

**DEPAUL  
UNIVERSITY**

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## **Course Catalog**

**College of Computing and Digital Media Graduate Studies**

**Summer 2011-2012/Autumn 2012-2013**

# Table of Contents

Table of Contents	2
General Information	4
Catalog Version	4
College of Computing and Digital Media (CDM)	5
About the College	5
Administration	5
Assistantships and Stipends	5
Student Services	6
Facilities	6
Professional Development	7
CDM Graduate Student Handbook	9
Introduction	9
Dismissal/Probation	9
Evaluation and Credit/Limitations	10
Graduation Requirements	10
Grades, Repeating Classes	10
Graduation with Distinction	11
Readmission	11
Registration	11
Programs in CDM	12
Current Degree Descriptions	12
Online Learning	13
Welcome to CDM Online Learning	13
Doctor of Philosophy in Computer and Information Sciences	14
Requirements	14
Master of Fine Arts	16
MFA in Animation	16
MFA in Cinema	18
MFA in Screenwriting	19
School of Computing (SoC)	22
About the School of Computing	22
Faculty	22
Master of Science in Applied Technology	26
About	26
Master of Science in Business Information Technology	26
Requirements	27
Master of Science in Computer Game Development	28
Requirements	28
Master of Science in Computational Finance	30
Requirements	30
Master of Science in Computer Science	31
Requirements	31
Master of Science in Computer, Information and Network Security	36
Requirements	36

Master of Science in E-Commerce Technology	44
Requirements	45
Master of Science in Human-Computer Interaction	46
Requirements	46
Master of Science in Information Systems	48
Requirements	49
Master of Science in IT Project Management	63
Requirements	63
Master of Science in Network Engineering and Management	65
Requirements	65
Master of Science in Predictive Analytics	67
Requirements	67
Master of Science in Software Engineering	69
Requirements	69
SE At-A-Glance	77
Juris Doctorate and Master of Science	78
Requirements	78
<b>School of Cinema and Interactive Media (CIM)</b>	<b>81</b>
About the School	81
Faculty	81
Master of Arts in Animation	83
Requirements	83
Master of Science in Cinema Production	87
Requirements	87
Master of Science in Computer Game Development	88
Requirements	88
Master of Science in Human-Computer Interaction	90
Requirements	90
<b>The Vincentian Character of DePaul University</b>	<b>93</b>
The Vincentian Character of DePaul University	93
<b>Courses</b>	<b>94</b>
Courses	94

# General Information

College of Computing and Digital Media - Graduate Studies ▢ General Information

## Catalog Version

### **GRADUATE UPDATE: MAY 15, 2012**

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 (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's** graduate programs are designed to accommodate the working professional. Classes are offered in the evenings at DePaul's Loop Campus. In addition, CDM offers both individual courses and entire degree programs online. Our curriculum is structured to give you a solid foundation in the principles of each area of study, as well as a thorough understanding of specialized applications. Class projects focus on problem solving, teamwork, and knowledge sharing. Each student has a faculty advisor, a seasoned professional, with insights about a course of study based on opportunities in the field. The real-world perspective of CDM faculty gives you a practical advantage in shaping your education and your career.

Students can choose from 16 master's programs, three MFA programs, and the Ph.D. program.

At CDM, you get the right mix of theory and practice and the education you need to apply critical and creative thinking in new and unpredictable situations.

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

College of Computing and Digital Media - Graduate Studies ▢ College of Computing and Digital Media (CDM) ▢ Assistantships and Stipends

## Assistantships and Stipends

A limited number of funding opportunities are available for qualified CDM graduate students. Graduate assistantships are tuition and/or monetary awards based on academic merit, experience in the field, and recommendations. An assistantship typically requires the recipient to perform some service for CDM such as tutoring, grading or lab support. CDM awards two kinds of assistantships:

### Graduate Assistantships:

Graduate assistantships are intended for any degree-seeking (PhD, MS, MA and MFA) graduate student in CDM. For more information please visit <http://www.cdm.depaul.edu/Current%20Students/Pages/Assistantships.aspx>

### Ph.D. Stipends:

Intended for full-time students pursuing a PhD at CDM. For more information please visit <http://www.cdm.depaul.edu/Current%20Students/Pages/Assistantships.aspx>

## **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

### **Graduate Admissions**

JAMES PARKER  
Director of Graduate Admissions

MICHAEL WESOLOWSKI  
Assistant Director of Graduate Admissions

EMILY HOULIS  
Admission Officer

MAISIE YANG  
Admission Officer

## **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.

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

## 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 354 Cloud Computing Infrastructure and Operations Program**

A 6-week program in the architectures, infrastructure, and operations of Cloud Computing

### **IPD 355 Cloud Computing Fundamentals Program**

An 11-week program in the principles, methods, and technologies of Cloud Computing

### **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



# 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 Animation

Master of Fine Arts in Cinema

Master of Fine Arts in Screenwriting

### **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)

Computational Finance (joint with KGSB) (GRE or GMAT score required for admission)

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)

Human-Computer Interaction (joint with SoC)

### **Master of Arts Degree Programs**

#### ***School of Cinema and Interactive Media***

Animation

### **Special Programs**

Professional Development Programs

College of Computing and Digital Media - Graduate Studies □ CDM Graduate Student Handbook □ Dismissal/Probation

## 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 2.5 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 2.5, the student may be dismissed from the program.

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, apply for readmission. In addition to the application, the student should provide information that would demonstrate a change in the student's circumstances to the extent that would support successful completion of the student's degree program.

College of Computing and Digital Media - Graduate Studies ▢ CDM Graduate Student Handbook ▢ Evaluation and Credit/Limitations

## **Evaluation and Credit/Limitations**

### **Using Undergraduate Credit for Graduate Courses:**

All courses numbered 100 through 399 are considered to be at the undergraduate level and are not accepted for graduate credit. Exceptions to this policy may include courses from the Institute for Professional Development (IPD) that are indicated as applicable for graduate credit, and as approved by the student's faculty advisor.

### **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.

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

## **Graduation Requirements**

The minimum requirements to graduate with an MA or MS degree are as follows:

- 2.5 cumulative grade point average
- 52 credits (normally 13 courses) earned in graduate courses which have not been used to complete any previous degree

In addition, students must successfully complete all degree requirements as listed on the 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.

MFA and PhD requirements may be different. Students should consult the appropriate page in the catalog for specific grade and credit requirements.

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 cumulative 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**

A student must complete the graduate program requirements in place at the time of the student's first enrollment in the graduate program. A student who changes graduate programs while his/her studies are in progress must complete the requirements in place at the time he or she enrolls in the new program. A student who changes graduate programs during a break between terms (e.g., winter, spring) follows the requirements in place for the term immediately following the break. A student who applies for readmission will be subject to the program and concentration requirements in place in the enrollment term of readmission.

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

## **Registration**

Students must complete all prerequisite phase courses with grades of B- or better prior to enrolling in graduate level courses.

Students are responsible for abiding by all registration policies as described in the DePaul Graduate Student Handbook.

Online learning students **MUST** register for the appropriate online course section. Failure to register for an online learning section prohibits the student from online learning services, include exam proctoring.

*Special Note:* Students are **NOT** allowed to attend a course or utilize online course technology if they are not on the class roster.

