

Department of
Computing and
New Media Technologies
(CNMT)

Majors: Computer Information Systems and
Web and Digital Media Development

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ADVISING MATERIAL

University of Wisconsin-Stevens Point
College of Letters and Science

The field of Computer Information Systems (CIS) continues to grow and will outpace the growth of many other fields well into the future. The CIS curriculum at UWSP is designed to assure that graduates can easily move into any of the major areas within the computing profession or to pursue additional academic goals. As a result, graduates of the UWSP CIS program can expect to find a wide range of opportunities awaiting them upon graduation. Students develop valuable theoretical knowledge, technical skills and practical experiences as part of their coursework using state of the art tools and technologies in the field. Other skills the CIS curriculum focuses on include oral and written communication, time management, teamwork, leadership and project management, logical thinking, and problem solving.

The CIS curriculum at UWSP consists of several core courses, which cover the main areas of computing; and focus areas, which students can choose from depending on their preferences. At the core, the CIS curriculum introduces students to concepts in programming, algorithms, databases, Web applications and services, as well as how to incorporate these into today's networked world by designing and implementing production-level computer-based systems.

Currently, we offer students two focus areas to choose from:

APPLICATION DEVELOPMENT

The creation of a software product is a rigorously planned and structured process. Organizations and businesses rely on complex software products to support their day to day operations. Systematic application development is being recognized as critical in developing complex and reliable software products. Students in the UWSP CIS program will learn how to use state of the art tools and technologies, and to apply well proven methodologies for the creation and development of application programs satisfying the requirements of a modern economy. This process starts with identifying organizational problems and information requirements through systems analysis and design, and makes efficient and effective use of an organization's most valuable resources – its data, through careful design and administration of databases, and provides user interfaces that are both functional and attractive.

NETWORKING AND INFORMATION ASSURANCE

Today's interconnected world requires a deeper understanding of how different networks operate, how to implement different networked environments, and how the information that is exchanged through them can be safeguarded. As part of this focus area, students will learn about wireless networks, implementation of network services in a network and up-to-date advanced topics in networking, such as multimedia distribution or peer-to-peer networking. An additional part of this focus area covers the organizational and operational aspects of data and network security.

1. If you declare CIS as your major, you are a “premajor” until you apply and are accepted into the major. Applications are processed in September and February each year. You should apply no later than the second semester of your sophomore year. Exceptions may be granted.
2. Before you can apply for admission to the CIS major, you must complete CIS 110, 120, 210 and Math 209. You must have a GPA in these courses of at least 2.50, including transfer credits.
3. We rank applicants by overall GPA and accept approximately the top 40 each semester. The actual number admitted is based on available teaching resources.
4. You may apply for admission to the CIS major no more than twice.
5. You may repeat a course in the major only if you follow the policy on Repeating Courses found in the More Academic Information section of the UWSP Course Catalog that is referenced on your DPR. If you repeat a course, only the most recent grade counts for the GPA.
6. CIS and Math courses taken pass/fail do not count for the major.
7. You may petition the department chair to accept coursework done at other institutions, but no more than one-half of the CIS credits applied to your major may be earned outside UWSP. The department chair may allow exceptions.
8. To maintain admitted status, you must maintain a GPA of at least 2.50 in all courses taken at UWSP that count for the CIS major.
9. If you do not maintain a GPA of at least 2.50 in all courses taken at UWSP that count for the CIS major, you will be placed on CIS probation and will have one semester to restore your GPA. If you fail to do so, you will be dropped from the major and the only CIS courses for which you will be allowed to register are those required to complete the CIS minor.
10. If you are not admitted to the CIS major, the only CIS courses for which you will be allowed to register are those required to complete the CIS minor.
11. Admission to CIS classes may be limited in any semester and may be determined in part by your CIS GPA.

