

**DEPAUL
UNIVERSITY**



Course Catalog

College of Computing and Digital Media Graduate Studies

Summer/Autumn 2010-2011

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General Information

College of Computing and Digital Media - Graduate Studies [General Information](#)

Catalog Version

GRADUATE UPDATE: JUNE 15, 2010

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

College of Computing and Digital Media - Graduate Studies [General Information](#) [Campus Locations](#)

Campus Locations

The College of Computing and Digital Media (CDM) offers courses at our Loop and Lincoln Park Campuses as well as at convenient suburban locations.

LINCOLN PARK CAMPUS

2320 North Kenmore Avenue
Chicago, Illinois 60614

LOOP CAMPUS

243 South Wabash
Chicago, Illinois 60604
312-362-8381
(full program of course offerings)

NAPERVILLE CAMPUS

150 West Warrenville Road
Naperville, Illinois 60566
(selected course offerings)

OHARE CAMPUS

3166 River Road
Des Plaines, Illinois 60018
(selected course offerings)

ROLLING MEADOWS CAMPUS

2550 West Golf Road
Meadows Corporate Center, East Tower
Rolling Meadows, Illinois 60
(selected course offerings)

Students may take courses at any of the locations. Currently all students must complete at least part of their degree program at the Loop Campus. However, as the University continues to expand the number and variety of courses at the suburban campuses, most students will be able to take increasing advantage of these locations.

College of Computing and Digital Media (CDM)

[College of Computing and Digital Media - Graduate Studies](#) ▢ [College of Computing and Digital Media \(CDM\)](#)

About the College

The College of Computing and Digital Media offers graduate level, professional education in these areas: applied technology, artificial intelligence, business information technology, collaborative technologies, computer science, computer graphics and motion technology, computer vision, data analysis, database, data communications, data warehousing, cinema production, distributed systems, e-commerce technology, game development, human-computer interaction, information systems, management information systems, network engineering and management, predictive analytics, project management, software engineering, systems foundation, systems development, and visual computing. Students choose from a broad collection of courses to develop, in depth, the research habits and practical skills needed for research and professional practice. The College's programs are designed to provide its graduates with the technical competence and the flexibility necessary to respond to both present and future opportunities in the computing and digital media professions.

[College of Computing and Digital Media - Graduate Studies](#) ▢ [College of Computing and Digital Media \(CDM\)](#) ▢ [Administration](#)

Administration

DAVID MILLER, PH.D.

Dean

LUCIA DETTORI, PH.D.

Associate Dean

MARTIN KALIN, PH.D.

Associate Dean

LIZ FRIEDMAN, PH.D.

Assistant Dean of Student Services

MARGIE MARTYN, PH.D., CCNA

Assistant Dean of Academic Administration

[College of Computing and Digital Media - Graduate Studies](#) ▢ [College of Computing and Digital Media \(CDM\)](#) ▢ [Graduate Assistantships](#)

Graduate Assistantships

Announcement of Graduate Assistantships is generally made by June 1. Assistantships must be accepted or declined, in writing, by July 1. Recipients will be assigned by their program directors or departments to activities appropriate for a teaching, research or administrative assistant.

[College of Computing and Digital Media - Graduate Studies](#) ▢ [College of Computing and Digital Media \(CDM\)](#) ▢ [Student Services](#)

Student Services

Assistant Dean of Student Services

LIZ FRIEDMAN, Ph.D.

Advising Staff

JOHN GLATZ
Director of Advising

BECKY KROCHMAL
Assistant Director of Advising

JIGBIE AGUIRRE
Academic Advisor

SHANNON RESOWSKI
Academic Advisor

Graduate Admissions

REBECCA PHEND
Associate Director of Graduate Admissions

AMANADA VIRZI
Associate Director of Admissions

MICHAEL WESOLOWSKI
Assistant Director of Graduate Admissions

[College of Computing and Digital Media - Graduate Studies](#) [College of Computing and Digital Media \(CDM\)](#) [Facilities](#)

Facilities

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

The 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
- Center for Web Intelligence
- E-Commerce Technology Lab

More information about Labs and Resources at CDM.

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 356 Web Development with Ajax Technologies Program

A 7-week program covering Web development with Ajax technologies

IPD 357 Wireless LAN Security Program

An 8-week program covering the latest solutions in wireless LAN security

IPD 358 SharePoint Developer Program

A 10-week comprehensive program covering Microsoft SharePoint development

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 8-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

College of Computing and Digital Media - Graduate Studies □ College of Computing and Digital Media (CDM) □

CDM Graduate Student Handbook

College of Computing and Digital Media - Graduate Studies ▢ CDM Graduate Student Handbook

Introduction

In addition to the DePaul University Graduate Student Handbook, the College of Computing and Digital Media Graduate Student Handbook includes the rules and regulations for its graduate programs. Additional academic information and regulations applicable to our graduate programs appears in the specific graduate section.

As a graduate student you assume the responsibility to know and meet both the general and particular policies, and deadlines outlined in this catalog and handbook.

Specific Graduate Program Information can be found on each program page:

PhD and MFA Programs

Doctor of Philosophy in Computer and Information Sciences
Master of Fine Arts in Cinema

Master of Science Degree Programs

SCHOOL OF COMPUTING

Applied Technology (joint with SNL)
Business Information Technology (joint with KGSB)
Computer Game Development (joint with CIM)
Computer Graphics and Motion Technology (joint with CIM)
Computational Finance (joint with KGSB) **
Computer Science *
Computer, Information and Network Security *
E-Commerce Technology
Human-Computer Interaction (joint with CIM) *
Information Systems *
IT Project Management **
Network Engineering and Management *
Predictive Analytics **
Software Engineering *
Juris Doctorate and Master of Science (joint with LAW)

SCHOOL OF CINEMA AND INTERACTIVE MEDIA

Cinema Production
Computer Game Development (joint with SoC)
Computer Graphics and Motion Technology (joint with SoC)
Human-Computer Interaction (joint with SoC) *

Master of Arts Degree Programs

SCHOOL OF COMPUTING

Information Technology *
Juris Doctorate and Master of Arts (joint with LAW)

* Online Option Available

** GRE or GMAT score required for admission

Dismissal/Probation

Master's Degree students are required to meet all GPA requirements for their declared program. Once a student's cumulative GPA falls below that which is required, a student is allowed to complete an additional 16 credits or 3 quarters (whichever comes first) to return to good academic standing. If at the conclusion of this time period, the cumulative GPA remains below that which is required, the student may be dismissed from the program. A student is subject to probation as soon as his/her graduate GPA falls below 2.5. The student remains on probation until four more courses are taken, at which time another evaluation is made. If, at that time, the student has failed to raise his/her GPA to the required level of 2.5 the student may be dismissed for poor scholarship and prohibited from registering for additional coursework.

Doctoral student progress will be evaluated annually. Students must maintain a GPA of 3.5 or better to remain in good standing in the program. Any course grade below B- is unsatisfactory and will not be counted toward degree requirements. The PhD committee will ask a student to withdraw from the doctoral program if the committee members judge that the student is not satisfactorily progressing toward the degree.

A student who has been dismissed may, after a period of time, petition for reinstatement. The petition, addressed to the dean of the college, would provide information that would demonstrate a change in the student's circumstances to an extent that would support successful completion of the student's degree program. The dean's decision, based upon the merits of the petition and the recommendation of the faculty of the student's department, may, if favorable stipulate conditions of reinstatement.

Evaluation and Credit/Limitations

Using Undergraduate Credit for Graduate Courses:

All courses numbered 100 through 420 are considered to be at the undergraduate level and are not accepted for graduate credit. Exceptions to this policy include courses in the 400 level that are specifically required for a declared graduate program, courses from the Institute for Professional Development (IPD) that are indicated as applicable for graduate credits, and credit earned as part of a combined Bachelor/Master degree program.

TRANSFER CREDIT

Transfer credit is not widely accepted at the graduate level. However, in certain circumstances and with the approval of the student's faculty advisor and the CDM dean's office, it will be considered. In all instances, a maximum of two courses will be considered for transfer into any CDM graduate degree program. Course work that has already been applied toward a degree may not be applied as transfer credit. This transfer credit policy also applies to credit earned in certificate programs through the Institute of Professional Development.

Graduation Requirements

Students must successfully complete all of the general and specific degree requirements as listed in program pages of the catalog under which they were admitted. Students need to achieve the minimum grade point average indicated for their declared program of study to graduate. Specific graduation information for each program is listed on the program page .

[College of Computing and Digital Media - Graduate Studies](#) [CDM Graduate Student Handbook](#) [Grades, Repeating Classes](#)

Grades, Repeating Classes

All grades from all graduate level courses are computed in the GPA. When a student repeats a graduate level course, both the old and new grades are calculated in the graduate GPA.

[College of Computing and Digital Media - Graduate Studies](#) [CDM Graduate Student Handbook](#) [Graduation with Distinction](#)

Graduation with Distinction

Master of Arts and Master of Science degrees will be awarded with distinction to students who earned a cumulative graduate GPA of 3.9 or higher.

[College of Computing and Digital Media - Graduate Studies](#) [CDM Graduate Student Handbook](#) [Readmission](#)

Readmission

Upon admission to a graduate program, a student is to follow the catalog requirements in effect at the time of initial enrollment. If a student was previously enrolled in a graduate program in CDM but has not been in attendance for a period for one calendar year or longer, the student must file a Readmission Application. A student who is readmitted or who changes his or her program is subject to the terms of the catalog in effect at the time of readmission or program change.

[College of Computing and Digital Media - Graduate Studies](#) [CDM Graduate Student Handbook](#) [Registration](#)

Registration

Students with a conditional degree seeking status must satisfactorily complete all prerequisite phase courses prior to enrolling in graduate level courses. Special exceptions to this policy may be authorized by the student's faculty advisor in consultation with a professional advisor in the CDM Academic Success Center.

To register for courses offered through other DePaul graduate programs and which are not required in the primary program, students must consult a professional advisor in the CDM Academic Success Center. Students must obtain permission from their faculty advisor in

their primary program for these courses to apply to their graduate program. Students are responsible for completing the required prerequisites for all courses in which they register. Please note that courses taken from other colleges may have a higher tuition rate.

Programs in CDM

College of Computing and Digital Media - Graduate Studies ▢ Programs in CDM

Current Degree Descriptions

PhD and MFA Programs

Doctor of Philosophy in Computer and Information Sciences
Master of Fine Arts in Cinema

Master of Science Degree Programs

School of Computing

Applied Technology (joint with SNL)
Business Information Technology (joint with KGSB)
Computer Game Development (joint with CIM)
Computer Graphics and Motion Technology (joint with CIM)
Computational Finance (joint with KGSB) **
Computer Science *
Computer, Information and Network Security *
E-Commerce Technology
Human-Computer Interaction (joint with CIM)*
Information Systems *
IT Project Management **
Network Engineering and Management *
Predictive Analytics **
Software Engineering *

Juris Doctorate and Master of Science (joint with LAW)

School of Cinema and Interactive Media

Cinema Production
Computer Game Development (joint with SoC)
Computer Graphics and Motion Technology (joint with SoC)
Human-Computer Interaction (joint with SoC) *

Master of Arts Degree Programs

School of Computing

Information Technology *
Juris Doctorate and Master of Arts (joint with LAW)/A>

Special Programs

Advanced Software Development Professional
Professional Development Programs

* Online Option Available

** GRE or GMAT score required for admission

Online Learning

College of Computing and Digital Media - Graduate Studies ▢ Online Learning

Welcome to CDM Online Learning

DePaul CDM Online Learning programs are specifically designed to compliment the busy lifestyle of working professionals. Our Course OnLine (COL) lecture playback system brings the unique experience of an on-campus DePaul CDM education to off-campus students, and gives them flexibility in how, when, and where they learn.

Course OnLine allows DePaul CDM to offer nearly over **80 individual courses** online each quarter. We offer **9 master's degree programs** that can be completed entirely online, including:

- Computer Science
- Computer, Information and Network Security
- E-Commerce Technology
- Information Systems
- Information Technology
- Software Engineering
- Network Engineering and Management

Graduate students who wish to complete their degree through online learning do not register for a special online degree. Rather, they apply for one of our regular degree programs and then sign up for online learning courses. **The degree earned by an online learning student is identical to the degree earned by an on-campus student.**

Doctor of Philosophy in Computer and Information Sciences

College of Computing and Digital Media - Graduate Studies ▢ Doctor of Philosophy in Computer and Information Sciences

Requirements

The **Ph.D. in Computer and Information Sciences** offers an opportunity for exceptional students to pursue substantial research in the computer sciences and related areas. To earn a Ph.D. degree, a student must demonstrate breadth of knowledge in at least three research areas and significant depth in a chosen dissertation area. In addition, the student must conceive, write and defend a Ph.D. dissertation representing a significant and original contribution to current academic research as demonstrated by a public dissertation defense and publication in established peer-reviewed academic conferences and/or journals.

The Ph.D. in Computer and Information Sciences has two tracks, which differ primarily in the structure of the Inquiry Phase. Students must choose whether to enter the Computer Science or Information Systems track at admission.

OVERVIEW

The Inquiry Phase

During the Inquiry Phase students in the Computer Science track will complete coursework, initial research projects, and two Breadth Examinations. They must also prepare themselves for a Depth Examination in their chosen area of research. This Depth exam will be completed during the Research phase. Students in the Information Systems track will complete coursework, research projects, and a comprehensive exam.

The Research Phase

In this phase, students will conduct focused research leading to successful completion of a Dissertation Proposal. A Ph.D. student enters the Research Phase when he or she has chosen an area in which to do dissertation research and has found a faculty member willing to act as his or her Dissertation Advisor. The Research Phase may overlap with the Inquiry Phase, in fact, students are strongly encouraged to begin their research, under the supervision of a faculty Ph.D. advisor, as early as possible upon entering the program.

The Candidacy Phase

During the Candidacy Phase the Candidate conducts further research, and writes and defends the Ph.D. Dissertation. To be admitted to candidacy, doctoral students must complete the following:

- **Residency:** Three quarter of full-time study must be completed at DePaul University beyond the master's level. Full-time study is defined as registration for a minimum of eight credit hours (typically two courses) per quarter. With prior approval of the Ph.D. Committee, students may satisfy residency requirements by coursework, participation in seminars, or research performed off campus.
- **Allied Course:** Specific courses as specified for each track under course requirements.
- **Doctoral Examinations:** Pass two Breadth Examinations and one Depth Examination (Computer Science track) or pass Comprehensive Examination (Information Systems track).
- **Defense of Proposal:** Successfully defend a Dissertation Proposal.

COURSE REQUIREMENTS

Ph.D. students with a master's degree are required to complete a minimum of 60 credits (typically 15 courses) of graduate classes. These credits must include at least 48 credits of courses in the 420-599 range, including CSC 426: Values and Computer Technology. Information Systems track students must also complete IS 590: Information Systems Research Methods.

Students may enroll in CSC 699 only after completion of the Breadth Examinations. Conditionally admitted students must complete an additional 52 credits (typically 13 courses)

of graduate classes, including at least 36 credits of courses in the 420-599 range. The written approval of the Ph.D. Committee is required, before registering, to apply courses taught outside the School towards the doctoral program course requirements.

Student progress will be evaluated annually. Students must maintain a grade point average of 3.5 or better to remain in good standing in the program. Any course grade below B- is unsatisfactory and will not be counted toward degree requirements. The Ph.D. Committee will ask a student to withdraw from the doctoral program if the members judge that the student is not progressing satisfactorily toward the degree.

TIME LIMITS

For part-time doctoral students:

- No more than three years between admission to the doctoral program and completion of Breadth Examinations.
- No more than three years between completion of Breadth Examinations and admission to Candidacy.
- No less than eight months and no more than five years between admission to Candidacy and the dissertation defense

For full-time doctoral students:

- No more than two years between admission to the doctoral program and completion of Breadth Examinations. Note that students funded by SOC or other stipends will be required to meet more stringent requirements.
- No more than two years between completion of Breadth Examinations and admission to Candidacy.
- No less than eight months and no more than five years between admission to Candidacy and the dissertation defense.

Learn more about our Ph.D. requirements.

A limited number of Ph.D. stipends are available and may be applied for during the application process. Please see the Assistantships and Stipends page for further information.

Master of Fine Arts in Cinema

College of Computing and Digital Media - Graduate Studies ▢ Master of Fine Arts in Cinema

Requirements

The **Master of Fine Arts in Cinema** is the terminal degree in digital filmmaking. The MFA program is a highly selective program that culminates in the successful completion of the MFA thesis project; a public presentation of the thesis project, and a defense of the thesis to the student's MFA committee. Learn more about admission to this program.

Online Learning Options

Some courses in this degree are available for review and playback via the CDM Course Online playback system (COL) . If a course is COL-enabled, any student registered in the course has access to the course playback. Students are strongly encouraged to utilize the COL resource wherever available. Some courses are offered online. To complete this degree a student may take any combination of online and on campus courses. For more information on online learning at CDM visit the Online Learning Page.

COURSE REQUIREMENTS

Prerequisite Phase

The goal of the prerequisite phase is to give students the background necessary for starting the graduate program. These prerequisite phase requirements can be fulfilled in one of three ways:

- The student takes the course and earns a grade of B- or higher.
- The faculty advisor waives the course because of equivalent academic background or work experience.

All students are blocked from enrolling in Graduate Phase courses prior to completing their prerequisites. Students must submit an online Change of Status request (through myCDM) when the Prerequisite Phase is completed to inform the Student Services offices that the block can be removed.

DC 101	Screenwriting for Majors
DC 210	Digital Cinema Production I
DC 215	Digital Sound Design
DC 220	Editing I
DC 275	Cinematography
VFX 278	Digital Compositing

Foundation Phase

DC 460	Digital Cinema Proseminar
DC 461	Production Workshop
DC 462	Directing Workshop

Theory Phase

DC 476 Visual Design
and students must select 2 courses from the following list:

DC 421	Production Design
DC 422	Editing Styles and Techniques
DC 431	Cinema Movements and Manifestos
DC 451	Modes of Digital Distribution
DC 470	Film Mavericks
DC 481	Distribution and Exhibition
DC 485	Producing the Feature Film
DC 489	The Big Picture: the Entertainment Industry

Production Phase

DC 401	Writing the Short Motion Picture
DC 415	Advanced Sound Design

DC 420	Editing II
DC 423	Pre-Production for Cinema
DC 475	Advanced Cinematography
DC 495	Directing the Short Motion Picture

Major Electives

Students must choose any 3 DC, ANI or VFX production or theory courses.

Thesis Phase

DC 565 Thesis Development

MFA Thesis

The **MFA Thesis** shall be a major artistic digital project. Although there is no prescribed length for the thesis, the following should be used as guidelines:

- For live action projects, 15-35 minutes. (15-20 minute films tend to get the best festival play). Films longer than 35 minutes usually do not qualify for the SAG student film waiver. The Digital Cinema faculty encourages students to produce feature length films.
- For animation projects, 10 minutes or more.

Student's MFA Committee

During this phase students are supervised by their MFA Committee. The student's MFA Committee shall have a Chair and a minimum of two other members. The Chair (who was the student's advocate during the selection process) and one committee member must be full-time Digital Cinema Faculty. After assembling an MFA Committee the student will advise the Chair of the Digital Cinema MFA Committee of the composition of that committee. Students will work closely with the Chair of their committee in planning and completing the MFA thesis.

MFA Thesis Screening

A major component of the MFA degree is the public screening of the MFA thesis. It is the student's responsibility to organize, schedule, promote and publicize this screening.

MFA Thesis Defense

At some point following the public screening the student will schedule a thesis defense with his/her MFA committee. At this defense the student's MFA Committee will discuss, evaluate, and critique the thesis and make a determination on the awarding of the MFA degree.

DEGREE REQUIREMENTS

Students in this degree program must meet the following requirements:

- complete a minimum of 64 credit hours (generally 16 courses) beyond the Prerequisite Phase
- earn a grade of B- or better in each Prerequisite Phase course
- earn a grade of C- or better in all graduate courses beyond the Prerequisite Phase
- maintain a graduate level GPA of 2.50 or higher while pursuing their degree
- achieve a graduate GPA of 2.50 or higher at the completion of all other requirements

For DePaul's policy on repeat graduate courses and a complete list of academic policies see the DePaul Graduate Handbook in the Course Catalog.

School of Computing (SoC)

College of Computing and Digital Media - Graduate Studies ▫ 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.

College of Computing and Digital Media - Graduate Studies ▫ School of Computing (SoC) ▫ Faculty

Faculty

DAVID MILLER, Ph.D.
Dean
University of Chicago

OLAYELE ADELAKUN, Ph.D.
Associate Professor
Turku School of Economics & Business Adm.

GARY ANDRUS, Ph.D.
Associate Professor
Wayne State University

ANDRE BERTHIAUME, Ph.D.
Associate Professor
University of Montreal

GIAN MARIO BESANA, Ph.D.
Associate Professor
University of Notre Dame

GREGORY BREWSTER, Ph.D.
Associate Professor
University of Wisconsin, Madison

ROBIN BURKE, Ph.D.
Associate Professor
Northwestern University

SUSY CHAN, Ph.D.
Professor
Syracuse University

I-PING CHU, Ph.D.
Associate Professor
State University of New York at Stony Brook

ANTHONY CHUNG, Ph.D.
Associate Professor
University of Maryland Baltimore County

LUCIA DETTORI, Ph.D.

Associate Professor and Associate Dean
University of Paris XI

MASSIMO DIPIERRO, Ph.D.
Assistant Professor
University of Southampton, UK

CLARK ELLIOTT, Ph.D.
Associate Professor
Northwestern University

HELMUT EPP, Ph.D.
Professor
Northwestern University

XIAOWEN FANG, Ph.D.
Associate Professor
Purdue University

ROBERT FISHER, Ph.D.
Associate Professor
Harvard University

JACOB FURST, Ph.D.
Associate Professor
University of North Carolina at Chapel Hill

GERALD GORDON, Ph.D.
Associate Professor
University of California, Berkeley

PETER HASTINGS, Ph.D.
Associate Professor
University of Michigan, Ann Arbor

HENRY HARR, Ph.D.
Professor Emeritus
Illinois Institute of Technology

JANE HUANG, Ph.D.
Assistant Professor
University of Illinois at Chicago

RADHA JAGADEESAN, Ph.D.
Professor
Cornell University

XIAOPING JIA, Ph.D.
Professor
Northwestern University

STEVE JOST, Ph.D.
Associate Professor
Northwestern University

MARTIN KALIN, Ph.D.
Professor and Associate Dean
Northwestern University

IYAD KANJ, Ph.D.
Associate Professor
Texas A & M University

LINDA KNIGHT, Ph.D.

Associate Professor
DePaul University

JEAN-PHILIPPE LABRUYČRE, M.S.
Instructor
Illinois Institute of Technology

GLENN LANCASTER, Ph.D.
Associate Professor
University of California, Irvine

STEPHEN LUECKING, M.F.A.
Professor
Miami University

EVELYN LULIS, Ph.D.
Associate Professor
Illinois Institute of Technology

STEVEN LYTINEN, Ph.D.
Professor
Yale University

WILFREDO MARRERO, Ph.D.
Associate Professor
Carnegie Mellon University
JOHN MCDONALD, Ph.D.
Associate Professor
Northwestern University

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

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

BAMSHAD MOBASHER, Ph.D.
Associate Professor
Iowa State University
THOMAS MUSCARELLO, Ph.D.
Associate Professor
University of Illinois at Chicago

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

LJUBOMIR PERKOVIC, Ph.D.
Associate Professor
Carnegie Mellon University
NICOLE PINKARD, Ph.D.
Visiting Associate Professor
Northwestern University

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

DANIELA RAICU, Ph.D.
Assistant Professor
Oakland University

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

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

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

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

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

AMBER SETTLE, Ph.D.
Associate Professor
University of Chicago

PAUL SISUL, M.DIV.
Instructor
DeAndreis Institute of Theology
JANINE SPEARS, Ph.D.
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CHARLES WILCOX, B.A.
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Purdue University

Master of Science in Applied Technology

College of Computing and Digital Media - Graduate Studies ▫ School of Computing (SoC) ▫ Master of Science in Applied Technology

About

The **Master of Science in Applied Technology (MSAT)** is a joint degree between the College of Computing and Digital Media (CDM) and the School of New Learning (SNL).

The degree is designed for experienced non-IT managers who wish to acquire advanced technical skills in a highly focused area, in combination with enhanced understanding of the larger organizational, economic, and social contexts within which these technical skills are practiced. Students entering the MSAT must have an undergraduate degree with an appropriate GPA, although it need not have been in a technology-related field. They must also have had experience in the workplace sufficient to define the technological requirements of an organization as well as to understand the organizational system itself (generally, at least three years), and must have access to a worksite "laboratory" within which the application of learning can take place. Prospective students can find more information on this degree at the SNL website . The curriculum consists of three primary components:

- An individualized Area of Specialization in either Applied Information Systems or Applied Telecommunications Systems offered through the CDM Area of Specialization combines CDM coursework with on-the-job application of this coursework.
- A series of Liberal Learning Seminars offered through SNL which are designed to develop the skills of communication, interpersonal facility, problem-solving, analytical and systems thinking, ethical decision-making, and self-managed learning.
- A Culminating Project which is designed to integrate the technical and liberal learning components of the program through the design and/or implementation of a major professional project in the workplace. This degree is administered by the School of New Learning. More information on this degree can be found on the SNL website .