CDM does not allow enrollment in closed courses. Students wishing to enroll in a closed course may elect to add themselves to the course waitlist in campus connect. The waitlist allows students to be auto-enrolled in a class as seats become available. Auto-enrollment from the waitlist occurs hourly during the first week of enrollment and two times per day until the last day to add a class. Students are strongly encouraged to closely monitor their email accounts if they have any waitlisted courses. All waitlists expire after the last day to add a class each term.

# 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 Animation  
Master of Fine Arts in Cinema  
Master of Fine Arts in Screenwriting

### 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)  
Computational Finance (joint with KGSB) (GRE or GMAT score required for admission)  
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)  
Human-Computer Interaction (joint with SoC)

### Master of Arts Degree Programs

#### ***School of Cinema and Interactive Media***

Animation

### Special Programs

Professional Development Programs

# 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 complement 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.

We offer **11 master's degree programs** that can be completed entirely online, including:

- Applied Technology
- Computer Game Development
- Computer Science
- Computer, Information and Network Security
- E-Commerce Technology
- Human-Computer Interaction
- Information Systems
- IT Project Management
- Predictive Analytics
- 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

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### 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

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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

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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

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

## MFA in Animation

The **MFA in Animation** degree is for students who are interested in creating original animated films and artwork as their main vocation. Students in the MFA in Animation degree will receive intense and rigorous training in the history, critical artistic issues, and fundamental principles that are necessary for animation artists. The student films created throughout their degree will be challenged by faculty in critiques, through which students will be urged to develop a personal vision and push the limits of their abilities and the potential of animation as an expressive medium. The program uses the cohort model, so students will work alongside their peers throughout their degree. Filmmakers choosing this field often support themselves and fund their films by teaching college, which requires an MFA, so MFA in Animation graduates will be eligible to compete for tenure-track teaching positions within the growing number of Animation programs around the world. The degree is intended for those with undergraduate degrees in Animation, Film, Art, Graphic Design, Illustration and other visual art areas.

DePaul's large group of full time and adjunct Animation faculty come from diverse backgrounds in commercial production, game development and art exhibition. We are part of the School of Cinema & Interactive Media, which features the latest digital technologies and facilities: a stop motion studio, two green screen stages, a sound recording and mixing studio, and a motion capture studio. Our visiting artists series brings prominent animators to campus. Past visitors include David O'Reilly and legendary animator Yuri Norstein.

Learn more about admission to this program .

### Prerequisite Phase Course Requirements

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 courses prior to completing their prerequisites. Students should contact their advisor to enroll in graduate courses until their Prerequisite Phase is completed. 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 230                              3d Design and Modeling \*  
ANI 231                              3d Animation \*

\* Students in the MFA program aren't required to work in the medium of 3D animation, but we believe that it is important for 21st century animators and animation educators to be familiar with 3D modeling and animation tools and concepts. Students who are required to take ANI 230 and ANI 231 during their first two quarters must make up the elective courses later in the program. These courses may also be completed during the preceding Spring or Summer terms.

### First Year Course Requirements

#### ***Fall Quarter***

ANI 460                              Animation Graduate Seminar  
ANI 421                              Animation Mechanics  
1 Animation Elective \*

#### ***Winter Quarter***

ANI 425                              Visual Storytelling  
ANI 422                              Animation Styles and Techniques  
1 Animation Elective \*

#### ***Spring Quarter***

ANI 440                              Collaborative Short Animated Film  
ANI 466                              Cinema, Animation and Art



## 1 Animation Elective

\* Students who are required to take ANI 230 and ANI 231 during their first two quarters must make up the elective courses later in the program.

## Second Year Course Requirements

### *Fall Quarter*

ANI 540                 Animated Short Film Part I (2 credit hours)  
ANI 415                 Audio for Animation  
1 Animation Elective

### *Winter Quarter*

ANI 541                 Animated Short Film Part II (2 credit hours)  
ANI 560                 Graduate Teaching Seminar  
1 Animation Elective

### *Spring Quarter*

ANI 639   MFA Pre-Thesis  
2 Animation Electives

## Third Year Course Requirements

### *Fall Quarter*

ANI 640                 MFA Thesis Animation (1 credit hour) \*  
1 Animation Elective

### *Winter Quarter*

ANI 640                 MFA Thesis Animation (1 credit hour) \*  
1 Animation Elective

### *Spring Quarter*

ANI 640                 MFA Thesis Animation (1 credit hour) \*  
\* ANI 640 must be taken at least 3 times.

## Animation Electives

Animation electives include any graduate level ANI, DC, GAM, GD, GPH, HCI or VFX courses.

## MFA Thesis

The **MFA Thesis Animation** is the culmination of graduate study in the MFA. Students work on an animated film for the three quarters of their third year, and meet periodically for critiques with peers and faculty. Students also produce a written analysis of their work. Students must complete their thesis project and the degree within a total of five years from their first quarter in the program.

### *Student's MFA Advisor Committee and Thesis Timeline*

During the Fall quarter of their second year, all MFA students must form an MFA Advisor Committee. The committee is comprised of three full-time DePaul faculty members, and at least two of the three must be members of the Animation MFA Committee. Students must consult with their Advisor Committee throughout the Thesis project, including during ANI 639 MFA Pre-Thesis. During the final quarter of their Thesis project, the MFA candidate must schedule a meeting with their Advisor Committee to screen the work, and defend the project and thesis paper before the committee. The MFA Advisor Committee decides whether the MFA candidate should be awarded the degree, and if not, what must be done in order for them to receive it.

### *MFA Thesis Screening*

At the end of the third year students present their thesis exhibition in an appropriate venue (a theater or gallery).

### *MFA Thesis Defense*

In order to receive their MFA degree, students must defend the thesis project and the written analysis of their work before their MFA Advisor Committee.

## DEGREE REQUIREMENTS

Students in the MFA in Animation degree program must meet the following requirements:

- complete a minimum of 79 graduate credit hours 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 GPA of 2.50 or higher while pursuing their degree
- achieve a graduate GPA of 2.50 or higher at the completion of all requirements
- satisfactory completion of the MFA thesis as determined by the student's MFA Advisor Committee
- credit earned towards previously awarded master's or MFA degree cannot be counted toward the completion of this MFA program.

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

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

## MFA in Cinema

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 Advisor 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

### Foundation Phase

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

### Theory Phase

DC 502	Story Structures
DC 476	Visual Design

and students must select **1** course 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	Advanced Topics in Cinema
DC 481	Distribution and Exhibition
DC 485	Producing
DC 489	The Big Picture: the Entertainment Industry

### Production Phase

DC 401	Writing the Short Motion Picture
DC 415	Post-Production 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 **2** DC, ANI or VFX production or theory courses.

### Thesis Phase

DC 565	Thesis Development
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### 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 Advisor Committee**

During this phase students are supervised by their MFA Advisor Committee. The student's MFA Advisor 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 Advisor 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 Advisor Committee. At this defense the student's MFA Advisor 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 graduate 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 GPA of 2.50 or higher while pursuing their degree
- achieve a graduate GPA of 2.50 or higher at the completion of all requirements
- satisfactory completion of the MFA Thesis as determined by the student's MFA Advisor Committee
- credit earned towards a previously awarded master's or MFA degree cannot be counted toward the completion of this MFA program.