“*I entered the UWSP CIS program to gain additional skills to advance my career. The wide variety of courses offered in the program make it possible to tailor your education to best suit your intended career path, and the curriculum is regularly updated to reflect the newest computer technologies.*

– Kent Thomas
CIS major

The CIS major consists of at least 56 credits:

1. Core requirements:

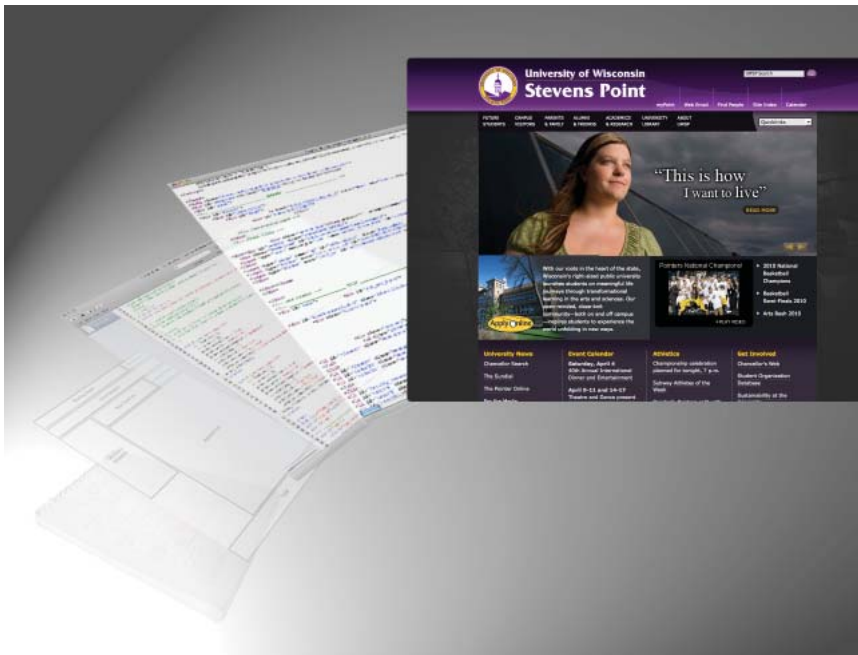
Computer Information Systems (CIS) 110 or Web and Digital Media Development (WDMD) 110 and 111, 120, 210, 220, 225, 310, 341, and Math 209.

Computing and New Media Technologies (CNMT) 210, 410, and 480.

2. Required option:

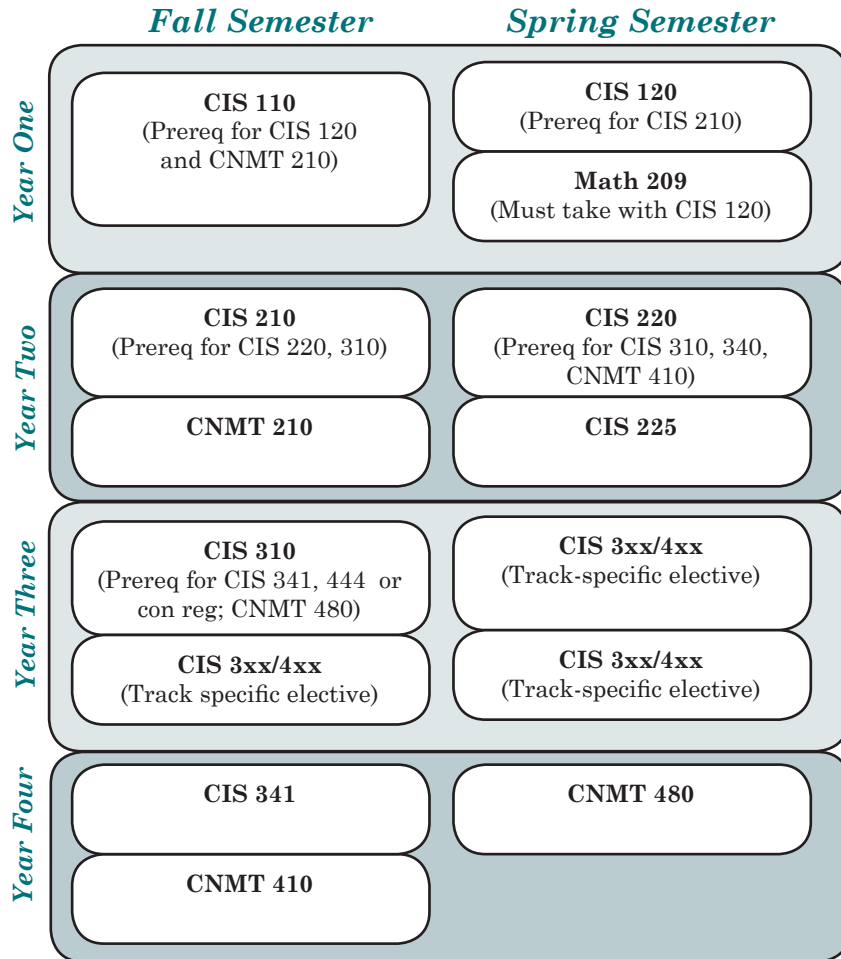
Complete three courses from those listed in one of the following options:

- a. **Application development and support option:** CIS 340, 342, 345, 346, and 444.
- b. **Networking and Information Assurance option:** CIS 347, 353, 355, 357, 367.



This diagram shows required courses and their prerequisite courses to help you in planning your semesters here at UWSP. Before you plan to take a particular course, make sure that you have completed the course's prerequisites.

As you plan your junior and senior years, you should remember that you may take more 300/400-level electives than those required for your option. Each course taken will equip you with knowledge that is of significant value to prospective employers. Because the upper level elective course offerings change frequently, consult the UWSP Course Catalog or the Timetable for specific course prerequisites.



Different students will most likely take different paths through the CIS major. The following table illustrates a typical plan to complete the major within the traditional four year time frame.

Year One

Fall Semester

CIS 110 Object Oriented Programming..... 4 credits

Spring Semester

CIS 120 Data Structures and Algorithms 4 credits

MATH 209 Math for Info Sciences..... 4 credits

Year Two

Fall Semester

CIS 210 Database Design and Implementation..... 4 credits

CNMT 210 Web Design and Development I 4 credits

Spring Semester

CIS 220 Object Oriented Analysis and Design 4 credits

CIS 225 Data Communication and Networks 4 credits

Year Three

Fall Semester

CIS 310 Production Programming..... 4 credits

CIS 3XX (Focus course) 4 credits

Spring Semester

CIS 3XX/4XX (Focus course) 4 credits

CIS 3XX/4XX (Focus course) 4 credits

Year Four

Fall Semester

CIS 341 Interactive Web Programming 4 credits

CNMT 410 Professional IT Communication 4 credits

Spring Semester

CNMT 480 Applied Computing Project 4 credits

The CIS minor consists of at least 24 credits:

Requirements: CIS 110, 120, 210, 220, 310; CNMT 210 (or CIS 225).

1. You should declare your intention to minor in CIS no later than the first semester of your sophomore year.
2. You must have no more than one grade below C- in all CIS courses. If a course is repeated, only the most recent grade counts. CIS courses taken pass/fail do not count for the CIS minor.
3. You must have a GPA in all CIS courses of at least 2.25.
4. You may petition the department for exceptions.

	<i>Fall Semester</i>	<i>Spring Semester</i>
<i>Year One</i>	CIS 110 (Prereq for CIS 120 and CNMT 210)	CIS 120 (Prereq for CIS 210)
<i>Year Two</i>	CIS 210 (Prereq for CIS 220) CNMT 210 or CIS 225	CIS 220 (Prereq for CIS 310)
<i>Year Three</i>	CIS 310	
<i>Year Four</i>		

CIS Course Descriptions

CIS 110. Object-Oriented Programming. 4 cr.

Introduction to object-oriented programming paradigm; definition and use of classes; the fundamentals of object-oriented design; development of object-oriented programming language principles; coding in an object-oriented metalanguage; coding in a current object-oriented programming language.

CIS 120. Data Structures and Algorithms. 4 cr.

Introduction to fundamental concepts of data structures and algorithms that proceed from them. Includes recursion, underlying philosophy of object-oriented programming, fundamental data structures, basics of algorithmic analysis. Coding and testing of representative algorithms. Prereq: 110 or WDMD 111; con reg in Math 209.

CIS 210. Database Design and Implementation. 4 cr.