Online Learning Options

This degree can be completed entirely online. CDM online degrees are delivered mostly through COL-enabled courses , although other delivery technologies are also used. If a course is COL-enabled, any student registered in the course has access to the course playback. Students are strongly encouraged to utilize the COL resource wherever available. To complete this degree a student may take any combination of online and on campus courses. For more information on online learning at CDM visit the Online Learning Page and the SNL Online Learning page .

Master of Science in Business Information Technology

Requirements

The **Master of Science in Business Information Technology** is a joint degree between College of Computing and Digital Media (CDM) and the Kellstadt Graduate School of Business (KGSB).

The Master of Science in Business Information Technology program addresses today's need for individuals who understand the core principles of both business and technology in corporations, health care institutions, and government agencies. Many of these people work as liaisons between the Information Technology department and a functional business unit. Others work within departments that are information dependent and rely heavily on information technology. The program also provides a solid base for those interested in moving their career forward through project management or information technology management positions. Learn more about admission to this program.

COURSE REQUIREMENTS

CDM Foundation Courses

CSC 451	Database Design
IS 433	Information Security Management
PM 440	Collaborative Technologies for Leading Projects
SE 477	Software and Systems Project Management
TDC 425	Voice/Data Network Fundamentals

Kellstadt Foundation Courses

ACC 500	Financial Accounting
MGT 502	Operations Management
MIS 555	Management of Information Technology
MIS 674	Systems Analysis and Design
MKT 555	Decisions in Marketing Management

Major electives

Students must take **1** course from the list of CDM electives below, **1** course from the list of Kellstadt courses listed below, and **1** course from either list.

CDM Electives

CSC 599	Topics in Computer Science
ECT 596	Topics in E-Commerce Technology
HCI 422	Multimedia
HCI 440	Usability Engineering
HCI 454	Interaction Design
IPD 499	Topics in Global Information Technology
IS 435	Organizational Modeling
PM 570	Enterprise System Implementation
IS 482	Legal Aspects of Information Technology
IS 505	Business Continuity/Disaster Recovery Theories and Strategies
IS 511	Social Issues of Computing
IS 540	Global Information Technology
IS 574	Business Intelligence
IS 578	Information Technology Consulting
IS 596	Topics in Information Systems
IT 432	Web Architecture for Non-Programmers
IT 498	Topics in Global Information Technology
SE 427	Software Quality Management
TDC 463	Computer Networks and Data Systems

Kellstadt Electives

ACC 535	Accounting Systems
ACC 555	Management Accounting for Decision Making
MGT 501	Strategic Supply Chain Management
MGT 506	Decision Making for Managers
MGT 570	Entrepreneurship and New Venture Management
MIS 680	Electronic Business
MIS 681	E-Business Strategies
MIS 683	Information Technology Strategy and Architecture

MIS 689	Knowledge Management
MIS 798	Special Topics
MIS 799	Independent Study
MKT 595	Internet and Interactive Marketing

DEGREE REQUIREMENTS

Students in this degree program must meet the following requirements:

- complete a minimum of 52 credit hours (generally 13 courses) beyond the Prerequisite Phase
- earn a grade of B- or better in each Prerequisite Phase course
- earn a grade of C- or better in all graduate courses beyond the Prerequisite Phase
- maintain a graduate level GPA of 2.50 or higher while pursuing their degree
- achieve a graduate GPA of 2.50 or higher at the completion of all other requirements

Students with a GPA of 3.9 or higher will graduate with distinction.

For DePaul's policy on repeat graduate courses and a complete list of academic policies see the DePaul Graduate Handbook in the Course Catalog.

Master of Science in Computer Game Development

College of Computing and Digital Media - Graduate Studies ▢ School of Computing (SoC) ▢ Master of Science in Computer Game Development

Requirements

The **MS in Computer Game Development** is designed for those interested in game development programming at the highest level, including computer science and computer graphics professionals retooling for the game industry. Learn more about admission to this program.

Online Learning Options

Some courses in this degree are available for review and playback via the CDM Course Online playback system (COL) . If a course is COL-enabled, any student registered in the course has access to the course playback. Students are strongly encouraged to utilize the COL resource wherever available. Some courses are offered online. To complete this degree a student may take any combination of online and on campus courses. For more information on online learning at CDM visit the Online Learning Page.

COURSE REQUIREMENTS

Prerequisite Phase

The goal of the prerequisite phase is to give students the background necessary for starting the graduate program. These prerequisite phase requirements can be fulfilled in one of three ways:

- The student takes the course and earns a grade of B- or higher.
- The student takes a Graduate Assessment Exam (GAE) to test out of the course.
- The faculty advisor waives the course because of equivalent academic background or work experience.

All students are blocked from enrolling in Graduate Phase courses prior to completing their prerequisites. Students must submit an online Change of Status request (through myCDM) when the Prerequisite Phase is completed to inform the Student Services offices that the block can be removed.

CSC 262	Programming Languages II: C/C++
CSC 373	Computer Systems I
CSC 374	Computer Systems II
CSC 393	Data Structures in C++
or CSC 383	Data Structures and Algorithms in Java
MAT 150	Calculus I
GPH 321	Computer Graphics Development
or	an equivalent Linear Algebra course

Foundation Phase

GAM 424	Game Design Workshop
GAM 474	Fundamentals of Game Programming I
GAM 475	Game Engine Programming I

Advanced Phase

GAM 450	Physics for Game Developers
GAM 476	Artificial Intelligence for Computer Games
CSC 421	Applied Algorithms and Structures
GPH 469	Computer Graphics Development
GAM 575	Game Engine Programming II

Major electives

Students must complete **2** graduate GAM courses in the 420-699 range or courses from the following list:

CSC 443	Introduction to Operating Systems
CSC 447	Concepts of Programming Languages
CSC 448	Compiler Design
CSC 451	Database Design
CSC 480	Foundations of Artificial Intelligence
CSC 578	Neural Networks and Machine Learning
CSC 435	Distributed Systems I
GAM 490	Multiplayer Game Development
GAM 599	Topics in Computer Game Design and Development
GPH 438	Computer Animation Survey
GPH 448	Computer Graphics Scripting
GPH 539	Advanced Rendering Techniques
GPH 540	Procedural Shading
GPH 541	Advanced Lighting Techniques
GPH 570	Visualization
GPH 572	Principles of Computer Animation
GPH 575	Advanced Graphics Development
SE 430	Object Oriented Modeling
SE 433	Software Testing and Quality Assurance
SE 450	Object-Oriented Software Development
SE 477	Software and Systems Project Management
CSC 536	Distributed Systems II
CSC 534	Software Development for Limited and Embedded Devices
CSC 552	Concurrent Software Development
SE 558	Architecture and Design for Multiplayer Games

CDM Open Electives

Students must complete **1** CDM open elective course in the 420-699 range.

Capstone

GAM 690	Game Development Studio I
GAM 692	Game Development Studio II

Note Students must register for GAM 690 and GAM 691 in consecutive quarters. A grade will not be assigned for GAM 690 until GAM 691 has been completed.

DEGREE REQUIREMENTS

Students in this degree program must meet the following requirements:

- complete a minimum of 52 credit hours (generally 13 courses) beyond the Prerequisite Phase
- earn a grade of B- or better in each Prerequisite Phase course
- earn a grade of C- or better in all graduate courses beyond the Prerequisite Phase

- maintain a graduate level GPA of 2.50 or higher while pursuing their degree
- achieve a graduate GPA of 2.50 or higher at the completion of all other requirements

Students with a GPA of 3.9 or higher will graduate with distinction.

For DePaul's policy on repeat graduate courses and a complete list of academic policies see the DePaul Graduate Handbook in the Course Catalog.

Master of Science in Computer Graphics and Motion Technology

College of Computing and Digital Media - Graduate Studies ▫ School of Computing (SoC) ▫ Master of Science in Computer Graphics and Motion Technology

Requirements

The **MS in Computer Graphics and Motion Technology** focuses on the technical and visual foundations for the design and software development of Computer Graphics and Motion technology. This program prepares students for technical careers in the graphics industry ranging from entertainment to data visualization for science and medicine.

Students in the program will acquire a broad set of skills including:

- Gain a sensitivity to human perception, including a comprehension of fundamental design concepts, color theory, and the interaction of light with surfaces
- Build a deep understanding of such interaction design, modeling objects, controlling cameras, rigging characters for animation and using particle and surface techniques
- Apply perceptual and technical abilities in creating shaders, textures, characters, scenes and animations
- Acquire hands-on experience with a wide range of commercially-available tools
- Become appreciative of the two "cultures" of computer graphics - the one drawing on communication design and the other deriving from computer science.
- This degree prepares students for careers in graphics/animation production and software development. Students acquire both the aesthetic and technical knowledge required in this changing industry.

Concentrations

Visualization Concentration

This concentration focuses on graphics/animation for displaying, explaining and analyzing scientific and medical data. Visualization displays numerical data in an accurate, high-density and compact form in which patterns are revealed, emphasized and clearly communicated. Students focus on the mathematics, statistics and programming techniques necessary to analyze and display such data. At the same time students are given a firm grounding in the aesthetics that allow them to build visualizations that communicate effectively and beautifully.

Developer Concentration

This concentration follows a more traditional computer science path, focusing on the mathematical and programming techniques necessary to build graphics/animation software. Developers study not only the necessary data structures to build software such as game engines and production renderers but also the knowledge required to know what software artists will need and how they use it.

Technical Director Concentration

This concentration prepares students for jobs that facilitate artistic production. It gives students a solid aesthetic background while also providing a firm grounding in the scripting techniques necessary to take the industry's software as far as it can go in realizing the artist's creative intent. Graduates will be able to assist creative directors in such activities as

creating virtual sets, adjusting lighting, asset management and rigging characters for animation.

Online Learning Options

Some courses in this degree are available for review and playback via the CDM Course Online playback system (COL) . If a course is COL-enabled, any student registered in the course has access to the course playback. Students are strongly encouraged to utilize the COL resource wherever available. Some courses are offered online. To complete this degree a student may take any combination of online and on campus courses. For more information on online learning at CDM visit the Online Learning Page.

Developer Concentration

This concentration follows a more traditional computer science path, focusing on the mathematical and programming techniques necessary to build graphics/animation software. Developers study not only the necessary data structures to build software such as game engines and production renderers but also the knowledge required to know what software artists will need and how they will use it. Learn more about admission to this program .

Online Learning Options

Some courses in this degree are available for review and playback via the CDM Course Online playback system (COL) . If a course is COL-enabled, any student registered in the course has access to the course playback. Students are strongly encouraged to utilize the COL resource wherever available. Some courses are offered online. To complete this degree a student may take any combination of online and on campus courses. For more information on online learning at CDM visit the Online Learning Page.

COURSE REQUIREMENTS

Prerequisite Phase

The goal of the prerequisite phase is to give students the background necessary for starting the graduate program. These prerequisite phase requirements can be fulfilled in one of three ways:

- The student takes the course and earns a grade of B- or higher.
- The student takes a Graduate Assessment Exam (GAE) to test out of the course.
- The faculty advisor waives the course because of equivalent academic background or work experience.

All students are blocked from enrolling in Graduate Phase courses prior to completing their prerequisites. Students must submit an online Change of Status request (through myCDM) when the Prerequisite Phase is completed to inform the Student Services offices that the block can be removed.

IT 240	Introduction to Desktop Databases
CSC 261	Programming in C++ I
CSC 262	Programming in C++ II
CSC 393	Data Structures in C++
HCI 402	Foundations of Digital Design
GPH 212	Perceptual Principles for Digital Environments II
MAT 150	Calculus I
or MAT 160	Calculus for Mathematics and Science Majors I
or MAT 170	Calculus I with Scientific Applications (Recommended)

Foundation Phase

GPH 425	Survey of Computer Graphics
GPH 438	Computer Animation Survey
GPH 448	Computer Graphics Scripting
HCI 470	Digital Page Formatting I
GPH 436	Fundamentals of Computer Graphics
GPH 469	Computer Graphics Development

Advanced Phase

GPH 572	Principles of Computer Animation
GPH 539	Advanced Rendering Techniques

Major Electives

Students must take **1** graduate GPH course in the 420-699 range.

Open Electives

Students must take **2** graduate CDM courses in the 420-699 range.

At least **1** of the Major or Open electives must be 500-level or above.

DEGREE REQUIREMENTS

Students in this degree program must meet the following requirements:

- complete a minimum of 52 credit hours (generally 13 courses) beyond the Prerequisite Phase
- earn a grade of B- or better in each Prerequisite Phase course
- earn a grade of C- or better in all graduate courses beyond the Prerequisite Phase
- maintain a graduate level GPA of 2.50 or higher while pursuing their degree
- achieve a graduate GPA of 2.50 or higher at the completion of all other requirements

Students with a GPA of 3.9 or higher will graduate with distinction.

For DePaul's policy on repeat graduate courses and a complete list of academic policies see the DePaul Graduate Handbook in the Course Catalog.

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Technical Director Concentration

This concentration prepares students for jobs that facilitate artistic production. It gives students a solid aesthetic background while also providing a firm grounding in the scripting techniques necessary to take the industry's software as far as it can go in realizing the artist's creative intent. Graduates will be able to assist creative directors in such activities as creating virtual sets, adjusting lighting, asset management and rigging characters for animation. Learn more about admission to this program .

Online Learning Options

Some courses in this degree are available for review and playback via the CDM Course Online playback system (COL) . If a course is COL-enabled, any student registered in the course has access to the course playback. Students are strongly encouraged to utilize the COL resource wherever available. Some courses are offered online. To complete this degree a student may take any combination of online and on campus courses. For more information on online learning at CDM visit the [Online Learning Page](#).

COURSE REQUIREMENTS

Prerequisite Phase

The goal of the prerequisite phase is to give students the background necessary for starting the graduate program. These prerequisite phase requirements can be fulfilled in one of three ways:

- The student takes the course and earns a grade of B- or higher.
- The student takes a Graduate Assessment Exam (GAE) to test out of the course.
- The faculty advisor waives the course because of equivalent academic background or work experience.

All students are blocked from enrolling in Graduate Phase courses prior to completing their prerequisites. Students must submit an online Change of Status request (through myCDM) when the Prerequisite Phase is completed to inform the Student Services offices that the block can be removed.

IT 240	Introduction to Desktop Databases
IM 230	Scripting for Interactive Media
and IM 330	Advanced Scripting for Interactive Media
or CSC 261	Programming in C++ I
and CSC 262	Programming in C++ II
IM 336	Interactive Media Scripting for Programmers
GPH 269	Graphic Geometries
HCI 402	Foundations of Digital Design
GPH 212	Perceptual Principles for Digital Environments II

NOTE: *The Technical Director prerequisite concentration requires two quarters of programming in either Action Script or C/C++ so students entering with prior course work in C++ will satisfy this requirement. Any Technical Director student who wishes to eventually take courses in the Developer concentration as electives is encouraged to take the C++ programming track CSC 261 and CSC 262 to satisfy the prerequisite programming requirement.*

Foundation Phase

GPH 425	Survey of Computer Graphics
GPH 438	Computer Animation Survey
GPH 448	Computer Graphics Scripting
HCI 470	Digital Page Formatting I
HCI 440	Usability Engineering
GPH 450	Digital Modeling I

Advanced Phase

HCI 422	Multimedia
GPH 560	Modeling Spaces
GPH 565	Designing for Visualization
GPH 539	Advanced Rendering Techniques

Major Electives

Students must take **1** graduate GPH course in the 420-699 range.

Open Electives

Students must take **2** graduate CDM courses in the 420-699 range.

At least **1** of the Major or Open electives must be 500-level or above.

Suggested Electives

CSC 421	Applied Algorithms and Structures
CSC 423	Data Analysis and Regression
CSC 482	Applied Image Analysis
CSC 483	Information Processing Management
CSC 521	Monte Carlo Algorithms
GPH 448	Computer Graphics Scripting
GPH 487	Forensic Animation
GPH 536	Smooth Surface Modeling for Graphics and Animation
GPH 540	Procedural Shading
GPH 575	Advanced Graphics Development

DEGREE REQUIREMENTS

Students in this degree program must meet the following requirements:

- complete a minimum of 52 credit hours (generally 13 courses) beyond the Prerequisite Phase
- earn a grade of B- or better in each Prerequisite Phase course
- earn a grade of C- or better in all graduate courses beyond the Prerequisite Phase
- maintain a graduate level GPA of 2.50 or higher while pursuing their degree
- achieve a graduate GPA of 2.50 or higher at the completion of all other requirements

Students with a GPA of 3.9 or higher will graduate with distinction.

For DePaul's policy on repeat graduate courses and a complete list of academic policies see

the DePaul Graduate Handbook in the Course Catalog.
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Visualization Concentration

This concentration focuses on graphics/animation for displaying, explaining and analyzing scientific and medical data. Visualization displays numerical data in an accurate, high-density and compact form in which patterns are revealed, emphasized and clearly communicated. Students focus on the mathematics, statistics and programming techniques necessary to analyze and display such data. At the same time students are given a firm grounding in the aesthetics that allow them to build visualizations that communicate effectively and beautifully. Learn more about admission to this program .

Online Learning Options

Some courses in this degree are available for review and playback via the CDM Course Online playback system (COL) . If a course is COL-enabled, any student registered in the course has access to the course playback. Students are strongly encouraged to utilize the COL resource wherever available. Some courses are offered online. To complete this degree a student may take any combination of online and on campus courses. For more information on online learning at CDM visit the Online Learning Page.

COURSE REQUIREMENTS

Prerequisite Phase

The goal of the prerequisite phase is to give students the background necessary for starting the graduate program. These prerequisite phase requirements can be fulfilled in one of three ways:

- The student takes the course and earns a grade of B- or higher.
- The student takes a Graduate Assessment Exam (GAE) to test out of the course.
- The faculty advisor waives the course because of equivalent academic background or work experience.

All students are blocked from enrolling in Graduate Phase courses prior to completing their prerequisites. Students must submit an online Change of Status request (through myCDM) when the Prerequisite Phase is completed to inform the Student Services offices that the block can be removed.

IT 223	Data Analysis
CSC 261	Programming in C++ I
CSC 262	Programming in C++ II
MAT 150	Calculus I
and MAT 151	Calculus II
or MAT 160 and MAT 161	
or MAT 170 and MAT 171 *	
HCI 402	Foundations of Digital Design

* *This calculus sequence is recommended*

Foundation Phase

GPH 425	Survey of Computer Graphics
GPH 436	Fundamentals of Computer Graphics
HCI 440	Usability Engineering
CSC 431	Scientific Computing
HCI 470	Digital Page Formatting I
GPH 469	Computer Graphics Development

Advanced Phase

GPH 572	Principles of Computer Animation
CSC 481	Introduction to Image Processing
GPH 570	Visualization
GPH 580	Hardware Shading Techniques

Major Electives

Students must take 1 graduate GPH course in the 420-699 range.

Open Electives

Students must take 2 graduate CDM courses in the 420-699 range.

At least 1 of the Major or Open electives must be 500-level or above.

Suggested Electives

GPH 438	Computer Animation Survey
GPH 450	Digital Modeling I
GPH 539	Advanced Rendering Techniques
GPH 560	Modeling Spaces

DEGREE REQUIREMENTS

Students in this degree program must meet the following requirements:

- complete a minimum of 52 credit hours (generally 13 courses) beyond the Prerequisite Phase
- earn a grade of B- or better in each Prerequisite Phase course
- earn a grade of C- or better in all graduate courses beyond the Prerequisite Phase
- maintain a graduate level GPA of 2.50 or higher while pursuing their degree
- achieve a graduate GPA of 2.50 or higher at the completion of all other requirements

Students with a GPA of 3.9 or higher will graduate with distinction.

For DePaul's policy on repeat graduate courses and a complete list of academic policies see the DePaul Graduate Handbook in the Course Catalog.

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Master of Science in Computational Finance

College of Computing and Digital Media - Graduate Studies ▢ School of Computing (SoC) ▢ Master of Science in Computational Finance

Requirements

The **Master of Science in Computational Finance** is a joint degree between the College of Computing and Digital Media (CDM) and the Kellstadt Graduate School of Business (KGSB) .

The objective of this program is to offer students the opportunity to acquire both the ability to understand existing financial models in a quantitative and mathematical way, and the ability to implement these models in the form of computer programs. This program differs from a regular MS in Finance because of a stronger mathematical component and the addition of an intensive computational component. The program aims to produce graduates with the required qualifications to become "quantitative financial analysts". The Computational Finance graduates will be able to apply these quantitative tools to solve complex problems in the areas of portfolio management, risk management, and financial engineering. Learn more about admission to this program.

Online Learning Options

Some courses in this degree are available for review and playback via the CDM Course On-Line playback system (COL) . If a course is COL-enabled, any student registered in the course has access to the course playback. Students are strongly encouraged to utilize the COL resource wherever available. To complete this degree a student may take any combination of online and on campus courses. For more information on online learning at CDM visit the [Online Learning Page](#). Information on online delivery of Kellstadt courses can be found on the [Kellstadt Online Learning page](#).

COURSE REQUIREMENTS

Prerequisite Phase

The goal of the prerequisite phase is to give students the background necessary for starting the graduate program. These prerequisite phase requirements can be fulfilled in one of three ways:

- The student takes the course and earns a grade of B- or higher.
- The student takes a Graduate Assessment Exam (GAE) to test out of the course.
- The faculty advisor waives the course because of equivalent academic background or work experience.

All students are blocked from enrolling in Graduate Phase courses prior to completing their prerequisites. Students must submit an online Change of Status request (through myCDM) when the Prerequisite Phase is completed to inform the Student Services offices that the block can be removed.

MAT 150	Calculus I
and MAT 151	Calculus II
or MAT 160	Calculus for Mathematics and Science Majors I
and MAT 161	Calculus for Mathematics and Science Majors II
or MAT 170	Calculus I with Scientific Applications
and MAT 171	Calculus II with Scientific Applications
CSC 261	Programming Languages I: C/C++
and CSC 262	Programming Languages II: C/C++
or CSC 309	Object-Oriented Programming in C++
CSC 202	Discrete Structures for Computer Science
or CSC 321	Design and Analysis of Algorithms

CDM Foundation Courses

CSC 423	Data Analysis and Regression
CSC 425	Time Series Analysis and Forecasting
CSC 431	Scientific Computing
or CSC 485	Numerical Analysis
CSC 521	Monte Carlo Algorithms

Kellstadt Foundation Courses

ACC 500	Financial Accounting
ECO 555	Economics for Decision-Making
FIN 555	Financial Management
FIN 523	Investment Analysis
FIN 525	Portfolio Management
FIN 562	Derivatives: Pricing and Risk Management
FIN 662	Advanced Derivatives: Pricing and Applications

Advanced Phase

CSC 696	Master's Research
or CSC 697	Graduate Internship
or CSC 559	Software Engineering for Financial Markets

Major electives

Students must complete 1 graduate CDM 500-level course.

DEGREE REQUIREMENTS

Students in this degree program must meet the following requirements:

- complete a minimum of 52 credit hours (generally 13 courses) beyond the Prerequisite Phase
- earn a grade of B- or better in each Prerequisite Phase course
- earn a grade of C- or better in all graduate courses beyond the Prerequisite Phase
- maintain a graduate level GPA of 2.50 or higher while pursuing their degree
- achieve a graduate GPA of 2.50 or higher at the completion of all other requirements

Students with a GPA of 3.9 or higher will graduate with distinction.

For DePaul's policy on repeat graduate courses and a complete list of academic policies see the DePaul Graduate Handbook in the Course Catalog.

Master of Science in Computer Science

College of Computing and Digital Media - Graduate Studies ▫ School of Computing (SoC) ▫ Master of Science in Computer Science

Requirements

The **Master of Science degree in Computer Science** prepares students for a professional career in Software Development or Computer Science Research. The program exposes students to the complete life-cycle of computer application development including abstraction, modeling and algorithm development, leveraging computer systems, programming languages and development frameworks, and software development techniques and processes. Students also have the opportunity to study and develop applications in diverse applied areas such as:

- Computer Security
- Robotics and Computer Vision
- Data Mining and Knowledge Discovery
- Databases
- Mobile and Embedded Systems
- Intelligent Systems
- Computer Games
- Distributed Systems and Web Development
- Computer Graphics
- Computer Games

Graduates of the Computer Science Master's program are typically employed as developers and software engineers, and many also pursue a Ph.D. degree. The program is structured to provide students an expertise in the following core areas:

- Programming and Software Development
- Algorithm Design and Computer Science Concepts
- Computer and Database Systems

Students will acquire a broad range of skills including:

- Knowledge of key computer science concepts, techniques and algorithms
- An understanding of the workings and the API (Application Programming Interface) of modern computer systems including database systems
- Skills in programming and software development
- Expertise in your chosen area of Computer Science
- Research skills and experiences that can be applied in any endeavor

Learn more about admission to this program.

Online Learning Options

This degree can be completed entirely online. CDM online degrees are delivered mostly through COL-enabled courses , although other delivery technologies are also used. If a course is COL-enabled, any student registered in the course has access to the course playback. Students are strongly encouraged to utilize the COL resource wherever available. To complete this degree a student may take any combination of online and on campus courses. For more information on online learning at CDM visit the [Online Learning Page](#).

COURSE REQUIREMENTS

Prerequisite Phase

The goal of the prerequisite phase is to give students the background necessary for starting the graduate program. These prerequisite phase requirements can be fulfilled in one of three ways:

- The student takes the course and earns a grade of B- or higher.
- The student takes a Graduate Assessment Exam (GAE) to test out of the course.
- The faculty advisor waives the course because of equivalent academic background or work experience.

All students are blocked from enrolling in Graduate Phase courses prior to completing their prerequisites. Students must submit an online Change of Status request (through myCDM) when the Prerequisite Phase is completed to inform the Student Services offices that the block can be removed.

