Course Catalog

College of Computing and Digital Media Undergraduate Studies

Summer/Autumn 2009-2010

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General Information

Catalog Version

UNDERGRADUATE UPDATE: APRIL 15, 2009
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College of Computing and Digital Media (CDM)

About the College

DePaul's **College of Computing and Digital Media** (CDM) is organized into two schools: the **School of Computing** (SoC) and the **School of Cinema and Interactive Media** (CIM) featuring 16 degree programs designed to keep pace with the latest developments in technology while remaining grounded in the liberal arts and sciences. As one of the largest IT programs in the nation, DePaul CDM has a reputation for offering an extraordinary selection of degree programs and courses from traditional computer science, information systems, and network technologies to game development, digital cinema, and our newest undergraduate program in animation. At CDM, students will experience a dynamic interdisciplinary curriculum and the opportunity to explore their academic curiosity through 18 minor concentrations that reflect the diverse offerings of CDM's majors.

Administration

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Dean

LUCIA DETTORI, Ph.D.
Associate Dean

MARTIN KALIN, Ph.D.
Associate Dean

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Student Services

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Academic Advisor

BECKY KROCHMAL
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Associate Director of Advising

Undergraduate Admissions

SARAH PIECZYNSKI
Director of Undergraduate Services

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 College of CDM 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
- Centre for Web Intelligence
- E-Commerce Technology Lab

Admission

First Year Student Applicants

Deadlines And Requirements

1. We recommend you apply by November 15th for Early Action Program admission. The regular submission deadline for all materials is February 1st. Applications are considered on a space available basis until August 15th by rolling notification.
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.

T ransfer 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.

Academic Advisement

ADVISING

The College 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 interestes, skills, and lifestyle.

Professional Development

The College of Computing and Digital Media 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 359 Web Development with Python Program
A 5-week program covering Web development with the Python programming language.

IPD 360/460 SQL Server Business Intelligence Program
An 11-week in-depth program covering SQL Server analysis services, integration services, and reporting services

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

IPD 370 Advanced SQL Program
A 2-week program covering advanced Structured Query Language (SQL) features

IPD 380 IT Project Management Program
A 10-week comprehensive program covering best practices in IT project management

IPD 382 Java Developer Program
A 10-week comprehensive program covering object-oriented applications development using Java

IPD 389 .NET Developer Program
A 10-week comprehensive program covering .NET technologies

IPD 392 Telecommunications Program
An 11-week intensive program focusing on the configuration, implementation and ongoing support of telecommunications systems and networks

IPD 394 Java EE Developer Program
A 10-week in-depth program covering enterprise-wide applications development using Java EE

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 College of Computing and Digital Media (CDM). For specific information governing transfer admission and evaluation of credit, please consult the DePaul University Undergraduate Transfer webpage. Current CDM 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.

Grades and Credit Hours Requirements

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.

Credit Hours

All students must complete a minimum of 192 quarter hours of college credit.

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 College of Computing and Digital Media (CDM) 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 College of Computing and Digital Media (CDM) 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 COMPUTING AND DIGITAL MEDIA

Computer technology is an omnipresent part of our world, used in academic disciplines from physics to history to geography. **CDM offers several minors that will appeal to all DePaul University students.**

Political science and *geography* majors can pursue a minor in Data Analysis, Databases, or Data Visualization, which is important to understanding how to analyze census or GPS data.

Communications majors may be interested in Digital Cinema which will give you skills in creating videos for advertising.

Art majors interested in a career in graphics programming, animation or design may be interested in CDM's tech-focused minors in Animation or Computer Graphics Software Development.

An academic foundation in E-Commerce Technology, Networks or Information Systems can give *Commerce* students 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 CDM Undergraduate Services team: gocdm@cdm.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 of CLEP credit.

Finally, students cannot earn a minor in their major program.
Courses required to fulfill a minor are determined by the unit in which the minor resides.

CDM Minors for CDM Students

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

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 CDM 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.

- 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

CDM Minor Requirements

Animation Minor

ANI 101	Animation for Non-Majors
or **ANI 201** (not both)	Animation I
ANI 230	3D Modeling
ANI 231	3D Animation
ANI 206	History of Animation

3 courses from the following list: (at least 1 must be ANI)

DC 201	Introduction to Screenwriting
DC 210	Digital Cinema Production I
DC 220	Editing I
Any ANI course	

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 CDM Electives	

Database Minor

CSC 211	Programming in Java I
and **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 CDM 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
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	Prorgamming 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
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

2 courses from the following list:

ANI 230	3D Modeling
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

3 courses from the following list:

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 L.T. System Managemement
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 130	Building Internet Applications
IT 240	Introduction to Desktop Databases
TDC 361	Basic Comunication Systems
or **IT 263**	Applied Networks and Security
IT 215	Analysis and Design Techniques

1 CDM 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 Langauge II:C/C++
IT 201	Introduction to Information Systems
IT 263	Applied Networks and Security
TDC 362	Principles of Data Communication
TDC 363	Introduction to Local Area Networks
TDC 365	Network Interconnection Technologies

Screenwriting

DC 201	Introduction to Screenwriting
DC 205	Foundations of Cinema
DC 301	Advanced Screenwriting I
DC 302	Advanced Screenwriting II
DC 303	Advanced Screenwriting III
DC 304	Topics in Screenwriting

Security Minor

CSC 211	Programming in Java I
and **CSC 212**	Programmingin Java II
or	
CSC 261	Programming Language I: C/C++
and **CSC 262**	Programming Language II:C/C++

CSC 233	Codes and Cyphers
or **CSC 333**	Cryptology
CNS 378	Host and Information Security
CNS 320	Computer Forensic and Incident Response
CNS 228	Legal,Ethical and Social Issues in Information Security
CNS 340	Fundamentals of Information Assurance

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
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	Onject -Oriented Software Development

Visual Computing Minor

MAT 140	Discrete Mathematics I
or **MAT 220**	Linear Algebra with Applications
or **1 quarter of Calculus**	**(** Prerequsite for CSC 381)
IT 223	Data Analysis (Prerequsite for CSC 367)
CSC 381	Introduction to Digital Image Processing
CSC 382	Applied Image Analysis
CSC 384	Introduction to Computer Vision
CSC 367	Introduction to Data Mining (IT 223 requirement)

Programs in CDM

Current Degree Descriptions

Bachelor of Science Degree Programs

School of Computing

Computer Game Development (joint with CIM)
Computer Graphics and Motion Technology (joint with CIM)
Computer Science
Information Assurance and Security Engineering
Information Systems
Information Technology
Interactive Media (joint with CIM)
Math & Computer Science (joint with LA & S)
Network Technologies

School of Cinema and Interactive Media

Animation
Computer Game Development (joint with SoC)
Computer Graphics and Motion Technology (joint with SoC)
Digital Cinema
Interactive Media (joint with SoC)

Bachelor of Arts Degree Programs

School of Cinema and Interactive Media

Animation
Digital Cinema

School of Computing

Computing (joint with SNL)
Information Technology

Combined Bachelor/Master Degree Programs

Professional Development Programs

Minors

School of Computing (SoC)

About the School of Computing

The **School of Computing** (SoC) houses CDM's technical degrees. With an emphasis on the theoretical as well as practical, students can earn degrees that prepare them for work in computing, programming, data storage, information processing, network security, software development, and computer graphics and motion technology.

Faculty

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CHARLES WILCOX, B.A.
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ROSALEE WOLFE, Ph.D.
Professor
Indiana University

JAMES YU, Ph.D.
Associate Professor
Purdue University

Liberal Studies Program and Modern Language Option

The Liberal Studies Program is the common curriculum taken by all students in the seven undergraduate colleges of DePaul University. Overall, the Program is designed to develop students writing abilities, computational and technological proficiencies, and critical and creative thinking skills.

Each major in the University has unique Liberal Studies requirements.

Please consult the Liberal Studies catalog for your relevant requirements as a CDM student as well as for information about the Modern Language Option.

CDM Liberal Studies Courses

CDM 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 CDM has some great courses for you! CDM 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 CDM 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 .