Analyze and design databases to support computer-based information systems. Develop and program relational database management systems using SQL. Prereq: 120.

CIS 220. Object-Oriented Analysis and Design. 4 cr.

Analyze and design a software system using the object-oriented paradigm and object-oriented systems development life cycle as framework. Activities done in the context of a semester-long systems application case study. Prereq: 120.

CIS 225. Data Communication and Networks. 4 cr.

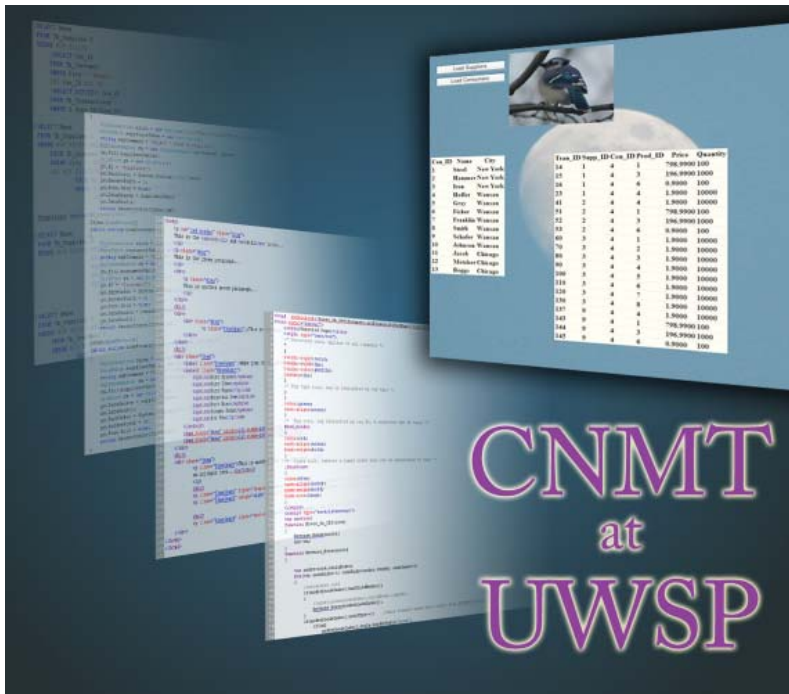
Physical basis for communication; modulation techniques; synchronous and asynchronous transmission; analog and digital signaling; multiplexing; communication hardware, software and protocols; routing algorithms; error detection and correction; basic concepts of local and wide area networks; network topologies; analysis of network needs, security, installation and growth. Prereq: 210.

CIS 310. Production Programming. 4 cr.

Detailed study of syntax and logic of the language. Apply a programming language to professional situations. Individual and team projects. Subtitle will indicate language. May repeat for credit under different subtitles. Prereq: 220 or WDMD 312.

CIS 340. Application Development with UML. 4 cr.

Develop software applications using C#.Net as production language. Study advanced programming concepts and techniques including object-oriented features of C#, GUI interfaces, collections, threads, delegates, exception handling, application domain modeling, database connectivity, XML use, integrated IDE, UML, and automatic code generation. Prereq: 220.



CIS 341. Interactive Web Programming. 4 cr.

Examine the relationship between Web servers and Web clients. Create interactive Web pages with server-side and client-side script. Pass information between pages. Store and retrieve information to and from a database. Prereq: 310.

CIS 342. Rich Internet Applications. 4 cr.

Examine concepts underlying technologies used to develop rich Internet applications, including scripting, style sheets, postback, message formatting, document object model (DOM), and XMLHttpRequest object model. Develop interactive and responsive Web applications using these technologies in various contexts. Prereq: CNMT 210 or WDMD 312.

CIS 345. Alternate Programming Language. 3 or 4 cr.

Examine an alternate programming language with emphasis on language structure. Subtitle will indicate language and number of credits. May repeat for credit under different subtitles. Prereq: 210.

CIS 346. Contemporary Topics in Computing. 3 or 4 cr.

Examine contemporary and emerging topics in computing. Subtitle will indicate topic and number of credits. May repeat for credit under different subtitles. Prereq: Jr st.