CSC 202	Discrete Structures for Computer Science
CSC 211	Programming in Java I
and CSC 212	Programming in Java II
or CSC 224	Java for Programmers
or CSC 396	Programming in Java I and II
CSC 373	Computer Systems I
CSC 374	Computer Systems II
CSC 383	Data Structures and Algorithms in Java

Foundation Phase

CSC 421	Applied Algorithms and Structures
CSC435	Distributed Systems I
CSC 447	Concepts of Programming Languages
CSC 453	Database Technologies
SE 450	Object-Oriented Software Development

Major electives

Graduates of the MS in Computer Science program must be proficient in at least one broad area of Computer Science listed below. For this reason students will take the remaining 8 elective courses as follows:

- 4 courses from one area
- 4 additional courses from any area. Including the option to take the 2-course SE Studio sequence, the 2-course GAM studio sequence, the 1-course CS capstone, the Research Colloquium course, or write an MS Thesis, or develop an MS Research Project.

The courses in each area are listed below. The Independent Study courses (CSC 695) may be taken for up to 8 credits and at most 4 credit hours of CSC 695 can count towards the chosen area.

Special requirements for the Software and System Development area Many graduates of the Computer Science program work as software developers. Students choosing to specifically prepare for this career path should choose the Software and System Development area. The requirements for students choosing this area are:

- 4 courses from the Software and System Development area
- (1 course from Software Engineering *and* CSC 597 Computer Science Capstone)
or (SE 491 Software Engineering Studio *and* SE 591 Software Engineering Studio II)
or (GAM 690 Game Development Studio I *and* GAM 691 Game Development Studio II)
- 2 courses from any area

Areas

Software and System Development area

CSC 438	Frameworks for Web Application Development
CSC 439	Computer Security
CSC 443	Introduction to Operating Systems
CSC 448	Compiler Design
CSC 475	Introduction to Robotics

CSC 548	Advanced Compiler Design
CSC 549	Database System Implementation
CSC 551	Distributed Database Systems
CSC 553	Advanced Database Concepts
CSC 536	Distributed Systems II
CSC 540	Software Development for Mobile and Wireless Systems
CSC 534	Software Development for Limited and Embedded Devices
CSC 552	Concurrent Software Development
GAM 491	Game Performance Optimization
SE 560	Structured Document Interchange and Processing
SE 452	Object-Oriented Enterprise Computing
SE 459	Agile Software Development
SE 554	Enterprise Component Architecture
CNS 450	Computer Forensics
SE 491	Software Engineering Studio (Capstone)
SE 591	Software Engineering Studio II (Capstone)
CSC 597	Computer Science Capstone
GAM 690	Game Development Studio I
GAM 691	Game Development Studio II

Theory area

CSC 431	Scientific Computing
CSC 440	Cryptology
CSC 444	Automata Theory and Formal Grammars
CSC 489	Theory of Computation
CSC 491	Advanced Algorithms and Structures
CSC 503	Parallel Algorithms
CSC 521	Monte Carlo Algorithms
CSC 525	Combinatorial Optimization
CSC 531	Introduction to Bioinformatics
CSC 535	Formal Semantics of Programming Languages
CSC 557	Foundations of Computer Security
CSC 547	Advanced Topics in Program Languages
CSC 580	Design of Object-Oriented Languages
CSC 591	Topics in Algorithms
SE 533	Software Validation and Verification

Database Systems area

CSC 452	Database Programming
CSC 454	Database Administration and Management
CSC 543	Spatial Databases and Geographic Information Systems
CSC 549	Database System Implementation
CSC 551	Distributed Database Systems
CSC 553	Advanced Database Concepts
CSC 554	Advanced Database Management
CSC 575	Intelligent Information Retrieval
CSC 589	Topics in Database

Artificial Intelligence area

CSC 457	Expert Systems
CSC 458	Symbolic Programming
CSC 480	Artificial Intelligence I
CSC 583	Artificial Intelligence II
CSC 495	Introduction to Social Computing
CSC 575	Intelligent Information Retrieval
CSC 528	Computer Vision
CSC 578	Neural Networks and Machine Learning
CSC 582	Machine Learning

CSC 587	Cognitive Science
CSC 594	Topics in Artificial Intelligence
CSC 481	Introduction to Image Processing
CSC 538	Vision Systems
CSC 482	Applied Image Analysis
CSC 592	Topics in Computer Vision and Pattern Recognition
CSC 423	Data Analysis and Regression
CSC 424	Advanced Data Analysis
CSC 425	Time Series Analysis and Forecasting
CSC 428	Data Analysis for Experimenters
ECT 584	Web Data Mining for Business Intelligence

Software Engineering area

SE 430	Object Oriented Modeling
SE 433	Software Testing and Quality Assurance
SE 453	Architecture and Frameworks for Developing Client Applications
SE 459	Agile Software Development
SE 457	Service-Oriented Architecture
SE 468	Software Measurement/Project Estimation
SE 470	Software Development Processes
SE 477	Software and Systems Project Management
SE 480	Software Architecture
SE 482	Requirements Engineering
SE 525	Software Security Architecture
SE 526	Software Security Assessment
SE 529	Software Risk Management
SE 533	Software Validation and Verification
SE 546	Software Architecture and Design for Desktop Applications
SE 549	Model-Driven Software Development

Security area

CNS 450	Computer Forensics
CSC 439	Computer Security
CSC 440	Cryptology
CSC 557	Foundations of Computer Security
SE 525	Software Security Architecture
SE 526	Software Security Assessment
TDC 588	Advanced Network Defense Systems

Multimedia area

GAM 450	Physics for Game Developers
GAM 453	Tool Programming for Game Development
GAM 474	Fundamentals of Game Programming I
GAM 475	Game Engine Programming I
GAM 476	Artificial Intelligence for Computer Games
GAM 486	Game Development for Mobile Devices
GAM 490	Multiplayer Game Development
GAM 575	Game Engine Programming II
GAM 690	Game Development Studio I
GAM 691	Game Development Studio II
GPH 436	Fundamentals of Computer Graphics
GPH 469	Computer Graphics Development
GPH 570	Visualization
GPH 572	Principles of Computer Animation
GPH 580	Hardware Shading Techniques
HCI 440	Usability Engineering
SE 456	Architecture of Computer Games
SE 556	Advanced Architecture of Computer Games
SE 558	Architecture and Design for Multiplayer Games
TDC 573	Multimedia Networking

Research and Thesis Options

As part of their electives, students have the option of signing up for the Research Colloquium or an Independent Study, or completing a Research Project, or writing a Master Thesis.

- **Research Colloquium**

The research colloquium consists of weekly talks by a variety of speakers including faculty, students, and guests from the academic and business communities. The lectures feature new creative and scholarly work that encompasses the disciplines and areas of interest of the School of Computing. Students interested in attending the colloquium and receiving credit should sign up for the **CSC 500** Research Colloquium course (NOTE: this course carries only 2 credits; it may be taken twice for credit.) Student evaluation is based on attendance as well as an online journal with reflections on each of the presentations. The educational objectives are to expose students to creative and scholarly research at DePaul and elsewhere, and to engage students in the thought process of identifying and solving challenging research problems.

- **Master's Independent Study**

Students interested in a more in-depth study of a particular area can choose to work with a faculty member (not necessarily their academic advisor) on an independent study or research project. The work involved may include system development, empirical studies, or theoretical work. The student will register for up to 4 credit hours of **CSC 695** Master's Independent Study. Four credit hours of CSC 695 replace one 500 level CS elective course in the MS in CS program. CSC 695 can be taken multiple times for up to 8 credit hours. Students must successfully complete the Foundation Phase courses prior to their first enrollment in CSC 695. Students interested in the Master's Research option must take CSC 695 for 8 credits. Students interested in the Master Thesis option will typically take 8 credits of CSC 695.

- **Master's Research**

A student who has made a significant contribution to a research project, through work done in 2 quarters of CSC 695 (8 credit-hours), may choose to complete the Master's Research option. The student must submit a technical report detailing the results of the research project. This report must be approved by the student's research supervisor and the faculty advisor, at which point it will be made available to the public as a CDM Departmental Master's Research Technical Report. In that case, the student will be allowed to register for the 0 credit course **CSC 696** Master's Research and the transcript will show the research project title as the course topic.

- **Master's Thesis**

A student who has made an original contribution to the area (through work done by CSC 695, typically) may choose to complete a Master's Thesis. The student and the student's research advisor should form a Master's Thesis Committee of 3 faculty. The student will need submit to the committee a thesis detailing the results of the research project. After a public defense, the committee will decide whether to accept the thesis. In that case, the student will be allowed to register for the 0 credit course **CSC 698** Master's Thesis and the transcript will show the thesis title as the course topic. The thesis will be made available to the public as a CDM Departmental Master's Thesis Technical Report.

DEGREE REQUIREMENTS

Students in this degree program must meet the following requirements:

- complete a minimum of 52 credit hours (generally 13 courses) beyond the Prerequisite Phase
- earn a grade of B- or better in each Prerequisite Phase course
- earn a grade of C- or better in all graduate courses beyond the Prerequisite Phase
- maintain a graduate level GPA of 2.50 or higher while pursuing their degree
- achieve a graduate GPA of 2.50 or higher at the completion of all other requirements

Students with a GPA of 3.9 or higher will graduate with distinction.

For DePaul's policy on repeat graduate courses and a complete list of academic policies see the DePaul Graduate Handbook in the Course Catalog.

Master of Science in Computer, Information and Network Security

College of Computing and Digital Media - Graduate Studies ▫ School of Computing (SoC) ▫ Master of Science in Computer, Information and Network Security

Requirements

The **MS in Computer, Information and Network Security** is intended for students who wish to specialize in the security aspects of the Information Technology field. Students who complete the program will be prepared to:

- Assess the information security risks faced by an organization
- Understand technology and human factors related to these risks
- Evaluate tools and resources currently available to limit risk, mitigate the effects of hostile action and recover from attack
- Manage the development, implementation and evolution of a security infrastructure
- Assess the impact of policy, legislation, compliance requirements and market trends on organizational security objectives
- Design, implement and maintain software systems designed to support security policy and goals
- Develop and maintain a network architecture consistent with mitigating risk and preventing hostile attack
- Be lifelong learners in the information security environment

Online Learning Options are available for this degree.

Concentrations

Computer Security Concentration

The Computer Security concentration focuses on fundamental security topics that arise in the design, analysis, and implementation of distributed systems. This concentration provides in-depth coverage of the theory and application of identity, authentication, access control, auditing, assessment and prevention of software vulnerabilities, and cryptography, in the context of modern enterprise-scale and web-based systems.

Information Systems Security Concentration

The Information Systems Security concentration focuses on the organizational and management aspects of information security. Students will learn how to plan and implement security plans, to include risk assessment, threat and vulnerability analysis, implementation of controls and safeguards, and maintenance. Students will also learn about related areas such as regulatory compliance, legal issues in security, and disaster recovery.

Network Security Concentration

The Network Security concentration focuses on the network infrastructure and network security management aspects of information security. This concentration will provide in-depth coverage of network security infrastructure technologies such as firewalls, Virtual Private Networks (VPN), Intrusion Detection and Prevention Systems (IDS/IPS), vulnerability assessment tools, as well as overall security infrastructure engineering and design.

Regulation, Compliance, and Audit Concentration

The Regulation, Compliance, and Audit concentration focuses on the impact of Information Assurance legislation and IT security controls requirements on Enterprises. This cross-disciplinary concentration covers information assurance in the context of IT and financial auditing, and providing a sound foundation for students looking for a career in auditing, compliance and information security management.

Note : Some required courses in the Regulation, Compliance & Audit concentration are **not** available via Online Learning.

Online Learning Options

All concentrations, except for a few courses in the Regulation, Compliance, and Audit can be

completed entirely online. CDM online degrees are delivered mostly through COL-enabled courses , although other delivery technologies are also used. If a course is COL-enabled, any student registered in the course has access to the course playback. Students are strongly encouraged to utilize the COL resource wherever available. To complete this degree a student may take any combination of online and on campus courses. For more information on online learning at CDM visit the Online Learning Page.

Computer Security Concentration

The Computer Security concentration focuses on fundamental security topics that arise in the design, analysis, and implementation of distributed systems. This concentration provides in-depth coverage of the theory and application of identity, authentication, access control, auditing, assessment & prevention of software vulnerabilities, and cryptography, in the context of modern enterprise-scale & web-based systems. Learn more about admission to this program .

Online Learning Options

This concentration is available online. CDM online degrees are delivered mostly through COL-enabled courses , although other delivery technologies are also used. If a course is COL-enabled, any student registered in the course has access to the course playback. Students are strongly encouraged to utilize the COL resource wherever available. To complete this degree a student may take any combination of online and on campus courses. For more information on online learning at CDM visit the Online Learning Page.

COURSE REQUIREMENTS

Prerequisite Phase

The goal of the prerequisite phase is to give students the background necessary for starting the graduate program. These prerequisite phase requirements can be fulfilled in one of three ways:

- The student takes the course and earns a grade of B- or higher.
- The student takes a Graduate Assessment Exam (GAE) to test out of the course.
- The faculty advisor waives the course because of equivalent academic background or work experience.

All students are blocked from enrolling in Graduate Phase courses prior to completing their prerequisites. Students must submit an online Change of Status request (through myCDM) when the Prerequisite Phase is completed to inform the Student Services offices that the block can be removed.

CSC 211	Programming in Java I
and CSC 212	Programming in Java II
or CSC 224	Java for Programmers
or CSC 396	Programming in Java I and II
CSC 373	Computer Systems I
CSC 374	Computer Systems II
CSC 383	Data Structures and Algorithms in Java

Foundation Phase

Students must achieve an average GPA of 3.0 or better in the five Foundation Phase courses. Students who do not meet the Foundation Phase GPA requirement must retake the course with the lowest grade. If a number of such courses exist, it is up to the student to choose which class to retake. Only the higher grade will count toward the average grade for the purpose of completing the GPA requirement. Students who do not meet the GPA requirements, and do not want to re-take a class are encouraged to talk to their faculty advisor to discuss their options. To progress to the Advanced Phase of the degree, a student must complete the Prerequisite Phase and Foundation Phase.

Students must complete the following courses:

CSC 435	Distributed Systems I
SE 450	Object-Oriented Software Development
TDC 477	Network Security
IS 433	Information Security Management
CNS 477	Legal Issues in Information Assurance

Advanced Phase

CSC 439

Computer Security

Students must also complete **2** of the following courses:

CSC 440	Cryptology
SE 525	Software Security Architecture
SE 526	Software Security Assessment
CSC 557	Foundations of Computer Security

Students must complete **1** of the following courses (not counting courses taken to satisfy the requirements above):

CNS 450	Computer Forensics
CSC 440	Cryptology
SE 482	Requirements Engineering
SE 525	Software Security Architecture
SE 526	Software Security Assessment
SE 529	Software Risk Management
CSC 536	Distributed Systems II
CSC 557	Foundations of Computer Security
TDC 577	Network Security II
TDC 588	Advanced Network Defense Systems

Major Electives

Students must complete **1** course from any CINS concentration area. That course cannot be used to fulfill a student's CINS Concentration Area or Foundation Phase requirements.

CDM Open Electives

Students must complete **2** CDM open electives. Elective courses are in the range of 420-699 and must be from the College of CDM.

Capstone

Students must complete **1** of the following courses:

CNS 594	Computer Information and Network Security Capstone
or CSC 698	Master's Thesis
or ECT 698	Master's Thesis
or IS 698	Master's Thesis
or SE 698	Master's Thesis
or TDC 698	Master's Thesis

DEGREE REQUIREMENTS

Students in this degree program must meet the following requirements:

- complete a minimum of 52 credit hours (generally 13 courses) beyond the Prerequisite Phase
- earn a grade of B- or better in each Prerequisite Phase course
- achieve a GPA of 3.0 or better in five courses required in the Foundation Phase
- earn a grade of C- or better in all graduate courses beyond the Prerequisite Phase
- maintain a graduate level GPA of 2.50 or higher while pursuing their degree
- achieve a graduate GPA of 2.50 or higher at the completion of all other requirements

Students with a GPA of 3.9 or higher will graduate with distinction.

For DePaul's policy on repeat graduate courses and a complete list of academic policies see the DePaul Graduate Handbook in the Course Catalog.

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Information Systems Security Concentration

The Information Systems Security concentration focuses on the organizational and management aspects of information security. Students will learn how to plan and implement security plans, to include risk assessment, threat and vulnerability analysis, implementation of controls and safeguards, and maintenance. Students will also learn about related areas such as regulatory compliance, legal issues in security, and disaster recovery. Learn more about admission to this program .

Online Learning Options

This concentration is available online. CDM online degrees are delivered mostly through COL-enabled courses, although other delivery technologies are also used. If a course is COL-enabled, any student registered in the course has access to the course playback. Students are strongly encouraged to utilize the COL resource wherever available. To complete this degree a student may take any combination of online and on campus courses. For more information on online learning at CDM visit the Online Learning Page.

COURSE REQUIREMENTS

Prerequisite Phase

The goal of the prerequisite phase is to give students the background necessary for starting the graduate program. These prerequisite phase requirements can be fulfilled in one of three ways:

- The student takes the course and earns a grade of B- or higher.
- The student takes a Graduate Assessment Exam (GAE) to test out of the course.
- The faculty advisor waives the course because of equivalent academic background or work experience.

All students are blocked from enrolling in Graduate Phase courses prior to completing their prerequisites. Students must submit an online Change of Status request (through myCDM) when the Prerequisite Phase is completed to inform the Student Services offices that the block can be removed.

IT 215	Analysis and Design Techniques
CSC 211	Programming in Java I
TDC 261	Basic Communication Systems
or IT 263	Applied Networks and Security

Foundation Phase

Students must achieve an average GPA of 3.0 or better in the five Foundation Phase courses. Students who do not meet the Foundation Phase GPA requirement must retake the course with the lowest grade. If a number of such courses exist, it is up to the student to choose which class to retake. Only the higher grade will count toward the average grade for the purpose of completing the GPA requirement. Students who do not meet the GPA requirements, and do not want to re-take a class are encouraged to talk to their faculty advisor to discuss their options. To progress to the Advanced Phase of the degree, a student must complete the Prerequisite Phase and Foundation Phase.

Students must complete the following courses:

IS 444	IT Auditing
TDC 463	Computer Networks and Data Systems
TDC 477	Network Security
CNS 477	Legal Issues in Information Assurance
IS 433	Information Security Management

Advanced Phase

A maximum of four courses in the Advanced Phase can be taken before completing the Foundation Phase and fulfilling the GPA requirement. Courses taken to fulfill the Foundation Phase cannot be counted in this category.

Students must complete the following course:

IS 533 Enterprise Security Infrastructure Controls and Regulatory Compliance

Students must also complete **3** of the following courses:

IS 505	Business Continuity/Disaster Recovery Theories and Strategies
IS 506	Business Continuity/Disaster Recovery Management and Tactics
ECT 582	Secure Electronic Commerce
SE 430	Object Oriented Modeling
SE 482	Requirements Engineering
SE 529	Software Risk Management
TDC 577	Network Security II

Major Electives

Students must complete **1** course from any CINS concentration area. That course cannot be used to fulfill a student's CINS Concentration Area or Foundation Phase requirements.

CDM Open Electives

Students must complete **2** CDM open electives. Elective courses are in the range of 420-699 and must be from the College of CDM

Capstone

Students must complete **1** of the following courses:

CNS 594	Computer Information and Network Security Capstone
or CSC 698	Master's Thesis
or ECT 698	Master's Thesis
or IS 698	Master's Thesis
or SE 698	Master's Thesis
or TDC 698	Master's Thesis

DEGREE REQUIREMENTS

Students in this degree program must meet the following requirements:

- complete a minimum of 52 credit hours (generally 13 courses) beyond the Prerequisite Phase
- earn a grade of B- or better in each Prerequisite Phase course
- achieve a GPA of 3.0 or better in five courses required in the Foundation Phase
- earn a grade of C- or better in all graduate courses beyond the Prerequisite Phase
- maintain a graduate level GPA of 2.50 or higher while pursuing their degree
- achieve a graduate GPA of 2.50 or higher at the completion of all other requirements

Students with a GPA of 3.9 or higher will graduate with distinction.

For DePaul's policy on repeat graduate courses and a complete list of academic policies see the DePaul Graduate Handbook in the Course Catalog.

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Network Security Concentration

The Network Security concentration focuses on the network infrastructure and network security management aspects of information security. This concentration will provide in-depth coverage of network security infrastructure technologies such as firewalls, Virtual Private Networks (VPN), Intrusion Detection and Prevention Systems (IDS/IPS), vulnerability assessment tools, as well as overall security infrastructure engineering and design. Learn more about admission to this program .

Online Learning Options

This concentration is available online. CDM online degrees are delivered mostly through COL-enabled courses , although other delivery technologies are also used. If a course is COL-enabled, any student registered in the course has access to the course playback. Students are strongly encouraged to utilize the COL resource wherever available. To complete this degree a student may take any combination of online and on campus courses. For more information on online learning at CDM visit the [Online Learning Page](#).

COURSE REQUIREMENTS

Prerequisite Phase

The goal of the prerequisite phase is to give students the background necessary for starting the graduate program. These prerequisite phase requirements can be fulfilled in one of three ways:

- The student takes the course and earns a grade of B- or higher.
- The student takes a Graduate Assessment Exam (GAE) to test out of the course.
- The faculty advisor waives the course because of equivalent academic background or

work experience.

All students are blocked from enrolling in Graduate Phase courses prior to completing their prerequisites. Students must submit an online Change of Status request (through myCDM) when the Prerequisite Phase is completed to inform the Student Services offices that the block can be removed.

CSC 211 Programming in Java I
or CSC 261 Programming Languages I: C/C++
or any more advanced programming course
TDC 261 Basic Communication Systems
or IT 263 Applied Networks and Security
TDC 311 Computers in Telecommunications Systems
or CSC 374 Computer Systems II

Foundation Phase

Students must achieve an average GPA of 3.0 or better in the five Foundation Phase courses. Students who do not meet the Foundation Phase GPA requirement must retake the course with the lowest grade. If a number of such courses exist, it is up to the student to choose which class to retake. Only the higher grade will count toward the average grade for the purpose of completing the GPA requirement. Students who do not meet the GPA requirements, and do not want to re-take a class are encouraged to talk to their faculty advisor to discuss their options. To progress to the Advanced Phase of the degree, a student must complete the Prerequisite Phase and Foundation Phase.

Students must complete the following courses:

TDC 460 Foundations of Network Technologies
TDC 463 Computer Networks and Data Systems
TDC 477 Network Security
CNS 477 Legal Issues in Information Assurance
IS 433 Information Security Management

Advanced Phase

A maximum of four courses in the Advanced Phase can be taken before completing the Foundation Phase and fulfilling the GPA requirement.

Students must complete the following courses:

TDC 511 Telecommunications Practicum
TDC 563 Protocols and Techniques for Data Networks
TDC 577 Network Security II
or TDC 588 Advanced Network Defense Systems

Students must also complete **1** of the following courses:

TDC 561 Network Programming
TDC 562 Computer-Communication Network Design and Analysis
TDC 567 Telecommunication Systems Design and Management
ECT 582 Secure Electronic Commerce

Major Electives

Students must complete **1** course from any CINS concentration area. That course cannot be used to fulfill a student's CINS Concentration Area or Foundation Phase requirements.

CDM Open Electives

Students must complete **2** CDM open electives. Elective courses are in the range of 420-699 and must be from the College of CDM

Capstone

Students must complete **1** of the following courses:

CNS 594 Computer Information and Network Security Capstone
or CSC 698 Master's Thesis
or ECT 698 Master's Thesis
or IS 698 Master's Thesis
or SE 698 Master's Thesis
or TDC 698 Master's Thesis

DEGREE REQUIREMENTS

Students in this degree program must meet the following requirements:

- complete a minimum of 52 credit hours (generally 13 courses) beyond the Prerequisite Phase
- earn a grade of B- or better in each Prerequisite Phase course
- achieve a GPA of 3.0 or better in five courses required in the Foundation Phase
- earn a grade of C- or better in all graduate courses beyond the Prerequisite Phase
- maintain a graduate level GPA of 2.50 or higher while pursuing their degree
- achieve a graduate GPA of 2.50 or higher at the completion of all other requirements

Students with a GPA of 3.9 or higher will graduate with distinction.

For DePaul's policy on repeat graduate courses and a complete list of academic policies see the DePaul Graduate Handbook in the Course Catalog.

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Regulation, Compliance and Audit Concentration

The Regulation, Compliance, and Audit concentration focuses on the impact of Information Assurance legislation and IT security controls requirements on Enterprises. This cross-disciplinary concentration covers information assurance in the context of IT and financial auditing providing a sound foundation for students looking for a career in auditing, compliance and information security management. Learn more about admission to this program .

Online Learning Options

Some courses in this concentration are available for review and playback via the CDM Course Online playback system (COL) . If a course is COL-enabled, any student registered in the course has access to the course playback. Students are strongly encouraged to utilize the COL resource wherever available. Some courses are offered online. To complete this degree a student may take any combination of online and on campus courses. For more information on online learning at CDM visit the [Online Learning Page](#).

COURSE REQUIREMENTS

Prerequisite Phase

The goal of the prerequisite phase is to give students the background necessary for starting the graduate program. These prerequisite phase requirements can be fulfilled in one of three ways:

- The student takes the course and earns a grade of B- or higher.
- The student takes a Graduate Assessment Exam (GAE) to test out of the course.
- The faculty advisor waives the course because of equivalent academic background or work experience.

