IT INNOVATION, MS

School of Interdisciplinary Informatics, College of Information Science & Technology

Vision Statement

Information technology innovation (ITIN) is the interdisciplinary practice of conceptualizing, designing, prototyping, and fielding an IT-based product or service. It focuses both on the technological and entrepreneurial aspects of IT products. Being many-faceted by definition, IT innovation brings together aspects of computer science and management information systems with other disciplines that inform IT design and application such as health care, business, psychology, art, music, or public administration, among many others. It integrates and interfaces a diverse set of disciplines in addition to information technology. In addition, IT Innovation takes a more holistic and immersive approach to idea/product development: It focuses on the ideation, design, and development of an IT-based innovation, as well as on the entrepreneurial realization of this innovation as a profitable or sustainable product or service. There is a great demand for ITIN entrepreneurs and professionals locally, regionally, and nationally, and the MS in ITIN program was created, in part, to prepare a workforce to meet those demands, in addition to satisfying the intellectual curiosity and honing the intellectual capacity of passionate creatives who work in and with technology.

Program Contact Information

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Program Website (https://www.unomaha.edu/college-of-information-science-and-technology/academics/it-innovation.php)

Other Program Related Information

Fast Track

The School of Interdisciplinary Informatics (SI2) has developed a Fast Track program for highly qualified and motivated students providing the opportunity to complete a bachelor's degree and a master's degree in an accelerated time frame. With Fast Track, students may count up to 9 graduate hours toward the completion of their undergraduate program as well as the graduate degree program. Students will work with both undergraduate and graduate advisors to ensure graduate classes selected will count toward both programs, should a student wish to earn a graduate degree in a separate College of Information Science & Technology (CIST) area than their undergraduate degree.

Program Specifics:

- This program is available for undergraduate students pursuing any of the following:
  - Students pursuing a CIST undergraduate degree desiring to pursue an MS in either the same or a related CIST field
  - Students pursuing the Bachelor of Multidisciplinary Studies desiring to pursue the MS in ITIN.
- Students must have completed no less than 60 undergraduate hours and with at least 24 undergraduate credits yet to complete.
- Students must have a minimum undergraduate GPA of 3.0.

- Students must complete the Fast Track Approval form and obtain all signatures and submit it to the Office of Graduate Studies prior to first enrollment in a graduate course.
- Students will work with their undergraduate advisor to register for the graduate courses.
- A minimum cumulative GPA of 3.0 is required to remain in good standing.
- Students remain undergraduates until they meet all the requirements for the undergraduate degree and are eligible for all rights and privileges granted undergraduate status including financial aid.
- Near the end of the undergraduate program, formal application to the graduate program is required. All applicants will need to meet any other admission requirements established for the MS in selected CIST program. The application fee will be waived if the applicant contacts the Office of Graduate Studies for a fee waiver code prior to submitting the MS application.
  - Admission to Fast Track does NOT guarantee admission to the graduate program.
  - The admit term must be after the completion term of the undergraduate degree.

Admissions

General Application Requirements and Admission Criteria (http://catalog.unomaha.edu/graduate/admission/)

Program-Specific Requirements

Application Deadlines (Spring 2024, Summer 2024, and Fall 2024)

- Fall: July 1
- Spring: December 1
- Summer: April 1

Other Requirements

- The minimum undergraduate grade point average (GPA) requirement for the MS in IT Innovation program is 3.0 or equivalent score on a 4.0 scale. Provisional admission may be granted to applicants with a GPA of 2.7 or above (see categories of admission below). Applicants should have the equivalent of a four-year undergraduate degree.
- **English Language Proficiency:** Applicants are required to have a command of oral and written English. Those who do not hold a baccalaureate or other advanced degree from the U.S., **OR** a baccalaureate or other advanced degree from a predetermined country on the waiver list (https://www.unomaha.edu/graduate-studies/prospective-students/Proof%20of%20English%20Proficiency-%20International.pdf), must meet the minimum language proficiency score requirement in order to be considered for admission.
  - Internet-based TOEFL: 80, IELTS: 6.5, PTE: 53, Duolingo: 110
- **Writing Sample:** Applicants are required to submit a writing sample about an area of innovation, information technology, or design that is of specific interest to them. This should be a two page double-spaced word processed essay that showcases your unique interest in interdisciplinary ideas and applications in technology, and demonstrates your potential for success in a hands-on and self-directed the graduate program.
- **Resume:** Submit a detailed resume indicating your work experience and background.
- **Letter of Recommendation**: One letter of recommendation from a reference who can evaluate your work and/or academic achievements on the following criteria: technical interest, independence and initiative, proficiency with written English, and alignment with the IT Innovation program.