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

College of Computing and Digital Media - Graduate Studies □ Master of Fine Arts □ MFA in Screenwriting

## **MFA in Screenwriting**

The **Master of Fine Arts (MFA) in Screenwriting** is a terminal degree in writing for film and television. The program provides aspiring writers with a demanding curriculum designed to cultivate their talents and provide them with the skills necessary to become successful members of the film and television industry. This highly selective program culminates in the completion of an MFA thesis screenplay or teleplay.

Learn more about admission to this program .

### **First Year Course Requirements**

#### ***Fall Quarter***

DC 501	Storytelling for the Screenwriter
DC 502	Story Structures
DC 503	Feature Film Development

#### ***Winter Quarter***

DC 402	Writing the Feature I
DC 400	Writing the Television Spec Script

### ***Spring Quarter***

DC 403 Writing the Feature II  
DC 405 Topics in Screenwriting  
1 CIM or MCS Elective

### ***Summer Quarter***

DC 480 Project Bluelight

## **Second Year Course Requirements**

### ***Fall Quarter***

DC 561 Thesis I  
DC 406 Writing the Sitcom  
or DC 407 Writing the Episodic Drama  
1 CIM or MCS Elective

### ***Winter Quarter***

DC 562 Thesis II  
DC 408 Writing On Assignment

### ***Spring Quarter***

DC 563 Thesis III  
DC 505 Industry Seminar

### **CIM or MCS Electives**

CIM or MCS electives include any graduate level ANI, DC, GAM, GD, GPH, HCI, MCS or VFX courses.

### **MFA Thesis**

Students in the **MFA in Screenwriting** program must complete a MFA Thesis project which consists of a feature length screenplay or original television pilot and future episode. We expect the thesis projects to be at a level of quality that would warrant representation by literary agents and managers. Satisfactory completion of the MFA Thesis project is determined by the MFA Advisor Committee (see below).

### ***Student's MFA Advisor Committee***

Prior to beginning their second year, all MFA candidates will be assigned two thesis committee members. The candidate will select a third thesis committee member from all CIM faculty and, upon acceptance of the student's request, this faculty member will make up the third member of the candidate's MFA Advisor Committee. This committee will conduct a portfolio review prior to the beginning of the second year to ensure the student is making proper progress towards his or her degree. The MFA Advisor Committee will offer suggestions and feedback on the student's work and help guide the student during the thesis phase of the program.

### ***MFA Thesis Timeline***

MFA in Screenwriting students are required to turn in a first draft of their thesis project by December 31st following the fall quarter of their final year. The thesis committee will provide notes on the project by January 31st. Candidates will turn in a final draft of their project by May 1st during their final year. The thesis committee will review the thesis project and decide whether the MFA candidate should be awarded the degree. If the committee does not deem the project ready for approval, the student will be given notes and asked to resubmit their project. Students may resubmit up to three additional times. If a student's project is not deemed passable after the fourth time, the student will not receive the MFA. Students have eighteen months from the submission of their first draft to obtain the committee's approval or the degree will not be awarded.

## **DEGREE REQUIREMENTS**

Students in the MFA in Animation degree program must meet the following requirements:

- complete a minimum of 64 graduate credit hours (generally **16** courses)
- earn a grade of C- or better in all graduate courses
- 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
- satisfactory completion of the MFA thesis as determined by the MFA Advisor Committee
- credit earned towards a previously awarded master's or MFA degree cannot be counted toward the

completion of this MFA program.

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.

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.  
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.  
Associate 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

EDWARD KEENAN, M.S.  
Instructor  
University of Illinois, Urbana-Champaign

LINDA KNIGHT, Ph.D.  
Associate Professor

DePaul University

JEAN-PHILIPPE LABRUYČRE, M.S.  
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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.  
Professor  
Iowa State University  
THOMAS MUSCARELLO, Ph.D.  
Associate Professor  
University of Illinois at Chicago

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

CYNTHIA PUTNAM, Ph.D.  
Assistant Professor  
University of Washington

DANIELA RAICU, Ph.D.  
Associate Professor  
Oakland University



ALEXANDER RASIN, Ph.D.  
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Brown University

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

JOHN ROGERS, Ph.D.  
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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.  
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University of Perugia

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PAUL SISUL, M.DIV.  
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DeAndreis Institute of Theology

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Concordia University

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DePaul University

HAROLD STREETER, M.S.  
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NORIKO TOMURO, Ph.D.  
Associate Professor  
DePaul University

CURT WHITE, Ph.D.  
Associate Professor  
Wayne State University

CHARLES WILCOX, B.A.

Instructor  
Southern Illinois University

ROSALEE WOLFE, Ph.D.  
Professor  
Indiana University

JAMES YU, Ph.D.  
Associate Professor  
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

College of Computing and Digital Media - Graduate Studies ▢ School of Computing (SoC) ▢ 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 prepares students to meet 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 provides a solid base for those interested in moving their career forward through project management or information technology management positions. The program also provides students a selection of courses for a business foundation. 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 students may take any combination of courses offered online and on campus.

### COURSE REQUIREMENTS

#### CDM Foundation Courses

IS 421	Systems Analysis
PM 430	Fundamentals of IT Project Management
ECT 424	Enterprise Infrastructure
IS 433	Information Security Management
IS 500*	Information Technology Leadership

#### Kellstadt Foundation Courses

ACC 500	Financial Accounting
MGT 500*	Managing for Effective and Ethical Organizational Behavior
MKT 555	Decisions in Marketing Management

\* Students are **not** allowed to take both IS 500 and MGT 500 to satisfy Foundation Course requirement.

### Major electives

Student takes **5** electives. Two of which must be at the 500-level. Elective courses may be taken from either CDM or Kellstadt from the elective courses listed below.

#### CDM Electives

Student is permitted to take any course numbered 420-599 prefixed CNS\*\*\*, CSC\*\*\*, ECT\*\*\*, HCI\*\*\*, IS\*\*\*, IT\*\*\*, IS\*\*\*, or TDC\*\*\* for which the student meets prerequisite requirements.

#### 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 555	Management of Information Technology
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

### Capstone

IS 577 or PM 577 or ECT 589	Information Systems Policies and Strategies IT Portfolio Management and Strategies E-Business Strategies
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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 pursuing their second master's degree must complete 52 graduate credit hours (generally 13 courses) beyond their first master's degree

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 243	Introduction to Programming
CSC 309	C++ for Programmers
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

CSC 421	Applied Algorithms and Structures
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GAM 474                      Fundamentals of Game Programming I  
or SE 456                     Architecture of Computer Games  
GAM 475                      Game Engine Programming I

### **Advanced Phase**

GAM 450                      Physics for Game Developers  
GAM 476                      Artificial Intelligence for Computer Games  
GPH 469                      Computer Graphics Development  
GAM 575                      Game Engine Programming II

### **Major electives**

Students must complete **3** graduate level elective courses. Students may choose from 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                      Artificial Intelligence I  
CSC 578                      Neural Networks and Machine Learning  
CSC 435                      Distributed Systems I  
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  
and GAM 691)                Game Development Studio II  
or GAM 499                    Topics in Computer Game Design and Development (8 units)

**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 pursuing their second master's degree must complete 52 graduate credit hours (generally 13 courses) beyond their first master's degree.