All students are blocked from enrolling in Graduate Phase courses prior to completing their prerequisites. Students must submit an online Change of Status request (through myCDM) when the Prerequisite Phase is completed to inform the Student Services offices that the block can be removed.

TDC 261 Basic Communication Systems
or IT 263 Applied Networks and Security

Foundation Phase

Students must achieve an average GPA of 3.0 or better in the five Foundation Phase courses. Students who do not meet the Foundation Phase GPA requirement must retake the course with the lowest grade. If a number of such courses exist, it is up to the student to choose which class to retake. Only the higher grade will count toward the average grade for the purpose of completing the GPA requirement. Students who do not meet the GPA requirements, and do not want to re-take a class are encouraged to talk to their faculty advisor to discuss their options. To progress to the Advanced Phase of the degree, a student must complete the Prerequisite Phase and Foundation Phase.

Students must complete the following courses:

ACC 500	Financial Accounting
IS 433	Information Security Management
IS 444	IT Auditing
TDC 463	Computer Networks and Data Systems
TDC 477	Network Security

Advanced Phase

A maximum of four courses in the Advanced Phase can be taken before completing the Foundation Phase and fulfilling the GPA requirement.

Students must complete the following courses:

ACC 503	Accounting Information Systems and Auditing
CNS 477	Legal Issues in Information Assurance
IS 533	Enterprise Security Infrastructure Controls and Regulatory Compliance

Students must also complete **1** of the following courses:

ECT 582	Secure Electronic Commerce
IS 505	Business Continuity/Disaster Recovery Theories and Strategies
IS 506	Business Continuity/Disaster Recovery Management and Tactics
TDC 577	Network Security II
TDC 588	Advanced Network Defense Systems

Major Electives

Students must complete **1** course from any CINS concentration area. That course cannot be used to fulfill a student's CINS Concentration Area or Foundation Phase requirements.

CDM Open Electives

Students must complete **2** CDM open electives. Elective courses are in the range of 420-699 and must be from the College of CDM

Capstone

Students must complete **1** of the following courses:

CNS 594	Computer Information and Network Security Capstone
or ECT 698	Master's Thesis
or IS 698	Master's Thesis
or TDC 698	Master's Thesis

DEGREE REQUIREMENTS

Students in this degree program must meet the following requirements:

- complete a minimum of 52 credit hours (generally 13 courses) beyond the Prerequisite Phase
- earn a grade of B- or better in each Prerequisite Phase course
- achieve a GPA of 3.0 or better in five courses required in the Foundation Phase
- earn a grade of C- or better in all graduate courses beyond the Prerequisite Phase
- maintain a graduate level GPA of 2.50 or higher while pursuing their degree
- achieve a graduate GPA of 2.50 or higher at the completion of all other requirements

Students with a GPA of 3.9 or higher will graduate with distinction.

For DePaul's policy on repeat graduate courses and a complete list of academic policies see the DePaul Graduate Handbook in the Course Catalog.

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Master of Science in E-Commerce Technology

Requirements

The **Master of Science in E-Commerce Technology** is designed for those who want to specialize in e-business systems development and management. This program exposes students to a broad and changing mix of technologies, programming languages and tools. Team projects, and work for real clients provide an authentic environment for learning. The curriculum provides flexible and in-depth training in web development and e-business systems implementation. Students may take their major electives in the following areas:

- E-Commerce Technology (ECT)
- Human-Computer Interaction(HCI)
- Database Technologies (CSC)
- Software Engineering (SE)

Students in this program will gain a broad range of skills including:

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

Learn more about admission to this program.

Online Learning Options

This degree can be completed entirely online. CDM online degrees are delivered mostly through COL-enabled courses , although other delivery technologies are also used. If a course is COL-enabled, any student registered in the course has access to the course playback. Students are strongly encouraged to utilize the COL resource wherever available. To complete this degree a student may take any combination of online and on campus courses. For more information on online learning at CDM visit the [Online Learning Page](#).

COURSE REQUIREMENTS

Prerequisite Phase

The goal of the prerequisite phase is to give students the background necessary for starting the graduate program. These prerequisite phase requirements can be fulfilled in one of three ways:

- The student takes the course and earns a grade of B- or higher.
- The student takes a Graduate Assessment Exam (GAE) to test out of the course.
- The faculty advisor waives the course because of equivalent academic background or work experience.

All students are blocked from enrolling in Graduate Phase courses prior to completing their prerequisites. Students must submit an online Change of Status request (through myCDM) when the Prerequisite Phase is completed to inform the Student Services offices that the block can be removed.

CSC 211 Programming in Java I
and CSC 212 Programming in Java II
or CSC 224 * Java for Programmers
or CSC 396 Programming in Java I and II
CSC 383 Data Structures and Algorithms in Java
ECT 310 Internet Application Development

* CSC 224 is equivalent to the combination of CSC 211 and CSC 212. Only students with experience in programming languages should take CSC 224 .

Foundation Phase

ECT 424 Enterprise Infrastructure
ECT 455 E-Commerce Web Site Engineering

CSC 453 Database Technologies
SE 430 Object Oriented Modeling

Students in the Foundation Phase may register for a maximum of four Advanced Phase courses.

Advanced Phase

ECT 480 Intranets and Portals
ECT 481 Internet Supply Chain Management
ECT 582 Secure Electronic Commerce

Major electives

Students must complete 5 major electives, at least 2 of which must be 500-level.

ECT 436 Social Marketing and Social Networking Applications
ECT 556 Enterprise Architecture and Design
ECT 565 Mobile Enterprise
ECT 583 Advanced Scripting Technologies
ECT 584 Web Data Mining for Business Intelligence
ECT 586 Customer Relationship Management Technologies
ECT 587 Mobile Commerce Technology
HCI 440 Usability Engineering
HCI 521 Designing for Content Management Systems
IS 430 Fundamentals of IT Project Management
IS 485 Requirements Elicitation, Analysis and Specification
IS 535 Information Technology Investment Financial Analysis
IS 560 Enterprise Systems
IS 570 Enterprise System Implementation
CSC 452 Database Programming
CSC 454 Database Administration and Management
CSC 495 Introduction to Social Computing
CSC 543 Spatial Databases and Geographic Information Systems
CSC 554 Advanced Database Management
SE 452 Object-Oriented Enterprise Computing
SE 457 Service-Oriented Architecture
SE 511 Practices of Global Software Development
SE 554 Enterprise Component Architecture
SE 560 Structured Document Interchange and Processing

Capstone

ECT 589 E-Business Strategies

DEGREE REQUIREMENTS

Students in this degree program must meet the following requirements:

- complete a minimum of 52 credit hours (generally 13 courses) beyond the Prerequisite Phase
- earn a grade of B- or better in each Prerequisite Phase course
- earn a grade of C- or better in all graduate courses beyond the Prerequisite Phase
- maintain a graduate level GPA of 2.50 or higher while pursuing their degree
- achieve a graduate GPA of 2.50 or higher at the completion of all other requirements

Students with a GPA of 3.9 or higher will graduate with distinction.

For DePaul's policy on repeat graduate courses and a complete list of academic policies see the DePaul Graduate Handbook in the Course Catalog.

Master of Science in Human-Computer Interaction

Requirements

The **Master of Science in Human-Computer Interaction** at DePaul prepares students to design, implement, and evaluate computer interfaces so that they are accessible and easy for people to use. This interdisciplinary degree integrates concepts and methods from computer science, graphic design and the social sciences to provide a comprehensive understanding of the user-centered design process.

Students in this program will acquire a broad range of skills including:

- Carry out the full user-centered design process
- Conduct usability tests
- Research users and their tasks
- Create the information architecture for a web site or complex application
- Develop working prototypes of dynamic web sites

Learn more about admission to this program.

Online Learning Options

This degree can be completed entirely online. CDM online degrees are delivered mostly through COL-enabled courses, although other delivery technologies are also used. If a course is COL-enabled, any student registered in the course has access to the course playback. Students are strongly encouraged to utilize the COL resource wherever available. To complete this degree a student may take any combination of online and on campus courses. For more information on online learning at CDM visit the [Online Learning Page](#).

COURSE REQUIREMENTS

Prerequisite Phase

The goal of the prerequisite phase is to give students the background necessary for starting the graduate program. These prerequisite phase requirements can be fulfilled in one of three ways:

- The student takes the course and earns a grade of B- or higher.
- The student takes a Graduate Assessment Exam (GAE) to test out of the course.
- The faculty advisor waives the course because of equivalent academic background or work experience.

All students are blocked from enrolling in Graduate Phase courses prior to completing their prerequisites. Students must submit an online Change of Status request (through myCDM) when the Prerequisite Phase is completed to inform the Student Services offices that the block can be removed.

IT 130	The Internet and the Web
IT 223	Data Analysis
IM 230	Scripting for Interactive Media
or IM 336	Interactive Media Scripting for Programmers
IM 270	User-Centered Web Design
HCI 402	Foundations of Digital Design *

* HCI 402 is not currently offered online. Consult your advisor for determining suitable alternative coursework.

Foundation Phase

HCI 440	Usability Engineering
HCI 450	Foundations of Human-Computer Interaction
HCI 470	Digital Page Formatting I

Students in the Foundation Phase may register for a maximum of four Advanced Phase courses.

Advanced Phase

HCI 430	Prototyping and Implementation
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HCI 445	Inquiry Methods and Use Analysis
HCI 460	Usability Evaluation Methods
HCI 454	Interaction Design

Major electives

Students must complete 4 elective courses from the lists below:

HCI Electives

HCI 422	Multimedia
HCI 432	User-Centered Web Development
HCI 511	Designing for Disabilities
HCI 521	Designing for Content Management Systems
HCI 530	Usability Issues for Handheld Devices
HCI 590	Topics in Human-Computer Interaction

Non-HCI Electives open to all HCI students

CSC 423	Data Analysis and Regression
CSC 424	Advanced Data Analysis
CSC 428	Data Analysis for Experimenters
CSC 449	Database Technologies
CSC 451	Database Design
CSC 587	Cognitive Science
ECT 433	Survey of Web Programming Technologies
ECT 455	E-Commerce Web Site Engineering
ECT 480	Intranets and Portals
ECT 586	Customer Relationship Management Technologies
IS 456	Knowledge Management Systems
IS 511	Social Issues of Computing
IS 570	Enterprise System Implementation
ITS 427	Learning and Technology
ITS 431	Instructional Delivery and Course Management Systems
ITS 560	Training and User Support
IT 432	Web Architecture for Non-Programmers
PM 430	Fundamentals of IT Project Management
PM 440	Collaborative Technologies for Leading Projects
PSY 402	Perceptual Processes
PSY 404	Learning and Cognitive Processes
PSY 473	The Psychology of Judgment and Decision-Making
PSY 557	Seminar in Learning and Cognitive Processes
PSY 680	Industrial and Organization Psychology
SE 477	Software and Systems Project Management
SE 482	Requirements Engineering

Non-HCI electives requiring programming experience

GPH 425	Survey of Computer Graphics
GPH 438	Computer Animation Survey
SE 430	Object Oriented Modeling

CDM Open Electives

Students must complete 1 advisor-approved CDM elective. Elective courses are in the range of 420-699 and must be from the College of CDM.

Capstone

HCI 594	Human-Computer Interaction Capstone *
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* HCI 594 is not currently offered online. Consult your advisor for determining suitable alternative course work.

DEGREE REQUIREMENTS

Students in this degree program must meet the following requirements:

- complete a minimum of 52 credit hours (generally 13 courses) beyond the Prerequisite Phase
- earn a grade of B- or better in each Prerequisite Phase course
- earn a grade of C- or better in all graduate courses beyond the Prerequisite Phase
- maintain a graduate level GPA of 2.50 or higher while pursuing their degree
- achieve a graduate GPA of 2.50 or higher at the completion of all other requirements

Students with a GPA of 3.9 or higher will graduate with distinction.

For DePaul's policy on repeat graduate courses and a complete list of academic policies see the DePaul Graduate Handbook in the Course Catalog.

Master of Science in Information Systems

College of Computing and Digital Media - Graduate Studies ▢ School of Computing (SoC) ▢ Master of Science in Information Systems

Requirements

The **Master of Science in Information Systems** program focuses on integrating business and technical emphases on the development, management, and planning of information systems. This program will give students a strong foundation in business and systems analysis, project management, database, and enterprise infrastructure. Building on this foundation, students will acquire a broad set of skills representing ten in-demand specializations in the IT workforce.

Regardless of concentrations the advanced phase of this curriculum prepares students to lead and support organizations' changing needs in the use of information and information technologies through knowledge in:

- enterprise systems
- financial analysis for IT projects and capital decisions
- information security and compliance
- analytical methods and techniques for various analytical specializations
- current and emerging technologies and IS practices
- information systems policies and strategies

Completion of this program will enable students to support organizations to gain strategic and tactical competitive advantage. Students can choose one of ten concentrations that best meets their career plans. They will gain expertise in managing IS operations while enhancing specific technical skills. As business and systems analysts, students will develop a solid understanding of business issues when applying technical solutions to meet organization needs. As project managers, students will lead application development and enterprise projects to ensure effective management of resources in meeting stakeholder expectation. For students interested in managerial careers, this program prepares them to lead the implementation of an organization's IT and e-business strategies as Chief Information Officer, Chief Technology Officer, or e-Business Manager. Students may also specialize in burgeoning careers as enterprise systems integrators, business intelligence analysts, information security and compliance specialists, business web analysts and developers, and database administrators. For students who already have professional IT experience, this program offers flexibility in course selection for career enhancement.

Ten concentrations are available to allow students to focus in-depth on a variety of information systems areas. Students can choose a concentration that best meets their career plans and can gain expertise in managing technology while enhancing specific technical skills.

Concentrations

- Standard
- Business Analysis / Systems Analysis
- Project Management
- Enterprise Systems Integration
- Information Technology Management
- Business Web Analysis and Development
- Managing E-Business
- Business Intelligence
- Information Security & Compliance
- Database Administration

Online Learning Options

This degree is available online. CDM online degrees are delivered mostly through COL-enabled courses , although other delivery technologies are also used. If a course is COL-enabled, any student registered in the course has access to the course playback. Students are strongly encouraged to utilize the COL resource wherever available. To complete this degree a student may take any combination of online and on campus courses. For more information on online learning at CDM visit the [Online Learning Page](#).

Standard Concentration

The standard concentration offers the most flexibility and is ideal for those who want to select a diverse mix of Advanced Phase electives, based upon their interests and/or their current employer's needs. For example, a student who works in an IT position with a heavily internationalized firm and interacts regularly with networking employees may want to choose electives from among a combination of networking and global IT courses. This concentration is also suitable for those wanting to customize a program for a career as an IT consultant, IT trainer, technical author, or IT sales consultant, for example. Note that this concentration is not recommended for those without professional IT experience. Students without such experience would be better served by selecting one of the other concentrations, each of which targets a specific IS position in the workforce.

Learn more about admission to this program.

Online Learning Options

This concentration is available online. CDM online degrees are delivered mostly through COL-enabled courses , although other delivery technologies are also used. If a course is COL-enabled, any student registered in the course has access to the course playback. Students are strongly encouraged to utilize the COL resource wherever available. To complete this degree a student may take any combination of online and on campus courses. For more information on online learning at CDM visit the [Online Learning Page](#).

COURSE REQUIREMENTS

Prerequisite Phase

The goal of the prerequisite phase is to give students the background necessary for starting the graduate program. These prerequisite phase requirements can be fulfilled in one of three ways:

- The student takes the course and earns a grade of B- or higher.
- The student takes a Graduate Assessment Exam (GAE) to test out of the course.
- The faculty advisor waives the course because of equivalent academic background or work experience.

All students are blocked from enrolling in Graduate Phase courses prior to completing their prerequisites. Students must submit an online Change of Status request (through myCDM) when the Prerequisite Phase is completed to inform the Student Services offices that the block can be removed.

IS 398 Introduction to IS Management Seminar
CSC 211 Programming in Java I

Foundation Phase

IS 421 Systems Analysis
IS 422 System Design, Implementation, and Maintenance
CSC 451 Database Design
ECT 424 Enterprise Infrastructure
IS 430 Fundamentals of IT Project Management

Advanced Phase

IS 433 Information Security Management
IS 535 Information Technology Investment Financial Analysis
IS 560 Enterprise Systems

CDM Open Electives

Students must complete 4 CDM elective course in the 420-699 range from any combination of IS concentration courses and other School of Computing offerings. ANI and DC courses do not qualify. Credit for courses taken outside of the school will only be given if approved by a faculty advisor. At least 1 of the Open electives must be 500-level or above.

Capstone

IS 577 Information Systems Capstone

DEGREE REQUIREMENTS

Students in this degree program must meet the following requirements:

- complete a minimum of 52 credit hours (generally 13 courses) beyond the Prerequisite Phase
- earn a grade of B- or better in each Prerequisite Phase course
- earn a grade of C- or better in all graduate courses beyond the Prerequisite Phase
- maintain a graduate level GPA of 2.50 or higher while pursuing their degree
- achieve a graduate GPA of 2.50 or higher at the completion of all other requirements

Students with a GPA of 3.9 or higher will graduate with distinction.

For DePaul's policy on repeat graduate courses and a complete list of academic policies see the DePaul Graduate Handbook in the Course Catalog.
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Business Analysis / Systems Analysis Concentration

This concentration prepares students to function as both a Business Analyst (BA) and a Systems Analyst (SA). In general, both a BA and a SA are charged with understanding the issues of the business or organizational unit and ensuring that IT projects meet those business needs. Typically, the emphasis for a Business Analyst is upon ferreting out and organizing the needs of a user department or a project, as well as ensuring that those needs are tied to the functional requirements of its IT systems. Business Analysts should have outstanding communication skills, a desire to work with people, and strong organizational abilities. For a Systems Analyst, the emphasis typically is upon designing and overseeing the development of a workable IT system that will meet those functional requirements. Thus, a Systems Analyst may be involved in requesting and analyzing bids, developing hardware requirements, setting and overseeing testing standards, directing programming activity, and coordinating the installation of information systems. Systems Analysts should have strong knowledge in methodologies and modeling techniques, solid communication skills, in-depth knowledge of the IT field, a strong inclination toward lifelong learning, and outstanding organizational ability.

[Learn more about admission to this program.](#)

Online Learning Options

This concentration can be completed entirely online. CDM online degrees are delivered mostly through COL-enabled courses, although other delivery technologies are also used. If a course is COL-enabled, any student registered in the course has access to the course

playback. Students are strongly encouraged to utilize the COL resource wherever available. To complete this degree a student may take any combination of online and on campus courses. For more information on online learning at CDM visit the Online Learning Page.

COURSE REQUIREMENTS

Prerequisite Phase

The goal of the prerequisite phase is to give students the background necessary for starting the graduate program. These prerequisite phase requirements can be fulfilled in one of three ways:

- The student takes the course and earns a grade of B- or higher.
- The student takes a Graduate Assessment Exam (GAE) to test out of the course.
- The faculty advisor waives the course because of equivalent academic background or work experience.

All students are blocked from enrolling in Graduate Phase courses prior to completing their prerequisites. Students must submit an online Change of Status request (through myCDM) when the Prerequisite Phase is completed to inform the Student Services offices that the block can be removed.

IS 398 Introduction to IS Management Seminar
CSC 211 Programming in Java I

Foundation Phase

IS 421 Systems Analysis
IS 422 System Design, Implementation, and Maintenance
CSC 451 Database Design
ECT 424 Enterprise Infrastructure
IS 430 Fundamentals of IT Project Management

Advanced Phase

IS 535 Information Technology Investment Financial Analysis
IS 560 Enterprise Systems
IS 435 Organizational Modeling
IS 485 Requirements Elicitation, Analysis, and Specification

Major Electives

Students must take 2 courses from the list below. At least 1 of the Major or Open electives must be 500-level or above.

IS 570 Enterprise System Implementation
ECT 480 Intranets and Portals
ECT 481 Internet Supply Chain Management
ECT 436 Social Marketing and Social Networking Applications
ECT 586 Customer Relationship Management Technologies
IS 433 Information Security Management
IS 440 Collaborative Technologies for Leading Projects
IS 540 Global Information Technology
IS 565 IT Outsourcing
SE 582 Software-Intensive Systems Engineering and Management

CDM Open Electives

Students must complete 1 CDM elective course in the 420-699 range. ANI and DC courses do not qualify. Credit for courses taken outside of the school will only be given if approved by a faculty advisor. At least 1 of the Major or Open electives must be 500-level or above.

Capstone

IS 577 Information Systems Capstone

DEGREE REQUIREMENTS

Students in this degree program must meet the following requirements:

- complete a minimum of 52 credit hours (generally 13 courses) beyond the Prerequisite

Phase

- earn a grade of B- or better in each Prerequisite Phase course
- earn a grade of C- or better in all graduate courses beyond the Prerequisite Phase
- maintain a graduate level GPA of 2.50 or higher while pursuing their degree
- achieve a graduate GPA of 2.50 or higher at the completion of all other requirements

Students with a GPA of 3.9 or higher will graduate with distinction.

For DePaul's policy on repeat graduate courses and a complete list of academic policies see the DePaul Graduate Handbook in the Course Catalog.

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Project Management Concentration

The concentration in Project Management is designed to prepare students for positions as IT Project Managers. Project Managers organize, schedule, and control IT projects, ensuring that they are implemented on-time, within budget, and that they meet stakeholder expectations and needs. Many PMs now manage virtual projects, where their project team is globally scattered and communications are primarily electronically facilitated. Some PMs lead an individual project, while others may be responsible for allocating scarce monetary and human resources across a variety of competing projects. Regardless, Project Managers must be skilled negotiators. In addition, all Project Managers require substantial organizational ability, sound judgement, and outstanding interpersonal skills.

Learn more about admission to this program.

Online Learning Options

This concentration is available online. CDM online degrees are delivered mostly through COL-enabled courses, although other delivery technologies are also used. If a course is COL-enabled, any student registered in the course has access to the course playback. Students are strongly encouraged to utilize the COL resource wherever available. To complete this degree a student may take any combination of online and on campus courses. For more information on online learning at CDM visit the [Online Learning Page](#).

COURSE REQUIREMENTS

Prerequisite Phase

The goal of the prerequisite phase is to give students the background necessary for starting the graduate program. These prerequisite phase requirements can be fulfilled in one of three ways:

- The student takes the course and earns a grade of B- or higher.
- The student takes a Graduate Assessment Exam (GAE) to test out of the course.
- The faculty advisor waives the course because of equivalent academic background or work experience.

All students are blocked from enrolling in Graduate Phase courses prior to completing their prerequisites. Students must submit an online Change of Status request (through myCDM) when the Prerequisite Phase is completed to inform the Student Services offices that the block can be removed.

IS 398 Introduction to IS Management Seminar
CSC 211 Programming in Java I

Foundation Phase

IS 421 Systems Analysis
IS 422 System Design, Implementation, and Maintenance
CSC 451 Database Design
ECT 424 Enterprise Infrastructure
IS 430 Fundamentals of IT Project Management

Advanced Phase

IS 535 Information Technology Investment Financial Analysis

IS 560	Enterprise Systems
IS 440	Collaborative Technologies for Leading Projects
IS 556	Enterprise Project Management

Major Electives

Students must take **2** courses from the list below.

IS 570	Enterprise System Implementation
ECT 556	Enterprise Architecture and Design
MGT 500	Managing for Effective and Ethical Organizational Behavior
IS 540	Global Information Technology
IS 565	IT Outsourcing

CDM Open Electives

Students must complete **1** CDM elective course in the 420-699 range. ANI and DC courses do not qualify. Credit for courses taken outside of the school will only be given if approved by a faculty advisor.

Capstone

IS 577	Information Systems Capstone
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DEGREE REQUIREMENTS

Students in this degree program must meet the following requirements:

- complete a minimum of 52 credit hours (generally 13 courses) beyond the Prerequisite Phase
- earn a grade of B- or better in each Prerequisite Phase course
- earn a grade of C- or better in all graduate courses beyond the Prerequisite Phase
- maintain a graduate level GPA of 2.50 or higher while pursuing their degree
- achieve a graduate GPA of 2.50 or higher at the completion of all other requirements

Students with a GPA of 3.9 or higher will graduate with distinction.

For DePaul's policy on repeat graduate courses and a complete list of academic policies see the DePaul Graduate Handbook in the Course Catalog.

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Enterprise Systems Integration Concentration

The Enterprise Systems Integration Analyst is responsible for developing solutions that allow integrating Information Technology systems, both internal and external to the organization. Such solutions must be efficient and effective, leveraging standardized technologies, policies and procedures to achieve functional interaction of systems. Enterprise Systems Integration Analysts require exceptional conceptual and communication skills, a broad and deep knowledge of IT systems, and a proactive nature.

[Learn more about admission to this program.](#)

Online Learning Options

This concentration is available online. CDM online degrees are delivered mostly through COL-enabled courses, although other delivery technologies are also used. If a course is COL-enabled, any student registered in the course has access to the course playback. Students are strongly encouraged to utilize the COL resource wherever available. To complete this degree a student may take any combination of online and on campus courses. For more information on online learning at CDM visit the [Online Learning Page](#).

COURSE REQUIREMENTS

Prerequisite Phase

The goal of the prerequisite phase is to give students the background necessary for starting the graduate program. These prerequisite phase requirements can be fulfilled in one of three ways:

- The student takes the course and earns a grade of B- or higher.

- The student takes a Graduate Assessment Exam (GAE) to test out of the course.
- The faculty advisor waives the course because of equivalent academic background or work experience.

All students are blocked from enrolling in Graduate Phase courses prior to completing their prerequisites. Students must submit an online Change of Status request (through myCDM) when the Prerequisite Phase is completed to inform the Student Services offices that the block can be removed.