Non-Degree students interested in taking courses without admission to the MS in IT Innovation degree program may do so with permission of the graduate program committee.

Categories of Admission

Unconditional Admission status may be granted to applicants considered fully qualified to undertake the program to which they were admitted. An applicant must have a baccalaureate degree from a regionally accredited institution. Other qualifications might include, but are not limited to academic foundation requirements, an interview, area of subject tests, advanced tests, a portfolio or performance, grade point average, and/or letters of recommendation.

Provisional Admission status may be granted to applicants who have not met all of the conditions for unconditional admission. Departments/schools and/or the dean for Graduate Studies may impose certain requirements which must be fulfilled by the student in order to maintain this status.

- Provisional admission may be granted to an applicant who has less than a "B" average (3.0 on a 4.0 scale) in the undergraduate work in the proposed graduate major and minor (but in no case less than a 2.7 GPA). This admission may be granted for reasons of maturity, experience, or other circumstances under which the student may be deemed capable of high quality graduate study.
  - Provisional admission remains in effect until the student has earned at least a grade of "B" (3.0 on a 4.0 scale) in each course involved in the first 12 hours of graduate study. The provisions are noted in DegreeWorks for reference.
- Provisional admission may occasionally be granted to an applicant who has graduated from an unaccredited institution. Unconditional status may be attained upon completion of 12 hours of graduate courses with a "B" (3.0 on a 4.0 scale) average, providing all other requirements are met.
- Provisional admission may occasionally be granted to seniors at UNO needing no more than nine hours of undergraduate credit to complete their baccalaureate degree and wishing to register for graduate credit, subject to their receiving a baccalaureate degree within the 12-month period immediately following such registration. They must, however, apply for admission to graduate studies and, if admitted, they should register as graduate students. Graduate coursework taken prior to receipt of the baccalaureate degree may not always be accepted for transfer to other institutions, as graduate work, or for completion of degree requirements at UNO.
- Provisional admission may occasionally be granted to an applicant who has not submitted the required aptitude or advanced knowledge test score(s). The student must, however, submit the score prior to second semester registration as a graduate student.

Provisional status will continue until provisions of admission are fulfilled or changed by the recommendation of the graduate program committee and approved by the dean for Graduate Studies.

Degree Requirements

Code	Title	Credits
ITIN 8000	TECHNOLOGY & INNOVATION STUDIO (Taken 3 times, 3 credits each, in the first 3 semesters of a students' program of study, for a total of 9 credit hours.)	9
Electives		**15-18**
	A total of 15-18 graduate-level credits from any program in the NU system that aligns with the student's area of interest. Students are encouraged to consider the following examples of acceptable electives from within the ITIN program:	
ITIN 8210	FOUNDATIONS OF IT INNOVATION	
ITIN 8220	DESIGN PROCESS	
ITIN 8216	INTRODUCTION TO AUTONOMOUS MOBILE ROBOTS	
ITIN 8006	SPECIAL TOPICS IN IT INNOVATION	
ITIN 8910	INTERNSHIP [1]	
ITIN 8900	INDEPENDENT STUDIES [2]	
Exit Requirement (choose one)		**3-6**
ITIN 8960	THESIS EQUIVALENT PROJECT IN IT INNOVATION	6
or		
ITIN 8990	THESIS	6
or		
CYBR 8950	CYBERSECURITY GRADUATE CAPSTONE [3]	3
Total Credits		**30**

[1] A maximum of 6 credit hours of internship may be used towards degree requirements.

[2] A maximum of 6 credit hours of independent study may be used towards degree requirements.

[3] Students choosing the capstone exit option are required to take 3 additional credits of electives to earn 30 credit hours total.

Exit Requirements

Specific guidance and requirements for each exit requirement option are described below:

Guidance for Thesis-Equivalent Project Exit Option

Students who choose this exit option will identify a project topic that they would like to pursue. Thesis-equivalent projects are independent (each student is responsible for their own project) and involve a substantial development component (e.g., application, website, algorithm, hardware systems) of an artifact, system, or product of interest to the student. Students are highly encouraged work with IS&T faculty members to refine their ideas and seek mentors prior to starting the project. Students who choose this exit option are required to:

1. Apply for eligibility to take ITIN 8960 with a chosen faculty advisor who will serve as their supervisory committee chair. The ITIN Graduate Concentration Committee will act as the de facto supervisory committee for the thesis equivalent project.
2. Register for 6 credits of ITIN 8960 to complete the chosen project.
3. Participate in a public oral defense of their project work to their supervisory committee.