CIS Course Descriptions

CIS 347. Special Topics in IT Infrastructure. 4 cr.

Examine contemporary and emerging topics in IT Infrastructure. Subtitle will indicate topic and number of credits. May repeat for credit under different subtitles. Does not count for the Application Development option. Prereq: determined at time of offering based on subtitle.

CIS 353. Wireless Networking and Devices. 4 cr.

Introduction to concepts of different wireless network technologies, mobility of users, and mobile devices. Student projects that target different areas of wireless networking will give a deeper insight into a particular area. Prereq: 225.

CIS 355. Network Management. 4cr.

Examine core concepts in designing and managing a network infrastructure, e.g. designing and planning a mock network, administering and configuring network equipment, and troubleshooting. Hands-on labs with network equipment and/or simulation tools. Prereq: 225.

CIS 357. Server Administration. 4 cr.

Apply techniques for secure deployment of network services such as DHCP, DNS, SMTP, SSH, HTTP, HTTPS, printing and file sharing on both Windows and Linux server platforms. Introduction to Linux operating system including commands, utilities, shell programming, system administration, networking and Internet server capabilities. Hands-on laboratory projects. Prereq: 225.

CIS 367. Information and Network Security. 4 cr.

Introduction to information and network security issues. Characteristics of information security; security law and ethics; risk assessment; operations security; cryptography. Explore security vulnerabilities, security measures, and security tools such as firewalls, TCP wrappers, tripwires and intrusion detection systems. Prereq: 225.

CIS 397. Internship in Computing. 3 or 6 cr.

Participate in supervised training work program that you arrange with your advisor at a cooperating organization. Credit determined by advisor and chair. May repeat for 6 cr max. Prereq: Jr st and cons chair.

CIS 444. Advanced Database. 4 cr.

Define, design and construct an enterprise data warehouse. In-depth study of techniques and algorithms for extracting useful information, such as OLAP, data mining, and creation of datamarts. Examine performance considerations. Prereq: 310.

CIS 499. Special Work.

Upperclass CIS students may arrange for independent study with consent of chair. Credit based on scope of project.

Overview

The **Web and Digital Media Development program** at UWSP prepares students by giving them cutting-edge technological skills and experiences, combined with knowledge of the creative, social, and technical issues that shape our world and provide the context in which they will be employed following graduation. After completing the requirements of the WDMD major or minor you will:

- Possess expertise in the computer technology and media tools used in the creative process, including leading-edge software and modern programming languages.
- Be able to develop multimedia digital presentations including graphics, audio, video, illustration, and animation.
- Be capable of creating CDs, DVDs and Web sites that communicate throughout the global society.
- Be comfortable with the design issues, aesthetic components, computer technology, and media tools used in the creative process, and be able to apply them to your own interfaces.

You can further expect an environment that promotes:

- Hands-on learning experiences, team learning and group work.
- Real-world application of your learning through projects in the community.
- Close contact with fellow students and highly qualified faculty.
- Opportunities for extra-curricular activities, such as student clubs.
- Exposure to state-of-the-art hardware, software and media technology.

The WDMD major consists of at least 58 credits:**1. Core requirements:**

WDMD 100, 200, 201, 211, 302, 312; Business 320, 330;
CNMT 210, 410, 480.

2. Electives: Complete one of two focuses:

a. **Design Focus:** CIS 110; WDMD 202; and
18 credits in WDMD courses numbered 345 and above.

b. **Technical Focus:** CIS 110; CIS 120,

210, 220; Complete one of two concentrations:

1. **Application Development:** CIS 310; and either
CIS 341 or CIS 342.

2. **Networking and Information Assurance:** CIS 225, and
one course from CIS 353, 355, or 357.

These programs of study include only courses required for the WDMD major. Additional courses are required to complete your degree. It also anticipates completion of only the minimum 58 credits required for the WDMD major. Taking additional WDMD elective courses will enhance your skills and job prospects, and is therefore highly recommended.

Different students will most likely take different paths through the WDMD major. The following table illustrates a typical plan to complete the major within the traditional four year time frame. Note that these are for core courses only. You will need to take additional WDMD courses depending on your major focus. Because the upper level elective course offerings change frequently, consult the UWSP Course Catalog or the Timetable for specific course prerequisites.



