 206 History of Animation  
DC 201 Introduction to Screenwriting  
DC 205 Foundations of Cinema  
DC 220 Editing I  
ART 218 Figure Drawing

\*Note: ANI 201 Recommended

*Liberal Studies* (5) (ART 106 Required as one of LS)

### **Second Year**

*Major Field Courses* (7)

ANI 220 Pre-Production Art  
ANI 230 3d Modeling for Animation and Gaming  
ANI 231 3d Animation for Cinema and Gaming  
ANI 240 Animation II  
DC 210 Digital Cinema Production I  
DC 215 Digital Sound Design  
DC 207 History of American Cinema, 1890-1945  
or DC 208 History of American Cinema, 1946-1975  
or DC 209 History of American Cinema, 1976-Present

*Liberal Studies* (5) (ART 239 required as one of LS)

### **Third Year**

*Major Field Courses* (4)

ANI 300 3d Character Animation  
ANI 340 Animation III  
DC 275 Cinematography and Lighting  
ART 318 Advanced Figure Drawing

*Animation Electives* (2)

*Liberal Studies* (5)

*Open Electives* (1)

### **Fourth Year**

*Major Field Courses* (2)

ANI 350 Animation Production Studio  
DC 398 Digital Cinema Capstone

**NOTE:** (Can substitute GAM 394 for DC 398. If GAM 394 is used, then the student MUST also take GAM 395 as an elective.)

*Animation Electives* (3)

*Liberal Studies* (4)

*Open Electives* (2)

---

Four-year schedule of courses for the **Screenwriting Concentration** :

### **First Year**

*Major Field Courses* (5)

DC 201 Introduction to Screenwriting  
DC 205 Foundations of Cinema  
DC 207 History of American Cinema, 1890-1945  
DC 208 History of American Cinema, 1946-1975  
DC 209 History of American Cinema, 1976-Present

## **Second Year**

### *Major Field Courses (5)*

DC 210 Digital Cinema Production I  
DC 215 Digital Sound Design  
DC 220 Editing I  
DC 250 Working with Actors 1  
DC 270 Topics in Digital Cinema

## **Third Year**

### *Major Field Courses (3)*

DC 301 Advanced Screenwriting I  
DC 304 Topics in Screenwriting  
DC 302 Advanced Screenwriting II

## **Fourth Year**

### *Major Field Courses (10)*

DC 303 Advanced Screenwriting III  
DC 389 The Big Picture: the Entertainment Industry  
DC 390 Topics in Directing  
DC 398 Digital Cinema Capstone

### *English Courses*

Two 200 level or higher English Literature classes

### *Theater Courses*

THE 204 History of Dramatic Literature  
THE 205 History of Dramatic Literature  
THE 206 History of Dramatic Literature  
THE 244 Dramatic Writing for Non-Majors

### *Open Electives (5)*

---

### **Animation Electives**

Any ANI, ART, DC, GAM, GPH or IM course. EXCEPT: ART 102, ART 104, or DC 120

---

### **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 Digital Cinema**

The **Bachelor of Science program in Digital Cinema** teaches students the fundamentals of motion picture theory

and history along with the technical production skills, using state-of-the-art digital technology.

The **BS degree in Digital Cinema** at DePaul CTI is an innovative program that seeks to define and to develop the evolving relationship between cinema production technologies and creative artistic expression.

The intensive technical emphasis of the Bachelor of Science degree prepares students for work in live-action special effects, 3-D animation, and game development.

---

The Liberal Studies program is the general education portion of the curriculum at DePaul. Click here to view the CTI courses that qualify for liberal studies credit.

GAM 224 is required as one of the A&L Liberal Studies courses.

Please note: Students must complete 20 liberal studies courses including the eight credit hour Mathematical and Technological Literacy requirement which is both ISP 120 and ISP 121. ISP 121 will replace one course from any of the six Learning Domains as long as they take at least one course in each domain.

---

Four-year schedule of courses:

### **First Year**

#### *Major Field Courses (6)*

DC 201 Introduction to Screenwriting  
DC 205 Foundations of Cinema  
ANI 101 Animation for Non-Majors  
or ANI 201 Animation I  
ANI 105 Intro to Visual Design  
DC 207 History of American Cinema, 1890-1945  
DC 208 History of American Cinema, 1946-1975

#### *Major Field Courses (6)*

DC 210 Digital Cinema Production I  
DC 215 Digital Sound Design  
DC 220 Editing I  
ANI 230 3d Modeling for Animation and Gaming  
DC 209 History of American Cinema, 1976-Present  
DC 225 Digital Still Photography

### **Third Year**

#### *Major Field Courses (7)*

ANI 231 3d Animation for Cinema and Gaming  
GAM 244 Game Development I  
DC 275 Cinematography and Lighting  
ANI 300 3d Character Animation  
DC 310 Digital Cinema Production II  
DC 315 Advanced Digital Sound Design  
DC 320 Editing II

### **Fourth Year**

#### *Major Field Courses (7)*

ANI 310 Motion Capture Workshop  
GAM 245 Game Development II  
DC 375 High Definition Cinematography  
DC 378 Compositing and Special Effects  
DC 390 Topics in Directing  
DC 395 Topics in Production  
DC 398 Digital Cinema Capstone



### 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.

School of Computer Science, Telecommunications & Information Systems - Undergraduate Studies □ Academic Programs □

School of Computer Science, Telecommunications & Information Systems - Undergraduate Studies □ Academic Programs □  
Bachelor of Science in E-Commerce Technology

## Bachelor of Science in E-Commerce Technology

Modern organizations are designing and deploying Internet-based technologies for integrated e-commerce transactions. Students of the **Bachelor of Science in E-Commerce Technology** program learn the most in-demand internet skills for evolving new economy.

The BS in E-Commerce Technology focuses on applying Internet technologies for a wide variety of e-business solutions, including:

- online retail
- banking
- e-supply chain management
- customer relationship management
- e-government

Students learn methodologies for web engineering and project management, interactive design and e-business process/technologies. This dual emphasis of e-business concepts and technologies has resulted in plentiful job opportunities for many E-Commerce Technology graduates.