CDM Liberal Studies Courses for CDM students

-Rule 1-
A CDM student can take any CDM 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 Computer Graphics and Motion Technology (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 E-Commerce Technology (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 Computer Science (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 CDM 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 CDM classes by CDM 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

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CDM Liberal Studies Courses by Liberal Studies Area

Arts and Literature

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.

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 120 *Video Editing*
Students analyze and assemble dramatic scenes under a variety of conditions and narrative strategies. Editing theories, techniques, and procedures, issues of continuity, effects, movement and sound are examined as they relate to the fundamentals of cinematic montage and visual storytelling. This class present a variety of topics and experiences that are designed to broaden the student's understanding of the art of cinematic storytelling and montage. Work on more advanced projects is integrated into the class as a means to an understanding of advanced editing tools and techniques.

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 233 *Cinema & Art*
This course will provide an overview of avant-garde film, video, animation and installation,

and the relationship of these cinematic forms to Modern and Contemporary art.

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!

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 298 *Internship in Media Production/Post-Production*
This course offers students an excellent opportunity to gain professional experience, industry contacts, and referrals while still in school. Opportunities in post-production, motion picture production, advertising, television, animation, motion graphics and interactive media. Admission to the program requires consent of internship course instructor. Current work experience plus classroom time is required. Supervisor evaluation will contribute to the final grade.

DC 380 *Project Bluelight*
Production of a feature-length digital motion picture written by students or faculty within the Digital Cinema program.

GPH 360 *Modeling Spaces*
The digital design and modeling of environmental spaces with attention to human use parameters.

IT 300 *Research Experience*
This course involves the exploration of a research topic under the supervision of a research advisor.

IT 398 *Topics in Global Information Technology*
This course focuses on current topics in the information and communications technologies that together support the "networked world." Sample topics are global software development and deployment, global data and information management, and cross-cultural project management for information systems. The course may be offered for variable credit hours (2, 4, 8, 16, and 32).

Scientific Inquiry: Elective

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 233 *Codes and Ciphers*
A history of code making and breaking and the math and (computer) science behind it

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 261 *Programming Languages I: C/C++*
CSC 262 *Programming Languages II: C/C++*
Two courses in programming C++

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

DC 274 *Image,Optics and Cinematic Motion*
Cinematography is the scientifically-grounded discipline of making lighting and camera choices in order to record moving images. This course deals with the basic mathematics, physics, and photochemistry that underlie cinematography and that motivate camera design and construction. A student who masters the foundations of cinematography through a mixture of lectures, readings, exercises, and labs will be able to evaluate and understand how motion-based recording choices affect perception of moving images they see every day.

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.

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.

IT 223 *Data Analysis*

Self, Society, and the Modern World

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.

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 235 *Adaptation: The Cinematic Recrafting of Meaning*
This course explores contemporary cinematic adaptations of literature and how recent reworkings in film open viewers up to critical analysis of the cultural practices surrounding the promotion and reception of these narratives.

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.

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.

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

DC 227 *Film Philosophy*
This course is a seminar on the philosophical analysis of film art, with an emphasis on the ways in which it creates meaning through techniques that define a formal structure. There is a particular focus on aesthetic problems about appearance and reality, literacy and visual effects, communication and alienation through film technology.

DC 228 or GAM 228 or IT 228 *Ethics in Computer Games and Cinema*
Societies function based on normative ethics utilizing common sense to distinguish between ethical and unethical behavior. Most of us are not aware of the underlying theories when arriving at ethical judgments about right and wrong. However, the fast pace of progress in information technologies and digital entertainment creates an environment, in which ethical challenges are particularly complex. In the eyes of many, games and movies are violent, offensive and immoral. This course will concentrate on analyzing the impact of digital entertainment on an individual and society. Implications of certain values embedded in games and movies will be discussed. Elements of the ethical code of conduct for a game or movie creator will be formulated. The issue of balancing individual creativity vs. cultural impact, particularly on children, will be discussed.

CDM Liberal Studies Courses by Course Topic

The Internet and How It Works

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++.

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.

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.

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

TDC 361 *Basic Communication Systems*

<u>The Computer and Society</u>

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

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.

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.

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.

DC 228 or GAM 228 or IT 228 *Ethics in Computer Games and Cinema*
Societies function based on normative ethics utilizing common sense to distinguish between ethical and unethical behavior. Most of us are not aware of the underlying theories when arriving at ethical judgments about right and wrong. However, the fast pace of progress in information technologies and digital entertainment creates an environment, in which ethical challenges are particularly complex. In the eyes of many, games and movies are violent, offensive and immoral. This course will concentrate on analyzing the impact of digital entertainment on an individual and society. Implications of certain values embedded in games and movies will be discussed. Elements of the ethical code of conduct for a game or movie creator will be formulated. The issue of balancing individual creativity vs. cultural impact, particularly on children, will be discussed.

Computer Graphics and Motion Technology

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

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 presen.

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

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

CSC 250 *Computers and Human Intelligence* : Scientific Inquiry: Quantitative

Study how computers are designed to think like people

Digital Cinema and Game Development

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.

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 120 *Video Editing*
Students analyze and assemble dramatic scenes under a variety of conditions and narrative strategies. Editing theories, techniques, and procedures, issues of continuity, effects, movement and sound are examined as they relate to the fundamentals of cinematic montage and visual storytelling. This class present a variety of topics and experiences that are designed to broaden the student's understanding of the art of cinematic storytelling and montage. Work on more advanced projects is integrated into the class as a means to an understanding of advanced editing tools and techniques.

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 233 *Cinema & Art*
This course will provide an overview of avant-garde film, video, animation and installation, and the relationship of these cinematic forms to Modern and Contemporary art.

DC 235 *Adaptation: The Cinematic Recrafting of Meaning*
This courses explores contemporary cinematic adaptations of literature and how recent re-workings in film open viewers up to critical analysis of the cultural practices surrounding the promotion and reception of these narratives.

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 206 *History of Games*
This class will examine particular games and game genres in their historical context using a case study format

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.

Combined Bachelor/Master Degrees

The Combined Degree Programs at CDM 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 combined 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@cdm.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@cdm.depaul.edu

Maintaining Good Standing

- Student GPAs and grades will be reviewed after Autumn, Winter, and Spring Quarter
- Student and Faulty Advisor will be notified when the student's cumulative GPA falls below 3.3 or when the student receives less than a C- in graduate level Course (X-course)

Dismissal Policy

If a student's cumulative GPA falls below 3.3, the student must attain term GPA of 3.3 or above in the following quarter to stay active. If the student does not achieve a 3.3 term GPA, then the student will be dismissed from the combined program and resume the traditional BA/BS. As long as the student's cumulative GPA is below 3.3, the student must continue to achieve at least a 3.3 term GPA in all following quarters or face dismissal. If, at any point, the student's cumulative GPA is once again 3.3 or higher, term requirements no longer apply.

It is important to note:
**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 CDM graduate degree program, they may do so following normal CDM admissions procedures, but will still be required to take 13 graduate courses for a MS degree.

BA/BS-MA/MS Transition

If, upon completion of the BA/BS Degree, the student did not meet all prerequisites for the MA/MS Degree, then the student will need to complete (course, test or waiver) the missing prerequisites for the chosen MA/MS Degree.
If, while still in the undergraduate degree phase, the student receives less than a C- in graduate level course (X-course), the X-course cannot count towards the MA/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 CDM intranet so it is available to the student and CDM faculty and staff.

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 College of Computing and Digital Media (CDM) 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 College of Computing and Digital Media (CDM) 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 COMPUTING AND DIGITAL MEDIA

Computer technology is an omnipresent part of our world, used in academic disciplines from physics to history to geography. **CDM offers several minors that will appeal to all DePaul University students.**

Political science and *geography* majors can pursue a minor in Data Analysis, Databases, or Data Visualization, which is important to understanding how to analyze census or GPS data.

Communications majors may be interested in Digital Cinema which will give you skills in creating videos for advertising.

Art majors interested in a career in graphics programming, animation or design may be interested in CDM's tech-focused minors in Animation or Computer Graphics Software Development.

An academic foundation in E-Commerce Technology, Networks or Information Systems can give *Commerce* students 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 CDM Undergraduate Services team: gocdm@cdm.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 of CLEP credit.

Finally, students cannot earn a minor in their major program.
Courses required to fulfill a minor are determined by the unit in which the minor resides.