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 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

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### 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 and MAT 151 or MAT 160 and MAT 161 or MAT 170 and MAT 171	Calculus I Calculus II Calculus for Mathematics and Science Majors I Calculus for Mathematics and Science Majors II Calculus I with Scientific Applications Calculus II with Scientific Applications
CSC 243	Introduction to Programming
CSC 309	C++ for Programmers
CSC 202	Discrete Structures for Computer Science

### CDM Foundation Courses

CSC 423	Data Analysis and Regression
CSC 425	Time Series Analysis and Forecasting
CSC 431 or CSC 485	Scientific Computing 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                      Risk Management  
FIN 662                      Derivatives Valuation

### **Advanced Phase**

CSC 695                      Master's Independent Study  
or CSC 697                      Graduate Internship  
or CSC 559                      Software Engineering for Financial Markets

### **Major electives**

Students must complete **1** graduate CDM 500-level course.

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 pursuing their second master's degree must complete 52 graduate credit hours (generally 13 courses) beyond their first master's degree.

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 a 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

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### 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 243	Introduction to Programming
CSC 300	Data Structures in Java I
CSC 301	Data Structures in Java II
CSC 373	Computer Systems I
CSC 374	Computer Systems II

### Foundation Phase

CSC 421	Applied Algorithms and Structures
CSC 435	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 471	Mobile Application Development
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 421	Applied 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      Social Network Analysis  
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 pursuing their second master's degree must complete 52 graduate credit hours (generally 13

courses) beyond their first master's degree.

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.

#### Governance, Risk and Compliance Concentration

The Governance, Risk, and Compliance concentration focuses on enterprise-level information security risk management, IT audit, and regulatory compliance. This cross-disciplinary concentration focuses on how to develop an information security program; assess security risk in business processes; identify and implement a system of controls for security governance and regulatory compliance; plan and conduct IT audits; and develop business continuity and disaster recovery plans.

**Note** : Some required courses in the Governance, Risk and Compliance concentration are **not** available via

## Online Learning.

### Online Learning Options

All concentrations, except for a few courses in the Governance, Risk, and Compliance 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.

### 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 243	Introduction to Programming
CSC 300	Data Structures in Java I
CSC 301	Data Structures in Java II
CSC 373	Computer Systems I
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:

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
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Students must also complete 2 of the following courses:

CSC 440	Cryptology
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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 the list of courses below. That course cannot be used to fulfill a student's CINS Concentration Area or Foundation Phase requirements.

ACC 500	Financial Accounting
ACC 503	Accounting Information Systems and Auditing
ACC 541	Financial Accounting Theory and Practice I
ACC 547	Audit and Regulation of Corporate Financial Reporting
CNS 450	Computer Forensics
CNS 455	Physical and IT Security Convergence
CNS 477	Legal Issues in Information Assurance
CSC 439	Computer Security
CSC 440	Cryptology
CSC 536	Distributed Systems II
CSC 557	Foundations of Computer Security
ECT 582	Secure Electronic Commerce
IS 444	IT Auditing
IS 505	Business Continuity/Disaster Recovery Theories and Strategies
IS 506	Business Continuity/Disaster Recovery Management and Tactics
IS 533	Enterprise Security Infrastructure Controls and Regulatory Compliance
SE 430	Object Oriented Modeling
SE 482	Requirements Engineering
SE 525	Software Security Architecture
SE 526	Software Security Assessment
SE 529	Software Risk Management
TDC 511	Telecommunications Practicum
TDC 561	Network Programming
TDC 562	Computer-Communication Network Design and Analysis
TDC 563	Protocols and Techniques for Data Networks
TDC 567	Telecommunication Systems Design and Management
TDC 577	Network Security II
TDC 588	Advanced Network Defense Systems

### 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 pursuing their second master's degree must complete 52 graduate credit hours (generally 13 courses) beyond their first master's degree.

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.

[Return to top of page](#)

## **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.

IS 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  
or TDC 588 Advanced Network Defense Systems

### Major Electives

Students must complete **1** course from the list of courses below. That course cannot be used to fulfill a student's CINS Concentration Area or Foundation Phase requirements.

ACC 500 Financial Accounting  
ACC 503 Accounting Information Systems and Auditing  
ACC 541 Financial Accounting Theory and Practice I  
ACC 547 Audit and Regulation of Corporate Financial Reporting  
CNS 450 Computer Forensics  
CNS 455 Physical and IT Security Convergence  
CNS 477 Legal Issues in Information Assurance  
CSC 439 Computer Security  
CSC 440 Cryptology  
CSC 536 Distributed Systems II  
CSC 557 Foundations of Computer Security  
ECT 582 Secure Electronic Commerce  
IS 444 IT Auditing  
IS 505 Business Continuity/Disaster Recovery Theories and Strategies  
IS 506 Business Continuity/Disaster Recovery Management and Tactics  
IS 533 Enterprise Security Infrastructure Controls and Regulatory Compliance  
SE 430 Object Oriented Modeling  
SE 482 Requirements Engineering  
SE 525 Software Security Architecture  
SE 526 Software Security Assessment  
SE 529 Software Risk Management  
TDC 511 Telecommunications Practicum  
TDC 561 Network Programming  
TDC 562 Computer-Communication Network Design and Analysis  
TDC 563 Protocols and Techniques for Data Networks  
TDC 567 Telecommunication Systems Design and Management  
TDC 577 Network Security II  
TDC 588 Advanced Network Defense Systems

### 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 pursuing their second master's degree must complete 52 graduate credit hours (generally 13 courses) beyond their first master's degree.

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.

[Return to top of page](#)

## 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 in C++ I
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
CNS 378	Host and Information 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:

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 the list of courses below. That course cannot be used to fulfill a student's CINS Concentration Area or Foundation Phase requirements.

ACC 500                    Financial Accounting  
ACC 503                    Accounting Information Systems and Auditing  
ACC 541                    Financial Accounting Theory and Practice I  
ACC 547                    Audit and Regulation of Corporate Financial Reporting  
CNS 450                    Computer Forensics  
CNS 455                    Physical and IT Security Convergence  
CNS 477                    Legal Issues in Information Assurance  
CSC 439                    Computer Security  
CSC 440                    Cryptology  
CSC 536                    Distributed Systems II  
CSC 557                    Foundations of Computer Security  
ECT 582                    Secure Electronic Commerce  
IS 444                     IT Auditing  
IS 505                     Business Continuity/Disaster Recovery Theories and Strategies  
IS 506                     Business Continuity/Disaster Recovery Management and Tactics  
IS 533                     Enterprise Security Infrastructure Controls and Regulatory Compliance  
SE 430                     Object Oriented Modeling  
SE 482                     Requirements Engineering  
SE 525                     Software Security Architecture  
SE 526                     Software Security Assessment  
SE 529                     Software Risk Management  
TDC 511                    Telecommunications Practicum  
TDC 561                    Network Programming  
TDC 562                    Computer-Communication Network Design and Analysis  
TDC 563                    Protocols and Techniques for Data Networks  
TDC 567                    Telecommunication Systems Design and Management  
TDC 577                    Network Security II  
TDC 588                    Advanced Network Defense Systems

### **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 pursuing their second master's degree must complete 52 graduate credit hours (generally 13 courses) beyond their first master's degree.