IS 398	Introduction to IS Management Seminar
CSC 211	Programming in Java I
ECT 310	Internet Application Development

Foundation Phase

IS 421	Systems Analysis
IS 422	System Design, Implementation, and Maintenance
CSC 451	Database Design
ECT 424	Enterprise Infrastructure
IS 430	Fundamentals of IT Project Management

Advanced Phase

IS 560	Enterprise Systems
ECT 481	Internet Supply Chain Management
ECT 556	Enterprise Architecture and Design
IS 556	Enterprise Project Management

Major Electives

Students must take **2** courses from the list below.

IS 535	Information Technology Investment Financial Analysis
IS 433	Information Security Management
ECT 480	Intranets and Portals
ECT 586	Customer Relationship Management Technologies
ECT 565	Mobile Enterprise

CDM Open Electives

Students must complete **1** CDM elective course in the 420-699 range. ANI and DC courses do not qualify. Credit for courses taken outside of the school will only be given if approved by a faculty advisor.

Capstone

IS 577	Information Systems Capstone
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DEGREE REQUIREMENTS

Students in this degree program must meet the following requirements:

- complete a minimum of 52 credit hours (generally 13 courses) beyond the Prerequisite Phase
- earn a grade of B- or better in each Prerequisite Phase course
- earn a grade of C- or better in all graduate courses beyond the Prerequisite Phase
- maintain a graduate level GPA of 2.50 or higher while pursuing their degree
- achieve a graduate GPA of 2.50 or higher at the completion of all other requirements

Students with a GPA of 3.9 or higher will graduate with distinction.

For DePaul's policy on repeat graduate courses and a complete list of academic policies see the DePaul Graduate Handbook in the Course Catalog.
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Information Technology Management Concentration

The concentration in Information Technology Management prepares students to lead an organization's IT function, as either Chief Information Officer or Chief Technology Officer. Such positions have strategic responsibility for identifying and championing the strategic use of IT within their organizations, as well as ensuring that the IT infrastructure is capable of meeting strategic business goals. In addition, these executives have substantial budgetary

responsibility, including responsibility for allocating scarce monetary and human resources among competing projects. They are responsible for smooth daily operation of the various functional departments within the Information Technology area, as well as for ensuring disaster recovery and business continuity.

Learn more about admission to this program.

Online Learning Options

This concentration is available online. CDM online degrees are delivered mostly through COL-enabled courses, although other delivery technologies are also used. If a course is COL-enabled, any student registered in the course has access to the course playback. Students are strongly encouraged to utilize the COL resource wherever available. To complete this degree a student may take any combination of online and on campus courses. For more information on online learning at CDM visit the Online Learning Page.

COURSE REQUIREMENTS

Prerequisite Phase

The goal of the prerequisite phase is to give students the background necessary for starting the graduate program. These prerequisite phase requirements can be fulfilled in one of three ways:

- The student takes the course and earns a grade of B- or higher.
- The student takes a Graduate Assessment Exam (GAE) to test out of the course.
- The faculty advisor waives the course because of equivalent academic background or work experience.

All students are blocked from enrolling in Graduate Phase courses prior to completing their prerequisites. Students must submit an online Change of Status request (through myCDM) when the Prerequisite Phase is completed to inform the Student Services offices that the block can be removed.

IS 398 Introduction to IS Management Seminar
CSC 211 Programming in Java I

Foundation Phase

IS 421 Systems Analysis
IS 422 System Design, Implementation, and Maintenance
CSC 451 Database Design
ECT 424 Enterprise Infrastructure
IS 430 Fundamentals of IT Project Management

Advanced Phase

IS 535 Information Technology Investment Financial Analysis
IS 483 Information Services and Operations
IS 505 Business Continuity/Disaster Recovery Theories and Strategies
IS 556 Enterprise Project Management
IS 565 IT Outsourcing

Major Electives

Students must take **1** courses from the list below.

IS 570 Enterprise System Implementation
IS 444 IT Auditing
IS 560 Enterprise Systems
MGT 500 Managing for Effective and Ethical Organizational Behavior
IS 440 Collaborative Technologies for Leading Projects
ECT 565 Mobile Enterprise
IS 433 Information Security Management
ECT 589 E-Business Strategies
IS 506 Business Continuity/Disaster Recovery Management and Tactics

CDM Open Electives

Students must complete **1** CDM elective course in the 420-699 range. ANI and DC courses do not qualify. Credit for courses taken outside of the school will only be given if approved by a

faculty advisor.

Capstone

IS 577 Information Systems Capstone

DEGREE REQUIREMENTS

Students in this degree program must meet the following requirements:

- complete a minimum of 52 credit hours (generally 13 courses) beyond the Prerequisite Phase
- earn a grade of B- or better in each Prerequisite Phase course
- earn a grade of C- or better in all graduate courses beyond the Prerequisite Phase
- maintain a graduate level GPA of 2.50 or higher while pursuing their degree
- achieve a graduate GPA of 2.50 or higher at the completion of all other requirements

Students with a GPA of 3.9 or higher will graduate with distinction.

For DePaul's policy on repeat graduate courses and a complete list of academic policies see the DePaul Graduate Handbook in the Course Catalog.

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Business Web Analysis and Development Concentration

This concentration in Business Web Analysis and Development prepares students to function as programmer/analysts in an e-business environment. The e-business programmer/analyst must have a strong knowledge of both Web Development technologies and e-business applications. Knowledge of e-business security is critical. This concentration is designed for those who are interested in both programming and analysis in a Web environment. Ideal personal characteristics include outstanding logic and attention to detail, coupled with strong interest in the business function and an ability to work well with others.

Note: While there is some programming involved, the MS in IS with a Concentration in Business Web Analysis and Development is NOT primarily a programming degree. As an alternative, the MS in E-Commerce Technology degree should be considered by students seeking a stronger emphasis on programming within the e-commerce arena. Students whose primary career focus is on programming in general should consider the MS in Software Engineering or the MS in Computer Science degree.

[Learn more about admission to this program.](#)

Online Learning Options

This concentration is available online. CDM online degrees are delivered mostly through COL-enabled courses, although other delivery technologies are also used. If a course is COL-enabled, any student registered in the course has access to the course playback. Students are strongly encouraged to utilize the COL resource wherever available. To complete this degree a student may take any combination of online and on campus courses. For more information on online learning at CDM visit the [Online Learning Page](#).

COURSE REQUIREMENTS

Prerequisite Phase

The goal of the prerequisite phase is to give students the background necessary for starting the graduate program. These prerequisite phase requirements can be fulfilled in one of three ways:

- The student takes the course and earns a grade of B- or higher.
- The student takes a Graduate Assessment Exam (GAE) to test out of the course.
- The faculty advisor waives the course because of equivalent academic background or work experience.

All students are blocked from enrolling in Graduate Phase courses prior to completing their prerequisites. Students must submit an online Change of Status request (through myCDM) when the Prerequisite Phase is completed to inform the Student Services offices that the

block can be removed.

IS 398	Introduction to IS Management Seminar
CSC 211	Programming in Java I
ECT 310	Internet Application Development

Foundation Phase

IS 421	Systems Analysis
IS 422	System Design, Implementation, and Maintenance
CSC 451	Database Design
ECT 424	Enterprise Infrastructure
IS 430	Fundamentals of IT Project Management

Advanced Phase

ECT 582	Secure Electronic Commerce
ECT 455	E-Commerce Web Site Engineering
ECT 583	Advanced Scripting Technologies
ECT 436	Social Marketing and Social Networking Applications

Major Electives

Students must take **2** courses from the list below. At least **1** of the Major or Open electives must be 500-level or above.

IS 560	Enterprise Systems
ECT 481	Internet Supply Chain Management
ECT 587	Mobile Commerce Technology
SE 452	Object-Oriented Enterprise Computing
HCI 521	Designing for Content Management Systems
ECT 586	Customer Relationship Management Technologies
ECT 589	E-Business Strategies

CDM Open Electives

Students must complete **1** CDM elective course in the 420-699 range. ANI and DC courses do not qualify. Credit for courses taken outside of the school will only be given if approved by a faculty advisor. At least **1** of the Major or Open electives must be 500-level or above.

Capstone

IS 577	Information Systems Capstone
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DEGREE REQUIREMENTS

Students in this degree program must meet the following requirements:

- complete a minimum of 52 credit hours (generally 13 courses) beyond the Prerequisite Phase
- earn a grade of B- or better in each Prerequisite Phase course
- earn a grade of C- or better in all graduate courses beyond the Prerequisite Phase
- maintain a graduate level GPA of 2.50 or higher while pursuing their degree
- achieve a graduate GPA of 2.50 or higher at the completion of all other requirements

Students with a GPA of 3.9 or higher will graduate with distinction.

For DePaul's policy on repeat graduate courses and a complete list of academic policies see the DePaul Graduate Handbook in the Course Catalog.

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Managing E-Business Concentration

This concentration in e-business management prepares students to manage an organization's e-business efforts, including developing and overseeing a long range e-business strategy. E-business managers champion the use and expansion of Web-based systems in meeting strategic goals. They work closely with marketing and sales departments to develop and enhance their Web-based efforts. Some students in this concentration will seek initial positions as Web content managers. Typical characteristics for those managing e-business include strategic vision, a proactive orientation, a lifelong interest in new technology, and outstanding interpersonal skills.

Learn more about admission to this program.

Online Learning Options

This concentration is available online. CDM online degrees are delivered mostly through COL-enabled courses, although other delivery technologies are also used. If a course is COL-enabled, any student registered in the course has access to the course playback. Students are strongly encouraged to utilize the COL resource wherever available. To complete this degree a student may take any combination of online and on campus courses. For more information on online learning at CDM visit the Online Learning Page.

COURSE REQUIREMENTS

Prerequisite Phase

The goal of the prerequisite phase is to give students the background necessary for starting the graduate program. These prerequisite phase requirements can be fulfilled in one of three ways:

- The student takes the course and earns a grade of B- or higher.
- The student takes a Graduate Assessment Exam (GAE) to test out of the course.
- The faculty advisor waives the course because of equivalent academic background or work experience.

All students are blocked from enrolling in Graduate Phase courses prior to completing their prerequisites. Students must submit an online Change of Status request (through myCDM) when the Prerequisite Phase is completed to inform the Student Services offices that the block can be removed.

IS 398	Introduction to IS Management Seminar
CSC 211	Programming in Java I
ECT 310	Internet Application Development

Foundation Phase

IS 421	Systems Analysis
IS 422	System Design, Implementation, and Maintenance
CSC 451	Database Design
ECT 424	Enterprise Infrastructure
IS 430	Fundamentals of IT Project Management

Advanced Phase

ECT 589	E-Business Strategies
ECT 455	E-Commerce Web Site Engineering
ECT 586	Customer Relationship Management Technologies
IS 535	Information Technology Investment Financial Analysis
MKT 555	Decisions in Marketing Management

Major Electives

Students must take **1** course from the list below.

ECT 556	Enterprise Architecture and Design
ECT 565	Mobile Enterprise
IS 556	Enterprise Project Management
ECT 480	Intranets and Portals
IS 560	Enterprise Systems
IS 440	Collaborative Technologies for Leading Projects
ECT 582	Secure Electronic Commerce
HCI 521	Designing for Content Management Systems
ECT 481	Internet Supply Chain Management

CDM Open Electives

Students must complete **1** CDM elective course in the 420-699 range. ANI and DC courses do not qualify. Credit for courses taken outside of the school will only be given if approved by a faculty advisor.

Capstone

IS 577	Information Systems Capstone
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DEGREE REQUIREMENTS

Students in this degree program must meet the following requirements:

- complete a minimum of 52 credit hours (generally 13 courses) beyond the Prerequisite Phase
- earn a grade of B- or better in each Prerequisite Phase course
- earn a grade of C- or better in all graduate courses beyond the Prerequisite Phase
- maintain a graduate level GPA of 2.50 or higher while pursuing their degree
- achieve a graduate GPA of 2.50 or higher at the completion of all other requirements

Students with a GPA of 3.9 or higher will graduate with distinction.

For DePaul's policy on repeat graduate courses and a complete list of academic policies see the DePaul Graduate Handbook in the Course Catalog.

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Business Intelligence Concentration

A Business Intelligence Analyst understands the strategic goals and tactical issues facing an organization, and uses a combination of technology and statistics to provide senior management with the information they need. Typically, this is done through the maintenance of a data warehouse, a special data repository from which strategic information may be harvested, using data mining techniques to compute predictive analytics. Business analysts have strong computational and analytical skills, and are comfortable with both statistics and technology. They are able to anticipate and fill senior executives' data needs, often through the use of real-time dashboards.

[Learn more about admission to this program.](#)

Online Learning Options

This concentration is available online. CDM online degrees are delivered mostly through COL-enabled courses, although other delivery technologies are also used. If a course is COL-enabled, any student registered in the course has access to the course playback. Students are strongly encouraged to utilize the COL resource wherever available. To complete this degree a student may take any combination of online and on campus courses. For more information on online learning at CDM visit the [Online Learning Page](#).

COURSE REQUIREMENTS

Prerequisite Phase

The goal of the prerequisite phase is to give students the background necessary for starting the graduate program. These prerequisite phase requirements can be fulfilled in one of three ways:

- The student takes the course and earns a grade of B- or higher.
- The student takes a Graduate Assessment Exam (GAE) to test out of the course.
- The faculty advisor waives the course because of equivalent academic background or work experience.

All students are blocked from enrolling in Graduate Phase courses prior to completing their prerequisites. Students must submit an online Change of Status request (through myCDM) when the Prerequisite Phase is completed to inform the Student Services offices that the block can be removed.

IS 398	Introduction to IS Management Seminar
CSC 211	Programming in Java I
IT 223	Data Analysis

Foundation Phase

IS 421	Systems Analysis
IS 422	System Design, Implementation, and Maintenance
CSC 451	Database Design

ECT 424 Enterprise Infrastructure
IS 430 Fundamentals of IT Project Management

Advanced Phase

IS 560 Enterprise Systems
IS 574 Business Intelligence
CSC 423 Data Analysis and Regression
IS 567 Knowledge Discovery Technologies

Major Electives

Students must take **2** courses from the list below.

IS 456 Knowledge Management Systems
ECT 480 Intranets and Portals
ECT 586 Customer Relationship Management Technologies
CSC 424 Advanced Data Analysis
ECT 584 Web Data Mining for Business Intelligence
IS 549 Data Warehousing and Data Mining

CDM Open Electives

Students must complete **1** CDM elective course in the 420-699 range. ANI and DC courses do not qualify. Credit for courses taken outside of the school will only be given if approved by a faculty advisor.

Capstone

IS 577 Information Systems Capstone

DEGREE REQUIREMENTS

Students in this degree program must meet the following requirements:

- complete a minimum of 52 credit hours (generally 13 courses) beyond the Prerequisite Phase
- earn a grade of B- or better in each Prerequisite Phase course
- earn a grade of C- or better in all graduate courses beyond the Prerequisite Phase
- maintain a graduate level GPA of 2.50 or higher while pursuing their degree
- achieve a graduate GPA of 2.50 or higher at the completion of all other requirements

Students with a GPA of 3.9 or higher will graduate with distinction.

For DePaul's policy on repeat graduate courses and a complete list of academic policies see the DePaul Graduate Handbook in the Course Catalog.
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Information Security & Compliance Concentration

The concentration in Information Security & Compliance prepares students to function as information security managers, risk managers, IT auditors, and compliance analysts. These roles are responsible for conducting risk assessments, developing and implementing security policies, and ensuring an organization's IT compliance with internal, industry, and government regulation, policies, and procedures. These roles play an integral part in advising and collaborating across organizational units on chain of trust agreements, business continuity and disaster recovery plans, and audit and governmental compliance practices. Further, these roles are responsible for building organizational awareness of security and compliance policies and procedures. As such, these professionals must maintain current knowledge of a broad range of security threats and vulnerabilities, legal requirements, ethical considerations, industry standards and control techniques. These professionals are detail-oriented and persistent, are persuasive in both oral and written communication to a broad range of technical and non-technical organizational members, and are effective at advising and influencing senior management.

Learn more about admission to this program.

Online Learning Options

This concentration is available online. CDM online degrees are delivered mostly through COL-enabled courses , although other delivery technologies are also used. If a course is COL-

enabled, any student registered in the course has access to the course playback. Students are strongly encouraged to utilize the COL resource wherever available. To complete this degree a student may take any combination of online and on campus courses. For more information on online learning at CDM visit the Online Learning Page.

COURSE REQUIREMENTS

Prerequisite Phase

The goal of the prerequisite phase is to give students the background necessary for starting the graduate program. These prerequisite phase requirements can be fulfilled in one of three ways:

- The student takes the course and earns a grade of B- or higher.
- The student takes a Graduate Assessment Exam (GAE) to test out of the course.
- The faculty advisor waives the course because of equivalent academic background or work experience.

All students are blocked from enrolling in Graduate Phase courses prior to completing their prerequisites. Students must submit an online Change of Status request (through myCDM) when the Prerequisite Phase is completed to inform the Student Services offices that the block can be removed.

IS 398 Introduction to IS Management Seminar
CSC 211 Programming in Java I

Foundation Phase

IS 421 Systems Analysis
IS 422 System Design, Implementation, and Maintenance
CSC 451 Database Design
ECT 424 Enterprise Infrastructure
IS 430 Fundamentals of IT Project Management

Advanced Phase

IS 433 Information Security Management
IS 444 IT Auditing
IS 505 Business Continuity/Disaster Recovery Theories and Strategies
CNS 477 Legal Issues in Information Assurance
IS 533 Enterprise Security Infrastructure Controls and Regulatory Compliance

Major Electives

Students must take **1** courses from the list below.

IS 506 Business Continuity/Disaster Recovery Management and Tactics
IS 535 Information Technology Investment Financial Analysis
IS 560 Enterprise Systems

CDM Open Electives

Students must complete **1** CDM elective course in the 420-699 range. ANI and DC courses do not qualify. Credit for courses taken outside of the school will only be given if approved by a faculty advisor.

Capstone

IS 577 Information Systems Capstone

DEGREE REQUIREMENTS

Students in this degree program must meet the following requirements:

- complete a minimum of 52 credit hours (generally 13 courses) beyond the Prerequisite Phase
- earn a grade of B- or better in each Prerequisite Phase course
- earn a grade of C- or better in all graduate courses beyond the Prerequisite Phase
- maintain a graduate level GPA of 2.50 or higher while pursuing their degree
- achieve a graduate GPA of 2.50 or higher at the completion of all other requirements

Students with a GPA of 3.9 or higher will graduate with distinction.

For DePaul's policy on repeat graduate courses and a complete list of academic policies see the DePaul Graduate Handbook in the Course Catalog.

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Database Administration Concentration

This concentration in Database Administration is designed to prepare students to be Database Administrators. Large organizations have entire teams or even departments responsible for the DBA function, while small organizations may have just one DBA. In general, DBA's are responsible for the validity, reliability, security, and online responsiveness of their organization's database. They design both the physical and logical structure of these databases, develop processes and procedures to ensure both security and business continuity and disaster recovery.

Note: Students in this concentration are advised to take CSC 451 as their first foundation course. After successful completion of CSC 451, students in the concentration can take Advanced Phase at the same time as Foundation courses, if they so desire. Advisors may wish to suggest that their students in this concentration take one more technical database course along with one more traditional IS course, or, if they are taking just one course at a time, that they alternate courses between the two categories.

[Learn more about admission to this program.](#)

Online Learning Options

This concentration is available online. CDM online degrees are delivered mostly through COL-enabled courses, although other delivery technologies are also used. If a course is COL-enabled, any student registered in the course has access to the course playback. Students are strongly encouraged to utilize the COL resource wherever available. To complete this degree a student may take any combination of online and on campus courses. For more information on online learning at CDM visit the [Online Learning Page](#).

COURSE REQUIREMENTS

Prerequisite Phase

The goal of the prerequisite phase is to give students the background necessary for starting the graduate program. These prerequisite phase requirements can be fulfilled in one of three ways:

- The student takes the course and earns a grade of B- or higher.
- The student takes a Graduate Assessment Exam (GAE) to test out of the course.
- The faculty advisor waives the course because of equivalent academic background or work experience.

All students are blocked from enrolling in Graduate Phase courses prior to completing their prerequisites. Students must submit an online Change of Status request (through myCDM) when the Prerequisite Phase is completed to inform the Student Services offices that the block can be removed.

IS 398	Introduction to IS Management Seminar
CSC 211	Programming in Java I
and CSC 212	Programming in Java I
or CSC 224	Java for Programmers

Foundation Phase

IS 421	Systems Analysis
IS 422	System Design, Implementation, and Maintenance
CSC 451	Database Design
ECT 424	Enterprise Infrastructure
IS 430	Fundamentals of IT Project Management

Advanced Phase

IS 433	Information Security Management
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IS 549	Data Warehousing and Data Mining
CSC 454	Database Administration and Management
CSC 452	Database Programming
CSC 554	Advanced Database Management
IS 505	Business Continuity/Disaster Recovering Theories and Strategies

CDM Open Electives

Students must complete **1** CDM elective course in the 420-699 range. ANI and DC courses do not qualify. Credit for courses taken outside of the school will only be given if approved by a faculty advisor.

Capstone

IS 577 Information Systems Capstone

DEGREE REQUIREMENTS

Students in this degree program must meet the following requirements:

- complete a minimum of 52 credit hours (generally 13 courses) beyond the Prerequisite Phase
- earn a grade of B- or better in each Prerequisite Phase course
- earn a grade of C- or better in all graduate courses beyond the Prerequisite Phase
- maintain a graduate level GPA of 2.50 or higher while pursuing their degree
- achieve a graduate GPA of 2.50 or higher at the completion of all other requirements

Students with a GPA of 3.9 or higher will graduate with distinction.

For DePaul's policy on repeat graduate courses and a complete list of academic policies see the DePaul Graduate Handbook in the Course Catalog.

Master of Arts in Information Technology

College of Computing and Digital Media - Graduate Studies ▢ School of Computing (SoC) ▢ Master of Arts in Information Technology

Requirements

The **Master of Arts in Information Technology Program** is intended to prepare professionals in the broad field of Information Technology. In particular, the program prepares graduates to interact professionally with technologists, write about IT, manage impacts of IT on organizations or society, or evaluate IT-oriented data.

The goal of the MA in Information Technology program is to prepare someone in a non-technical position to interact effectively with the technical staff and customers. Students in the program acquire a broad range of skills including:

- The concepts, tools, and practices of information technology management.
- The analysis phase of the software development life cycle.
- The fundamentals of networks for voice and data communications and for the integration of voice and data streams,
- The methods and problems associated with technology-triggered business transformation.
- The basics of database design.
- The fundamentals of project management for software systems.
- The skills to acquire and analyze data.

Learn more about admission to this program.

Online Learning Options

This degree can be completed entirely online. CDM online degrees are delivered mostly through COL-enabled courses , although other delivery technologies are also used. If a course is COL-enabled, any student registered in the course has access to the course playback. Students are strongly encouraged to utilize the COL resource wherever available. To complete this degree a student may take any combination of online and on campus courses. For more information on online learning at CDM visit the Online Learning Page.

DEGREE REQUIREMENTS

Prerequisite Phase

The goal of the prerequisite phase is to give students the background necessary for starting the graduate program. These prerequisite phase requirements can be fulfilled in one of three ways:

- The student takes the course and earns a grade of B- or higher.
- The student takes a Graduate Assessment Exam (GAE) to test out of the course.
- The faculty advisor waives the course because of equivalent academic background or work experience.

All students are blocked from enrolling in Graduate Phase courses prior to completing their prerequisites. Students must submit an online Change of Status request (through myCDM) when the Prerequisite Phase is completed to inform the Student Services offices that the block can be removed.

IT 130	The Internet and the Web
IT 223	Data Analysis
TDC 261	Basic Communication Systems

Foundation Phase

CSC 423	Data Analysis and Regression
HCI 445	Inquiry Methods and Use Analysis
HCI 440	Usability Engineering
CSC 451	Database Design
IS 511	Social Issues of Computing
IS 430	Fundamentals of IT Project Management
IT 432	User-Centered Web Development

Students in the Foundation Phase may register for a maximum of four Advanced Phase courses.

Advanced Phase

The Advanced Phase provides opportunities for breadth and depth in IT, and allows for specialized interests. Students must take **5** elective courses from the list below. A minimum of **2** courses must be taken at the 500-level.

CSC 424	Advanced Data Analysis
CSC 428	Data Analysis for Experimenters
CSC 449	Database Technologies
ECT 480	Intranets and Portals
ECT 556	Enterprise Architecture and Design
ECT 565	Mobile Enterprise
ECT 585	Legal Aspects of E-Commerce
ECT 586	Customer Relationship Management Technologies
ECT 589	E-Commerce Strategies
HCI 450	Foundations of Human-Computer Interaction
HCI 454	Interaction Design
HCI 460	Usability Evaluation Methods
IPD 499	Topics in Global Information Technology
IS 425	Enterprise Information
IS 570	Enterprise System Implementation.
IS 456	Knowledge Management Systems
IS 482	Legal Aspects of Information Technology
IS 483	Information Services and Operations
IS 505	Business Continuity/Disaster Recovery Theories and Strategies
IS 512	Collaborative Technologies for Leading Projects
IS 540	Global Information Technology
IS 560	Enterprise Systems
IS 433	Information Security Management

in IT project failures. Over the past decade, it has become apparent that placing individuals with strong training in the breadth of project management skills significantly improves the likelihood of bringing an IT project in successfully on time, and on budget. This growing awareness is leading to increased demand for skilled IT project and program managers. But demand for these skills currently outstrips the supply of qualified candidates. This is a high-level program preparing graduates for mid- to high-level project and program management positions. Core IT skills are assumed. Students focus on leveraging those skills to build leadership practices that enable quality work.