CDM Minors for CDM Students

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

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 CDM 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.

- 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

CDM Minor Requirements

Animation Minor

ANI 101	Animation for Non-Majors
or **ANI 201** (not both)	Animation I
ANI 230	3D Modeling
ANI 231	3D Animation
ANI 206	History of Animation

3 courses from the following list: (at least 1 must be ANI)

DC 201	Introduction to Screenwriting
DC 210	Digital Cinema Production I
DC 220	Editing I
Any ANI course	

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 CDM Electives	

Database Minor

CSC 211	Programming in Java I
and **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 CDM 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
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	Prorgamming 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
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

2 courses from the following list:

ANI 230	3D Modeling
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

3 courses from the following list:

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 L.T. System Managemement
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 130	Building Internet Applications
IT 240	Introduction to Desktop Databases
TDC 361	Basic Comunication Systems
or **IT 263**	Applied Networks and Security
IT 215	Analysis and Design Techniques

1 CDM 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 Langauge II:C/C++
IT 201	Introduction to Information Systems
IT 263	Applied Networks and Security
TDC 362	Principles of Data Communication
TDC 363	Introduction to Local Area Networks
TDC 365	Network Interconnection Technologies

Screenwriting

DC 201	Introduction to Screenwriting
DC 205	Foundations of Cinema
DC 301	Advanced Screenwriting I
DC 302	Advanced Screenwriting II
DC 303	Advanced Screenwriting III
DC 304	Topics in Screenwriting

Security Minor

CSC 211	Programming in Java I
and **CSC 212**	Programmingin Java II
or	
CSC 261	Programming Language I: C/C++
and **CSC 262**	Programming Language II:C/C++
CSC 233	Codes and Cyphers
or **CSC 333**	Cryptology
CNS 378	Host and Information Security
CNS 320	Computer Forensic and Incident Response
CNS 228	Legal,Ethical and Social Issues in Information Security
CNS 340	Fundamentals of Information Assurance

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
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	Onject -Oriented Software Development

Visual Computing Minor

MAT 140	Discrete Mathematics I
or **MAT 220**	Linear Algebra with Applications
or **1 quarter of Calculus**	**(** Prerequsite for CSC 381)
IT 223	Data Analysis (Prerequsite for CSC 367)
CSC 381	Introduction to Digital Image Processing
CSC 382	Applied Image Analysis
CSC 384	Introduction to Computer Vision
CSC 367	Introduction to Data Mining (IT 223 requirement)

Bachelor of Arts Degree Programs

Computing (Joint with SNL)

The Bachelor of Arts in Computing is offered jointly by the College of Computing and Digital Media 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 College of Computing and Digital Media at (312)362-8381 or the School for New Learning at (312)362-8001.

Information Technology

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 CDM 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
IT 201 Introduction to Information Systems
IT 240 Introduction to Desktop Databases Self Placement Test
ICS 200 Introduction to Business

Liberal Studies (7)
Open Elective (1)

Second Year

Major Field Courses (7)

CSC 223	The Impact of Computing Technology On Our Lives
IM 210	Introduction to Human-Computer Interaction
IT 231	Web Development I
IT 232	Web Development II
IT 223	Data Analysis Self Placement Test
or CSC 239	Personal Computing
IT 263	Applied Networks and Security
or TDC 361	Basic Communication Systems
CMNS 212	Small Group Communication
or CMNS 220	Public Speaking

Liberal Studies (5)

Third Year

Major Field Courses (4)

WRD 204	Technical Writing
or WRD 301	Writing in Workplace Contexts

3 Technical Grounding Courses from this list:

IT 330	User Interface Developmnet for Interactive Systems
IT 320	Content Management Systems
IT 215	Analysis and Design Techniques Self Placement Test
CSC211	Programming in Java I Self Placement Test
CSC212	Programming in Java II
CSC261	Programming Languages I: C/C++
CSC262	Programming Languages II: C/C++
ECT 330	Advanced Internet Application Development
TDC363	Introduction to Local Area Networks
GPH211	Perceptual Principles for Digital Environments I
GPH212	Perceptual Principles for Digital Environments II
GAM244	Game Development I
GAM245	Game Development II
SE 325	Principles and Practices of Software Engineering Self Placement Test

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

Fourth Year

Major Field Courses (1)

CSC 378	Software Projects for Community Clients*

CSC 399 Independent Study*

*CSC 378 is the first course in a two quarter sequence (8 hours of credit). It counts for both Senior Year capstone and Junior Year Experiential Learning. The second course is a special section of CSC 399. Both quarters must be completed to receive any credit.

Any 200-level or higher DePaul Elective (3)
300-level CDM Electives (1)
Liberal Studies (1)
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.

Bachelor of Science Degree Programs

Computer Games Development (Joint with CIM)

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.

CDM's Computer Games 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 Production & Design 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 CDM courses that qualify for liberal studies credit.

Four-year schedule of courses for the **Production & Design 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 (6)

MAT 150 Calculus I
GAM 341 Introduction to Level Design
ANI 230 3d Modeling for Animation and Gaming
CSC 261 Programming Languages I: C/C++
CSC 262 Programming Languages II: C/C++
GAM 230 Intro to Game Production

Gaming Elective (1)
Liberal Studies (5)

Third Year

Major Field Courses (4)

ANI 231 3d Animation for Cinema and Gaming
GAM 374 Action Games Programming
IM 220 Interactive Media I
WRD 204 Technical Writing

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

Fourth Year

Major Field Courses (4)

GAM 333 The Business of 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 CDM 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.

Computer Graphics and Motion Technology (Joint with CIM)

The **Bachelor of Science in Computer Graphics and Motion Technology** unites the technical and aesthetic principals of digitally created motion graphics and animation. Graduates 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 CDM 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
or MAT 160 Calculus for Mathematics and Science Majors I
or MAT 170 Calculus I with Scientific Applications *
MAT 151 Calculus II

* *MAT 170 is recommended*

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 Postmoderism
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.

The **Bachelor of Science in Computer Graphics and Motion Technology** unites the technical and aesthetic principals of digitally created motion graphics and animation. Graduates 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 is 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 CDM courses that qualigy 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
or MAT 160	Calculus for Mathematics and Science Majors I
or MAT 170	Calculus I with Scientific Applications (Recommended)
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
CMNS 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

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)

IM 230	Scripting for Interactive Media
and IM 330	Advanced Scripting for Interactive Media
or CSC 261	Programming Language I: C/C++
and CSC 262	Programming Language 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	Principles of Asian Art
IM 210	Introduction to Human-Computer Interaction
CMNS 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

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 button 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 satisy 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
ART 360	Illustration
ART 373	History of Design
IT 223	Data Analysis Self Placement Test
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
IM 330	Advanced Scripting for Interactive Media
or IM 336	Interactive Media Scripting for Programmers *
MAT 150	Calculus I
MAT 151	Calculus II
MAT 152	Calculus III

* Students who take CSC 261 and CSC 262 may take IM 330 or IM 336 as an elective. Only one of the two would count as an elective.

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 al 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.

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 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 CDM 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 Philosophical Inquiry Liberal Studies requirement.

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

A. mathematical tools
B. problem solving, algorithms, and structured programming
C. modeling and object-oriented programming
D. computer systems

They also include:

E. the senior capstone course
F. the communication requirement

A. **Mathematical Tools** (3 Courses)

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

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** (4 courses):

CSC 224	Java for Programmers Self Placement Test
CSC 309	Object-Oriented Programming in C++
CSC 383	Data Structures and Algorithms in Java
or CSC 393	Data Structures in C++
SE 350	Object-Oriented Software Development

D. **Computer Systems** (5 courses):

CSC 348	Introduction to Compiler Design
CSC 355	Database Systems
CSC 373	Computer Systems I
CSC 374	Computer Systems II
CSC 376	Distributed Systems

E. **Capstone** (1 course):

CSC 394	Software Projects

F. **Communication** (2 courses):

WRD 204	Technical Writing
CMNS 220	Public Speaking

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

Major Field Courses

Introductory Major Field Courses

CSC 233	Codes and Ciphers
CSC 235	Problem Solving
GAM 244	Game Development I
GAM 245	Game Development II
IM 210	Introduction to Human-Computer Interaction
IM 336	Interactive Media Scripting for Programmers
IT 130	The Internet and the Web
IT 231	Web Development I
IT 232	Web Development II
IT 263	Applied Networks and Secruity
MAT 150	Calculus I
MAT 151	Calculus II

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.