What students learn from this program:

- Computer programming and database technology
- Web engineering methodology, user-centered design, and systems development life cycle
- Web services, e-commerce servers, Web 2.0
- Project management
- Networking and middleware

---

The Liberal Studies program is the general portion of the curriculum at DePaul. Click [here](#) to view the CTI courses that qualify for liberal studies credit.

---

Four-year schedule of courses:

### **First Year**

*Major Field Courses (6)*

IT 130 The Internet and the Web [Self Placement Test Available!](#)  
IT 201 Introduction to Information Systems  
IT 240 Introduction to Desktop Databases [Self Placement Test Available!](#)  
IT 263 Applied Networks and Security  
IT 230 Building Internet Applications  
MAT 140 Discrete Mathematics I  
**or** BMS 125 Business Calculus I

*Liberal Studies (6)*

**Second Year**

*Major Field Courses (7)*

IT 223 Data Analysis [Self Placement Test Available!](#)  
IM 210 Introduction to Human-Computer Interaction  
IT 215 Analysis and Design Techniques [Self Placement Test Available!](#)  
CSC 211 Programming in Java I [Self Placement Test Available!](#)  
CSC 212 Programming in Java II  
ECT 330 Advanced Internet Application Development  
WRD 204 Technical Writing [formerly Eng 204]  
**or** WRD 301 Writing in the Professions

*Liberal Studies (5)*

**Third Year**

*Major Field Courses (5)*

ECT 355 Internet Systems: Collaboration, Commerce, and Media  
ECT 360 Introduction to Xml  
ECT 365 Web Server Operations  
SE 330 Object Oriented Modeling  
CMN 212 Small Group Communication  
**or** CMN 220 Public Speaking

*Liberal Studies (4)*

*Open Electives (3)*

**Fourth Year**

*Major Field Courses (2)*

ECT 372 Software Project Development and Management  
ECT 359 E-Commerce Technology Senior Project

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

*Liberal Studies (4)*

*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 Interactive Media**

A major in **Interactive Media** provides students with skills and expertise for designing and producing web applications, interactive presentations and user interfaces for computer applications and a variety of consumer devices.

The **Bachelor of Science in Interactive Media** degree prepares students for the expanding field of interaction design and its application to multimedia and web development. The base program integrates technical and artistic disciplines. Technical concepts and skills involve web markup languages, interactive scripting and human-centered design. The student also explores artistic areas of study such as communication design, animation, game design and cinema.

What students learn from this program:

- Develop well-designed web pages, sites, and interactive applications
- Design, code and create content for casual games
- Conduct usability tests for interactive web sites
- Employ visual design principles to express ideas and concepts
- Create prototypes for interactive displays

---

The Liberal Studies program is the general education portion of the curriculum at DePaul. [Click here to view the CTI courses that qualify for liberal studies credit.](#)

---

Four-year schedule of courses:

### **First Year**

*Major Field Courses (6)*

IT 130 The Internet and the Web  
ANI 105 Intro to Visual Design  
IM 270 User-Centered Web Design  
ART 260 Art and Design I: History, Concept, Structure  
IT 240 Introduction to Desktop Databases  
ANI 101 Animation for Non-Majors  
or ANI 201 Animation I

*Liberal Studies (6) - Required: PSY 105 Introductory Psychology I and DC 205 Foundations of Cinema*

### **Second Year**

*Major Field Courses (7)*

IT 223 Data Analysis  
IT 230 Building Internet Applications  
IM 210 Introduction to Human-Computer Interaction  
IM 220 Interactive Media I  
IM 230 Scripting for Interactive Media  
ART 264 Typography I  
ANI 230 3d Modeling for Animation and Gaming

*Liberal Studies (5) - Required: CSC 208 Computers and Social Responsibility*

### **Third Year**

*Major Field Courses (5)*

IM 360 User-Centered Evaluation

IM 320 Interactive Media II  
IM 330 Advanced Scripting for Interactive Media  
WRD 204 Technical Writing [formerly Eng 204]  
GAM 244 Game Development I

*IM Electives* (3)  
*Liberal Studies* (4)

#### **Fourth Year**

*Major Field Courses* (1)

IM 394 Human-Computer Interaction Capstone Course  
or CSC 394 Software Projects

*IM Electives* (2) - chosen in consultation with student's advisor  
*Liberal Studies* (4)  
*Open Electives* (5)

---

#### **IM Electives**

Any 200 or 300 level CTI, ART or CMN course.

Any of the following:

PSY 360 Theories of Learning and Cognition  
PSY 375 Sensation and Perception  
PSY 380 Industrial and Organizational Psychology  
PSY 383 Psychology of Design  
PSY 241 Research Methods I  
PSY 242 Research Methods 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.

School of Computer Science, Telecommunications & Information Systems - Undergraduate Studies □ Academic Programs □  
Bachelor of Science in Information Assurance and Security Engineering

### **Bachelor of Science in Information Assurance and Security Engineering**

The **Bachelor of Science in Information Assurance and Security Engineering** prepares students to evaluate and manage an organization's computer, information and network security, as well as develop a solid information technology infrastructure.

A student in the **BS in Information Assurance and Security Program** will learn the fundamentals of information security and security engineering, security infrastructure design and implementation as well as the impact of security requirements on a business operation.

The BS in IASE program also emphasizes hands-on experience. IASE students learn to design, implement and manage various security infrastructure components in our state-of-the-art Information Assurance and Security Laboratory. The lab environment includes multi-vendor firewalls, Virtual Private Networks, Intrusion Detection and Prevention systems, routers, switches and event correlation systems.

What students learn from this program:

- Fundamentals of information assurance
  - Risk assessment
  - Network security
  - Computer forensics
  - Application development
- 

The Liberal Studies program is the general education portion of the curriculum at DePaul. Click [here](#) to view the CTI courses that qualify for liberal studies credit.