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.

[Return to top of page](#)

## **Governance, Risk, and Compliance Concentration**

The Governance, Risk, and Compliance concentration focuses on enterprise-level information security risk management, IT audit, and regulatory compliance. This cross-disciplinary concentration focuses on how to develop an information security program; assess security risk in business processes; identify and implement a system of controls for security governance and regulatory compliance; plan and conduct IT audits; and develop business continuity and disaster recovery plans. 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.

IT 223	Data Analysis
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 421	Systems Analysis
IS 433	Information Security Management
IS 444	IT Auditing
IS 505	Business Continuity/Disaster Recovery Theories and Strategies

### **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 **3** courses:

ACC 503	Accounting Information Systems and Auditing
CSC 451	Database Design
IS 533	Enterprise Security Infrastructure Controls and Regulatory Compliance

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

IS 430	Fundamentals of IT Project Management
IS 483	Information Services and Operations
CNS 477	Legal Issues in Information Assurance

### **Major Electives**

Students must complete **2** courses from the list of courses below. Those courses cannot be used to fulfill a student's CINS Concentration Area or Foundation Phase requirements.

ACC 541	Financial Accounting Theory and Practice I
ACC 547	Audit and Regulation of Corporate Financial Reporting
CNS 455	Physical and IT Security Convergence
CNS 466	Critical Infrastructure and Control Systems Cybersecurity
CNS 477	Legal Issues in Information Assurance
IS 422	System Design, Implementation, and Maintenance
IS 430	Fundamentals of IT Project Management
IS 483	Information Services and Operations
IS 506	Business Continuity/Disaster Recovery Management and Tactics
IS 535	Information Technology Investment Financial Analysis
SE 529	Software Risk Management
TDC 463	Computer Networks and Data Systems
TDC 477	Network Security

### **CDM Open Electives**

Students must complete **1** CDM open elective. 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:

IS 577	Information Systems Policies and Strategies
or CNS 594	Computer Information and Network Security 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
- 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 pursuing their second master's degree must complete 52 graduate credit hours (generally 13 courses) beyond their first master's degree.

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.

[Return to top of page](#)

## 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 and CSC 212 or CSC 224 * or CSC 396	Programming in Java I Programming in Java II Java for Programmers 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
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ECT 481 Internet Supply Chain Management  
ECT 582 Secure Electronic Commerce

### Major electives

Students must take **5** elective courses from the list below. A minimum of **2** courses must be taken at the 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 Introduction to User-Centered Design  
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 Social Network Analysis  
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 pursuing their second master's degree must complete 52 graduate credit hours (generally 13 courses) beyond their first master's degree.

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

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

### Requirements

The **Master of Science in Human-Computer Interaction** prepares students to design, implement, and evaluate computer interfaces so that people can effectively use them. This interdisciplinary degree integrates concepts and methods from computer science, visual design and the social sciences to provide a comprehensive

understanding of the user-centered design process.

By completing the program, students will be able to do the following:

- 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
IT 238	Interactive Web Scripting
IM 270	User-Centered Web Design
HCI 302	Foundations of Digital Design

### **Foundation Phase**

HCI 440	Introduction to User-Centered Design
HCI 450	Foundations of Human-Computer Interaction
HCI 470	Digital Page Formatting

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 and Information Architecture

### **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	Accessibility and Design for Diverse Users
HCI 514	Global User Research
HCI 520	Learner-Centered Design
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 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
GAM 424	Game Design Workshop
IS 456	Knowledge Management Systems
IS 511	Social Issues of Computing
IS 570	Enterprise System Implementation
IT 432	Web Architecture for Non-Programmers
PM 430	Fundamentals of IT Project Management
SE 477	Software and Systems Project Management
or 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 482	Requirements Engineering
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

### **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 pursuing their second master's degree must complete 52 graduate credit hours (generally 13 courses) beyond their first master's degree.

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**



## 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

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### 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

### 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

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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 pursuing their second master's degree must complete 52 graduate credit hours (generally 13 courses) beyond their first master's degree.

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.

[Return to top of document](#)

## **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**

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### **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

### **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 536	Enterprise Cloud Computing
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

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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 pursuing their second master's degree must complete 52 graduate credit hours (generally 13 courses) beyond their first master's degree.

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.

[Return to top of document](#)

### 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 judgment, 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

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### 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

### 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  
IS 500 Information Technology Leadership  
or 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

## DEGREE REQUIREMENTS

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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 pursuing their second master's degree must complete 52 graduate credit hours (generally 13 courses) beyond their first master's degree.

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.

[Return to top of document](#)

### 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

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### 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  
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  
IS 536                    Enterprise Cloud Computing

### Major Electives

Students must take **1** course 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

## DEGREE REQUIREMENTS

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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 pursuing their second master's degree must complete 52 graduate credit hours (generally 13 courses) beyond their first master's degree.

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.

[Return to top of document](#)

## 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

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### 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

### 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  
IS 500 Information Technology Leadership  
or 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
IS 536	Enterprise Cloud Computing

### 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

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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 pursuing their second master's degree must complete 52 graduate credit hours (generally 13 courses) beyond their first master's degree.

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.

[Return to top of document](#)

### 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

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### 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  
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

## DEGREE REQUIREMENTS

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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 pursuing their second master's degree must complete 52 graduate credit hours (generally 13 courses) beyond their first master's degree.

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.

[Return to top of document](#)

### 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

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### 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  
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  
IS 536 Enterprise Cloud Computing

### 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

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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 pursuing their second master's degree must complete 52 graduate credit hours (generally 13 courses) beyond their first master's degree.

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.

[Return to top of document](#)

### **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](#).

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## **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
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

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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 pursuing their second master's degree must complete 52 graduate credit hours (generally 13 courses) beyond their first master's degree.

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.

[Return to top of document](#)

### 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

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### 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

### 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 536 Enterprise Cloud Computing  
 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

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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 pursuing their second master's degree must complete 52 graduate credit hours (generally 13 courses) beyond their first master's degree.

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.

[Return to top of document](#)

### 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

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### 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
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
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## DEGREE REQUIREMENTS

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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 pursuing their second master's degree must complete 52 graduate credit hours (generally 13 courses) beyond their first master's degree.

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 IT Project Management

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

### Requirements

The **Master of Science in IT Project Management** is for working professionals who have either a technology undergraduate degree or two years of IT work experience and wish to advance their careers by filling the growing need for IT project managers. This program is intended for graduate students who wish to prepare for careers leading and managing IT project teams.

The lack of project and program management skills has long been known to be a major factor 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

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#### 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 Bachelor's 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 or IS 500	Managing Effective and Ethical Organizational Behavior Information Technology Leadership

*Students are not allowed to take both IS 500 and MGT 500 to satisfy Foundation Phase requirements.*

**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 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)

LLS 445	Improving Interpersonal Dynamics
LLS 455	Valuing Human Differences Seminar
LLS 465	Engaging Ethical Reasoning Seminar

### Capstone

Students must complete the following course

PM 577	Project Management Practicum Capstone
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## DEGREE REQUIREMENTS

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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 pursuing their second master's degree must complete 52 graduate credit hours (generally 13 courses) beyond their first master's degree.