Artificial Intelligence

CSC 357	Expert Systems
CSC 358	Symbolic Programming
CSC 389	Foundations of Artificial Intelligence

Computational Sciences

CSC 331 Scientific Computing

Computer Game Development

GAM 350	Physics for Game Developers
GAM 353	Tool Programming for Game Development
GAM 374	Action Games Programming
GAM 376	Artificial Intelligence for Computer Games
GAM 378	Strategy Games Programming
GAM 380	Console Game Development Environments
GAM 382	Serious Games
GAM 386	Game Development for Mobile Devices

GAM 390	Multiplayer Game Development
GAM 394	Game Development Project I
GAM 395	Game Development Project II

Computer Graphics

GPH 325	Survey of Computer Graphics
GPH 329	Computer Graphics Development II
GPH 339	Advanced Rendering Techniques
GPH 372	Principles of Computer Animation
GPH 375	Advanced Graphics Development
GPH 389	Real-Time Graphics Techniques
GPH 395	Computer Graphics Senior Project

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

Computer Systems

CSC 343	Introduction to Operating Systems
CSC 347	Concepts of Programming Languages
CSC 375	Introduction to Robotics
TDC 368	Network Programming

Computer Vision

CSC 381	Introduction to Digital Image Processing
CSC 382	Applied Image Analysis

Data Analysis and Mining

CSC 324	Data Analysis and Statistical Software II
CSC 334	Advanced Data Analysis
CSC 367	Introduction to Data MIning

Data Storage

CSC 352	Database Programming
CSC 353	Advanced Database Concepts

Human-Computer Interaction

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

IT 330	User Interface Development for Interactive Systems

Security

CNS 320	Computer Forensic and Incident Response
CNS 340	Fundamentals of Information Assurance
CSC 333	Cryptology

Software Engineering

SE 325	Principles and Practices of Software Engineering
SE 330	Object-Oriented Modeling
SE 333	Software Testing
SE 352	Object-Oriented Enterprise Application Development
SE 368	Software Measurement and Project Estimation

Theory of Computation

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

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
IT 320	Content Management Systems

Open Electives (5 courses)

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

Program Requirements

The coursework for the BS in CS: SE Concentration consists of the DePaul University Liberal Studies Program (19 courses), Major Field courses (24 courses or 96 credits), and Open Elective courses (5 courses or 20 credits).

Note: CSC 208 The Computer and Social Responsibility must be taken to satisfy the Philosophical Inquiry Liberal Studies requirement.

The **Major Field** courses for the BS in CS Software Engineering (SE) Concentration consists of 21 required (4 credit) courses and 3 SE Concentration elective courses (or 12 credits). The 21 required courses include 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):

CNS 340	Fundamentals of Information Assurance
CSC 305	Graphical User Interface Implementation
SE 333	Software Testing
SE 368	Software Measurement and Project Estimation

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 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.

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 CDM 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
IT 240	Introduction to Desktop Databases Self Placement Test
IT 263	Applied Networks and Security

IT 231	Web Development I
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
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 375	Network Protocols
TDC 365	Network Interconnection Technologies
WRD 204	Technical Writing

Liberal Studies (5)

Third Year

Major Field Courses (4)

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

300-level CDM 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
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 FIN290	Finance for Non-Commerce Majors

300-level CDM 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.

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'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 CDM 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

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 CDM 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.

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 CDM 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)

CNS 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 CDM 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 CDM Electives of which 3 must be 300-level and at most one could be chosen from the restricted list below.
Capstone (Any CDM Capstone)
Liberal Studies (3)
Open Electives (5)

Restricted List of CDM Electives (Only 1 CDM 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
ANI 240 Animation 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.

Interactive Media (Joint with CIM)

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 CDM 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 231	Web Development I
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

Liberal Studies (5) - Required: CSC 208 Computers and Social Responsibility or IT 228 Ethics in Computer Games and Cinema

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
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 CDM, 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.

Mathematics / Computer Science (Joint with LA&S)

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 is 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.

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 compete for the more theoretical complex jobs found 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).

  Click here to view the CDM courses that qualify for Liberal Studies credit.

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

The courses in the Core build the necessary foundation in discrete and continuous mathematics, problem solving, algorithmic thinking and programming. The Advanced Classes allow the student to explore the differenct areas of mathematics and computer science in more depth.

CORE CLASSES (14 courses)

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 II
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
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
MAT 351	Probability and Statistics I
MAT 310	Abstract Algebra I
MAT 311	Abstract Algebra II
MAT 312	Abstract Algebra III
MAT 335	Real Analysis I
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	Numberical Analysis II
MAT 330	Methods of Computation and Theoretical Physics I
MAT 331	Methods of Computation and Theoretical Physics II
MAT 384	Mathemactical 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 and Models and the Monte Carlo Method
CSC 367	Introduction to Data Mining
MAT 261	Multivariate 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
MAT 381	Fourier Analysis and Special Functions
MAT 370	Advanced Linear Algebra
MAT 384	Mathematical Modeling
CSC 381	Introduction to Digital Image Processing

CSC 383	Applied Image Analysis
CSC 384	Introduction to Computer Vision

CAPSTONE COURSES (1 course)

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 (7 courses)

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.

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'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 .

What students learn from the program:

- The protocols and services that enable Internet and LAN services
- The design and management of local and wide area network
- Voice and data network convergence through VoIP technologies
- Wireless networks (WiFi, WiMAX, Cellular, and 3G)
- Network security

The Liberal Studies program is the general education portion of the curriculum at DePaul. Click here to view the CDM 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
IT 201	Introduction to Information Systems
IT 240	Introduction to Desktop Databases Self Placement Test
IT 263	Applied Networks and Security
IT 231	Web Development I
MAT 140	Discrete Mathematics I

Liberal Studies (6)

Second Year

Major Field Courses (6)

IT 223	Data Analysis Self Placement Test
TDC 311	Computers in Telecommunications Systems
TDC 362	Principles of Data Communications
WRD 204	Technical Writing
or WRD 301	Writing in Workplace Contexts
CSC 211	Programming in Java I Self Placement Test
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 (4)

TDC 363	Introduction to Local Area Networks
TDC 364	Voice Communications Technologies
TDC 365	Network Interconnection Technologies
CMNS 212	Small Group Communication
or CMNS 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 (1)

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** .

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

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

First Year

Major Field Courses (6)

IT 130	The Internet and the Web Self Placement Test
IT 201	Introduction to Information Systems
IT 240	Introduction to Desktop Databases Self Placement Test
IT 263	Applied Networks and Security
IT 231	Web Development I
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
WRD 204	Technical Writing
or WRD 301	Writing in Workplace Contexts

Liberal Studies (6)

Third Year

Major Field Courses (4)

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

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

Fourth Year

Major Field Courses (5)

CNS 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
IT 201	Introduction to Information Systems
IT 240	Introduction to Desktop Databases Self Placement Test
IT 263	Applied Networks and Security
IT 231	Web Development I
MAT140	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
or WRD 301	Writing in Workplace Contexts

Liberal Studies (6)

Third Year

Major Field Courses (6)

TDC 363	Introduction to Local Area Networks
TDC 365	Network Interconnection Technologies
TDC 368	Network Programming
CSC 309	Object-Oriented Programming in C++
or CSC 224	Java for Programmers Self Placement Test
CSC 383	Data Structures and Algorithms in Java
or CSC 393	Data Structures in C++

CMNS 212	Small Group Communication
or CMNS 220	Public Speaking

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

Fourth Year

Major Field Courses (2)

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 Cinema and Interactive Media (CIM)

About the School of Cinema and Interactive Media

The School of Cinema and Interactive Media (CIM) houses CDM's creative degrees. With an emphasis on all aspects of production, students can earn degrees that prepare them for work in digital cinema, animation, computer game development, and interactive media.