---

Four-year schedule of courses:

### **First Year**

*Major Field Courses (6)*

IT 130 The Internet and the Web [Self Placement Test Available](#)  
IT 240 Introduction to Desktop Databases [Self Placement Test Available](#)  
IT 263 Applied Networks and Security  
IT 230 Building Internet Applications  
CSC 233 Codes and Ciphers  
MAT 140 Discrete Mathematics I

*Liberal Studies (6)*

### **Second Year**

*Major Field Courses (7)*

CSC 211 Programming in Java I [Self Placement Test Available](#)  
**and** CSC 212 Programming in Java II  
**or** CSC 261 Programming Languages I: C/C++  
**and** CSC 262 Programming Languages II: C/C++  
CSC 373 Computer Systems I  
CNS 340 Fundamentals of Information Assurance (ex CSC 390)  
TDC 362 Principles of Data Communications  
TDC 365 Network Interconnection Technologies  
WRD 204 Technical Writing [formerly ENG 204]

*Liberal Studies (5)*

### **Third Year**

*Major Field Courses (4)*

TDC 377 Fundamentals of Network Security  
IT 378 Host and Information Security  
CNS 320 Computer Forensic and Incident Response  
CMN 212 Small Group Communication  
**or** CMN 220 Public Speaking

*300-level CTI elective (1) -chosen in consultation with student's advisor.*

*Liberal Studies (7)*

### **Fourth Year**

*Major Field Courses (6)*

SE 325 Principles and Practices of Software Engineering [Self Placement Test Available](#)  
TDC 379 Telecommunication and Network Security Practicum  
CNS 228 Legal, Ethical and Social Issues in Information Security  
CNS 394 Information Systems Security Engineering I

CNS 395 Information Systems Security Engineering II  
ACC 101 Introduction to Accounting I  
or FIN 290 Finance for Non-Commerce Majors

300-level CTI elective (1) -chosen in consultation with student's advisor.  
Liberal Studies (1)  
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.

School of Computer Science, Telecommunications & Information Systems - Undergraduate Studies □ Academic Programs □  
Bachelor of Science in Information Systems

## **Bachelor of Science in Information Systems**

The **Bachelor of Science in Information Systems** program emphasizes both technical and managerial expertise. Its graduates start their careers in IT project management, systems analysis & design, database administration, helpdesk, enterprise systems administration, and user training.

DePaul CTI's **BS in Information Systems** provides students with a solid and diverse foundation in information technology, preparing for the changing technology demands of the business world.

The program is focused on the organizational and business application of computers and related technologies. Students within the IS program apply their knowledge of hardware, software, business processes and procedures to help organizations improve their performance and meet tactical and strategic goals.

What students learn from this program:

- systems analysis and design skills
- IT project management skills
- supply chain management (SCM) and customer relationship management (CRM)
- knowledge of enterprise systems
- knowledge of systems architecture and design

---

The Liberal Studies program is the general education portion of the curriculum at DePaul. Click [here](#) to view the CTI courses that qualify for liberal studies credit.

---

Four-year schedule of courses:

### **First Year**

*Major Field Courses (5)*

IT 130 The Internet and the Web [Self Placement Test Available!](#)  
IT 201 Introduction to Information Systems  
IT 240 Introduction to Desktop Databases [Self Placement Test Available!](#)  
IT 263 Applied Networks and Security  
IT 230 Building Internet Applications

*Liberal Studies (7)*

## **Second Year**

*Major Field Courses (7)*

IT 223 Data Analysis [Self Placement Test Available!](#)  
IM 210 Introduction to Human-Computer Interaction  
IT 215 Analysis and Design Techniques [Self Placement Test Available!](#)  
CSC 211 Programming in Java I [Self Placement Test Available!](#)  
ACC 101 Introduction to Accounting I  
or MKT 301 Principles of Marketing  
CMN 212 Small Group Communication  
or CMN 220 Public Speaking  
WRD 204 Technical Writing [formerly Eng 204]  
or WRD 301 Writing in the Professions [prereq]

*Liberal Studies (5)*

## **Third Year**

*Major Field Courses (5)*

IT 236 User Interface Development  
CSC 212 Programming in Java II  
IS 371 Introduction to I.T System Management  
IS 372 Fundamentals of Software Project Management  
IS 373 Introduction to Large Systems Implementation

*Liberal Studies (4)*

*Open Electives (3)*

## **Fourth Year**

*Major Field Courses (3)*

CNS 340 Fundamentals of Information Assurance : (Formerly CSC390)  
IS 375 Object-Oriented Analysis and Design  
IS 376 Information Systems Project

*300-Level CTI electives (2) - chosen in consultation with your advisor.*

*Liberal Studies (3)*

*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.

The Bachelor of Arts degree 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. They will acquire:

- An understanding of the impact of information and communication technologies on social, cultural, and ethical dimensions.
  - Strong quantitative and reasoning skills with the ability to present technical data in verbal, written, and graphical forms.
  - Verbal and written communication literacy.
  - Students will also have an opportunity to specialize in a domain of interest or to acquire a generalized education in information technology.
- 

The Liberal Studies program is the general education portion of the curriculum at DePaul. [Click here to view the CTI courses that qualify for liberal studies credit.](#)

---

Four-year schedule of courses:

### **First Year**

*Major Field Courses (4)*

IT 130 The Internet and the Web [Self Placement Test Available!](#)  
IT 201 Introduction to Information Systems  
IT 240 Introduction to Desktop Databases [Self Placement Test Available!](#)  
ICS 200 Introduction to Business

*Liberal Studies (7)*

*Open Elective (1)*

### **Second Year**

*Major Field Courses (6)*

IT 230 Building Internet Applications [Self Placement Test Available!](#)  
IT 223 Data Analysis [Self Placement Test Available!](#)  
or CSC 239 Personal Computing  
IM 210 Introduction to Human-Computer Interaction  
IT 263 Applied Networks and Security  
or TDC 361 Basic Communication Systems  
CSC 223 The Impact of Computing Technology On Our Lives  
CMN 212 Small Group Communication  
or CMN 220 Public Speaking