Can you remember the last time you went a day without using a computer, iPod, or cell phone, watching a movie or playing a video game? Technology is always moving forward. Isn't that the direction you want to go?

– Gail Lindner
WDMD major



WDMD Major

Four Year Course Sequence - Design Focus

Year One

Fall Semester

WDMD 100 Creativity and the Arts	3 credits
CIS 110 Object-Oriented Computing	4 credits

Spring Semester

WDMD 200 Computer Graphics	3 credits
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Year Two

Fall Semester

WDMD 201 Intro to Digital Media Creation	3 credits
WDMD 202 Digital Image Development	3 credits
CNMT 210 Web Design/Development I	4 credits

Spring Semester

WDMD 211 Web Design/Development II	3 credits
WDMD 302 Multimedia Authoring	3 credits
BUS 320 Management	3 credits

Year Three

Fall Semester

WDMD 312 Web Design/Development III	3 credits
WDMD 3xx Design focus course	3 credits
WDMD 3xx Design focus course	3 credits

Spring Semester

BUS 330 Management	3 credits
WDMD 3xx Design focus course	3 credits
WDMD 3xx Design focus course	3 credits

Year Four

Fall Semester

CNMT 410 Professional IT Communication	4 credits
WDMD 3xx Design focus course	3 credits
WDMD 3xx Design focus course	3 credits

Spring Semester

CNMT 480 Applied Computing Project	4 credits
WDMD 3xx Design focus course	3 credits

	<i>Fall Semester</i>	<i>Spring Semester</i>
<i>Year One</i>	<p>WDMD 100 (Prereq for WDMD 200 or concurrent registration)</p> <p>CIS 110 (Prereq for CNMT 210 or concurrent registration)</p>	<p>WDMD 200 (Prereq for WDMD 201, 202)</p>
<i>Year Two</i>	<p>WDMD 201 (Prereq for WDMD 345, 360)</p> <p>WDMD 202 (Prereq for WDMD 345, 360)</p> <p>CNMT 210 (Prereq for WDMD 211)</p>	<p>WDMD 211 (Prereq for CIS 340, CNMT 410)</p> <p>WDMD 302 (Prereq for WDMD 360, 362, 365)</p> <p>BUS 320</p>
<i>Year Three</i>	<p>WDMD 312</p> <p>WDMD 3xx</p> <p>WDMD 3xx</p>	<p>BUS 330</p> <p>WDMD 3xx</p> <p>WDMD 3xx</p>
<i>Year Four</i>	<p>CNMT 410</p> <p>WDMD 3xx</p> <p>WDMD 3xx</p>	<p>CNMT 480</p> <p>WDMD 3xx</p>

WDMD Major

Four Year Course Sequence - Technical Focus

Year One

Fall Semester

WDMD 100 Creativity and the Arts	3 credits
CIS 110 Object-Oriented Computing.....	4 credits

Spring Semester

WDMD 200 Computer Graphics	3 credits
CIS 120 Data Structures	4 credits

Year Two

Fall Semester

WDMD 201 Intro to Digital Media Creation.....	3 credits
CNMT 210 Web Design/Development I.....	4 credits
CIS 210 Database Design/Impl.	4 credits

Spring Semester

WDMD 211 Web Design/Development II.....	3 credits
WDMD 302 Multimedia Authoring	3 credits
BUS 320 Management.....	3 credits

Year Three

Fall Semester

WDMD 312 Web Design/Development III.....	3 credits
CIS 3xx CIS concentration course	3 credits

Spring Semester

CIS 220 Object Oriented Analysis and Design	4 credits
BUS 330.....	3 credits

Year Four

Fall Semester

CNMT 410 Professional IT Communication	4 credits
CIS 3xx CIS concentration course	4 credits