Faculty

LISA BARCY, M.A.
Instructor
Columbia College

ROBIN BURKE, Ph.D.
Associate Professor
Northwestern University

SHAYNA CONNELLY, M.F.A.
Instructor
Columbia College

RONALD ELTANAL, M.F.A.
Associate Professor
University of Southern California

SCOTT ERLINDER, M.F.A.
Assistant Professor
Columbia College

DANA HODGDON, M.A.
Visiting Professor
Northwestern University

MATT IRVINE, M.F.A.
Assistant Professor
Columbia College

JOSHUA JONES, M.F.A.
Assistant Professor
University of Southern California

STEVEN JONES, B.S.
Producer in Residence
Illinois Institute of Technology

EDWARD KEENAN, M.S.
Instructor
University of Illinois at Chicago

DANIEL KLEIN, B.F.A.
Instructor
New York University

MIKAEL KREUZRIEGLER, M.F.A.
Visiting Assistant Professor
University of Southern California

JOSEPH LINHOFF, J.D.
Assistant Professor
University of Colorado at Boulder School of Law

WILLIAM MUEHL, B.A.
Instructor
University of Wisconsin

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

GARY NOVAK, M.F.A.
Assistant Professor
American Film Institute

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

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

ROBERT STEEL, M.A.
Instructor
Northwestern University

ALEXANDER STEWART, M.F.A.
Instructor
School of the Art Institute of Chicago

JOSE ZAGAL, Ph.D.
Assistant Professor
Georgia Institute of Technology

JONAH ZEIGER, M.F.A.
Assistant Professor
New York University

JOANNE ZIELINSKI, M.F.A.
Associate Professor
Rutgers University

Liberal Studies Program and Modern Language Option

The Liberal Studies Program is the common curriculum taken by all students in the seven undergraduate colleges of DePaul University. Overall, the Program is designed to develop students writing abilities, computational and technological proficiencies, and critical and creative thinking skills.

Each major in the University has unique Liberal Studies requirements.

Please consult the Liberal Studies catalog for your relevant requirements as a CDM student as well as for information about the Modern Language Option.

CDM 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 CDM has some great courses for you! CDM 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 CDM 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 .

CDM Liberal Studies Courses for CDM students

-Rule 1-
A CDM student can take any CDM 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 Computer Graphics and Motion Technology (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 E-Commerce Technology (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 Computer Science (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 CDM 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 CDM classes by CDM 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

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CDM Liberal Studies Courses by Liberal Studies Area

Arts and Literature

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.

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 120 *Video Editing*
Students analyze and assemble dramatic scenes under a variety of conditions and narrative strategies. Editing theories, techniques, and procedures, issues of continuity, effects, movement and sound are examined as they relate to the fundamentals of cinematic montage and visual storytelling. This class present a variety of topics and experiences that are designed to broaden the student's understanding of the art of cinematic storytelling and montage. Work on more advanced projects is integrated into the class as a means to an understanding of advanced editing tools and techniques.

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 233 *Cinema & Art*
This course will provide an overview of avant-garde film, video, animation and installation, and the relationship of these cinematic forms to Modern and Contemporary art.

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!

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 298 *Internship in Media Production/Post-Production*
This course offers students an excellent opportunity to gain professional experience, industry contacts, and referrals while still in school. Opportunities in post-production, motion picture production, advertising, television, animation, motion graphics and interactive media. Admission to the program requires consent of internship course instructor. Current work experience plus classroom time is required. Supervisor evaluation will contribute to the final grade.

DC 380 *Project Bluelight*
Production of a feature-length digital motion picture written by students or faculty within the Digital Cinema program.

GPH 360 *Modeling Spaces*
The digital design and modeling of environmental spaces with attention to human use parameters.

IT 300 *Research Experience*
This course involves the exploration of a research topic under the supervision of a research advisor.

IT 398 *Topics in Global Information Technology*
This course focuses on current topics in the information and communications technologies that together support the "networked world." Sample topics are global software development and deployment, global data and information management, and cross-cultural project management for information systems. The course may be offered for variable credit hours (2, 4, 8, 16, and 32).

Scientific Inquiry: Elective

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 233 *Codes and Ciphers*
A history of code making and breaking and the math and (computer) science behind it

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 261 *Programming Languages I: C/C++*
CSC 262 *Programming Languages II: C/C++*
Two courses in programming C++

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

DC 274 *Image,Optics and Cinematic Motion*
Cinematography is the scientifically-grounded discipline of making lighting and camera choices in order to record moving images. This course deals with the basic mathematics, physics, and photochemistry that underlie cinematography and that motivate camera design and construction. A student who masters the foundations of cinematography through a mixture of lectures, readings, exercises, and labs will be able to evaluate and understand how motion-based recording choices affect perception of moving images they see every day.

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.

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.

IT 223 *Data Analysis*

Self, Society, and the Modern World

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.

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 235 *Adaptation: The Cinematic Recrafting of Meaning*
This course explores contemporary cinematic adaptations of literature and how recent reworkings in film open viewers up to critical analysis of the cultural practices surrounding the promotion and reception of these narratives.

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.

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.

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

DC 227 *Film Philosophy*
This course is a seminar on the philosophical analysis of film art, with an emphasis on the ways in which it creates meaning through techniques that define a formal structure. There is a particular focus on aesthetic problems about appearance and reality, literacy and visual effects, communication and alienation through film technology.

DC 228 or GAM 228 or IT 228 *Ethics in Computer Games and Cinema*
Societies function based on normative ethics utilizing common sense to distinguish between ethical and unethical behavior. Most of us are not aware of the underlying theories when arriving at ethical judgments about right and wrong. However, the fast pace of progress in information technologies and digital entertainment creates an environment, in which ethical challenges are particularly complex. In the eyes of many, games and movies are violent, offensive and immoral. This course will concentrate on analyzing the impact of digital entertainment on an individual and society. Implications of certain values embedded in games and movies will be discussed. Elements of the ethical code of conduct for a game or movie creator will be formulated. The issue of balancing individual creativity vs. cultural impact, particularly on children, will be discussed.

CDM Liberal Studies Courses by Course Topic

The Internet and How It Works

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++.

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.

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.

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

TDC 361 *Basic Communication Systems*

The Computer and Society

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

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.

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.

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.

DC 228 or GAM 228 or IT 228 *Ethics in Computer Games and Cinema*
Societies function based on normative ethics utilizing common sense to distinguish between ethical and unethical behavior. Most of us are not aware of the underlying theories when arriving at ethical judgments about right and wrong. However, the fast pace of progress in information technologies and digital entertainment creates an environment, in which ethical challenges are particularly complex. In the eyes of many, games and movies are violent, offensive and immoral. This course will concentrate on analyzing the impact of digital entertainment on an individual and society. Implications of certain values embedded in games and movies will be discussed. Elements of the ethical code of conduct for a game or movie creator will be formulated. The issue of balancing individual creativity vs. cultural impact, particularly on children, will be discussed.

Computer Graphics and Motion Technology

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

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 presen.

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

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

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

Digital Cinema and Game Development

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.

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 120 *Video Editing*
Students analyze and assemble dramatic scenes under a variety of conditions and narrative strategies. Editing theories, techniques, and procedures, issues of continuity, effects, movement and sound are examined as they relate to the fundamentals of cinematic montage and visual storytelling. This class present a variety of topics and experiences that are designed to broaden the student's understanding of the art of cinematic storytelling and montage. Work on more advanced projects is integrated into the class as a means to an understanding of advanced editing tools and techniques.

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 233 *Cinema & Art*
This course will provide an overview of avant-garde film, video, animation and installation, and the relationship of these cinematic forms to Modern and Contemporary art.

DC 235 *Adaptation: The Cinematic Recrafting of Meaning*
This courses explores contemporary cinematic adaptations of literature and how recent re-workings in film open viewers up to critical analysis of the cultural practices surrounding the promotion and reception of these narratives.

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 206 *History of Games*
This class will examine particular games and game genres in their historical context using a case study format

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.