*Liberal Studies (6)*

### **Third Year**

*Major Field Courses (4)*

WRD 204 Technical Writing [formerly ENG 204]  
or WRD 301 Writing in the Professions

3 Technical Grounding Courses from this list:

IT 236 User Interface Development  
IT 215 Analysis and Design Techniques [Self Placement Test Available!](#)  
CSC 211 Programming in Java I [Self Placement Test Available!](#)  
CSC 212 Programming in Java II  
CSC 261 Programming Languages I: C/C++  
CSC 262 Programming Languages II: C/C++  
ECT 330 Advanced Internet Application Development  
TDC 363 Introduction to Local Area Networks  
GPH 211 Perceptual Principles for Digital Environments I



GPH 212 Perceptual Principles for Digital Environments II  
GAM 244 Game Development I  
GAM 245 Game Development II  
SE 325 Principles and Practices of Software Engineering [Self Placement Test Available!](#)

300-Level CTI Electives (1)  
Any DePaul Class 200-level and higher (2)  
Liberal Studies (5)

#### **Fourth Year**

Major Field Courses (1)

SOC 394 Sociology and Society (Satisfies the Junior Experiential Learning requirement)  
CSC 378 Software Projects for Community Clients

Any 200-level or higher DePaul Elective (3)  
300-level CTI Electives (2)  
Open Electives (5)

---

#### **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.

School of Computer Science, Telecommunications & Information Systems - Undergraduate Studies [Academic Programs](#) [Bachelor of Science in Information Technology](#)

### **Bachelor of Science in Information Technology**

The Bachelor of Science in Information Technology is a technical degree that instructs 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. Students also receive a solid academic foundation in business concepts and technical communication.

---

The Liberal Studies program is the general education portion of the curriculum at DePaul. [Click here to view the CTI courses that qualify for liberal studies credit.](#)

---

Four-year schedule of courses:

#### **First Year**

Major Field Courses (6)

IT 130 The Internet and the Web [Self Placement Test Available](#)  
IT 240 Introduction to Desktop Databases [Self Placement Test Available](#)  
IT 263 Applied Networks and Security  
IT 230 Building Internet Applications [Self Placement Test Available](#)  
CSC 211 Programming in Java I [Self Placement Test Available](#)  
**and** CSC 212 Programming in Java II  
**or** CSC 261 Programming Languages I: C/C++  
**and** CSC 262 Programming Languages II: C/C++  
**or** CSC 241 Introduction to Computer Science I

and CSC 242 Introduction to Computer Science II

*Liberal Studies (6)*

### **Second Year**

*Major Field Courses (7)*

CSC 309 Object-Oriented Programming in C++ (Take this if you took the JAVA sequence.)  
or CSC 224 Java for Programmers (Take this if you took C++ programming.) [Self Placement Test Available!](#)  
CSC 383 Data Structures and Algorithms in Java  
or CSC 393 Data Structures in C++  
CSC 352 Database Programming  
IT 215 Analysis and Design Techniques [Self Placement Test Available](#)  
IT 223 Data Analysis [Self Placement Test Available!](#)  
MAT 140 Discrete Mathematics I  
WRD 204 Technical Writing [formerly Eng 204]  
or WRD 301 Writing in the Professions [prereq: ENG 104 or WRD 104]

*Liberal Studies (5)*

### **Third Year**

*Major Field Courses (6)*

IT 378 Host and Information Security  
CSC 373 Computer Systems I  
or ECT 365 Web Server Operations  
or TDC 311 Computers in Telecommunications Systems  
IS 372 Fundamentals of Software Project Management  
CMN 212 Small Group Communication  
or CMN 220 Public Speaking  
MKT 301 Principles of Marketing

(1) of the 4 CTI Electives of which at least 3 must be 300-level and at most one could be chosen from the restricted list below

*Liberal Studies (5)* Required: ECO 105 Principles of Microeconomics

### **Fourth Year**

*Major Field Courses (5)*

ACC 101 Introduction to Accounting I  
or FIN 290 Finance for Non-Commerce Majors

(3) of the 4 CTI Electives of which 3 must be 300-level and at most one could be chosen from the restricted list below.

*Capstone (Any CTI Capstone)*

*Liberal Studies (3)*

*Open Electives (5)*

---

**Restricted List of CTI Electives** (Only 1 CTI Elective can come from this list):

IM 210 Introduction to Human-Computer Interaction  
IM 270 User-Centered Web 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 259 Design Geometry  
GAM 244 Game Development I  
GAM 245 Game Development II  
ANI 201 Animation I  
ANI 230 3d Modeling for Animation and Gaming  
ANI 231 3d Animation for Cinema and Gaming

### 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.

School of Computer Science, Telecommunications & Information Systems - Undergraduate Studies □ Academic Programs □ Bachelor of Science in Network Technologies

## Bachelor of Science in Network Technologies

The BS degree in Network Technology trains professionals who meet the current industry demands for innovative network designs, and develop network applications and services for business enterprises and the network providers that serve them.

Students in DePaul CTI's **Network Technology Program** will learn the theory and practice of designing, deploying and managing both wired and wireless networks technologies, including broadband Internet access technologies, interconnection technologies, network convergence, and network security.

The program provides a combined emphasis on both foundational theory and hands-on experience that allow students to design, configure, and manage equipment and services in a variety of network environments.

Students gain experience with network devices and servers in lab facilities focused on enterprise network, security, and multimedia network services.

### Concentrations

The degree features a Standard Concentration as well as concentrations in Network Security and Application Development .