Spring Semester

CNMT 480 Applied Computing Project.....	4 credits
WDMD 3xx.....	3 credits

	<i>Fall Semester</i>	<i>Spring Semester</i>
<i>Year One</i>	<p>WDMD 100 (Prereq for WDMD 200 or concurrent registration)</p> <p>CIS 110 (Prereq for CNMT 210 or concurrent registration)</p> <p>WDMD 111 (Prereq for CNMT 210 or concurrent registration)</p>	<p>WDMD 200 (Prereq for WDMD 201, 202)</p> <p>CIS 120 (Prereq to CIS 210)</p>
<i>Year Two</i>	<p>WDMD 201 (Prereq for WDMD 302, 360, 364)</p> <p>CNMT 210 (Prereq for WDMD 211)</p> <p>CIS 210 (Prereq for CIS 220, 225)</p>	<p>WDMD 211 (Prereq for CIS 340, CNMT 410)</p> <p>WDMD 302 (Prereq for WDMD 360, 362, 365)</p> <p>BUS 320</p>
<i>Year Three</i>	<p>WDMD 312</p> <p>CIS 3XX</p>	<p>CIS 220</p> <p>BUS 330</p>
<i>Year Four</i>	<p>CNMT 410</p> <p>CIS 3xx</p>	<p>CNMT 480</p> <p>WDMD 3xx</p>

WDMD Minor

Requirements and Sequencing of Required Courses

The WDMD minor consists of at least 23 credits:

- 1. Requirements:** WDMD 100, 200, 201, 302; CIS 110, CNMT 210.
- 2. Electives:** Two WDMD courses numbered 345 and above.

	<i>Fall Semester</i>	<i>Spring Semester</i>
<i>Year One</i>	WDMD 100 (Prereq for WDMD 200 or concurrent registration)	WDMD 200 (Prereq for WDMD 201, 202)
	CIS 110 (Prereq for CNMT 210)	
<i>Year Two</i>	WDMD 201 (Prereq for WDMD 345, 360)	WDMD 302 (Prereq for WDMD 360, 362, 365)
	CNMT 210 (Prereq for WDMD 211)	WDMD 3xx
<i>Year Three</i>		WDMD 3xx
<i>Year Four</i>		

WDMD Course Descriptions

WDMD 100. Creativity and the Arts. 3 cr.

Creation across artistic media and genres. Nature of artistic experience as expressed in art, theatre, dance, music, film, video, and computer media. GEP: HU; GDR:HU1

WDMD 200. Introduction to Computer Graphics. 3 cr.

Survey of three common varieties of software used in Web and multimedia development, including raster-based, vector-based, and motion-software. If you took WDMD 202 or 310 or 345 (Photoshop) or 345 (Illustrator) or 365, you are not eligible to receive credit for WDMD 200. Prereq: 100 or con reg. GEP: ART

WDMD 201. Introduction to Digital Media Creation. 3 cr.

Examine core concepts related to digital media creation, including graphics, audio, video and the multimedia development process. Prereq: 200.

WDMD 202. Digital Image Development. 3 cr.

Use advanced graphics and animation tools to develop digital images. Prereq: 200. GEP: ART

WDMD 211. Web Design and Development II. 3 cr.

Concepts of client-side programming of web applications. Introduction to one or more Web-centered languages including JavaScript and XML. Prereq: 210.

WDMD 302. Multimedia Authoring. 3 cr.

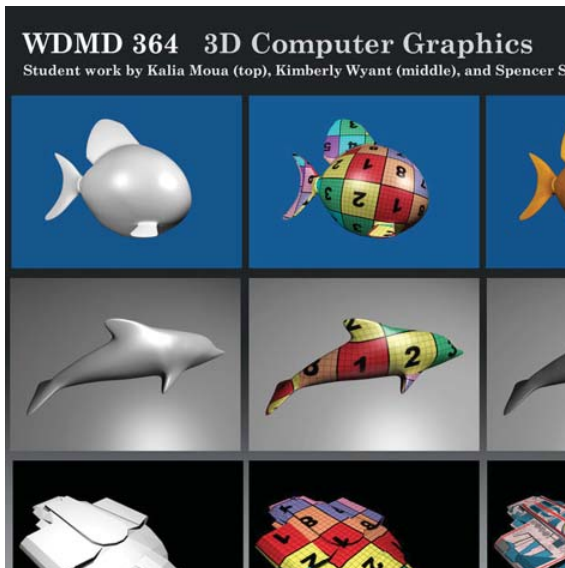
Develop and create digital media including video, audio, animation. Prereq: 201.