Combined Bachelor/Master Degrees

The Combined Degree Programs at CDM 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 combined 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@cdm.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@cdm.depaul.edu

Maintaining Good Standing

- Student GPAs and grades will be reviewed after Autumn, Winter, and Spring Quarter
- Student and Faulty Advisor will be notified when the student's cumulative GPA falls below 3.3 or when the student receives less than a C- in graduate level Course (X-course)

Dismissal Policy

If a student's cumulative GPA falls below 3.3, the student must attain term GPA of 3.3 or above in the following quarter to stay active. If the student does not achieve a 3.3 term GPA, then the student will be dismissed from the combined program and resume the traditional BA/BS. As long as the student's cumulative GPA is below 3.3, the student must continue to achieve at least a 3.3 term GPA in all following quarters or face dismissal. If, at any point, the student's cumulative GPA is once again 3.3 or higher, term requirements no longer apply.

It is important to note:
**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 CDM graduate degree program, they may do so following normal CDM admissions procedures, but will still be required to take 13 graduate courses for a MS degree.

BA/BS-MA/MS Transition

If, upon completion of the BA/BS Degree, the student did not meet all prerequisites for the MA/MS Degree, then the student will need to complete (course, test or waiver) the missing prerequisites for the chosen MA/MS Degree.
If, while still in the undergraduate degree phase, the student receives less than a C- in graduate level course (X-course), the X-course cannot count towards the MA/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 CDM intranet so it is available to the student and CDM faculty and staff.

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 College of Computing and Digital Media (CDM) 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 College of Computing and Digital Media (CDM) 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 COMPUTING AND DIGITAL MEDIA

Computer technology is an omnipresent part of our world, used in academic disciplines from physics to history to geography. **CDM offers several minors that will appeal to all DePaul University students.**

Political science and *geography* majors can pursue a minor in Data Analysis, Databases, or Data Visualization, which is important to understanding how to analyze census or GPS data.

Communications majors may be interested in Digital Cinema which will give you skills in creating videos for advertising.

Art majors interested in a career in graphics programming, animation or design may be interested in CDM's tech-focused minors in Animation or Computer Graphics Software Development.

An academic foundation in E-Commerce Technology, Networks or Information Systems can give *Commerce* students 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 CDM Undergraduate Services team: gocdm@cdm.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 of CLEP credit.

Finally, students cannot earn a minor in their major program.
Courses required to fulfill a minor are determined by the unit in which the minor resides.

CDM Minors for CDM Students

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

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 CDM 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.

- 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

CDM Minor Requirements

Animation Minor

ANI 101	Animation for Non-Majors
or **ANI 201** (not both)	Animation I
ANI 230	3D Modeling
ANI 231	3D Animation
ANI 206	History of Animation

3 courses from the following list: (at least 1 must be ANI)

DC 201	Introduction to Screenwriting
DC 210	Digital Cinema Production I
DC 220	Editing I
Any ANI course	

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 CDM Electives	

Database Minor

CSC 211	Programming in Java I
and **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 CDM 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
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	Prorgamming 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
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

2 courses from the following list:

ANI 230	3D Modeling

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

3 courses from the following list:

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 L.T. System Managemement
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 130	Building Internet Applications
IT 240	Introduction to Desktop Databases
TDC 361	Basic Comunication Systems
or **IT 263**	Applied Networks and Security
IT 215	Analysis and Design Techniques

1 CDM 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 Langauge II:C/C++
IT 201	Introduction to Information Systems
IT 263	Applied Networks and Security
TDC 362	Principles of Data Communication
TDC 363	Introduction to Local Area Networks
TDC 365	Network Interconnection Technologies

Screenwriting

DC 201	Introduction to Screenwriting
DC 205	Foundations of Cinema
DC 301	Advanced Screenwriting I
DC 302	Advanced Screenwriting II
DC 303	Advanced Screenwriting III
DC 304	Topics in Screenwriting

Security Minor

CSC 211	Programming in Java I
and **CSC 212**	Programmingin Java II
or	
CSC 261	Programming Language I: C/C++
and **CSC 262**	Programming Language II:C/C++
CSC 233	Codes and Cyphers
or **CSC 333**	Cryptology
CNS 378	Host and Information Security
CNS 320	Computer Forensic and Incident Response
CNS 228	Legal,Ethical and Social Issues in Information Security
CNS 340	Fundamentals of Information Assurance

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
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	Onject -Oriented Software Development

Visual Computing Minor

MAT 140	Discrete Mathematics I

or **MAT 220**	Linear Algebra with Applications
or **1 quarter of Calculus**	**(** Prerequsite for CSC 381)
IT 223	Data Analysis (Prerequsite for CSC 367)
CSC 381	Introduction to Digital Image Processing
CSC 382	Applied Image Analysis
CSC 384	Introduction to Computer Vision
CSC 367	Introduction to Data Mining (IT 223 requirement)

Bachelor of Arts Degree Programs

Animation

The **BA in Animation** emphasizes solid traditional animation and storytelling skills, while encouraging experimentation in form, content and medium. Students are free to work in hand-drawn, stop-motion, cut-out and 3D computer animation. They may produce hybrid forms fully integrated with live action video, draw web-based shorts inspired by Hollywood or anime, or design motion graphics for film titles and commercials.

Students will gain a broad foundation in the rich history of the art form and prepare for the future under the guidance of faculty with professional experience in television, film, art and interactive media.

What students get from this program:

- A faculty body of experienced animators and working professionals.
- Education in the foundations of cinema, as well as in the important skills of drawing and design.
- Access to the latest in animation technology, computing systems, and software.
- Valuable production experience both in class and through internships.
- The benefit of industry connections through CDMs relationship with Chicagos many animation and production studios.

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

Please note : Students must complete 20 Liberal Studies courses including the eight credit hour Mathematical and Technological Literacy requirement which is both LSP 120 (formerly ISP 120) and LSP 121 (formerly ISP 121). LSP 121 will replace one course from any one of the six Learning Domains as long as the student takes at least one course in each domain.

Four-year schedule of courses:

First Year

Major Field Courses (6)

ANI 105	Intro to Visual Design
ANI 201	Animation I *
ANI 206	History of Animation

DC 201	Introduction to Screenwriting
DC 220	Editing I
ART 218	Figure Drawing

Liberal Studies Courses (6) (Required: ART 106 Beginning Drawing and either DC 233 Cinema and Art or ART 200 Art and Artists in Contemporary Culture)

*ANI 101 Animation for Non-Majors allowed for students transferring into the major.

Second Year

Major Field Courses (6)

ANI 220	Pre-Production Art
ANI 230	3D Modeling
ANI 231	3D Animation
ANI 320	Hand-Drawn Animation
DC 210	Digital Cinema Production I
ART 218	Advanced Figure Drawing

Liberal Studies Courses (6)

Third Year

Major Field Courses (5)

ANI 240	Animation Production I
ANI 340	Animation Production II
IM 220	Interactive Media I
DC 215	Digital Sound Design
MCS 207	History of Cinema I, 1890-1945
or MCS 208	History of Cinema II
or MCS 209	History of Cinema III, 1975-Present

Animation Electives (2) Any ANI, ART, DC, GAM, GPH or IM course EXCEPT: ART 102, ART 104, ART 105, DC 120 or GPH 211
Liberal Studies Courses (3)
Open Electives (2)

Fourth Year

Major Field Courses (3)

ANI 260	Motion Graphics
ANI 394	Animation Project I
ANI 395	Animation Project II

Animation Electives (2) Any ANI, ART, DC, GAM, GPH or IM course EXCEPT: ART 102, ART 104, ART 105, DC 120 or GPH 211
Liberal Studies Courses (5)
Open Electives (2)

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

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

Digital Cinema

The **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 two 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 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 CDM courses that qualify for liberal studies credit.