Students in this program will gain a broad range of skills including:

- In-depth knowledge of project management skills, including risk management, procurement and contract management, time and cost estimating, controlling and tracking techniques (scope statements, work breakdown structures, Gantt, PERT, etc.); and IT testing, quality assurance, and control
- Familiarity with those elements of human resource management that are key to project management success, such as team building, motivating, communicating through traditional and electronic means, negotiating and influencing, coordinating, and managing organizational change
- Basic general knowledge of business systems and processes, including knowledge of introductory accounting and the basics of cost accounting as applied in IT project management
- Ability to effectively use common project management software packages
- Familiarity with program management and the skills to mitigate risk across a portfolio of projects

Learn more about admission to this program.

Online Learning Options

This degree can be completed entirely online. CDM online degrees are delivered mostly through COL-enabled courses, although other delivery technologies are also used. If a course is COL-enabled, any student registered in the course has access to the course playback. Students are strongly encouraged to utilize the COL resource wherever available. To complete this degree a student may take any combination of online and on campus courses. For more information on online learning at CDM visit the [Online Learning Page](#).

COURSE REQUIREMENTS

Prerequisite Phase

Unlike other CDM graduate programs that admit students regardless of technical background, the MS in IT Project Management is designed for students who possess a Bachelors degree or significant work experience in an IT related area. Examples of such areas include (but are not limited to) CIS, IS, MIS, Networking. Students whose undergraduate degree is in an unrelated area will be required to produce evidence of at least two years of responsible work experience as a computer programmer, systems analyst, business analyst, or similar position where the workload is primarily centered on Information Technology and the student had significant exposure to the system development process.

Foundation Phase

PM 430	Fundamentals of IT Project Management
PM 440	Collaborative Technologies for Leading Projects
PM 535	Information Technology Investment Financial Analysis
PM 556	Enterprise Project Management
PM 570	Enterprise System Implementation
MGT 500	Managing Effective and Ethical Organizational Behavior

Note: *The PM courses listed above are offered in cross-listed sections of same-number IS courses.*

Advanced Phase

Students must complete **24 quarter hours** (generally 6 course) from the list below. A minimum of **twelve quarter hours** (generally 3 courses) must be taken from CDM. These electives cover a broad range of technical, managerial, and information systems topics. Students should work closely with their advisor to identify and select courses most directly associated with

their career plans.

CDM Electives (all 4 quarter hours)

IS 433 Information Security Management
IS 435 Organizational Modeling
IS 456 Knowledge Management Systems
IS 483 Information Services and Operations
IS 485 Requirements Elicitation, Analysis, and Specification
IS 505 Business Continuity/Disaster Recovery Theories and Strategies
IS 533 Enterprise Security Infrastructure Controls and Regulatory Compliance
IS 540 Global Information Technology
IS 560 Enterprise Systems
IS 565 Information Technology Outsourcing
IS 578 Information Technology Consulting
SE 427 Software Quality Management
SE 430 Object Oriented Modeling *
SE 468 Software Measurement/Project Estimation
SE 470 Software Development Processes
SE 482 Requirements Engineering
SE 529 Software Risk Management

* **SE 430** requires two courses of object-oriented coding, or consent of the instructor .

Kellstadt Electives (all 4 quarter hours)

ACC 500 Financial Accounting
ACC 555 Management Accounting for Decision-Making
MGT 500 Managing Effective and Ethical Organizational Behavior
MGT 530 Leadership in Organizations
MGT 555 Strategic Management of Human Resources
MGT 562 Resolving Conflict in Organizations
MGT 563 Negotiation Skills
MGT 565 Employment Law

SNL Electives (all 3 quarter hours)

SNL 745 Improving Interpersonal Dynamics
SNL 755 Valuing Human Differences Seminar
SNL 765 Engaging Ethical Reasoning Seminar

Capstone

Students must complete the following course

PM 577 Project Management Practicum Capstone

DEGREE REQUIREMENTS

Students in this degree program must meet the following requirements:

- complete a minimum of 52 credit hours (generally 13 courses) beyond the Prerequisite Phase
- earn a grade of B- or better in each Prerequisite Phase course
- earn a grade of C- or better in all graduate courses beyond the Prerequisite Phase
- maintain a graduate level GPA of 2.50 or higher while pursuing their degree
- achieve a graduate GPA of 2.50 or higher at the completion of all other requirements

Students with a GPA of 3.9 or higher will graduate with distinction.

For DePaul's policy on repeat graduate courses and a complete list of academic policies see the DePaul Graduate Handbook in the Course Catalog.

Master of Science in Network Engineering and Management

College of Computing and Digital Media - Graduate Studies □ School of Computing (SoC) □ Master of Science in Network Engineering and Management

Requirements

The Master of Science in Network Engineering and Management trains professionals to meet current industry demands for innovative network designs, and the development of new network applications and services for business enterprises and the network providers that serve them. This program offers theoretical and applied study of the design, configuration and management of converged communication networks. Students completing this degree program have a thorough understanding of the technical and operational aspects of networks as well as the foundational theory of voice/data communications and network management.

After completing a common set of foundation courses, students can specialize in a variety of technical areas including network protocols, analysis, management, and security on both wired and wireless network infrastructures. Students can gain experience with network devices and servers in lab facilities focused on enterprise network, security, and multimedia network services. Through a combined emphasis on both theory and hands-on laboratory experiences, students gain expertise in a variety of specialized networking technologies, including the Internet, private network, and local area network arenas. Students who do not already have industry certifications in networking will also be guided by their faculty advisor through the process of selection and testing to pursue these certifications after appropriate coursework has been completed. Students acquire a broad range of skills including:

- A solid foundation in network design and operations
- A thorough understanding of security issues on both wired and wireless networks
- A comparative analysis of current carrier network service offerings, with an understanding of the service level vs. pricing tradeoffs inherent in each service
- A detailed understanding of the function, operations and management of network infrastructure components, including routers, switches, access points, and servers
- A strategic view of future networking trends in the Internet, wireless, security and local network services arenas

Learn more about admission to this program.

Online Learning Options

This degree can be completed entirely online. CDM online degrees are delivered mostly through COL-enabled courses, although other delivery technologies are also used. If a course is COL-enabled, any student registered in the course has access to the course playback. Students are strongly encouraged to utilize the COL resource wherever available. To complete this degree a student may take any combination of online and on campus courses. For more information on online learning at CDM visit the [Online Learning Page](#).

COURSE REQUIREMENTS

Prerequisite Phase

The goal of the prerequisite phase is to give students the background necessary for starting the graduate program. These prerequisite phase requirements can be fulfilled in one of three ways:

- The student takes the course and earns a grade of B- or higher.
- The student takes a Graduate Assessment Exam (GAE) to test out of the course.
- The faculty advisor waives the course because of equivalent academic background or work experience.

All students are blocked from enrolling in Graduate Phase courses prior to completing their prerequisites. Students must submit an online Change of Status request (through myCDM) when the Prerequisite Phase is completed to inform the Student Services offices that the block can be removed.

or CSC 261	Programming Languages I: C/C++
or any more advanced programming course	
TDC 311	Computers in Telecommunications Systems
or CSC 373	Computer Systems I
TDC 261	Basic Communication Systems
TDC 363	Introduction to Local Area Networks

Foundation Phase

TDC 460	Foundations of Network Technologies
TDC 463	Computer Networks and Data Systems
TDC 464	Converged Multimedia Networks

By taking these courses and receiving a grade of B- or better in each, the student will have completed the requirements of the Foundation Phase. If a student receives a grade below B- but better than or equal to C- for a Foundation Phase, the student is given an option to take a course-specific core competency exam to pass the failed course. If the student fails the exam, the student must retake the failed course. The student can take an exam only once for each failed course. There is no other core examination in the Foundation Phase.

Students in the Foundation Phase may register for a maximum of four Advanced Phase courses.

Advanced Phase

TDC 477	Network Security
TDC 511	Telecommunications Practicum
TDC 560	Advanced Network Technologies and Design
TDC 563	Protocols and Techniques for Data Networks

Major Electives

Students must complete **3** TDC courses from the range TDC 430 to TDC 599. A minimum of **2** courses must be 500-level.

CDM Open Electives

Students must complete **2** CDM open electives. Elective courses are in the range of 420-699 (**excluding** TDC 425) and must be from the College of CDM. Elective courses must not have been otherwise used to satisfy degree requirements. Credit for courses taken outside of the school will only be given if approved by a faculty advisor. Any course required for the student's concentration but taken as part of the requirements of another degree earned by the student may be waived, but cannot be used for elective credit.

Capstone

TDC 594	Network Capstone
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DEGREE REQUIREMENTS

Students in this degree program must meet the following requirements:

- complete a minimum of 52 credit hours (generally 13 courses) beyond the Prerequisite Phase
- earn a grade of B- or better in each Prerequisite Phase course
- earn a grade of C- or better in all graduate courses beyond the Foundation Phase
- earn a grade of B- or better in each Foundation Phase course. If a student receives a grade below B- but better than or equal to a C- for a Foundation Phase course, the student is given an option to take a course-specific core competency exam to pass the failed course. If the student fails the exam, the student must retake the failed course. The student can take an exam only once for each failed course.
- maintain a graduate level GPA of 2.50 or higher while pursuing their degree
- achieve a graduate GPA of 2.50 or higher at the completion of all other requirements

Students with a GPA of 3.9 or higher will graduate with distinction.

For DePaul's policy on repeat graduate courses and a complete list of academic policies see the DePaul Graduate Handbook in the Course Catalog.

Master of Science in Predictive Analytics

College of Computing and Digital Media - Graduate Studies ▫ School of Computing (SoC) ▫ Master of Science in Predictive Analytics

Requirements

Graduates of the **MS in Predictive Analytics** program will obtain a variety of skills required for a career in predictive analytics, including the ability to analyze large datasets and to develop modeling solutions to support decision making, a good understanding of the fundamental principles of marketing and customer relationship management, and communication skills to present results effectively to a non-technical business audience. The program aims to prepare students with the required qualifications to become "data mining analysts/engineers" or "predictive modelers".

Learn more about admission to this program.

Online Learning Options

Some courses in this degree are available for review and playback via the CDM Course Online playback system (COL) . If a course is COL-enabled, any student registered in the course has access to the course playback. Students are strongly encouraged to utilize the COL resource wherever available. Some courses are offered online. To complete this degree a student may take any combination of online and on campus courses. For more information on online learning at CDM visit the Online Learning Page. Information on online delivery of Marketing courses can be found on the Kellstadt Online Learning page.

COURSE REQUIREMENTS

Prerequisite Phase

The goal of the prerequisite phase is to give students the background necessary for starting the graduate program. These prerequisite phase requirements can be fulfilled in one of three ways:

- The student takes the course and earns a grade of B- or higher.
- The student takes a Graduate Assessment Exam (GAE) to test out of the course.
- The faculty advisor waives the course because of equivalent academic background or work experience.

All students are blocked from enrolling in Graduate Phase courses prior to completing their prerequisites. Students must submit an online Change of Status request (through myCDM) when the Prerequisite Phase is completed to inform the Student Services offices that the block can be removed.

IT 223	Data Analysis
MAT 150	Calculus I
MAT 151	Calculus II
MAT 220	Linear Algebra with Applications

School of Computing Foundation Courses

CSC 451	Database Design
CSC 423	Data Analysis and Regression
CSC 424	Advanced Data Analysis
IS 567	Knowledge Discovery Technologies
CSC 578	Neural Networks and Machine Learning

Marketing Department Foundation Courses

MKT 555	Decisions in Marketing Management
MKT 530	Customer Relationship Management
MKT 534	Analytical Tools for Marketers

School of Computing Advanced electives

Students must choose

- 1 School of Computing **500-level** elective course
- 2 courses from the following list

Data Mining and Data Analysis

CSC 425	Time Series Analysis and Forecasting
ECT 584	Web Data Mining for Business Intelligence
CSC 495	Introduction to Social Computing *
CSC 575	Intelligent Information Retrieval
CSC 598	Topics in Data Analysis
CSC 671	Quantitative Computing Workshop
CSC 521	Monte Carlo Algorithms *

Image Analysis and Visualization

CSC 481	Introduction to Image Processing
CSC 482	Applied Image Analysis
GPH 465	Survey of Visualization Applications
GPH 565	Designing for Visualization

Database Technologies

CSC 453	Database Technologies *
CSC 452	Database Programming *
CSC 543	Spatial Databases and Geographic Information Systems *

Business Intelligence

IS 574	Business Intelligence
IS 549	Data Warehousing and Data Mining
IS 578	Information Technology Consulting

** these courses are recommended only to students with strong programming background*

Marketing Department Advanced electives

Students must choose **1** course from the following list

MKT 529	Precision Marketing
MKT 595	Internet and Interactive Marketing
MKT 798	Special Topics

Project Course

CSC 695	Master's Independent Study
or CSC 697	Graduate Internship

DEGREE REQUIREMENTS

Students in this degree program must meet the following requirements:

- complete a minimum of 52 credit hours (generally 13 courses) beyond the Prerequisite Phase
- earn a grade of B- or better in each Prerequisite Phase course
- earn a grade of C- or better in all graduate courses beyond the Prerequisite Phase
- maintain a graduate level GPA of 2.50 or higher while pursuing their degree
- achieve a graduate GPA of 2.50 or higher at the completion of all other requirements

Students with a GPA of 3.9 or higher will graduate with distinction.

For DePaul's policy on repeat graduate courses and a complete list of academic policies see the DePaul Graduate Handbook in the Course Catalog.

Requirements

The **MS in Software Engineering** provides students with skills that are widely applicable, highly in demand and richly rewarded. Software engineering is a discipline concerned with the processes, methodologies, techniques, and tools of developing high-quality software systems in a cost-effective manner. The Software Engineering program emphasizes the best software engineering practices, current methodologies, emerging technologies, and their applications. It also emphasizes the development of communication and presentation skills in a team-based software development environment. The Software Engineering curriculum encompasses all important aspects of software engineering, including:

- Software engineering processes
- Requirements engineering
- Software architecture and design
- Software construction, software testing
- Software maintenance
- Software configuration management
- Software project management
- Software quality assurance

Graduates of the program will have acquired:

- Technical foundations in object-oriented analysis, modeling, architecture, design, and construction
- Communication skills and experiences in collaborative and team-based software development
- Knowledge and skills in software project management, configuration management, and quality assurance
- Knowledge in software development process improvement and experience in agile and iterative software development process
- Technical know-how in developing, integrating, and deploying web-based enterprise applications and service oriented architecture (SOA)

Online Learning Options are available for this degree.

Concentrations

Software Development Concentration

This concentration addresses the foundations, methodologies, and tools for developing high quality large-scale software systems, with an emphasis on the technical issues of software development.

Software Architecture Concentration

This concentration addresses the management and design of large-scale software systems.

Project Management Concentration

This concentration addresses the management of the quality of software products and processes and provides coursework in management and measurement techniques.

Gaming and Entertainment Technologies Concentration

This concentration addresses the foundations, methodologies, and tools for developing large-scale computer games and entertainment software systems.

Online Learning Options

All concentrations can be completed entirely online. CDM online degrees are delivered mostly through COL-enabled courses, although other delivery technologies are also used. If a course is COL-enabled, any student registered in the course has access to the course playback. Students are strongly encouraged to utilize the COL resource wherever available. To complete this degree a student may take any combination of online and on campus courses. For more information on online learning at CDM visit the Online Learning Page.

Software Development Concentration

This concentration addresses the foundations, methodologies, and tools for developing high quality large-scale software systems, with an emphasis on the technical issues of software development. Learn more about admission to this program .

Online Learning Options

This concentration is available online. CDM online degrees are delivered mostly through COL-enabled courses , although other delivery technologies are also used. If a course is COL-enabled, any student registered in the course has access to the course playback. Students are strongly encouraged to utilize the COL resource wherever available. To complete this degree a student may take any combination of online and on campus courses. For more information on online learning at CDM visit the Online Learning Page.

COURSE REQUIREMENTS

Prerequisite Phase

The goal of the prerequisite phase is to give students the background necessary for starting the graduate program. These prerequisite phase requirements can be fulfilled in one of three ways:

- The student takes the course and earns a grade of B- or higher.
- The student takes a Graduate Assessment Exam (GAE) to test out of the course.
- The faculty advisor waives the course because of equivalent academic background or work experience.

All students are blocked from enrolling in Graduate Phase courses prior to completing their prerequisites. Students must submit an online Change of Status request (through myCDM) when the Prerequisite Phase is completed to inform the Student Services offices that the block can be removed.

CSC 211	Programming in Java I
and CSC 212	Programming in Java II
or CSC 224	Java for Programmers
CSC 373	Computer Systems I
CSC 374	Computer Systems II
CSC 383	Data Structures and Algorithms in Java

Foundation Phase

Students must complete the following courses:

SE 430	Object Oriented Modeling
SE 433	Software Testing and Quality Assurance
SE 450	Object-Oriented Software Development
SE 477	Software and Systems Project Management

Advanced Phase

Students must complete the following courses:

CSC 435	Distributed Systems I
SE 480	Software Architecture
SE 554	Enterprise Component Architecture

Major Electives

SE courses in the 420-699 range and courses from the list below qualify as Major electives. Students must take **3** major elective courses. At least **2** must be SE courses.

CDM Open Electives

Students must complete **one** CDM elective course in the 420-699 range. ANI and DC courses do not qualify. Credit for courses taken outside of the school will only be given if approved by a faculty advisor.

Capstone

Students must complete the following courses as a sequence in consecutive quarters.

SE 491	Software Engineering Studio
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DEGREE REQUIREMENTS

Students in this degree program must meet the following requirements:

- complete a minimum of 52 credit hours (generally 13 courses) beyond the Prerequisite Phase
- earn a grade of B- or better in each Prerequisite Phase course
- earn a grade of C- or better in all graduate courses beyond the Prerequisite Phase
- maintain a graduate level GPA of 2.50 or higher while pursuing their degree
- achieve a graduate GPA of 2.50 or higher at the completion of all other requirements

Students with a GPA of 3.9 or higher will graduate with distinction.

For DePaul's policy on repeat graduate courses and a complete list of academic policies see the DePaul Graduate Handbook in the Course Catalog.

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Software Architecture Concentration

This concentration addresses the management and design of large-scale software systems. [Learn more about admission to this program .](#)

Online Learning Options

This concentration is available online. CDM online degrees are delivered mostly through COL-enabled courses , although other delivery technologies are also used. If a course is COL-enabled, any student registered in the course has access to the course playback. Students are strongly encouraged to utilize the COL resource wherever available. To complete this degree a student may take any combination of online and on campus courses. For more information on online learning at CDM visit the [Online Learning Page](#).

COURSE REQUIREMENTS

Prerequisite Phase

The goal of the prerequisite phase is to give students the background necessary for starting the graduate program. These prerequisite phase requirements can be fulfilled in one of three ways:

- The student takes the course and earns a grade of B- or higher.
- The student takes a Graduate Assessment Exam (GAE) to test out of the course.
- The faculty advisor waives the course because of equivalent academic background or work experience.

All students are blocked from enrolling in Graduate Phase courses prior to completing their prerequisites. Students must submit an online Change of Status request (through myCDM) when the Prerequisite Phase is completed to inform the Student Services offices that the block can be removed.

CSC 211	Programming in Java I
and CSC 212	Programming in Java II
or CSC 224	Java for Programmers
CSC 373	Computer Systems I
CSC 374	Computer Systems II
CSC 383	Data Structures and Algorithms in Java

Foundation Phase

Students must complete the following courses:

SE 430	Object Oriented Modeling
SE 433	Software Testing and Quality Assurance
SE 450	Object-Oriented Software Development
SE 477	Software and Systems Project Management

Advanced Phase

Students must complete the following courses:

SE 457	Service Oriented Architecture
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SE 480	Software Architecture
SE 482	Requirements Engineering

Major Electives

SE courses in the 420-699 range and courses from the list below qualify as Major electives. Students must take **3** major elective courses. At least **2** must be SE courses.

CDM Open Electives

Students must complete **one** CDM elective course in the 420-699 range. ANI and DC courses do not qualify. Credit for courses taken outside of the school will only be given if approved by a faculty advisor.

Capstone

Students must complete the following courses as a sequence in consecutive quarters.

SE 491	Software Engineering Studio
SE 591	Software Engineering Studio II

DEGREE REQUIREMENTS

Students in this degree program must meet the following requirements:

- complete a minimum of 52 credit hours (generally 13 courses) beyond the Prerequisite Phase
- earn a grade of B- or better in each Prerequisite Phase course
- earn a grade of C- or better in all graduate courses beyond the Prerequisite Phase
- maintain a graduate level GPA of 2.50 or higher while pursuing their degree
- achieve a graduate GPA of 2.50 or higher at the completion of all other requirements

Students with a GPA of 3.9 or higher will graduate with distinction.

For DePaul's policy on repeat graduate courses and a complete list of academic policies see the DePaul Graduate Handbook in the Course Catalog.

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Project Management Concentration

This concentration addresses the management of the quality of software products and processes and provides coursework in management and measurement techniques. Learn more about admission to this program .

Online Learning Options

This concentration is available online. CDM online degrees are delivered mostly through COL-enabled courses , although other delivery technologies are also used. If a course is COL-enabled, any student registered in the course has access to the course playback. Students are strongly encouraged to utilize the COL resource wherever available. To complete this degree a student may take any combination of online and on campus courses. For more information on online learning at CDM visit the [Online Learning Page](#).

COURSE REQUIREMENTS

Prerequisite Phase

The goal of the prerequisite phase is to give students the background necessary for starting the graduate program. These prerequisite phase requirements can be fulfilled in one of three ways:

- The student takes the course and earns a grade of B- or higher.
- The student takes a Graduate Assessment Exam (GAE) to test out of the course.
- The faculty advisor waives the course because of equivalent academic background or work experience.

All students are blocked from enrolling in Graduate Phase courses prior to completing their prerequisites. Students must submit an online Change of Status request (through myCDM) when the Prerequisite Phase is completed to inform the Student Services offices that the block can be removed.

CSC 211	Programming in Java I
and CSC 212	Programming in Java II
or CSC 224	Java for Programmers
CSC 373	Computer Systems I
CSC 374	Computer Systems II
CSC 383	Data Structures and Algorithms in Java

Foundation Phase

Students must complete the following courses:

SE 430	Object Oriented Modeling
SE 433	Software Testing and Quality Assurance
SE 450	Object-Oriented Software Development
SE 477	Software and Systems Project Management

Advanced Phase

Students must complete the following courses:

SE 468	Software Measurement/Project Estimation
SE 482	Requirements Engineering
SE 511	Practices of Global Software Development

Major Electives

SE courses in the 420-699 range and courses from the list below qualify as Major electives. Students must take **3** major elective courses. At least **2** must be SE courses.

CDM Open Electives

Students must complete **one** CDM elective course in the 420-699 range. ANI and DC courses do not qualify. Credit for courses taken outside of the school will only be given if approved by a faculty advisor.

Capstone

Students must complete the following courses as a sequence in consecutive quarters.

SE 491	Software Engineering Studio
SE 591	Software Engineering Studio II

DEGREE REQUIREMENTS

Students in this degree program must meet the following requirements:

- complete a minimum of 52 credit hours (generally 13 courses) beyond the Prerequisite Phase
- earn a grade of B- or better in each Prerequisite Phase course
- earn a grade of C- or better in all graduate courses beyond the Prerequisite Phase
- maintain a graduate level GPA of 2.50 or higher while pursuing their degree
- achieve a graduate GPA of 2.50 or higher at the completion of all other requirements

Students with a GPA of 3.9 or higher will graduate with distinction.

For DePaul's policy on repeat graduate courses and a complete list of academic policies see the DePaul Graduate Handbook in the Course Catalog.
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Gaming and Entertainment Technologies Concentration

This concentration addresses the foundations, methodologies, and tools for developing large-scale computer games and entertainment software systems. Learn more about admission to this program .

Online Learning Options

This concentration is available online. CDM online degrees are delivered mostly through COL-enabled courses , although other delivery technologies are also used. If a course is COL-enabled, any student registered in the course has access to the course playback. Students are strongly encouraged to utilize the COL resource wherever available. To complete this degree a student may take any combination of online and on campus courses. For more information on online learning at CDM visit the Online Learning Page.

COURSE REQUIREMENTS

Prerequisite Phase

The goal of the prerequisite phase is to give students the background necessary for starting the graduate program. These prerequisite phase requirements can be fulfilled in one of three ways:

- The student takes the course and earns a grade of B- or higher.
- The student takes a Graduate Assessment Exam (GAE) to test out of the course.
- The faculty advisor waives the course because of equivalent academic background or work experience.

All students are blocked from enrolling in Graduate Phase courses prior to completing their prerequisites. Students must submit an online Change of Status request (through myCDM) when the Prerequisite Phase is completed to inform the Student Services offices that the block can be removed.

CSC 211	Programming in Java I
and CSC 212	Programming in Java II
or CSC 224	Java for Programmers
CSC 373	Computer Systems I
CSC 374	Computer Systems II
CSC 383	Data Structures and Algorithms in Java

Foundation Phase

Students must complete the following courses:

SE 430	Object Oriented Modeling
SE 433	Software Testing and Quality Assurance
SE 450	Object-Oriented Software Development
SE 477	Software and Systems Project Management

Advanced Phase

Students must complete the following courses:

SE 456	Architecture of Computer Games
SE 558	Architecture and Design for Multiplayer Games
GAM 475	Game Engine Programming I

Major Electives

SE courses in the 420-699 range and courses from the list below qualify as Major electives. Students must take **3** major elective courses. At least **2** must be SE courses.