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

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#### 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 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

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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 pursuing their second master's degree must complete 52 graduate credit hours (generally 13 courses) beyond their first master's degree.

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

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#### 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

#### 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
Choose a course in advanced analytics from among	
CSC 495	Social Network Analysis
or ECT 584	Web Mining for Business Intelligence
or CSC 575	Intelligent Information Retrieval

#### 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	Social Network Analysis
CSC 555	Mining Big Data
CSC 575	Intelligent Information Retrieval
CSC 578	Machine Learning and Neural Networks *
CSC 598	Topics in Data Analysis
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
GEO 441	GIS for Community Development
or MPS 604	Special Topics in Applied GIS

### 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

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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 pursuing their second master's degree must complete 52 graduate credit hours (generally 13 courses) beyond their first master's degree.

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 Software Engineering

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

## 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.

### Entrepreneurship and Technology Leadership Concentration

This concentration addresses the foundations and methodologies of software development combined with knowledge of business environment and finance to prepare for career paths in entrepreneurship or senior technology leadership positions in businesses.

## Online Learning Options

Most 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 243	Introduction to Programming
or experience in at least one high-level programming language	
CSC 300	Data Structures in Java I
CSC 301	Data Structures in Java II
CSC 373	Computer Systems I
CSC 374	Computer Systems II

### 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 475	Managing Globally Distributed Software Development
or SE 477	Software and Systems Project Management

### Advanced Phase

Students must complete the following courses:

CSC 435	Distributed Systems I
SE 480	Software Architecture I
SE 459	Agile Software Development

### Major Electives

**SE courses in the 420-699 range** and courses from the list below at the end of this page 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 pursuing their second master's degree must complete 52 graduate credit hours (generally 13 courses) beyond their first master's degree.

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.

## 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 243	Introduction to Programming
or experience in at least one high-level programming language	
CSC 300	Data Structures in Java I
CSC 301	Data Structures in Java II
CSC 373	Computer Systems I
CSC 374	Computer Systems II

### 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 475	Managing Globally Distributed Software Development
or SE 477	Software and Systems Project Management

### Advanced Phase

Students must complete the following courses:

SE 457	Service Oriented Architecture
SE 480	Software Architecture I
SE 581	Software Architecture II

### Major Electives

**SE courses in the 420-699 range** and courses from the list below at the end of this page 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 pursuing their second master's degree must complete 52 graduate credit hours (generally 13 courses) beyond their first master's degree.

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.

### **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 243	Introduction to Programming or experience in at least one high-level programming language
CSC 300	Data Structures in Java I
CSC 301	Data Structures in Java II
CSC 373	Computer Systems I
CSC 374	Computer Systems II

#### **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



### **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 at the end of this page 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 pursuing their second master's degree must complete 52 graduate credit hours (generally 13 courses) beyond their first master's degree.

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.

## **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 243                      Introduction to Programming  
or experience in at least one high-level programming language

CSC 300	Data Structures in Java I
CSC 301	Data Structures in Java II
CSC 373	Computer Systems I
CSC 374	Computer Systems II

### 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 475 or SE 477	Managing Globally Distributed Software Development 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 at the end of this page 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 pursuing their second master's degree must complete 52 graduate credit hours (generally 13 courses) beyond their first master's degree.

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.

## Entrepreneurship and Technology Leadership Concentration

In the current IT environment, software development projects are increasingly treated as business propositions in which the product under development must deliver real and measurable value to the organization. As such, Software Engineers often need increasingly sophisticated knowledge of the business environment in order to advance in their careers beyond the purely technical track. This concentration will bridge the areas of software engineering and business, by equipping students to understand the financial, marketing, management, and entrepreneurial context in which most software development projects are executed.

The concentration will include course offerings from both CDM and Kellstadt Graduate School of Business. It offers the Software Engineering students the opportunities of immersing themselves in a classroom setting in which the focus is purely business oriented, as opposed to technology oriented. This concentration aims to prepare Software Engineering students for career paths in software technology focused entrepreneurship or senior technology leadership positions (CIO's, CTO's) in businesses.

Learn more about admission to this program .

## Online Learning Options

This degree can be completed entirely online. 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. Students who wish to complete this degree entirely online need to consult with their faculty advisor to make suitable substitutions for Kellstadt commerce courses that are not offered online, as noted in the program requirements below. For more information on online learning at CDM visit the Online Learning section . Information on online delivery of Kellstadt commerce courses can be found on the Kellstadt Online Learning page .

## COURSE REQUIREMENTS

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### 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 243	Introduction to Programming
or experience in at least one high-level programming language	
CSC 300	Data Structures in Java I
CSC 301	Data Structures in Java II
CSC 373	Computer Systems I
CSC 374	Computer Systems II

### CDM Foundation Courses

Students must complete the following courses:

SE 430	Object Oriented Modeling
SE 450	Object-Oriented Software Development
SE 477	Software and Systems Project Management

### Commerce Foundation Courses (Kellstadt)

Students must complete the following courses:

MGT 500	Managing for Effective and Ethical Organizational Behavior
MGT 570	Entrepreneurship and New Venture Management

### Major Electives

Students must take **3** courses from the list of CDM electives below and **2** courses from the list of Kellstadt courses listed below.

### CDM Electives

Students may select any SE elective or the following courses:

CSC 453	Database Technologies
HCI 440	Usability Engineering
The following courses are recommended:	
SE 433	Software Testing and Quality Assurance
SE 452	Object-Oriented Enterprise Computing
SE 468	Software Measurement/Project Estimation
SE 482	Requirements Engineering
SE 475	Managing Globally Distributed Software Development
SE 529	Software Risk Management
SE 554	Enterprise Component Architecture

### Commerce Electives (Kellstadt)

MGT 502	Operations Management
MGT 530	Leadership in Organizations
MGT 535	Change Management

MKT 555	Decisions in Marketing Management
ACC 500	Financial Accounting
ACC 555	Management Accounting for Decision-Making
IS 535	Information Technology Investment Financial Analysis
IS 570	Enterprise System Implementation

### CDM Open Electives

Students must complete **one** CDM elective course in the 420-699 range. ANI and DC and VFX 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

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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 pursuing their second master's degree must complete 52 graduate credit hours (generally 13 courses) beyond their first master's degree.

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.

[Return to top of page](#)

### 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 I  
 SE 456 Architecture of Computer Games  
 SE 549 Model-Driven Software Development  
 SE 558 Architecture and Design for Multiplayer Games  
 SE 581 Software Architecture II

#### 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**

SE 690 Research Seminar and  
SE 696 Master's Research or SE 698 Master's Thesis

### **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.

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 2012-13)**

**For: 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.

The Entrepreneurship Concentration is in cooperation with Kellstadt Graduate School Business and, as such, is

not featured on this grid. Please refer to the Requirements page for specific degree information.