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

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

First Year

Major Field Courses (6)

DC 201 Introduction to Screenwriting
DC 205 Foundations of Cinema
DC 220 Editing I
MCS 207 History of Cinema, 1890-1945
MCS 208 History of Cinema, 1945-1975
MCS 209 History of Cinema, 1975-Present

Liberal Studies (5)
Open Electives (1)

Second Year

Major Field Courses (5)

ANI 101 Animation for Non-Majors
or ANI 201 Animation I
DC 210 Digital Cinema Production I
DC 215 Digital Sound Design
DC 225 Digital Still Photography
DC 275 Cinematography and Lighting

Liberal Studies (6)
Open Electives (1)

Third Year

Major Field Courses (5)

DC 270 Topics in Digital Cinema
VFX 278 Digital Compositing I
DC 310 Digital Cinema Production II
DC 315 Advanced Digital Sound Design
DC 320 Editing II

CIM Electives (1) Any 200-level or above ANI, GPH, DC, GAM or IM course
Liberal Studies (5)
Open Electives (1)

Fourth Year

Major Field Courses (5)

DC 371 Documentary Production
DC 376 Visual Design
DC 389 The Big Picture: the Entertainment Industry
DC 390 Topics in Directing
DC 398 Digital Cinema Capstone

CIM Electives (1) Any 200-level or above ANI, GPH, DC, GAM or IM course
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
MCS 207 History of Cinema, 1890-1945
MCS 208 History of Cinema, 1945-1975
MCS 209 History of Cinema, 1975-Present

Liberal Studies (5)
Open Electives (2)

Second Year

Major Field Courses (5)

DC 210 Digital Cinema Production I
DC 220 Editing I
DC 250 Working with Actors 1
DC 270 Topics in Digital Cinema
THE 244 Dramatic Writing for Non-Majors

CIM Elective (1) Any 200-level or above ANI, GPH, DC, GAM or IM course
Liberal Studies (6)

Third Year

Major Field Courses (4)

DC 301 Advanced Screenwriting I
DC 302 Advanced Screenwriting II
DC 303 Advanced Screenwriting III
DC 304 Topics in Screenwriting

CIM Elective (1) Any 200-level or above ANI, GPH, DC, GAM or IM course
English Course (1) - A 200-level or above Englich Literature Class
Liberal Studies (5)
Open Electives (1)

Fourth Year

Major Field Courses (3)

DC 235 Adaptation: The Cinematice Recrafting of Meaning
DC 389 The Big Picture: the Entertainment Industry
DC 398 Digital Cinema Capstone

CIM Elective (1) Any 200-level or above ANI, GPH, DC, GAM or IM course
English Course (1) - A 200-level or above English Literature Class
Liberal Studies (4)
Open Electives (3)

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

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

Bachelor of Science Degree Programs

Animation

The **BS in Animation** provides students with a solid foundation in the art of animation and its history combined with insight into the latest techniques used in the rapidly-moving fields of high end 3D animation in the film, television, and game development industries.

Students will learn a comprehensive set of skills in 3D including character animation, modeling, texturing, lighting, and rigging. 3D courses are designed to provide students with necessary proficiencies while also encouraging creativity and experimentation. Students interested in game art will have additional options for gaining experience through cross-disciplinary classes in game development and production and through work on game

development teams.

What students get from this program:

- A faculty body of experienced animators and working professionals.
- Access to the latest in animation software, computing systems, and technology, including motion capture and green screen studios.
- Close cooperation with programming students in the Game Development program.
- Valuable production experience both in class and through internships.
- The benefits of industry connections through CDMs relationship with Chicagos largest game development and animation studios.

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

Please note : Students must complete 20 Liberal Studies courses including the eight credit hour Mathematical and Technological Literacy requirement which is both LSP 120 (formerly ISP 120) and LSP 121 (formerly ISP 121). LSP 121 will replace one course from any one of the six Learning Domains as long as the student takes at least one course in each domain.

Four-year schedule of courses:

First Year

Major Field Courses (6)

ANI 105	Intro to Visual Design
ANI 201	Animation I *
ANI 206	History of Animation
ANI 220	3D Modeling
DC 201	Introduction to Screenwriting
ART 218	Figure Drawing

Liberal Studies Courses (6) (Required: ART 106 Beginning Drawing)and either DC 233 Cinema and Art or ART 200 Art and Artists in Contemporary Culture).
GAM 224 is recommended.

* ANI 101 Animation for Non-Majors allowed for students transferring into the major.

Second Year

Major Field Courses (6)

ANI 220	Pre-Production Art
ANI 231	3D Animation
ANI 300	3D Character Animation
DC 220	Editing I
ART 318	Advanced Figure Drawing
or ART 317	Figure Sculpture
GAM 244	Game Development I

Liberal Studies Courses (6)

Third Year

Major Field Courses (6)

ANI 240	Animation Production I
ANI 340	Animation Production II
ANI 330	3D Character Modeling
ANI 339	3D Texturing and Lighting
DC 210	Digital Cinema Production I
GAM 341	Introduction to Level Design

Animation Electives (2) - Any ANI, ART, DC, GAM, GPH, or IM course **EXCEPT:** ART 102, ART 104, ART 105, DC 120 or GPH 211
Liberal Studies Courses (3)
Open Electives (1)

Fourth Year

Major Field Courses (4)

MCS 207	History of Cinema I, 1890-1945
or MCS 208	History of Cinema II
or MCS 209	History of Cinema III, 1975-Present
GPH 355	3D Scripting for Animators
ANI 394	Animation Project I *
ANI 395	Animation Project II "

* GAM 394/395 may be substituted for ANI 394/395

Animation Electives (1) - Any ANI, ART, DC, GAM, GPH, or IM course **EXCEPT:** ART 102, ART 104, ART 105, DC 120 or GPH 211
Liberal Studies Courses (5)
Open Electives (1)

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.

Computer Games Development (Joint with SoC)

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.

CDM's Computer Games 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 Production & Design 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 CDM courses that qualify for liberal studies credit.

Four-year schedule of courses for the **Production & Design 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 (6)

MAT 150 Calculus I
GAM 341 Introduction to Level Design
ANI 230 3d Modeling for Animation and Gaming
CSC 261 Programming Languages I: C/C++
CSC 262 Programming Languages II: C/C++
GAM 230 Intro to Game Production

Gaming Elective (1)
Liberal Studies (5)

Third Year

Major Field Courses (4)

ANI 231 3d Animation for Cinema and Gaming
GAM 374 Action Games Programming
IM 220 Interactive Media I
WRD 204 Technical Writing

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

Fourth Year

Major Field Courses (4)

GAM 333 The Business of 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 CDM 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.

The **Bachelor of Science in Computer Graphics and Motion Technology** unites the technical and aesthetic principals of digitally created motion graphics and animation. Graduates 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 CDM 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
or MAT 160 Calculus for Mathematics and Science Majors I
or MAT 170 Calculus I with Scientific Applications *

MAT 151 Calculus II

* *MAT 170 is recommended*

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 Postmoderism
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.

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.

CDM's Computer Games 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 Production & Design 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 CDM courses that qualify for liberal studies credit.

Four-year schedule of courses for the **Production & Design 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 (6)

MAT 150 Calculus I
GAM 341 Introduction to Level Design
ANI 230 3d Modeling for Animation and Gaming

CSC 261 Programming Languages I: C/C++
CSC 262 Programming Languages II: C/C++
GAM 230 Intro to Game Production

Gaming Elective (1)
Liberal Studies (5)

Third Year

Major Field Courses (4)

ANI 231 3d Animation for Cinema and Gaming
GAM 374 Action Games Programming
IM 220 Interactive Media I
WRD 204 Technical Writing

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

Fourth Year

Major Field Courses (4)

GAM 333 The Business of 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 CDM 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.

Computer Graphics and Motion Technology (Joint with SoC)

The **Bachelor of Science in Computer Graphics and Motion Technology** unites the technical and aesthetic principals of digitally created motion graphics and animation. Graduates 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 is 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 CDM courses that qualigy 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
or MAT 160	Calculus for Mathematics and Science Majors I
or MAT 170	Calculus I with Scientific Applications (Recommended)
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
CMNS 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

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)

IM 230	Scripting for Interactive Media
and IM 330	Advanced Scripting for Interactive Media
or CSC 261	Programming Language I: C/C++
and CSC 262	Programming Language 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	Principles of Asian Art
IM 210	Introduction to Human-Computer Interaction
CMNS 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

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 button 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 satisy 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
ART 360	Illustration
ART 373	History of Design
IT 223	Data Analysis Self Placement Test
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
IM 330	Advanced Scripting for Interactive Media
or IM 336	Interactive Media Scripting for Programmers *
MAT 150	Calculus I
MAT 151	Calculus II
MAT 152	Calculus III

* Students who take CSC 261 and CSC 262 may take IM 330 or IM 336 as an elective. Only one of the two would count as an elective.