---

The Liberal Studies program is the general education portion of the curriculum at DePaul. [Click here to view the CTI courses that qualify for liberal studies credit.](#)

---

Four-year schedule of courses for the **Standard Concentration** :

### First Year

*Major Field Courses (6)*

IT 130 The Internet and the Web [Self Placement Test Available!](#)  
IT 201 Introduction to Information Systems  
IT 240 Introduction to Desktop Databases [Self Placement Test Available!](#)  
IT 263 Applied Networks and Security  
IT 230 Building Internet Applications  
MAT 140 Discrete Mathematics I

*Liberal Studies (6)*

### Second Year

*Major Field Courses (6)*

IT 223 Data Analysis [Self Placement Test Available!](#)  
TDC 311 Computers in Telecommunications Systems  
TDC 362 Principles of Data Communications  
WRD 204 Technical Writing [formerly Eng 204]  
**or** WRD 301 Writing in the Professions  
CSC 211 Programming in Java I [Self Placement Test Available!](#)  
**and** CSC 212 Programming in Java II  
**OR** CSC 261 Programming Languages I: C/C++  
**and** CSC 262 Programming Languages II: C/C++

*Liberal Studies (6)*

### **Third Year**

*Major Field Courses (5)*

TDC 363 Introduction to Local Area Networks  
TDC 364 Voice Communications Technologies  
TDC 365 Network Interconnection Technologies  
CMN 212 Small Group Communication  
**or** CMN 220 Public Speaking

*(1) 300-level TDC elective chosen in consultation with student's advisor.*

*Liberal Studies (4)*

*Open Electives (3)*

### **Fourth Year**

*Major Field Courses (3)*

TDC 376 Network Project

*(2) 300-level TDC electives chosen in consultation with student's advisor.*

*Liberal Studies (3)*

*Open Electives (6)*

---

Four-year schedule of courses for the **Network Security Concentration** :

### **First Year**

*Major Field Courses (6)*

IT 130 The Internet and the Web [Self Placement Test Available!](#)  
IT 201 Introduction to Information Systems  
IT 240 Introduction to Desktop Databases [Self Placement Test Available!](#)  
IT 263 Applied Networks and Security  
IT 230 Building Internet Applications  
MAT 140 Discrete Mathematics I

*Liberal Studies (6)*

### **Second Year**

*Major Field Courses (6)*

CSC 261 Programming Languages I: C/C++  
CSC 262 Programming Languages II: C/C++  
TDC 311 Computers in Telecommunications Systems  
TDC 362 Principles of Data Communications  
CNS 340 Fundamentals of Information Assurance : (Formerly CSC390).  
WRD 204 Technical Writing [formerly Eng 204]  
**or** WRD 301 Writing in the Professions

*Liberal Studies (6)*

### **Third Year**

*Major Field Courses (5)*

TDC 363 Introduction to Local Area Networks  
TDC 365 Network Interconnection Technologies  
TDC 377 Fundamentals of Network Security  
CMN 212 Small Group Communication  
or CMN 220 Public Speaking

*(1) 300-level TDC elective chosen in consultation with student's advisor.  
Liberal Studies (7)*

### **Fourth Year**

*Major Field Courses (6)*

IT 378 Host and Information Security  
TDC 379 Telecommunication and Network Security Practicum  
TDC 375 Network Protocols  
TDC 368 Network Programming  
TDC 376 Network Project

*(1) 300-level TDC elective chosen in consultation with student's advisor.  
Open Electives (6)*

---

Four-year schedule of courses for the **Application Development Concentration** :

### **First Year**

*Major Field Courses (6)*

IT 130 The Internet and the Web [Self Placement Test Available!](#)  
IT 201 Introduction to Information Systems  
IT 240 Introduction to Desktop Databases [Self Placement Test Available!](#)  
IT 263 Applied Networks and Security  
IT 230 Building Internet Applications  
MAT 140 Discrete Mathematics I

*Liberal Studies (6)*

### **Second Year**

*Major Field Courses (6)*

IT 223 Data Analysis  
TDC 311 Computers in Telecommunications Systems  
TDC 362 Principles of Data Communications  
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++  
WRD 204 Technical Writing [formerly Eng 204]  
or WRD 301 Writing in the Professions [prereq: ENG 104 or WRD 104]

*Liberal Studies (6)*

### **Third Year**

*Major Field Courses (7)*

TDC 363 Introduction to Local Area Networks  
TDC 365 Network Interconnection Technologies

CSC 309 Object-Oriented Programming in C++  
or CSC 224 Java for Programmers [Self Placement Test Available!](#)  
CSC 383 Data Structures and Algorithms in Java  
or CSC 393 Data Structures in C++  
TDC 368 Network Programming  
CMN 212 Small Group Communication  
or CMN 210 Interpersonal and Small Group Communication

(1) 300-level TDC elective chosen in consultation with student's advisor.  
Liberal Studies (4)  
Open Electives (1)

#### **Fourth Year**

*Major Field Courses (3)*

TDC 375 Network Protocols  
TDC 376 Network Project

(1) 300-level TDC elective chosen in consultation with student's advisor.  
Liberal Studies (3)  
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.

School of Computer Science, Telecommunications & Information Systems - Undergraduate Studies □ Academic Programs □  
Bachelor of Science in Mathematics / Computer Science

### **Bachelor of Science in Mathematics / Computer Science**

Exceptional students with an interest in the highly theoretical nexus of math and computer science will find challenging opportunities from the **BS in Math and Computer Science** degree.

Mathematics are a key element to the theory and practice of computer science and technology:

- Number theory forms the basis for encryption algorithms for messages sent over the Internet.
- Facts from projective geometry and multivariable calculus underlie the computer algorithms that control computer animation.
- Properties of abstract groups are instrumental in correcting transmission errors that occur when information is sent from one computer to another.
- Graph theory and combinatorics are used to create algorithms for Internet search engines and analyze Internet routing protocols.

Graduates of this joint major program is intended to appeal to academically talented students. It is designed to prepare them for graduate study in various areas of computer science such as theoretical computer science, graphics, data analysis, artificial intelligence, and computational methods and in areas in applied mathematics such as numerical analysis or discrete mathematics.

The program is also designed to prepare students to complete for the more theoretical complex jobs found in in computer software development.

What students learn from the program:

- theory of computation
- computational mathematics
- artificial intelligence
- data analysis
- graphics
- computer vision.