Software Development	Software Architecture	Project Management	Gaming and Entertainment Tech.
<b>Foundation Courses (4)</b>			
SE430 Object Oriented Modeling			
SE433 Software Testing and Quality Assurance			
SE450 Object Oriented Software Development			
SE477 Software & Systems Project Management* or SE475 Managing Globally Distributed Software Development			
<b>Required Courses in Concentration (3)</b>			
CSC435 Foundations of Distributed Systems I	SE457 Service-Oriented Architecture	SE468 Software Measurement and Project Estimation	SE456 Architecture of Computer Games
SE480 Software Architecture I	SE480 Software Architecture I	SE482 Requirements Engineering	SE558 Architecture and Design for Multiplayer Games
SE459 Agile Software Development	SE581 Software Architecture II	SE511 Practices of Global Software Development	GAM475 Game Engine Programming I
<b>SE Capstone Project (2)</b>			
SE491 & SE591 Software Engineering Studio 1 & 2			
<b>SE Electives (3 from the following)</b>			
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 SE 581		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			
<b>SoC Open Elective (1)</b>			
One graduate course in the School of Computing			

\* Project Management student must take SE477

Distinction requirements: GPA 3.9 or higher

## 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 (CIPLITZ) 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**

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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**

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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 each 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](mailto: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](mailto: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](mailto:danny@cdm.depaul.edu) - For questions regarding substantive aspects of the CDM program
- Professor Curt White - CDM - [cwhite@cdm.depaul.edu](mailto:cwhite@cdm.depaul.edu) - For questions regarding substantive aspects of the CDM program



# 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

DAVID MILLER, Ph.D.  
Dean  
University of Chicago

SHIRO AKIYOSHI, M.F.A.  
Associate Professor  
School of the Art Institute of Chicago

MEGHANN ARTES, M.F.A.  
Assistant Professor  
University of California Los Angeles

LISA BARCY, M.A.  
Instructor  
Columbia College

DEVIN BELL, M.F.A.  
Assistant Professor  
California Institute of the Arts

KRISTYN BENEDYK, M.F.A.  
Assistant Professor  
University of Southern California

PETER BIAGI, B.A.  
Cinematographer in Residence  
Columbia College

JOHANNA DERY, M.F.A.  
Assistant Professor  
Goddard College

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

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

RONALD FERNANDEZ, M.F.A.  
Assistant Professor  
University of Southern California

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

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

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

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

THOMAS O'HAVER  
Director in Residence

SAVVAS PARITSIS  
Assistant Professor  
New York University

NICHOLE PINKARD, Ph.D.  
Associate Professor  
Northwestern University

JOHN PASATHAS, M.F.A.  
Assistant Professor  
DePaul University

MATT QUINN, M.F.A.  
Assistant Professor  
Loyola Marymount University in Los Angeles

BRAD RIDDELL, M.F.A.  
Assistant Professor  
University of Southern California

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

DORIS RUSCH, Ph.D.  
Assistant Professor  
University of Vienna

KATIE SALEN, M.F.A.  
Professor  
Rhode Island School of Design

BRIAN SCHRANK, Ph.D.  
Assistant Professor  
Georgia Institute of Technology

ROBERT STEEL, M.A.  
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ALEXANDER STEWART, M.F.A.  
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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 Arts in Animation

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

### Requirements

The **MA in Animation** degree provides a combination of artistic and technical training that prepares students for a future in 3D character animation, computer game art, or visual effects. .

DePaul's large group of full time and adjunct Animation faculty come from diverse backgrounds in commercial production, game development and art exhibition. We are part of the School of Cinema & Interactive Media, which features the latest digital technologies and facilities: a stop motion studio, two green screen stages, a sound recording and mixing studio, and a motion capture studio. Our visiting artists series brings prominent animators to campus. Past visitors include David O'Reilly and legendary animator Yuri Norstein. Learn more about admission to this program .

### Concentrations

#### Animator Concentration

The Animator Concentration is for students who are interested in deepening their knowledge of 3D modeling and animation, with an eye towards a production career in 3d character animation, computer game art, or visual effects. Students in this concentration will receive intense and rigorous training in the history, critical artistic issues, and fundamental principles that are necessary for animation artists. MA in Animation - Graduates will be prepared for the many varied career options available to animators, including storyboard artists, visual development artists, modelers, layout artists, character animators, effects animators, character riggers, motion capture artists, lighting artists, commercial animators, motion graphics artists, game artists, environment modelers and effects artists.

#### Technical Artist Concentration

The Technical Artist Concentration prepares students for a range of technical roles, from the complex jobs of riggers, next generation modelers and motion capture artists to the hybrid specialization of the Technical

Artist. A game industry Technical Artist is an art department member who serves as a bridge between art and engineering. The TA needs to understand the language of both fields and act as a translator between the areas. In the film and television CGI animation and VFX industries the Technical Artist is more commonly referred to as a Technical Director or Technical Animator. The TA in these fields shares many of the core responsibilities (pipeline, troubleshooting) and animation technical skills as the game TA.

### **Animator Concentration**

The Animator Concentration is for students who are interested in deepening their knowledge of 3D modeling and animation, with an eye towards a production career in 3d character animation, computer game art, or visual effects. Students in this concentration will receive intense and rigorous training in the history, critical artistic issues, and fundamental principles that are necessary for animation artists. MA in Animation - Animator students take many of the same courses as the MFA in Animation students, with the main difference being the absence of the year-long thesis film. Graduates will be prepared for the many varied career options available to animators, including storyboard artists, visual development artists, modelers, layout artists, character animators, effects animators, character riggers, motion capture artists, lighting artists, commercial animators, motion graphics artists, game artists, environment modelers and effects artists. This concentration is intended for those with undergraduate degrees in animation, film, game development, art, graphic design, illustration, architecture, industrial design and other related areas.

Students enrolled in the Animator Concentration have an opportunity to apply for the Animation MFA program, but this must be done by May 15th of their first year. Learn more about admission to this program .

### **Prerequisite Phase Course Requirements**

The goal of the prerequisite phase is to give students the background necessary for 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 courses prior to completing their prerequisites. Students should contact their advisor to enroll in graduate courses until their Prerequisite Phase is completed. 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 230                                    3D Design and Modeling\*

ANI 231                                    3D Animation\*

\*Students who are required to take ANI 230 and ANI 231 during their first two quarters must make up the elective courses later in the program. These courses may also be completed during the preceding Spring or Summer terms.

### **First Year Course Requirements**

#### ***Fall Quarter***

ANI 460 Animation Graduate Seminar

ANI 421 Animation Mechanics

1 Animation Elective\*

#### ***Winter Quarter***

ANI 425 Visual Storytelling

ANI 422 Animation Styles and Techniques

1 3D Animation Elective\*

#### ***Spring Quarter***

ANI 440                                    Collaborative Short Animated Film

ANI 466                                    Cinema, Animation and Art\*\*

or ANI 444                                Visual Design for Games\*\*

1 3D Animation Elective\*

\*Students who are required to take ANI 230 and ANI 231 during their first two quarters must make up the elective courses later in the program.

\*\*Students who plan to apply for the Animation MFA program during their first year should take ANI 466 rather than ANI 444.

### **Second Year Course Requirements**

#### ***Fall Quarter***

ANI 540 Animated Short Film Part I (2 credit hours)

1 3D Animation Elective

1 Animation Elective

### **Winter Quarter**

ANI 541 Animated Short Film Part II (2 credit hours)

1 Animation Elective

### **Animation Electives**

Animation electives include any graduate level ANI, DC, GAM, GD, GPH, HCI or VFX courses.