CDM Open Electives

Students must complete **one** CDM elective course in the 420-699 range. ANI and DC courses do not qualify. Credit for courses taken outside of the school will only be given if approved by a faculty advisor.

Capstone

Students must complete the following courses as a sequence in consecutive quarters.

SE 491	Software Engineering Studio
SE 591	Software Engineering Studio II

DEGREE REQUIREMENTS

Students in this degree program must meet the following requirements:

- complete a minimum of 52 credit hours (generally 13 courses) beyond the Prerequisite Phase
- earn a grade of B- or better in each Prerequisite Phase course
- earn a grade of C- or better in all graduate courses beyond the Prerequisite Phase
- maintain a graduate level GPA of 2.50 or higher while pursuing their degree
- achieve a graduate GPA of 2.50 or higher at the completion of all other requirements

Students with a GPA of 3.9 or higher will graduate with distinction.

For DePaul's policy on repeat graduate courses and a complete list of academic policies see the DePaul Graduate Handbook in the Course Catalog.

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Major elective lists

SE courses in the 420-699 range and courses from the list below qualify as Major electives. Students must take **3** major elective courses. At least **2** must be SE courses.

Enterprise Software Development

SE 452 Object-Oriented Enterprise Computing
SE 554 Enterprise Component Architecture
SE 453 Architecture and Frameworks for Developing Client Applications
SE 470 Software Development Processes
SE 482 Requirements Engineering
SE 533 Software Validation and Verification
SE 560 Structured Documentation Interchange and Processing
CSC 438 Framework for Web Application Development
CSC 453 Database Technologies

Software Architecture

SE 457 Service-Oriented Architecture
SE 480 Software Architecture
SE 456 Architecture of Computer Games
SE 549 Model-Driven Software Development
SE 558 Architecture and Design for Multiplayer Games

Computer Security

CNS 450 Computer Forensics
SE 525 Software Security Architecture
SE 526 Software Security Assessment
CSC 439 Computer Security

Distributed Systems

CSC 435 Distributed Systems I
CSC 536 Distributed Systems II
CSC 552 Concurrent Software Development
SE 558 Architecture and Design for Multiplayer Games

Project Management

SE 468 Software Measurement/Project Estimation
SE 470 Software Development Processes
SE 511 Practices of Global Software Development
SE 529 Software Risk Management
IS 556 Enterprise Project Management
IS 535 Information Technology Investment Financial Analysis
IS 533 Enterprise Security Infrastructure Controls and Regulatory Compliance
IS 565 IT Outsourcing
IS 560 Enterprise Systems

User-Centered Development

HCI 430 Prototyping and Implementation
HCI 440 Usability Engineering
SE 453 Architecture and Frameworks for Developing Client Applications
SE 546 Software Architecture and Design for Desktop Applications

Programming Languages & Compiler

SE 533 Software Validation and Verification
CSC 447 Concepts of Programming Languages
CSC 448 Compiler Design
CSC 548 Advanced Compiler Design
CSC 535 Formal Semantics of Programming Languages

Gaming and Entertainment Technology

SE 456 Architecture of Computer Games
SE 558 Architecture and Design for Multiplayer Games
GAM 453 Tool Programming for Game Development
GAM 475 Game Engine Programming I
GAM 490 Multiplayer Game Development
GAM 575 Game Engine Programming II

Software Engineering Research

The Master's Project or Thesis

Must represent an original contribution to the area, and may include system development, empirical studies, or theoretical work. The scope and the details of the research project will be determined by the research supervisor, and must be approved by the student's academic advisor.

Return to Software Development | Software Architecture | Project Management | Gaming and Entertainment Technologies concentration for CDM open elective and Capstone requirements.

SE At-A-Glance

College of Computing and Digital Media - Graduate Studies ▫ School of Computing (SoC) ▫ Master of Science in Software Engineering ▫ SE At-A-Glance

SE At-A-Glance

MS Software Engineering At-A-Glance (AY 2011)

Concentrations in *Software Development*, *Software Architecture*, *Project Management* and *Gaming and Entertainment Technologies*

See Requirements page for prerequisite course requirements and additional information about MS Software Engineering program.

Software Development	Software Architecture	Project Management	Gaming and Entertainment Tech.
Foundation Courses (4)			
SE430 Object Oriented Modeling			
SE433 Software Testing and Quality Assurance			
SE450 Object Oriented Software Development			
SE477 Software & Systems Project Management			
Required Courses in Concentration (3)			
CSC435 Foundations of Distributed Systems I	SE457 Service-Oriented Architecture	SE468 Software Measurement and Project Estimation	SE456 Architecture of Computer Games
SE480 Software Architecture	SE480 Software Architecture	SE482 Requirements Engineering	SE558 Architecture and Design for Multiplayer Games
SE554 Enterprise Component Architecture	SE482 Requirements Engineering	SE511 Practices of Global Software Development	GAM475 Game Engine Programming I
SE Capstone Project (2)			
SE491 & SE591 Software Engineering Studio 1 & 2			
SE Electives (3 from the following)			
Enterprise Software Development: SE452 SE554 SE453 SE470 SE482 SE533 SE560 CSC438 CSC453		Programming Languages & Compiler: SE533 CSC447 CSC448 CSC548 CSC535	
Software Architecture: SE457 SE480 SE456 SE549 SE558		Gaming and Entertainment Tech: SE456 SE558 GAM453 GAM475 GAM490 GAM575	
Computer Security: CNS450 SE525 SE526 CSC439		User Centerd Development: HCI440 HCI430 SE453 SE546	
Distributed Systems: CSC435 CSC536 CSC552 SE558		Software Engineering Research: SE690 and (SE696 or SE698)	
Project Management: SE468 SE470 SE511			

SE529 IS556 IS535 IS533 IS565 IS560
SoC Open Elective (1)
One graduate course in the School of Computing

Distinction requirements: GPA 3.9 or higher

Juris Doctorate and Master of Arts

College of Computing and Digital Media - Graduate Studies ▫ School of Computing (SoC) ▫ Juris Doctorate and Master of Arts

Requirements

The general objective of the joint JD/MA degree program at DePaul University College of Law Center for Intellectual Property Law & Information Technology (CIPLITŽ) and its College of Computing and Digital Media (CDM) is to offer law students the opportunity to acquire technology knowledge that will support them in their work in information technology law, intellectual property law, or patent law. This joint degree accommodates JD students without a technical or scientific background who are interested in intellectual property by offering a depth of knowledge and ability to communicate in technical terms. These tools are invaluable, as future intellectual property lawyers will require at a minimum a general understanding of computer and information systems, given the prominence of cyber- and telecommunications issues in today's legal practice. The JD/MA also accommodates JD students with technical or scientific backgrounds who may be interested in a broad-based exposure to computer or information systems. Where the JD/MS degree offers students an in-depth approach to specific computer science or information systems topics, the JD/MA presents a broader view that will prepare graduates of the joint degree program to interact successfully with clients and experts in computer-related fields.

Characteristics of the program include:

- This joint degree is designed to provide intensive technological training to students with non-technical backgrounds who wish to pursue legal careers focused on high technology.
- Some students may wish to use the JD/MA program as a means to fulfill the technical education requirements for the patent bar exam. Such students will need to consult closely with faculty advisors in both Schools and to contact the USPTO for specific eligibility requirements.
- It is expected that most students who pursue this joint degree will also obtain a Certificate in Intellectual Property: General, Intellectual Property: Patent or Information Technology from the law school.
- This program simultaneously offers a variety of curriculum options encompassing key technological topics along with legal courses which prepare the student for transactional and/or litigation work.

Students in this program acquire a broad range of skills including:

- An in-depth understanding of the legal issues that confront present and future technologies.
- An understanding of legal principles and application of those principles to a growing number of legal issues facing technology.
- A broad exposure to current IT theory and practices including telecommunication and data communication fundamentals, database, computer and network security, B2C e-commerce technologies, object-oriented concepts, and client server architecture.

Learn more about admission to this program.

Online Learning Options

Some courses in this degree are available for review and playback via the CDM Course Online playback system (COL) . If a course is COL-enabled, any student registered in the course has access to the course playback. Students are strongly encouraged to utilize the COL resource wherever available. Some courses are offered online. To complete this degree a student may take any combination of online and on campus courses. For more information on online learning at CDM visit the Online Learning Page.

COURSE REQUIREMENTS

Since each student will require a different number of CDM prerequisites and each student will select courses based on semester/quarter availability, any particular curriculum might be different from the sample curriculum shown. All joint degree students will be encouraged to select courses with the assistance of Joint Degree program advisors at both the Law School and CDM.

Students must complete the regular first year JD program before being admitted to the Joint Degree. The second and third years might consist of three law courses in Fall Semester and two law courses in Spring Semester as well as one CDM course Fall Quarter, two CDM courses Winter Quarter, and two CDM courses Spring Quarter. The fourth year might consist of three law courses Fall Semester, one CDM course Fall Quarter, three CDM courses Winter Quarter, and three CDM courses Spring Quarter. This schedule allows for completion of the JD as well as completion of 14 CDM courses (the MS program plus four prerequisite courses). It is possible that, because of prerequisite coursework, the program may take some students more than four years.

PREREQUISITE PHASE

The goal of the prerequisite phase is to give students the background necessary for starting the graduate program. These prerequisite phase requirements can be fulfilled in one of three ways:

- The student takes the course and earns a grade of B- or higher.
- The student takes a Graduate Assessment Exam (GAE) to test out of the course.
- The faculty advisor waives the course because of equivalent academic background or work experience.

All students are blocked from enrolling in Graduate Phase courses prior to completing their prerequisites. Students must submit an online Change of Status request (through myCDM) when the Prerequisite Phase is completed to inform the Student Services offices that the block can be removed.

CSC 211	Programming in Java I
CSC 212	Programming in Java II
IT 263	Applied Networks and Security

Foundation Phase

ECT 425	Technical Fundamentals of Distributed Information Systems
CSC 449	Database Technologies
ECT 433	Survey of Web Programming Technologies
ECT 455	E-Commerce Web Site Engineering
IS 425	Enterprise Information
IS 511	Social Issues of Computing
TDC 572	Network Security
or ECT 582	Secure Electronic Commerce

Advanced Phase

Students must complete 2 CDM major electives in the 420-699 range.

Major Electives

Students must complete 12 additional quarter hours fulfilled by courses from the IP Certificate. These courses will also be counted toward the JD degree.

Culminating Thesis

Students must complete a culminating thesis. A culminating thesis is an independent research article that demonstrates a student's ability to integrate both technical expertise

and legal knowledge. Normally, it is undertaken during the student's final year in the program.

In this work, the student is guided and assessed by a Committee of three faculty, at least one of whom is full time at CDM and least one of whom is full time at the College of Law. It is the responsibility of the student to find an advisor (Committee Chair) and assemble this committee.

The thesis will use the course number IT 698. It may be taken for two or four credits per quarter. Students may register for this course only after their advisor has approved a written proposal for their thesis. Students must continue to register for this course every quarter after their first registration in it until they complete their thesis to the satisfaction of their committee. They earn two hours of credit for each such registration but only four hours of credit will apply for degree credit.

DEGREE REQUIREMENTS

The following rules apply to this degree:

- Students may substitute up to 8 law semester hours in place of up to 3 CDM master's degree courses, reducing their CDM course requirements to 10 courses plus any necessary prerequisite coursework. Courses to be substituted must be selected from the elective and required courses for the College of Law certificates in Intellectual Property: General, Intellectual Property: Patent and Information Technology. Please see the certificate pages on the College of Law website for lists of qualifying courses.
- Student may substitute up to 15 CDM credit hours in place of up to 10 of the 86 required law semester hours, reducing their law course requirements to 76 semester hours. Only CDM courses taken after enrollment in the College of Law may be substituted for law courses.
- Students may not substitute CDM credit hours for required courses in the College of Law, such as the Professional Responsibility and Senior Seminar courses.
- Students must graduate from both schools on the same date, in the same semester/quarter, and in the same year. Double counting of credit hours occurs only after the student concurrently completes both degree programs. Students should consult with the joint degree advisors regarding any questions about coordinating the completion of the two degrees.
- Student must earn a grade of B- or better in each Prerequisite Phase course
- Students must earn a grade of C- or better in all graduate courses beyond the Prerequisite Phase
- Students must maintain a graduate level GPA of 2.50 or higher while pursuing their degree
- Students must achieve a graduate GPA of 2.50 or higher at the completion of all other requirements

Students with a GPA of 3.9 or higher will graduate with distinction.

For DePaul's policy on repeat graduate courses and a complete list of academic policies see the DePaul Graduate Handbook in the Course Catalog.

Joint Degree Program Advising and For Further Information

Students are encouraged to consult with the following advisors regarding their participation in the joint degree program:

- Assistant Dean Diana White - College of Law dwhite@depaul.edu - For questions regarding administrative aspects of the joint degree and College of Law programs
- Professor Katherine Strandburg - College of Law kstrandb@depaul.edu - For questions regarding substantive aspects of the College of Law IP and IT programs
- Professor Danny Mittleman - CDM- danny@cdm.depaul.edu - For questions regarding substantive aspects of the CDM program
- Professor Curt White - CDM - cwhite@cdm.depaul.edu - For questions regarding substantive aspects of the CDM program

Juris Doctorate and Master of Science

College of Computing and Digital Media - Graduate Studies ▫ School of Computing (SoC) ▫ Juris Doctorate and Master of Science

Requirements

The primary goal of the joint degree JD/MS program at DePaul University College of Law Center for Intellectual Property Law & Information Technology (CIPLITŽ) and its College of Computing and Digital Media (CDM) is to educate students to take advantage of the opportunities presented by the legal needs of industry in this high technology age. A critical need exists for patent attorneys in the high-tech field who have a substantive understanding of IT as well as for attorneys, who need not be members of the patent bar, to provide client counseling or litigation services in the information technology field. Graduates of the joint degree program will be qualified for careers in intellectual property boutique law firms, in general practice firms with clients in the high technology field, as in-house counsel in the high technology industry, and in government agencies dealing with high technology regulation.

Many of the students completing the joint JD/MS degree will choose to join the Patent Bar. The technical education provided by the MS part of the program will help to qualify them for the patent bar exam. However, in today's society, members of the Patent Bar are not the only attorneys who need technological expertise for successful legal practice. Many patent litigators are not members of the patent bar, yet must become intimately familiar with the technological bases for their clients litigation positions. Trademark attorneys face infringement and prosecution issues related to domain names and Internet websites. Copyright attorneys are frequently exposed to issues of protection for computer software and Internet website content. Even lawyers who do not specialize in intellectual property law frequently face computer-related issues, as such questions arise more and more frequently in "bread-and-butter" disputes between companies immersed in high technology.

The JD/MS program is primarily aimed at students with undergraduate scientific or technical degrees or with other substantial technological or scientific background who wish to deepen their technical expertise while also obtaining a law degree.

Characteristics of the program include:

- It is designed to provide a curriculum for students with significant undergraduate technological background who wish to pursue advanced studies in Computer Science, Telecommunications, and Information Systems jointly with their legal studies.
- It offers a variety of curriculum options encompassing key technological topics along with legal courses which prepare the student for transactional and/or litigation work.
- It is expected that most students who pursue this joint degree will also obtain a Certificate in Intellectual Property: General, Intellectual Property: Patent or Information Technology from the law school.
- It is expected that most students who pursue the JD/MS degree will already be qualified to sit for the patent bar exam. Students who need to "make up" some patent bar exam requirements may be able to pursue that goal as part of this program.

Students in this program, will acquire a broad range of skills including:

- An in-depth understanding of the legal issues that confront present and future technologies.
- An understanding of legal principles and application of those principles to a growing number of legal issues facing technology.
- Core knowledge in a particular technology discipline.
- In-depth fluency with state-of-the-art technologies and IT principles.

Learn more about admission to this program.

COURSE REQUIREMENTS

Students must complete the regular first year JD program before being admitted to the Joint Degree. The second and third years might consist of three law courses in Fall Semester and two law courses in Spring Semester as well as one CDM course Fall Quarter, two CDM courses Winter Quarter, and two CDM courses Spring Quarter. The fourth year might consist of three law courses Fall Semester, one CDM course Fall Quarter, three CDM courses Winter Quarter, and three CDM courses Spring Quarter.

This schedule allows for completion of the JD as well as completion of 14 CDM courses (the MS program plus four prerequisite courses). It is possible that, because of prerequisite coursework, the program may take some students more than four years. Since each student will require a different number of CDM prerequisites and each student will select courses based on semester/quarter availability, any particular curriculum might be different from the sample curriculum shown. Students are encouraged to select courses with the assistance of the program advisors at both the Law School and CDM.

CDM Requirements for an MS Degree

For the CDM portion of the joint degree, students may major in:

- Computer Information and Network Security
- Computer Science
- E-Commerce Technology
- Information Systems
- Network Engineering and Management

Each program listed above follows the requirements as listed on its page on the CDM website. These requirements are divided into the phases. Upon completion of those requirements, each student will move to the Elective Phase as described below.

Electives

Students must complete **12** additional quarter hours fulfilled by courses from the IP Certificate. These courses will also be counted toward the JD degree.

DEGREE REQUIREMENTS

The following rules apply to this degree:

- Students must graduate from both schools on the same date, in the same semester/quarter, and in the same year. Double counting of credit hours occurs only after the student concurrently completes both degree programs. Students should consult with the joint degree advisors regarding any questions about coordinating the completion of the two degrees.
- Students may substitute up to 8 law semester hours in place of up to 3 CDM master's degree course, reducing their CDM course requirements to 10 courses plus any necessary prerequisite coursework. Courses to be substituted must be selected from the elective and required courses for the College of Law certificates in Intellectual Property: General, Intellectual Property: Patent and Information Technology. Please see the certificate pages on the College of Law website for lists of qualifying courses.
- Students cannot substitute CDM credit hours for required courses in the College of Law, such as the Professional Responsibility and Senior Seminar courses
- Student may substitute up to 15 CDM credit hours in place of up to 10 of the 86 required law semester hours, reducing their law course requirements to 76 semester hours. Only CDM courses taken after enrollment in the College of Law may be substituted for law courses.
- Student must earn a grade of B- or better in each Prerequisite Phase course
- Students must earn a grade of C- or better in all graduate courses beyond the Prerequisite Phase
- Students must maintain a graduate level GPA of 2.50 or higher while pursuing their degree
- Students must achieve a graduate GPA of 2.50 or higher at the completion of all other requirements

Students with a GPA of 3.9 or higher will graduate with distinction.

For DePaul's policy on repeat graduate courses and a complete list of academic policies see

the DePaul Graduate Handbook in the Course Catalog.

Joint Degree Program Advising and For Further Information

Students are encouraged to consult with the following advisors regarding their participation in the joint degree program:

- Assistant Dean Diana White - College of Law - dwhite@depaul.edu - For questions regarding administrative aspects of the joint degree and College of Law programs
- Professor Katherine Strandburg - College of Law - kstrandb@depaul.edu - For questions regarding substantive aspects of the College of Law IP and IT programs
- Professor Danny Mittleman - CDM - danny@cdm.depaul.edu - For questions regarding substantive aspects of the CDM program
- Professor Curt White - CDM - cwhite@cdm.depaul.edu - For questions regarding substantive aspects of the CDM program

Advanced Software Development Professional

College of Computing and Digital Media - Graduate Studies ▫ School of Computing (SoC) ▫ Advanced Software Development Professional

About

After completing a Master's Degree, or gaining software engineering certification, a student may decide to continue their education as a software development professional. They might come back to gain new technical skills, take advanced classes which did not fit into their degree plan, or to help with professional recertification. The IEEE Computer Society Certified Software Development Professional program requires continual recertification, which may include College and University Courses. As part of DePaul University's commitment to life-long-learning, CDM is pleased to offer students with a Master's degree or IEEE professional certification an opportunity to enroll for advanced classes.

The program is an open-ended series of courses, which does not lead to a degree. To qualify for the Advanced Software Development Professional program, a student must either:

- Have a Master's Degree in Computer Science, Software Engineering, or another technical, scientific or engineering field, or
- Be certified by the IEEE Computer Society Certified Software Development (CDSPŽ) program.

Upon acceptance into the program, the student will meet with their faculty advisor to discuss which classes they would like to take.

After meeting with their faculty advisor, the student will have Non-Degree-Seeking status, and will be able to take any CDM class, as long as they satisfy the prerequisites for that class. If they do not have a Master's degree from DePaul University, they should discuss with their faculty advisor which classes they may have to take to satisfy these prerequisite requirements.

Courses taken as part of the Advanced Software Development Professional program may be used towards recertification for the IEEE Computer Society Certified Software Development Professional program. To be recertified, a candidate must first gain CDSP certification, and must then earn 30 Professional Development Units, 15 of which may come from College and University courses. Since each CDM course is worth 5.2 PDUs, three CDM courses will earn those 15 PDUs. CDSP recertification is required every three years, and so one CDM course per year will count for half of a candidate's recertification requirements.

A student in the Advanced Software Development Professional program who later is accepted to a degree program at DePaul University may count up to three courses taken in this program towards the degree.

Students are free to take any CDM classes they satisfy the prerequisite requirements for. The following

classes may be of particular interest to software professionals:

- SE 480 Software Architecture
- SE 469 Software Safety
- SE 470 Software Development Processes
- SE 472 Personal Software Process
- SE 473 Security Architecture I
- SE 477 Software and Systems Project Management
- SE 480 Software Architecture
- SE 482 Requirements Engineering
- SE 529 Software Risk Management
- SE 531 Formal Software Specifications and Development II
- SE 533 Software Validation and Verification
- SE 540 Software Development for Mobile and Wireless Systems
- SE 542 Software Development for Limited and Embedded Devices
- SE 546 Software Architecture and Design for Desktop Applications
- SE 550 Distributed Software Development
- SE 552 Concurrent Software Development
- SE 554 Enterprise Component Architecture
- SE 558 Software Methodologies
- SE 560 Structured Document Interchange and Processing
- SE 567 Software Reliability
- SE 571 Software Maintenance
- SE 573 Security Architecture II
- SE 580 Design of Object-Oriented Languages
- SE 590 Advanced Topics in Object Oriented Technology

DePaul University's Software Engineering Program is an IEEE Computer Society registered Education Provider. DePaul University's Software Engineering Program is committed to enhancing the ongoing professional development of software development professionals, Certified Software Development Professionals (CSDPŽ), and other software stakeholders through appropriate software engineering learning activities and products. As a CSDP Education Provider, DePaul University's Software Engineering Program has agreed to abide by IEEE Computer Society established operational and educational criteria, and is subject to random audits for quality assurance purposes.

Advice given by DePaul University faculty and staff about CSDP recertification is for informational purposes only. This document may not reflect the most recent requirements for CSDP recertification.

School of Cinema and Interactive Media (CIM)

College of Computing and Digital Media - Graduate Studies ▫ School of Cinema and Interactive Media (CIM)

About the School

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 cinema, animation, computer game development and interactive media.

College of Computing and Digital Media - Graduate Studies ▫ School of Cinema and Interactive Media (CIM) ▫ Faculty

Faculty

LISA BARCY, M.A.
Instructor
Columbia College

ROBIN BURKE, Ph.D.
Associate Professor
Northwestern University

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

GREGG ELDER, M.A.
Instructor
Columbia College

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

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

DANA HODGDON, M.A.
Associate Professor
Northwestern University

MATT IRVINE, M.F.A.
Associate 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

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

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

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

ERNESTO PEREZ, B.F.A.
Instructor
University of Illinois Urbana-Champaign

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

Master of Science in Cinema Production

College of Computing and Digital Media - Graduate Studies □ School of Cinema and Interactive Media (CIM) □ Master of Science in Cinema Production

Requirements

The **Master of Science in Cinema Production** degree emphasizes the technical and technology-based topics and practices of digital cinema. Such topics and practices include post-

production editing of video and audio, the integration of video and audio, special effects and computer-generated imaging, and modes of digital distribution.

Students in this program will acquire a broad set of skills including:

- Post-production editing of video and audio
- The integration of video and audio
- Special effects
- Computer-generated imaging

Concentrations

Cinema Production Concentration

This concentration is the advanced study of all aspects of digital filmmaking including screenwriting, producing, directing, cinematography, editing, and sound design. The emphasis of the program is on the individual student's development as a digital filmmaker and storyteller.

Animation Concentration

This concentration features a program of study in traditional animation (hand-drawn and stop-motion), 3D modeling and character animation for cinema and game art, in addition to the core cinema courses.

Online Learning Options

Some courses in this concentration are available for review and playback via the CDM Course Online playback system (COL) . If a course is COL-enabled, any student registered in the course has access to the course playback. Students are strongly encouraged to utilize the COL resource wherever available. Some courses are offered online. To complete this degree a student may take any combination of online and on campus courses. For more information on online learning at CDM visit the Online Learning Page.

Cinema Production Concentration

This concentration is the advanced study of all aspects of digital filmmaking including screenwriting, producing, directing, cinematography, editing, and sound design. The emphasis of the program is on the individual student's development as a digital filmmaker and storyteller. Limited Online Options are available for this concentration. Learn more about admission to this program .

COURSE REQUIREMENTS

Prerequisite Phase

The goal of the prerequisite phase is to give students the background necessary for starting the graduate program. These prerequisite phase requirements can be fulfilled in one of two ways:

- The student takes the course and earns a grade of B- or higher.
- The faculty advisor waives the course because of equivalent academic background or work experience.