It is highly recommended that students concentrate on one or two areas for their advanced classes to achieve depth, but they are not required to do so. Faculty advisors are available to assist students in their selection.

---

The BS in Math and Computer Science consists of five parts:

- The DePaul Liberal Studies program (19 courses, not including the capstone course).

Freshman and Sophomore Core: 5 courses

Learning Domains: 13 courses

Junior Year Experiential Learning Course

[Click here to view the CTI courses that qualify for liberal studies credit.](#)

- Core Classes (14 courses)
  - Advanced Classes (7 courses)
  - Capstone (1 course)
  - Open Electives (7 courses)
- 

## CORE CLASSES

### Mathematical Foundations

MAT 140 Discrete Mathematics I

MAT 141 Discrete Mathematics II

MAT 260 Multivariable Calculus I

MAT 262 Linear Algebra

In addition, students must complete one of the following three-course sequences:

MAT 150 Calculus I

AND MAT 151 Calculus II

AND MAT 152 Calculus III

or

MAT 160 Calculus for Mathematics and Science Majors I

AND MAT 161 Calculus for Mathematics and Science Majors II

AND MAT 162 Calculus for Mathematics and Science Majors III

or

MAT 170 Calculus I with Scientific Applications

AND MAT 171 Calculus II with Scientific Applications

AND MAT 172 Calculus III with Differential Equations

(MAT 147, MAT 148 and MAT 149 may also be used to satisfy this requirement)

### Problem Solving, algorithms, and structured programming

CSC 241 Introduction to Computer Science I

CSC 242 Introduction to Computer Science II

CSC 321 Design and Analysis of Algorithms

CSC 383 Data Structures and Algorithms in Java

or CSC 393 Data Structures in C++

### Object-Oriented Programming

CSC 224 Java for Programmers [Self Placement Test Available!](#)

or CSC 309 Object-Oriented Programming in C++

## Computer Systems

CSC 373 Computer Systems I  
CSC 374 Computer Systems II

---

### ADVANCED CLASSES (7 Courses)

Students can choose advanced computer science and mathematics classes from different areas including theory of computation, computational mathematics, artificial intelligence, data analysis, graphics, and computer vision. It is recommended that students concentrate on one or two areas for their advanced classes to achieve depth, but they are not required to do so. Students are strongly encouraged to discuss course selection with an advisor.

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 may wish to arrange with a professor to take an independent study or a research experience (MAT 399 or CSC 399 or IT 300) in order to explore a subject more deeply than is possible in a scheduled course.

#### Theory of Computation Area

The courses in the theory area explore the mathematical and logical foundations of computer science.

MAT 302 Combinatorics  
MAT 303 Theory of Numbers [prereq  
MAT 351 Probability and Statistics I  
MAT 310 Abstract Algebra I [prereq  
MAT 311 Abstract Algebra II  
MAT 312 Abstract Algebra III  
MAT 335 Real Analysis I [prereq  
MAT 372 Logic and Set Theory  
CSC 235 Problem Solving  
CSC 327 Problem Solving for Contests  
CSC 333 Cryptology  
CSC 344 Automata Theory and Formal Grammars  
CSC 347 Concepts of Programming Languages  
CSC 348 Introduction to Compiler Design  
CSC 387 Operations Research I: Linear Programming  
or MAT 387 Operations Research I: linear Programming  
CSC 389 Theory of Computation  
CSC 358 Symbolic Programming

#### Computational Methods Area

The computational methods area investigates quantitative and computational methods in computer science.

CSC 331 Scientific Computing  
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  
MAT 384 Mathematical Modeling

#### Artificial Intelligence Area

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

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

#### Data Analysis Area



For Students who are interested in statistical and computational Analysis of data. Many of the courses in this area require the student to take MAT 351-353.

CSC 328 Data Analysis for Experimenters  
CSC 334 Advanced Data Analysis  
or MAT 354 Multivariate Statistics  
CSC 332 Simulation and Modeling  
or MAT 359 Simulation Models and the Monte Carlo Method  
CSC 367 Introduction to Data Mining  
MAT 261 Multivariable Calculus II  
MAT 351 Probability and Statistics I  
MAT 352 Probability and Statistics II  
MAT 353 Probability and Statistics III  
MAT 355 Stochastic Processes  
MAT 357 Nonparametric Statistics  
MAT 370 Advanced Linear Algebra  
MAT 356 Applied Regression Analysis  
MAT 358 Applied Time Series and Forecasting

### **Graphics Area**

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

MAT 337 Complex Analysis  
MAT 261 Multivariable Calculus II  
MAT 370 Advanced Linear Algebra  
CSC 385 Numerical Analysis  
or MAT 385 Numerical Analysis I  
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 II  
GPH 336 Smooth Surface Modeling for Graphics and Animation  
GPH 372 Principles of Computer Animation

### **Computer Vision Area**

Computer vision studies the mathematical and algorithmic underpinnings of image analysis and image processing.

MAT 261 Multivariable Calculus II  
MAT 335 Real Analysis I [prereq  
MAT 381 Fourier Analysis and Special Functions  
MAT 370 Advanced Linear Algebra  
MAT 384 Mathematical Modeling  
CSC 381 Introduction to Digital Image Processing  
CSC 382 Applied Image Analysis  
CSC 384 Introduction to Computer Vision

---

## **CAPSTONE COURSES**

Students can choose from several capstone courses, depending on their interest and coursework:

CSC 378 Software Projects for Community Clients  
CSC 394 Software Projects  
GPH 395 Computer Graphics Senior Project  
MAT 398 Senior Capstone Seminar

Students need to make sure that they cover all prerequisites of their respective capstone (possibly using open electives).

---

## **OPEN ELECTIVES**

Students choose seven (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.

## Accelerated Degrees

School of Computer Science, Telecommunications & Information Systems - Undergraduate Studies □ Academic Programs □ Bachelor of Arts in Computing

### **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.

School of Computer Science, Telecommunications & Information Systems - Undergraduate Studies □ Academic Programs □ Accelerated Degrees

### **Accelerated Degrees**

#### **BS/MS ACCELERATED PROGRAMS AVAILABLE FOR CURRENT CTI STUDENTS**

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 than by taking each degree separately.