### **3D Animation Electives**

ANI 430 3D Character Animation

ANI 431 Advanced 3D Character Animation

ANI 432 3D Rigging

ANI 433 Advanced 3D Rigging

ANI 435 3D Character Modeling

ANI 436 3D Modeling Studio

ANI 438 3D Organic Modeling

ANI 439 3D Texturing and Lighting

ANI 445 Character Design

ANI 450 Motion Capture

ANI 451 Advanced Motion Capture

ANI 452 3D Scripting

ANI 453 Advanced 3D Scripting

ANI 478 3D Dynamics

### **DEGREE REQUIREMENTS**

Students in this degree program must meet the following requirements:

- complete a minimum of 52 credit hours 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 pursuing their second master's degree must complete 52 graduate credit hours (generally 13 courses) beyond their first master's degree.

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 .

### **Technical Artist Concentration**

The Technical Artist concentration prepares students for a range of roles, from the complex jobs of riggers, next generation modelers and motion capture artists to the hybrid specialization of the Technical Artist.

A game industry Technical Artist is an art department member who serves as a bridge between art and engineering. The art pipeline is the workflow of creating the art assets of the game: from concept to model to texturing to rigging to input into the game engine. The TA's objective is to make the pipeline streamlined, efficient and documented. The TA diagnoses and debugs the technology used by artists. The TA specs tools that will help make the art department more productive, sometimes scripting the tools in the software and sometimes working with programmers to tackle more complex operations. The TA needs to understand the language of both art and engineering and act as a translator between the areas.

In the film and television CGI animation and VFX industries the Technical Artist is more commonly referred to as a Technical Director or Technical Animator. The TA in these fields shares many of the core responsibilities (pipeline, troubleshooting) and animation technical skills as the game TA.

The Technical Artist concentration is not solely for the person who wants to be a TA, since these disciplines are constantly evolving. It also prepares the student interested in technically demanding areas such as rigging, modeling and motion capture.

Technical Artists come from both art and programming backgrounds. It is recommended that someone entering the TA concentration have an undergraduate degree in one of the following areas: art, animation, game art, graphic design, illustration, game design, game programming, computer graphics, computer science, or interactive media. Learn more about admission to this program .

### **Prerequisite Phase Course Requirements**

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 courses prior to completing their prerequisites. Students should contact their advisor to enroll in graduate courses until their Prerequisite Phase is completed. 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 230 3D Design and Modeling\*

ANI 231 3D Animation\*

### **Core Requirements**

ANI 446                      Game Art Pipeline  
ANI 452                      3D Scripting  
ANI 453                      Advanced 3D Scripting  
ANI 444                      Visual Design for Games  
GAM 690                     Game Development Studio I  
                                    and GAM 691 Game Development Studio II\*  
or ANI 440                    Collaborative Short Animated Film

\*Students who take GAM 690 to fulfill their Core Requirements must take GAM 691 as one of their Technical Artist Electives requirements.

### **Technical Artist Electives**

Students must take at least **5** courses out of the following choices. Students may take these courses before completing their Core Requirements courses. It is recommended that students choose their Technical Artist Elective courses in one of the following areas of focus: Rigging, Animation, Modeling, or Effects.

#### **Rigging**

ANI 430                      3D Character Animation  
ANI 432                      3D Rigging  
ANI 433                      Advanced 3D Rigging  
ANI 435                      3D Character Modeling  
ANI 450                      Motion Capture

#### **Animation**

ANI 450                      Motion Capture  
ANI 451                      Advanced Motion Capture Studio  
ANI 430                      3D Character Animation  
ANI 431                      Advanced 3D Character Animation  
ANI 432                      3D Rigging

#### **Modeling**

ANI 435                      3D Character Modeling  
ANI 436                      3D Modeling Studio  
ANI 437                      Environment Modeling  
ANI 438                      3D Organic Modeling

ANI 439 3D Texturing and Lighting

### Effects

ANI 478 3D Dynamics  
ANI 479 3D Compositing  
VFX 478 Digital Compositing I  
DC 430 Visual Effects

### Other Available Technical Artist Electives

GAM 690 Game Development Studio I  
GAM 691 Game Development Studio II

### CDM Open Electives

Students must complete any **3** graduate courses from the College of Computing and Digital Media.

### DEGREE REQUIREMENTS

Students in this degree program must meet the following requirements:

- complete a minimum of 52 credit hours 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 pursuing their second master's degree must complete 52 graduate credit hours (generally 13 courses) beyond their first master's degree.

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 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. The degree concentrates on the advanced study and skills application of all aspects of digital filmmaking including cinematography, editing, visual effects, and sound design. The emphasis of the program is on the individual student's skills development as a digital filmmaker or post-production professional.

Students in this program will acquire a broad set of skills including but not limited to:

- Post-production editing of video and audio
- The integration of video and audio
- Visual effects
- Digital distribution

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

### Introductory Phase

DC 460 Digital Cinema Proseminar

### Foundation Phase

DC 415 Post-Production 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 3 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 pursuing their second master's degree must complete 52 graduate credit hours (generally 13 courses) beyond their first master's degree.

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 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 243	Introduction to Programming
CSC 309	C++ for Programmers
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

CSC 421	Applied Algorithms and Structures
GAM 474	Fundamentals of Game Programming I
or SE 456	Architecture of Computer Games
GAM 475	Game Engine Programming I

## Advanced Phase

GAM 450	Physics for Game Developers
GAM 476	Artificial Intelligence for Computer Games
GPH 469	Computer Graphics Development
GAM 575	Game Engine Programming II

## Major electives

Students must complete **3** graduate level elective courses. Students may choose from 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	Artificial Intelligence I
CSC 578	Neural Networks and Machine Learning
CSC 435	Distributed Systems I
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
and GAM 691)	Game Development Studio II

or GAM 499                    Topics in Computer Game Design and Development (8 units)

**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 pursuing their second master's degree must complete 52 graduate credit hours (generally 13 courses) beyond their first master's degree.

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

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** prepares students to design, implement, and evaluate computer interfaces so that people can effectively use them. This interdisciplinary degree integrates concepts and methods from computer science, visual design and the social sciences to provide a comprehensive understanding of the user-centered design process.

By completing the program, students will be able to do the following:

- 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
IT 238	Interactive Web Scripting
IM 270	User-Centered Web Design
HCI 302	Foundations of Digital Design

### **Foundation Phase**

HCI 440	Introduction to User-Centered Design
HCI 450	Foundations of Human-Computer Interaction
HCI 470	Digital Page Formatting

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 and Information Architecture

### **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	Accessibility and Design for Diverse Users
HCI 514	Global User Research
HCI 520	Learner-Centered Design
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 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
GAM 424	Game Design Workshop
IS 456	Knowledge Management Systems
IS 511	Social Issues of Computing
IS 570	Enterprise System Implementation
IT 432	Web Architecture for Non-Programmers
PM 430	Fundamentals of IT Project Management
SE 477	Software and Systems Project Management
or 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 482	Requirements Engineering
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

### **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 pursuing their second master's degree must complete 52 graduate credit hours (generally 13 courses) beyond their first master's degree.

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.