All students are blocked from enrolling in Graduate Phase courses prior to completing their prerequisites. Students must submit an online Change of Status request (through myCDM) when the Prerequisite Phase is completed to inform the Student Services offices that the block can be removed.

DC 210	Digital Cinema Production I
DC 215	Digital Sound Design
DC 220	Editing I
DC 275	Cinematography
VFX 278	Digital Compositing I

Foundation Phase

DC 415	Advanced Sound Design
DC 420	Editing II
DC 475	Advanced Cinematography

Production Phase

DC 410	Digital Cinema Production II
DC 425	Color Correction
DC 477	Advanced Lighting and Camera Motion
DC 413	Production Sound
VFX 478	Digital Compositing II

Major Electives

Students in this program must choose any 5 DC, VFX or ANI graduate-level courses excluding DC 450, DC 460-462, DC 495.

DEGREE REQUIREMENTS

Students in this degree program must meet the following requirements:

- complete a minimum of 52 credit hours (generally 13 courses) beyond the Prerequisite Phase
- earn a grade of B- or better in each Prerequisite Phase course
- earn a grade of C- or better in all graduate courses beyond the Prerequisite Phase
- maintain a graduate level GPA of 2.50 or higher while pursuing their degree
- achieve a graduate GPA of 2.50 or higher at the completion of all other requirements

Students with a GPA of 3.9 or higher will graduate with distinction.

For DePaul's policy on repeat graduate courses and a complete list of academic policies see the DePaul Graduate Handbook in the Course Catalog.

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Animation Concentration

This concentration features a program of study in traditional animation (hand-drawn and stop-motion), 3D modeling and character animation for cinema and game art, in addition to the core cinema courses. Limited Online Options are available for this concentration. Learn more about admission to this program .

COURSE REQUIREMENTS

Prerequisite Phase

The goal of the prerequisite phase is to give students the background necessary for starting the graduate program. These prerequisite phase requirements can be fulfilled in one of two ways:

- The student takes the course and earns a grade of B- or higher.
- The faculty advisor waives the course because of equivalent academic background or work experience.

All students are blocked from enrolling in Graduate Phase courses prior to completing their prerequisites. Students must submit an online Change of Status request (through myCDM) when the Prerequisite Phase is completed to inform the Student Services offices that the block can be removed.

ANI 101	Animation for Non-Majors
or ANI 201	Animation I
ANI 206	History of Animation
ANI 230	3D Design and Modeling
ANI 231	3D Animation

Students must also complete 2 courses from the following list:

DC 215	Digital Sound Design
DC 275	Cinematography
DC 201	Introduction to Screenwriting
DC 210	Digital Cinema Production I
DC 220	Editing I
GAM 244	Game Development I
GAM 245	Game Development II

Foundation Phase

ANI 460	Animation Graduate Seminar
DC 461	Production Workshop
DC 462	Directing Workshop

Advanced Phase

ANI 436	3D Modeling Workshop
ANI 430	3D Character Animation
ANI 439	3D Texturing and Lighting

Major Electives

Students in this program must choose any 4 ANI, GPH, DC or GAM graduate-level courses.

Open Electives

Students in this program must choose any 3 CDM graduate-level- courses.

DEGREE REQUIREMENTS

Students in this degree program must meet the following requirements:

- complete a minimum of 52 credit hours (generally 13 courses) beyond the Prerequisite Phase
- earn a grade of B- or better in each Prerequisite Phase course
- earn a grade of C- or better in all graduate courses beyond the Prerequisite Phase
- maintain a graduate level GPA of 2.50 or higher while pursuing their degree
- achieve a graduate GPA of 2.50 or higher at the completion of all other requirements

Students with a GPA of 3.9 or higher will graduate with distinction.

For DePaul's policy on repeat graduate courses and a complete list of academic policies see the DePaul Graduate Handbook in the Course Catalog.

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Master of Science in Computer Game Development

College of Computing and Digital Media - Graduate Studies □ School of Cinema and Interactive Media (CIM) □ Master of Science in Computer Game Development

Requirements

The **MS in Computer Game Development** is designed for those interested in game development programming at the highest level, including computer science and computer graphics professionals retooling for the game industry. Learn more about admission to this program.

Online Learning Options

Some courses in this degree are available for review and playback via the CDM Course Online playback system (COL) . If a course is COL-enabled, any student registered in the course has access to the course playback. Students are strongly encouraged to utilize the COL resource wherever available. Some courses are offered online. To complete this degree a student may take any combination of online and on campus courses. For more information on online learning at CDM visit the [Online Learning Page](#).

COURSE REQUIREMENTS

Prerequisite Phase

The goal of the prerequisite phase is to give students the background necessary for starting

the graduate program. These prerequisite phase requirements can be fulfilled in one of three ways:

- The student takes the course and earns a grade of B- or higher.
- The student takes a Graduate Assessment Exam (GAE) to test out of the course.
- The faculty advisor waives the course because of equivalent academic background or work experience.

All students are blocked from enrolling in Graduate Phase courses prior to completing their prerequisites. Students must submit an online Change of Status request (through myCDM) when the Prerequisite Phase is completed to inform the Student Services offices that the block can be removed.

CSC 261	Programming Languages I: C/C++
CSC 262	Programming Languages II: C/C++
CSC 373	Computer Systems I
CSC 374	Computer Systems II
CSC 393	Data Structures in C++
or CSC 383	Data Structures and Algorithms in Java
MAT 150	Calculus I
GPH 321	Computer Graphics Development
or	an equivalent Linear Algebra course

Foundation Phase

GAM 424	Game Design Workshop
GAM 474	Fundamentals of Game Programming I
GAM 475	Game Engine Programming I

Advanced Phase

GAM 450	Physics for Game Developers
GAM 476	Artificial Intelligence for Computer Games
CSC 421	Applied Algorithms and Structures
GPH 469	Computer Graphics Development
GAM 575	Game Engine Programming II

Major electives

Students must complete 2 graduate GAM courses in the 420-699 range or courses from the following list:

CSC 443	Introduction to Operating Systems
CSC 447	Concepts of Programming Languages
CSC 448	Compiler Design
CSC 451	Database Design
CSC 480	Foundations of Artificial Intelligence
CSC 578	Neural Networks and Machine Learning
CSC 435	Distributed Systems I
GAM 490	Multiplayer Game Development
GAM 599	Topics in Computer Game Design and Development
GPH 438	Computer Animation Survey
GPH 448	Computer Graphics Scripting
GPH 539	Advanced Rendering Techniques
GPH 540	Procedural Shading
GPH 541	Advanced Lighting Techniques
GPH 570	Visualization
GPH 572	Principles of Computer Animation
GPH 575	Advanced Graphics Development
SE 430	Object Oriented Modeling
SE 433	Software Testing and Quality Assurance
SE 450	Object-Oriented Software Development
SE 477	Software and Systems Project Management
CSC 536	Distributed Systems II
CSC 534	Software Development for Limited and Embedded Devices
CSC 552	Concurrent Software Development
SE 558	Architecture and Design for Multiplayer Games

CDM Open Electives

Students must complete 1 CDM open elective course in the 420-699 range.

Capstone

GAM 690 Game Development Studio I

GAM 692 Game Development Studio II

Note Students must register for GAM 690 and GAM 691 in consecutive quarters. A grade will not be assigned for GAM 690 until GAM 691 has been completed.

DEGREE REQUIREMENTS

Students in this degree program must meet the following requirements:

- complete a minimum of 52 credit hours (generally 13 courses) beyond the Prerequisite Phase
- earn a grade of B- or better in each Prerequisite Phase course
- earn a grade of C- or better in all graduate courses beyond the Prerequisite Phase
- maintain a graduate level GPA of 2.50 or higher while pursuing their degree
- achieve a graduate GPA of 2.50 or higher at the completion of all other requirements

Students with a GPA of 3.9 or higher will graduate with distinction.

For DePaul's policy on repeat graduate courses and a complete list of academic policies see the DePaul Graduate Handbook in the Course Catalog.

Master of Science in Computer Graphics and Motion Technology

College of Computing and Digital Media - Graduate Studies □ School of Cinema and Interactive Media (CIM) □ Master of Science in Computer Graphics and Motion Technology

Requirements

The **MS in Computer Graphics and Motion Technology** focuses on the technical and visual foundations for the design and software development of Computer Graphics and Motion technology. This program prepares students for technical careers in the graphics industry ranging from entertainment to data visualization for science and medicine.

Students in the program will acquire a broad set of skills including:

- Gain a sensitivity to human perception, including a comprehension of fundamental design concepts, color theory, and the interaction of light with surfaces
- Build a deep understanding of such interaction design, modeling objects, controlling cameras, rigging characters for animation and using particle and surface techniques
- Apply perceptual and technical abilities in creating shaders, textures, characters, scenes and animations
- Acquire hands-on experience with a wide range of commercially-available tools
- Become appreciative of the two "cultures" of computer graphics - the one drawing on communication design and the other deriving from computer science.
- This degree prepares students for careers in graphics/animation production and software development. Students acquire both the aesthetic and technical knowledge required in this changing industry.

Concentrations

Visualization Concentration

This concentration focuses on graphics/animation for displaying, explaining and analyzing scientific and medical data. Visualization displays numerical data in an accurate, high-density and compact form in which patterns are revealed, emphasized and clearly communicated. Students focus on the mathematics, statistics and programming techniques necessary to analyze and display such data. At the same time students are given a firm grounding in the aesthetics that allow them to build visualizations that communicate

effectively and beautifully.

Developer Concentration

This concentration follows a more traditional computer science path, focusing on the mathematical and programming techniques necessary to build graphics/animation software. Developers study not only the necessary data structures to build software such as game engines and production renderers but also the knowledge required to know what software artists will need and how they use it.

Technical Director Concentration

This concentration prepares students for jobs that facilitate artistic production. It gives students a solid aesthetic background while also providing a firm grounding in the scripting techniques necessary to take the industry's software as far as it can go in realizing the artist's creative intent. Graduates will be able to assist creative directors in such activities as creating virtual sets, adjusting lighting, asset management and rigging characters for animation.

Online Learning Options

Some courses in this degree are available for review and playback via the CDM Course Online playback system (COL) . If a course is COL-enabled, any student registered in the course has access to the course playback. Students are strongly encouraged to utilize the COL resource wherever available. Some courses are offered online. To complete this degree a student may take any combination of online and on campus courses. For more information on online learning at CDM visit the Online Learning Page.

Developer Concentration

This concentration follows a more traditional computer science path, focusing on the mathematical and programming techniques necessary to build graphics/animation software. Developers study not only the necessary data structures to build software such as game engines and production renderers but also the knowledge required to know what software artists will need and how they will use it. Learn more about admission to this program .

Online Learning Options

Some courses in this degree are available for review and playback via the CDM Course Online playback system (COL) . If a course is COL-enabled, any student registered in the course has access to the course playback. Students are strongly encouraged to utilize the COL resource wherever available. Some courses are offered online. To complete this degree a student may take any combination of online and on campus courses. For more information on online learning at CDM visit the Online Learning Page.

COURSE REQUIREMENTS

Prerequisite Phase

The goal of the prerequisite phase is to give students the background necessary for starting the graduate program. These prerequisite phase requirements can be fulfilled in one of three ways:

- The student takes the course and earns a grade of B- or higher.
- The student takes a Graduate Assessment Exam (GAE) to test out of the course.
- The faculty advisor waives the course because of equivalent academic background or work experience.

All students are blocked from enrolling in Graduate Phase courses prior to completing their prerequisites. Students must submit an online Change of Status request (through myCDM) when the Prerequisite Phase is completed to inform the Student Services offices that the block can be removed.

IT 240	Introduction to Desktop Databases
CSC 261	Programming in C++ I
CSC 262	Programming in C++ II
CSC 393	Data Structures in C++
HCI 402	Foundations of Digital Design
GPH 212	Perceptual Principles for Digital Environments II
MAT 150	Calculus I

- or MAT 160 Calculus for Mathematics and Science Majors I
or MAT 170 Calculus I with Scientific Applications (Recommended)

Foundation Phase

GPH 425	Survey of Computer Graphics
GPH 438	Computer Animation Survey
GPH 448	Computer Graphics Scripting
HCI 470	Digital Page Formatting I
GPH 436	Fundamentals of Computer Graphics
GPH 469	Computer Graphics Development

Advanced Phase

GPH 572	Principles of Computer Animation
GPH 539	Advanced Rendering Techniques
GPH 570	Visualization
GPH 580	Hardware Shading Techniques

Major Electives

Students must take **1** graduate GPH course in the 420-699 range.

Open Electives

Students must take **2** graduate CDM courses in the 420-699 range.

At least **1** of the Major or Open electives must be 500-level or above.

DEGREE REQUIREMENTS

Students in this degree program must meet the following requirements:

- complete a minimum of 52 credit hours (generally 13 courses) beyond the Prerequisite Phase
- earn a grade of B- or better in each Prerequisite Phase course
- earn a grade of C- or better in all graduate courses beyond the Prerequisite Phase
- maintain a graduate level GPA of 2.50 or higher while pursuing their degree
- achieve a graduate GPA of 2.50 or higher at the completion of all other requirements

Students with a GPA of 3.9 or higher will graduate with distinction.

For DePaul's policy on repeat graduate courses and a complete list of academic policies see the DePaul Graduate Handbook in the Course Catalog.

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Technical Director Concentration

This concentration prepares students for jobs that facilitate artistic production. It gives students a solid aesthetic background while also providing a firm grounding in the scripting techniques necessary to take the industry's software as far as it can go in realizing the artist's creative intent. Graduates will be able to assist creative directors in such activities as creating virtual sets, adjusting lighting, asset management and rigging characters for animation. Learn more about admission to this program .

Online Learning Options

Some courses in this degree are available for review and playback via the CDM Course Online playback system (COL) . If a course is COL-enabled, any student registered in the course has access to the course playback. Students are strongly encouraged to utilize the COL resource wherever available. Some courses are offered online. To complete this degree a student may take any combination of online and on campus courses. For more information on online learning at CDM visit the [Online Learning Page](#).

COURSE REQUIREMENTS

Prerequisite Phase

The goal of the prerequisite phase is to give students the background necessary for starting the graduate program. These prerequisite phase requirements can be fulfilled in one of three

ways:

- The student takes the course and earns a grade of B- or higher.
- The student takes a Graduate Assessment Exam (GAE) to test out of the course.
- The faculty advisor waives the course because of equivalent academic background or work experience.

All students are blocked from enrolling in Graduate Phase courses prior to completing their prerequisites. Students must submit an online Change of Status request (through myCDM) when the Prerequisite Phase is completed to inform the Student Services offices that the block can be removed.

IT 240	Introduction to Desktop Databases
IM 230	Scripting for Interactive Media
and IM 330	Advanced Scripting for Interactive Media
or CSC 261	Programming in C++ I
and CSC 262	Programming in C++ II
IM 336	Interactive Media Scripting for Programmers
GPH 269	Graphic Geometries
HCI 402	Foundations of Digital Design
GPH 212	Perceptual Principles for Digital Environments II

NOTE: The Technical Director prerequisite concentration requires two quarters of programming in either Action Script or C/C++ so students entering with prior course work in C++ will satisfy this requirement. Any Technical Director student who wishes to eventually take courses in the Developer concentration as electives is encouraged to take the C++ programming track CSC 261 and CSC 262 to satisfy the prerequisite programming requirement.

Foundation Phase

GPH 425	Survey of Computer Graphics
GPH 438	Computer Animation Survey
GPH 448	Computer Graphics Scripting
HCI 470	Digital Page Formatting I
HCI 440	Usability Engineering
GPH 450	Digital Modeling I

Advanced Phase

HCI 422	Multimedia
GPH 560	Modeling Spaces
GPH 565	Designing for Visualization
GPH 539	Advanced Rendering Techniques

Major Electives

Students must take **1** graduate GPH course in the 420-699 range.

Open Electives

Students must take **2** graduate CDM courses in the 420-699 range.

At least **1** of the Major or Open electives must be 500-level or above.

Suggested Electives

DEGREE REQUIREMENTS

Students in this degree program must meet the following requirements:

- complete a minimum of 52 credit hours (generally 13 courses) beyond the Prerequisite Phase
- earn a grade of B- or better in each Prerequisite Phase course
- earn a grade of C- or better in all graduate courses beyond the Prerequisite Phase
- maintain a graduate level GPA of 2.50 or higher while pursuing their degree
- achieve a graduate GPA of 2.50 or higher at the completion of all other requirements

Students with a GPA of 3.9 or higher will graduate with distinction.

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Visualization Concentration

This concentration focuses on graphics/animation for displaying, explaining and analyzing scientific and medical data. Visualization displays numerical data in an accurate, high-density and compact form in which patterns are revealed, emphasized and clearly communicated. Students focus on the mathematics, statistics and programming techniques necessary to analyze and display such data. At the same time students are given a firm grounding in the aesthetics that allow them to build visualizations that communicate effectively and beautifully. [Learn more about admission to this program .](#)

Online Learning Options

Some courses in this degree are available for review and playback via the CDM Course Online playback system (COL) . If a course is COL-enabled, any student registered in the course has access to the course playback. Students are strongly encouraged to utilize the COL resource wherever available. Some courses are offered online. To complete this degree a student may take any combination of online and on campus courses. For more information on online learning at CDM visit the [Online Learning Page](#).

COURSE REQUIREMENTS

Prerequisite Phase

The goal of the prerequisite phase is to give students the background necessary for starting the graduate program. These prerequisite phase requirements can be fulfilled in one of three ways:

- The student takes the course and earns a grade of B- or higher.
- The student takes a Graduate Assessment Exam (GAE) to test out of the course.
- The faculty advisor waives the course because of equivalent academic background or work experience.

All students are blocked from enrolling in Graduate Phase courses prior to completing their prerequisites. Students must submit an online Change of Status request (through myCDM) when the Prerequisite Phase is completed to inform the Student Services offices that the block can be removed.

CSC 421	Applied Algorithms and Structures
CSC 423	Data Analysis and Regression
CSC 482	Applied Image Analysis
CSC 483	Information Processing Management
CSC 521	Monte Carlo Algorithms
GPH 448	Computer Graphics Scripting
GPH 487	Forensic Animation
GPH 536	Smooth Surface Modeling for Graphics and Animation
GPH 540	Procedural Shading
GPH 575	Advanced Graphics Development.
IT 223	Data Analysis
CSC 261	Programming in C++ I
CSC 262	Programming in C++ II
MAT 150	Calculus I
and MAT 151	Calculus II
or MAT 160 and MAT 161	
or MAT 170 and MAT 171 *	
HCI 402	Foundations of Digital Design

* *This calculus sequence is recommended*

Foundation Phase

GPH 425	Survey of Computer Graphics
GPH 436	Fundamentals of Computer Graphics
HCI 440	Usability Engineering
CSC 431	Scientific Computing

HCI 470 Digital Page Formatting I
GPH 469 Computer Graphics Development

Advanced Phase

GPH 572 Principles of Computer Animation
CSC 481 Introduction to Image Processing
GPH 570 Visualization
GPH 580 Hardware Shading Techniques

Major Electives

Students must take **1** graduate GPH course in the 420-699 range.

Open Electives

Students must take **2** graduate CDM courses in the 420-699 range.

At least **1** of the Major or Open electives must be 500-level or above.

Suggested Electives

GPH 438 Computer Animation Survey
GPH 450 Digital Modeling I
GPH 539 Advanced Rendering Techniques
GPH 560 Modeling Spaces.

DEGREE REQUIREMENTS

Students in this degree program must meet the following requirements:

- complete a minimum of 52 credit hours (generally 13 courses) beyond the Prerequisite Phase
- earn a grade of B- or better in each Prerequisite Phase course
- earn a grade of C- or better in all graduate courses beyond the Prerequisite Phase
- maintain a graduate level GPA of 2.50 or higher while pursuing their degree
- achieve a graduate GPA of 2.50 or higher at the completion of all other requirements

Students with a GPA of 3.9 or higher will graduate with distinction.

For DePaul's policy on repeat graduate courses and a complete list of academic policies see the DePaul Graduate Handbook in the Course Catalog.
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Master of Science in Human-Computer Interaction

College of Computing and Digital Media - Graduate Studies □ School of Cinema and Interactive Media (CIM) □ Master of Science in Human-Computer Interaction

Requirements

The **Master of Science in Human-Computer Interaction** at DePaul prepares students to design, implement, and evaluate computer interfaces so that they are accessible and easy for people to use. This interdisciplinary degree integrates concepts and methods from computer science, graphic design and the social sciences to provide a comprehensive understanding of the user-centered design process.

Students in this program will acquire a broad range of skills including:

- Carry out the full user-centered design process

- Conduct usability tests
- Research users and their tasks
- Create the information architecture for a web site or complex application
- Develop working prototypes of dynamic web sites

Learn more about admission to this program.

Online Learning Options

This degree can be completed entirely online. CDM online degrees are delivered mostly through COL-enabled courses, although other delivery technologies are also used. If a course is COL-enabled, any student registered in the course has access to the course playback. Students are strongly encouraged to utilize the COL resource wherever available. To complete this degree a student may take any combination of online and on campus courses. For more information on online learning at CDM visit the [Online Learning Page](#).

COURSE REQUIREMENTS

Prerequisite Phase

The goal of the prerequisite phase is to give students the background necessary for starting the graduate program. These prerequisite phase requirements can be fulfilled in one of three ways:

- The student takes the course and earns a grade of B- or higher.
- The student takes a Graduate Assessment Exam (GAE) to test out of the course.
- The faculty advisor waives the course because of equivalent academic background or work experience.

All students are blocked from enrolling in Graduate Phase courses prior to completing their prerequisites. Students must submit an online Change of Status request (through myCDM) when the Prerequisite Phase is completed to inform the Student Services offices that the block can be removed.

IT 130	The Internet and the Web
IT 223	Data Analysis
IM 230	Scripting for Interactive Media
or IM 336	Interactive Media Scripting for Programmers
IM 270	User-Centered Web Design
HCI 402	Foundations of Digital Design *

* HCI 402 is not currently offered online. Consult your advisor for determining suitable alternative coursework.

Foundation Phase

HCI 440	Usability Engineering
HCI 450	Foundations of Human-Computer Interaction
HCI 470	Digital Page Formatting I

Students in the Foundation Phase may register for a maximum of four Advanced Phase courses.

Advanced Phase

HCI 430	Prototyping and Implementation
HCI 445	Inquiry Methods and Use Analysis
HCI 460	Usability Evaluation Methods
HCI 454	Interaction Design

Major electives

Students must complete 4 elective courses from the lists below:

HCI Electives

HCI 422	Multimedia
HCI 432	User-Centered Web Development
HCI 511	Designing for Disabilities
HCI 521	Designing for Content Management Systems
HCI 530	Usability Issues for Handheld Devices

Non-HCI Electives open to all HCI students

CSC 423	Data Analysis and Regression
CSC 424	Advanced Data Analysis
CSC 428	Data Analysis for Experimenters
CSC 449	Database Technologies
CSC 451	Database Design
CSC 587	Cognitive Science
ECT 433	Survey of Web Programming Technologies
ECT 455	E-Commerce Web Site Engineering
ECT 480	Intranets and Portals
ECT 586	Customer Relationship Management Technologies
IS 456	Knowledge Management Systems
IS 511	Social Issues of Computing
IS 570	Enterprise System Implementation
ITS 427	Learning and Technology
ITS 431	Instructional Delivery and Course Management Systems
ITS 560	Training and User Support
IT 432	Web Architecture for Non-Programmers
PM 430	Fundamentals of IT Project Management
PM 440	Collaborative Technologies for Leading Projects
PSY 402	Perceptual Processes
PSY 404	Learning and Cognitive Processes
PSY 473	The Psychology of Judgment and Decision-Making
PSY 557	Seminar in Learning and Cognitive Processes
PSY 680	Industrial and Organization Psychology
SE 477	Software and Systems Project Management
SE 482	Requirements Engineering

Non-HCI electives requiring programming experience

GPH 425	Survey of Computer Graphics
GPH 438	Computer Animation Survey
SE 430	Object Oriented Modeling

CDM Open Electives

Students must complete 1 advisor-approved CDM elective. Elective courses are in the range of 420-699 and must be from the College of CDM.

Capstone

HCI 594	Human-Computer Interaction Capstone *
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* HCI 594 is not currently offered online. Consult your advisor for determining suitable alternative course work.

DEGREE REQUIREMENTS

Students in this degree program must meet the following requirements:

- complete a minimum of 52 credit hours (generally 13 courses) beyond the Prerequisite Phase
- earn a grade of B- or better in each Prerequisite Phase course
- earn a grade of C- or better in all graduate courses beyond the Prerequisite Phase
- maintain a graduate level GPA of 2.50 or higher while pursuing their degree
- achieve a graduate GPA of 2.50 or higher at the completion of all other requirements

Students with a GPA of 3.9 or higher will graduate with distinction.

For DePaul's policy on repeat graduate courses and a complete list of academic policies see the DePaul Graduate Handbook in the Course Catalog.

The Vincentian Character of DePaul University

College of Computing and Digital Media - Graduate Studies ▢ The Vincentian Character of DePaul University

The Vincentian Character of DePaul University

DePaul, a Catholic university, takes its name from St. Vincent DePaul. The religious community founded by Vincent, commonly known as Vincentians, opened the university and endowed it with a distinctive spirit: to foster in higher education a deep respect for the God-given dignity of all persons, especially the materially, culturally, and spiritually deprived; to instill in educated persons a dedication to the service of others. In each succeeding generation the women and men of DePaul have pursued learning in this spirit of Vincent DePaul.

Courses

College of Computing and Digital Media - Graduate Studies ▢ Courses

Courses

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