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 al 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 Science in Computer Graphics and Motion Technology** unites the technical and aesthetic principals of digitally created motion graphics and animation. Graduates 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 CDM 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
or MAT 160 Calculus for Mathematics and Science Majors I
or MAT 170 Calculus I with Scientific Applications *
MAT 151 Calculus II

* *MAT 170 is recommended*

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 Postmoderism
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.

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 CDM 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 CDM courses that qualify for Liberal Studies credit.

Please note: Students must complete 20 liberal studies courses including the eight credit hour Mathematical and Technological Literacy requirement which is both LSP 120 (formerly ISP 120) and LSP 121 (formerly ISP 121). LSP 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 (5)*

ANI 105	Intro to Visual Design
DC 201	Introduction to Screenwriting
DC 110	Foundation of Cinema for Majors
DC 225	Digital Still Photography
DC 220	Editing I

Liberal Studies (6 *)
Open Electives (1)

Second Year

Major Field Courses (7)

ANI 201	Animation I
VFX 200	Introduction to Visual Effects
DC 215	Digital Sound Design
ANI 230	3D Modeling
DC 275	Cinematography
DC 210	Digital Cinema Production I
DC 211	Pre-Production for Cinema

Liberal Studies (5 *)

Third Year

Major Field Courses (6)

VFX 278	Digital Compositing I
ANI 220	Pre-Production Art
ANI 260	Motion Graphics
ANI 231	3D Animation
DC 375	Advanced Cinematography
DC 310	Digital Cinema Produciton II

Liberal Studies (5 *)
Open Electives (1)

Fourth Year

Major Field Courses (5)

VFX 378	Digital Compositing II
ANI 310	Motion Capture Workshop
ANI 379	Advanced 3D Compositing
VFX 391	Vitual Cinema
DC 398	Digital Cinema Capstone

Liberal Studies (4 *)
Open Electives (3)

* Liberal Studies Arts & Literature Requirement must include at least TWO of the following:

MCS 207	History of Cinema I, 1890-1945
MCS 208	History of Cinema II
MCS 209	History of Cinema III, 1975-Present
ANI 206	History of Animation

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 .

Interactive Media (Joint with SoC)

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 CDM 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 231	Web Development I
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

Liberal Studies (5) - Required: CSC 208 Computers and Social Responsibility or IT 228 Ethics in Computer Games and Cinema

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

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 CDM, 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.

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 College of Computing and Digital Media (CDM) 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 College of Computing and Digital Media (CDM) 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 COMPUTING AND DIGITAL MEDIA

Computer technology is an omnipresent part of our world, used in academic disciplines from physics to history to geography. **CDM offers several minors that will appeal to all DePaul University students.**

Political science and *geography* majors can pursue a minor in Data Analysis, Databases, or Data Visualization, which is important to understanding how to analyze census or GPS data.

Communications majors may be interested in Digital Cinema which will give you skills in creating videos for advertising.

Art majors interested in a career in graphics programming, animation or design may be interested in CDM's tech-focused minors in Animation or Computer Graphics Software Development.

An academic foundation in E-Commerce Technology, Networks or Information Systems can give *Commerce* students 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 CDM Undergraduate Services team: gocdm@cdm.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 of CLEP credit.

Finally, students cannot earn a minor in their major program.
Courses required to fulfill a minor are determined by the unit in which the minor resides.

CDM Minors for CDM Students

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

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 CDM 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.

- 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

CDM Minor Requirements

Animation Minor

ANI 101	Animation for Non-Majors
or **ANI 201** (not both)	Animation I
ANI 230	3D Modeling
ANI 231	3D Animation
ANI 206	History of Animation

3 courses from the following list: (at least 1 must be ANI)

DC 201	Introduction to Screenwriting
DC 210	Digital Cinema Production I
DC 220	Editing I
Any ANI course	

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 CDM Electives	

Database Minor

CSC 211	Programming in Java I
and **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 CDM 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
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	Prorgamming 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
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

2 courses from the following list:

ANI 230	3D Modeling
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

3 courses from the following list:

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 L.T. System Managemement
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 130	Building Internet Applications

IT 240	Introduction to Desktop Databases
TDC 361	Basic Comunication Systems
or **IT 263**	Applied Networks and Security
IT 215	Analysis and Design Techniques
1 CDM 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 Langauge II:C/C++
IT 201	Introduction to Information Systems
IT 263	Applied Networks and Security
TDC 362	Principles of Data Communication
TDC 363	Introduction to Local Area Networks
TDC 365	Network Interconnection Technologies

Screenwriting

DC 201	Introduction to Screenwriting
DC 205	Foundations of Cinema
DC 301	Advanced Screenwriting I
DC 302	Advanced Screenwriting II
DC 303	Advanced Screenwriting III
DC 304	Topics in Screenwriting

Security Minor

CSC 211	Programming in Java I
and **CSC 212**	Programmingin Java II
or	
CSC 261	Programming Language I: C/C++
and **CSC 262**	Programming Language II:C/C++
CSC 233	Codes and Cyphers
or **CSC 333**	Cryptology
CNS 378	Host and Information Security
CNS 320	Computer Forensic and Incident Response
CNS 228	Legal,Ethical and Social Issues in Information Security
CNS 340	Fundamentals of Information Assurance

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
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	Onject -Oriented Software Development

Visual Computing Minor

MAT 140	Discrete Mathematics I
or **MAT 220**	Linear Algebra with Applications
or **1 quarter of Calculus**	**(** Prerequsite for CSC 381)
IT 223	Data Analysis (Prerequsite for CSC 367)
CSC 381	Introduction to Digital Image Processing
CSC 382	Applied Image Analysis
CSC 384	Introduction to Computer Vision
CSC 367	Introduction to Data Mining (IT 223 requirement)

Professional Development

The College of Computing and Digital Media 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 359 Web Development with Python Program
A 5-week program covering Web development with the Python programming language.

IPD 360/460 SQL Server Business Intelligence Program
An 11-week in-depth program covering SQL Server analysis services, integration services, and reporting services

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 366 Java Web Services Program
A 7-week concentrated program covering service-oriented architecture and the development

of Web services using Java

IPD 370 Advanced SQL Program
A 2-week program covering advanced Structured Query Language (SQL) features

IPD 380 IT Project Management Program
A 10-week comprehensive program covering best practices in IT project management

IPD 382 Java Developer Program
A 10-week comprehensive program covering object-oriented applications development using Java

IPD 389 .NET Developer Program
A 10-week comprehensive program covering .NET technologies

IPD 392 Telecommunications Program
An 11-week intensive program focusing on the configuration, implementation and ongoing support of telecommunications systems and networks

IPD 394 Java EE Developer Program
A 10-week in-depth program covering enterprise-wide applications development using Java EE

Combined Bachelor/Master Degrees

The Combined Degree Programs at CDM 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 combined 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@cdm.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@cdm.depaul.edu

Maintaining Good Standing

- Student GPAs and grades will be reviewed after Autumn, Winter, and Spring Quarter
- Student and Faulty Advisor will be notified when the student's cumulative GPA falls

below 3.3 or when the student receives less than a C- in graduate level Course (X-course)

Dismissal Policy

If a student's cumulative GPA falls below 3.3, the student must attain term GPA of 3.3 or above in the following quarter to stay active. If the student does not achieve a 3.3 term GPA, then the student will be dismissed from the combined program and resume the traditional BA/BS. As long as the student's cumulative GPA is below 3.3, the student must continue to achieve at least a 3.3 term GPA in all following quarters or face dismissal. If, at any point, the student's cumulative GPA is once again 3.3 or higher, term requirements no longer apply.

It is important to note:
**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 CDM graduate degree program, they may do so following normal CDM admissions procedures, but will still be required to take 13 graduate courses for a MS degree.

BA/BS-MA/MS Transition

If, upon completion of the BA/BS Degree, the student did not meet all prerequisites for the MA/MS Degree, then the student will need to complete (course, test or waiver) the missing prerequisites for the chosen MA/MS Degree.
If, while still in the undergraduate degree phase, the student receives less than a C- in graduate level course (X-course), the X-course cannot count towards the MA/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 CDM intranet so it is available to the student and CDM faculty and staff.

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.