Please note: This version of the degree replaces all previous combinations and current students will be migrated to this plan.

#### **Combined Degree Program Structure**

The shortened structure of combines degree programs is accomplished by students taking three Masters level

courses in their junior and senior year that count toward both their bachelor and masters degree requirements at the same time. Students in this program will receive both a bachelor degree, after 192 undergraduate credit hours, and a masters degree after 10 more graduate courses (40 hours), instead of the standard 13 (52 hours).

### **How to apply:**

In order to apply for the BS/MS program, your faculty advisor must send an e-mail recommendation to Becky Krochmal at [bkrochmal@cti.depaul.edu](mailto:bkrochmal@cti.depaul.edu). The recommendation should include, the student full name, id number and the BS and MS degrees you wish to apply for.

### **Admission criteria are as follows:**

- Minimum of 6 course/24 credit hours completed
- GPA of 3.3 or higher
- Endorsement of faculty advisor this should be sent via e-mail to [bkrochmal@cti.depaul.edu](mailto:bkrochmal@cti.depaul.edu)

### **Maintaining Good Standing**

- Maintain GPA of 3.3 or higher
- Earn a B- minimum in each graduate prerequisite course taken
- Earn at least the minimum grade required in all graduate courses taken (see specific programs for details)
- If a student does not maintain good standing, they 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 the student does pursue graduate study, other graduate courses must be substituted). 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.

### **Designing a Course of Study**

It is extremely important that the student and faculty advisor work together on a course of study immediately upon admission to the Combined Degree Program.

This course of study may include which undergraduate classes to avoid taking in order to take the graduate version. Failure to put together a solid plan can lead to extra coursework and a lengthening of the Combined Degree program.

It is advisable for the student and advisor to enter the proposed plan of study in the student communication record on the CTI intranet so it is available to the student and CTI faculty and staff.

# Special Programs

School of Computer Science, Telecommunications & Information Systems - Undergraduate Studies ▢ Special Programs

## 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 students 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.

It is obvious that computers are becoming an ever more ubiquitous part of our world. They are used in all academic disciplines, from physics to history to geography. To get the most out of your degree, why not try a minor in CTI? CTI offers several minors that will appeal to you.

*Political science* and *geography* majors, you could learn about databases and data analysis which is important to understanding how to analyze census or GPS data.

*Communications* majors, you might be interested in digital cinema which will give you skills in creating videos for advertising.

*Art* majors, you know that animators are moving to computers, so if you are interested in animation, we have a computer graphics minor for you.

*Commerce* students, grounding in e-commerce technology, networks or information systems could give you an edge in a tough job market.

There are other examples too numerous to mention. So if you have questions or want advice on what minor is best for you, can email our CTI Undergraduate Services team: [gociti@cti.depaul.edu](mailto:gociti@cti.depaul.edu) or call them at: 312-362-8714.

## **Policies for Academic Minors**

Students must:

1. earn at least a grade of C- in each minor course and a GPA of no less than 2.0 for all courses in the minor;
2. earn at least a cumulative GPA of 2.0 for all courses applied to the minor;
3. not select the pass/fail option for courses in the minor
4. meet the following residency requirement: no more than 50% of the requirements of a minor may be fulfilled by transfer credits, AP credit, IB credit or CLEP credit.

Finally, studies cannot earn a minor in their major program.

Courses required to fulfill a minor are determined by the unit in which the minor resides.

- Animation Minor
- Computer Graphics Software Development
- Computer Science
- Data Analysis and Data Mining
- Database
- Data Visualization Development
- Digital Cinema
- E-Commerce Technology
- Game Design
- Game Programming
- Interactive Media
- Information Systems
- Information Technology
- Network Technologies
- Security
- Software Engineering
- Visual Computing

## **CTI Minor Requirements for Non-CTI Majors**

### **Animation Minor**

ANI 101 Animation for Non-Majors  
ANI 230 3d Modeling for Animation and Gaming  
ANI 231 3d Animation for Cinema and Gaming  
ANI 206 History of Animation

3 courses from the following list:

ANI 220 Pre-Production Art  
ANI 300 3d Character Animation  
ANI 310 Motion Capture Workshop  
DC 201 Introduction to Screenwriting  
DC 205 Foundations of Cinema

### **Computer Graphics Software Development Minor**

#### Liberal Studies

GPH 211 Perceptual Principles for Digital Environments I  
GPH 212 Perceptual Principles for Digital Environments II

#### Course Requirements

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

CSC 393 Data Structures in C++  
GPH 329 Computer Graphics Development II  
GPH 339 Advanced Rendering Techniques  
GPH 372 Principles of Computer Animation

### **Computer Science Minor**

CSC 241 Introduction to Computer Science I  
and CSC 242 Introduction to Computer Science II  
and CSC 224 Java for Programmers  
or  
CSC 211 Programming in Java I  
and CSC 212 Programming in Java II  
and CSC 309 Object-Oriented Programming in C++  
or  
CSC 261 Programming Languages I: C/C++  
and CSC 262 Programming Languages II: C/C++  
and CSC 224 Java for Programmers  
CSC 393 Data Structures in C++  
or CSC 383 Data Structures and Algorithms in Java  
MAT 140 Discrete Mathematics I  
CSC 373 Computer Systems I  
CSC 374 Computer Systems II

### **Data Analysis and Data Mining Minor**

IT 240 Introduction to Desktop Databases  
IT 223 Data Analysis  
CSC 324 Data Analysis and Statistical Software II  
CSC 367 Introduction to Data Mining  
CSC 334 Advanced Data Analysis  
2 CTI Electives

### **Database Minor**

CSC 211 Programming in Java I  
CSC 212 Programming in Java II  
IT 223 Data Analysis  
IT 240 Introduction to Desktop Databases  
CSC 352 Database Programming  
CSC 367 Introduction to Data Mining  
1 CTI Elective