Guidance for Thesis Exit Option

All candidates completing the thesis option should carefully review the Graduate College requirements for forming the supervisory committee, Thesis/Thesis-Equivalent Proposal Approval forms, and final approval and submission of the thesis. Students who choose this exit option are required to:

1. Apply for eligibility to take ITIN 8990 with a chosen ITIN faculty advisor who will serve as their thesis committee chair.
2. Form a supervisory thesis committee composed of 2 ITIN faculty and 1 outside member. All supervisory committee members will then sign the Proposed Supervisory Committee form.
3. Students will draft a written thesis proposal outlining the proposed research activities to be conducted for their thesis. The scope and contributions are to be developed with the guidance of the supervisory committee chair. This proposal is distributed to their supervisory committee members for review.
4. Present their thesis proposal in a presentation to their supervisory committee members, and feedback received from this presentation is used to guide the student to refine their proposal. Once all changes

have been finalized, the supervisory committee signs the Thesis Proposal Approval form.

5. Register for 6 credits of ITIN 8990 to conduct the research under the supervision of their thesis committee chair.

6. At the conclusion of the student's thesis work, they will finalize a draft of the thesis and send it to their supervisory committee for review. Students will then schedule a public thesis defense session where they will present the work done to date and answer questions from their committee about the research. The committee will then either approve the thesis outright or request changes. Once all changes have been finalized, the Report of Completion of Degree form will be signed by all committee members.

Since disciplinary norms can vary, students are strongly encouraged to work with their supervisory committee chair to make sure expectations are met.

Guidance for Capstone Exit Option

Students who choose this exit option will enroll in CYBR 8950, which is an interdisciplinary capstone course in the final semester of their program. Students who choose this option are required to take 3 credits of additional electives, subject to the requirements outlined above. Students choosing this option are highly encouraged to take ITIN 8210 and ITIN 8220 prior to enrolling in CYBR 8950.

Quality of Work Standards

The Graduate College's Quality of Work standards shall be applied to foundation courses as well as courses taken as part of the degree program. In particular, the GPC will recommend to the Graduate College that any

1. Student receiving a grade of "C-" or below in any foundation courses will be automatically dismissed from the program or, in the case of unclassified or non-degree students, be automatically denied admission.

2. Student receiving a grade of "C+" or "C" in any foundation course will be placed on probation or dismissed from the program.

3. Student not maintaining a "B" (3.0 on 4.0 scale) average in foundation courses will be placed on probation or dismissed from the program.

ITIN 8000 TECHNOLOGY & INNOVATION STUDIO (3 credits)
ITIN 8000 is a studio course that provides a foundation to incoming MSc ITIN students from all disciplines through self-guided modules covering topics from technology, innovation, design, and computing. Students will use the modules to practice applying and mastering skills in a self-guided collaborative environment. Each module will consist of three levels of difficulty. Student performance will be assessed by students' personal progress and skills improvement as shown by them completing increasingly difficult levels of the modules. Students will be graded on a satisfactory/unsatisfactory basis. The class requires in-person participation and attendance.
Prerequisite(s): Students in the MS in IT Innovation program must register during their first three terms. Not open to non-degree graduate students.

ITIN 8006 SPECIAL TOPICS IN IT INNOVATION (3 credits)
This course is designed to acquaint students with issues which are current to the field or emerging trends in the IT Innovation area. Topics will vary across terms. This course may be repeated, but no topic may be taken more than once. (Cross-listed with ITIN 4000).
Prerequisite(s): Permission of instructor. Additional prerequisites may be required for particular topic offerings.

ITIN 8100 INTERMEDIA (3 credits)
This is an ongoing course that brings together students of the arts and students of scientific disciplines in order to facilitate and promote the creation of intermedia art, and to further explore shared resources, joint research, and exhibition/performance opportunities.
Prerequisite(s): Graduate Standing

ITIN 8210 DESIGN SCIENCE AND THEORY DEVELOPMENT (3 credits)
The purpose of this course is to help students understand theory, theoretical contributions, and design science. Students will approach such questions as: What is a theory? What makes a good theory? Why are theories just theories and not laws? What is not a theory? Following this introduction, we explore design science as a research methodology and Information Technology design theories. Ultimately, students create their own new studies around some design concept.
Prerequisite(s): Graduate standing / permission of the instructor

ITIN 8220 DESIGN PROCESS (3 credits)
Inter-disciplinary design teams will work together to design and innovate products of the future. The design projects in the course are developed to directly address a problem brought forward by a technology company in the Omaha area in order to provide students with a design experience that directly impacts real-world product development. Students will focus on the technological (interface), physical (ergonomics) and aesthetic quality of design, and will learn how to conduct rigorous user studies in a laboratory setting. Teams will be cross disciplinary and consider all aspects of the design, creation, testing, and fabrication of the products.