WDMD 312. Web Design and Development III. 3 cr.

Concepts of server-side programming of Web applications. Introductions to one or more Web-centered languages including PHP and SQL database. Prereq: 211.

WDMD 345. Advanced Media Development Tools. 3 or 4 cr.

Use professional software tools for digital media development. Subtitle will indicate tool(s) and number of credits. Prerequisite will be determined at time of offering based on subtitle. Does not count for Technical focus of WDMD major.



WDMD 346. Contemporary Topics in Web and Digital Media. 3 or 4 cr.
Examine contemporary and emerging topics in Web and digital media. Subtitle will indicate topic and number of credits. Prerequisite will be determined at time of offering based on subtitle. May repeat for credit with different subtitles. 3 cr. max toward design focus of WDMD major. Does not count for Technical focus of WDMD major.

WDMD 348. Cognitive Learning Techniques and Video Production. 3 cr.

Nonlinear audio and video production techniques including storyboarding, scene visualization, and editing. Prereq: See course catalog. GEP: IS

WDMD 360. Digital Audio and Video Production. 3 cr.

Nonlinear audio and video production techniques including storyboarding, scene visualization, and editing. Prereq: 302.

WDMD 362. Digital Portfolio Development. 3 cr.

Advanced examination and application of professional digital portfolio components and processes. Develop, refine and present artifacts that relate to digital media design and development. Prereq: 302 and jr st.

WDMD 364. 3-D Computer Graphics. 3 cr.

Develop 3-D computer modeling skills as well as introductory animation skills. Theory of design principles including scale and proportion, 3-D composition, color, etc. as applied to 3-D computer-simulated environments. Prereq: 201, 202.

WDMD and CNMT Course Descriptions

WDMD 365. Digital Game Development. 3 cr.

Exploration of the theory, design, and development of games and simulation for the Web through the use of animation and interactive programming.

Prereq: 302.

WDMD 368. Advanced Digital Image Development. 3 cr.

Development of advanced skills and techniques for visual storytelling across client-required media including print, Web, and multimedia. Prereq: 202.

WDMD 397. Internship in Web and Digital Media Development. 1-3 cr.

Participate in supervised training work program that you arrange with your advisor at a cooperating organization. Advisor and chair determine credits.

May repeat for 3 cr max. Does not count for Technical focus of WDMD major.

Prereq: Consent of chair.

WDMD 399. Independent Study. 1-3 cr.

Independent study/project development in Web and/or digital media. Advisor and chair determine credits. May repeat for 3 cr. Max. Does not count for Technical focus of WDMD major. Prereq: Consent of chair.

CNMT 210. Web Design and Development I. 4 cr.

Fundamental principles and techniques of Web development, user-centered Web design, and basic project management. Topics include (X)HTML, CSS, JavaScript, HTTP, DOM, and tools for developing Web applications including code, graphics, and basic multimedia. Prereq: CIS 110.

CNMT 376/576. Visual Expression in New Media. 2-3 cr.

Visual analysis and development of advertising, educational, training, photojournalistic, and political images. Does not count for the WDMD major or minor. GE: HU.

CNMT 410. Professional IT Communication. 4 cr.

Examine methods of audience analysis and strategies to shape effective oral and written communication related to the field of information technology. Topics include career positioning, system documentation, Email etiquette and format, workplace ethics, social networking behavior, basic research practices, oral presentation skills, individual and group nonverbal communication in the workplace. Prereq: CIS 220 or WDMD 211; Comm 101; English 102 or 150, sr st.

CNMT 480. Applied System Development Project. 4 cr.

Apply computer programming, system design, and/or Web and digital media development concepts, principles, and practices to a comprehensive system development project; use team approach to analyze, design and document real world systems; use project management methods, project scheduling and control techniques; use formal presentations and group dynamics to solve system problems; develop a database and/or digital media artifacts to support the system. Prereq: CNMT 410; CIS 341 or both WDMD 302 and 312; sr st.