### **Data Visualization Development Minor**

#### Liberal Studies

GPH 211 Perceptual Principles for Digital Environments I  
GPH 212 Perceptual Principles for Digital Environments II

#### Course Requirements

CSC 261 Programming Languages I: C/C++  
CSC 262 Programming Languages II: C/C++  
CSC 323 Data Analysis  
CSC 393 Data Structures in C++  
GPH 329 Computer Graphics Development II  
GPH 372 Principles of Computer Animation  
GPH 380 Visualization

### **Digital Cinema Minor**

DC 205 Foundations of Cinema

DC 225 Digital Still Photography  
DC 201 Introduction to Screenwriting  
DC 220 Editing I

3 courses from the following list:

ANI 101 Animation for Non-Majors  
DC 210 Digital Cinema Production I  
DC 270 Topics in Digital Cinema  
GAM 224 Introduction to Game Design  
DC 215 Digital Sound Design  
DC 275 Cinematography and Lighting  
DC 310 Digital Cinema Production II  
DC 320 Editing II  
DC 389 The Big Picture: the Entertainment Industry

### **E-Commerce Technology Minor**

IT 130 The Internet and the Web  
CSC 211 Programming in Java I  
CSC 212 Programming in Java II  
IT 230 Building Internet Applications  
ECT 330 Advanced Internet Application Development  
IM 210 Introduction to Human-Computer Interaction

1 course from the following list:

ECT 355 Internet Systems: Collaboration, Commerce, and Media  
ECT 360 Introduction to Xml  
ECT 365 Web Server Operations

### **Game Design Minor**

DC 201 Introduction to Screenwriting  
ANI 105 Intro to Visual Design  
ANI 101 Animation for Non-Majors  
or ANI 201 Animation I  
ANI 230 3d Modeling for Animation and Gaming  
GAM 224 Introduction to Game Design  
GAM 244 Game Development I  
GAM 245 Game Development II

### **Game Programming Minor**

GAM 224 Introduction to Game Design  
GAM 244 Game Development I  
GAM 245 Game Development II  
GAM 374 Action Games Programming

Two of:

ANI 230 3d Modeling for Animation and Gaming  
GPH 321 Computer Graphics Development I  
GPH 329 Computer Graphics Development II  
GPH 350 Digital Modeling II  
Any other 300-level GAM or GPH course

### **Interactive Media Minor**

#### Required Courses

IM 210 Introduction to Human-Computer Interaction  
IM 220 Interactive Media I  
IM 230 Scripting for Interactive Media  
IM 270 User-Centered Web Design

Plus any three of the following:

IM 320 Interactive Media II

IM 330 Advanced Scripting for Interactive Media

IM 360 User-Centered Evaluation

ANI 101 Animation for Non-Majors

ANI 105 Intro to Visual Design

ART 260 Art and Design I: History, Concept, Structure

ART 264 Typography I

DC 205 Foundations of Cinema

GAM 244 Game Development I

IT 130 The Internet and the Web

IT 230 Building Internet Applications

### **Information Systems Minor**

CSC 211 Programming in Java I

IT 230 Building Internet Applications

IT 240 Introduction to Desktop Databases

IT 130 The Internet and the Web

IT 201 Introduction to Information Systems

IT 215 Analysis and Design Techniques

IM 210 Introduction to Human-Computer Interaction

1 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

### **Information Technology Minor**

IT 130 The Internet and the Web

IT 230 Building Internet Applications

IT 240 Introduction to Desktop Databases

TDC 361 Basic Communication Systems

or IT 263 Applied Networks and Security

IT 215 Analysis and Design Techniques

One CTI elective

### **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 201 Introduction to Information Systems

IT 263 Applied Networks and Security

TDC 362 Principles of Data Communications

TDC 363 Introduction to Local Area Networks

TDC 365 Network Interconnection Technologies

### **Security Minor**

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 233 Codes and Ciphers

or CSC 333 Cryptology

IT 378 Host and Information Security

CNS 320 Computer Forensic and Incident Response

CNS 228 Legal, Ethical and Social Issues in Information Security



**Software Engineering Minor**

CSC 261 Programming Languages I: C/C++  
and CSC 262 Programming Languages II: C/C++  
and CSC 224 Java for Programmers

or

CSC 241 Introduction to Computer Science I  
and CSC 242 Introduction to Computer Science II  
and CSC 224 Java for Programmers

or

CSC 211 Programming in Java I  
and CSC 212 Programming in Java II  
and then

CSC 383 Data Structures and Algorithms in Java  
SE 325 Principles and Practices of Software Engineering  
SE 330 Object Oriented Modeling  
SE 350 Object-Oriented Software Development

**Visual Computing Minor**

MAT 140 Discrete Mathematics I  
or MAT 220 Linear Algebra with Applications  
or One quarter of Calculus (CSC 381 requirement)  
IT 223 Data Analysis (required for CSC367)  
CSC 381 Introduction to Digital Image Processing  
CSC 382 Applied Image Analysis  
CSC 384 Introduction to Computer Vision  
CSC 367 Introduction to Data Mining (IT223 requirement)

# Courses

School of Computer Science, Telecommunications & Information Systems - Undergraduate Studies □ Courses

## **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.

# Programs in CTI

School of Computer Science, Telecommunications & Information Systems - Undergraduate Studies □ Programs in CTI

## **Current Degree Descriptions**

### **Bachelor of Science Degrees in**

Computer Game Development

Computer Graphics and Motion Technology

Computer Science

Digital Cinema

E-Commerce Technology

Information Systems

Interactive Media

Network Technology

Information Technology

Information Assurance and Security Engineering

### **Bachelor of Arts Degrees in**

Digital Cinema

Information Technology

### **Accelerated BS/MS Degrees**

### **Joint Degree Programs**

BS in Math/Computer Science (with Liberal Arts & Sciences)

BA in Computing (with the School for New Learning)

### **Minors**