ITIN 8256 INNOVATION VENTURES (3 credits)
This team-based course provides students with the opportunity to practice the basic tools of business discovery and validation, both as an instrument for new venture formation and as a core capability for addressing challenges in competitive landscapes. As such, the course lies at the intersection of innovation, entrepreneurship and strategy. Students will develop practical experience by experimenting with and refining business ideas. (Cross-listed with BSAD 8726, ENTR 4720, ITIN 4720, MGMT 4720, MKT 4720).
Prerequisite(s): Admission to a graduate program or instructor permission.

ITIN 8266 USER EXPERIENCE DESIGN (3 credits)
User experience (UX) design is concerned with the application of user-centered design principles to the creation of computer interfaces ranging from traditional desktop and web-based applications, mobile and embedded interfaces, and ubiquitous computing. This course provides in-depth, hands-on experience with real world application of the iterative user-centered process including contextual inquiry, task analysis, design ideation, rapid prototyping, interface evaluation, and reporting usability findings. (Cross-listed with CSCI 4260, CSCI 8266, ITIN 4260).

ITIN 8300 RESEARCH FOUNDATIONS (3 credits)
This course serves as an introduction to research literature and research methodology in the innovation and creativity research domain. Students are introduced to skills, methodological issues, and bibliographic resources to enhance their ability in critically evaluating and conducting research in the IT Innovation field. Through a series of readings, in-class discussions, and lectures the student will select and define a research question, explore the various types of research designs and complete a literature review. This course is structured to make research meaningful and significant and enable students to write effectively.
Prerequisite(s): CIST 2500 or equivalent

ITIN 8900 INDEPENDENT STUDIES (1-3 credits)
A variable credit course for the graduate student who will benefit from independent reading assignments and research type problems. Independent study makes available courses of study not available in scheduled course offerings. The student wishing to take an independent study course should find a faculty member willing to supervise the course and then submit, for approval, a written proposal (including amount of credit) to the IT Innovation Graduate Program Committee Chair at least three weeks prior to registration.
Prerequisite(s): Written permission required

ITIN 8910 INTERNSHIP (1-3 credits)
The purpose of this course is to provide the students with an opportunity for practical application and further development of knowledge and skills acquired in the MS in IT Innovation program. The internship gives students professional work experience and exposure to the challenges and opportunities faced by IT professionals in the workplace.
Prerequisite(s): Students must have completed a minimum of 12 credit hours towards the MS in ITIN program. Instructor permission is required to register. Not open to non-degree graduate students.

ITIN 8940 ITIN CAPSTONE I (3 credits)
The purpose of the Information Technology Innovation (ITIN) capstone courses is for ITIN majors to explore, identify, evaluate, design, construct and implement a new innovative product that leverages information technology and includes an interdisciplinary field of study. The capstone is the culmination product of the specific various disciplines a student has selected as the unique combination for his or her degree. This course serves as part one of the capstone project for the ITIN Masters degree. The two courses for the ITIN capstone project are intended to be completed in two consecutive semesters (Fall/Spring).
Prerequisite(s): Must be pursuing ITIN MS degree and have completed: two sections of ITIN 8000, ITIN 8220, 8300, and 3 hours of upper division courses in interdisciplinary area identified in the student's course plan. Not open to non-degree graduate students.

ITIN 8950 ITIN CAPSTONE II (3 credits)
The purpose of the ITIN capstone courses is for ITIN majors to explore, identify, evaluate, design, construct and implement a new innovative product that leverages information technology and an interdisciplinary field. The capstone is the culmination product for prospective graduate and utilizes the discipline(s) a student has selected as the unique combination for his or her degree. This course serves as part two of the capstone project for the Information Technology Innovation (ITIN) program. The two courses for the ITIN capstone project are taught in two consecutive semesters.
Prerequisite(s): Must be pursuing ITIN MS degree and have completed: three sections of ITIN 8000, ITIN 8220, 8300, 8940 and 6 hours of upper division courses in interdisciplinary area identified in the student's course plan. Not open to non-degree graduate students.

ITIN 8960 THESIS EQUIVALENT PROJECT IN IT INNOVATION (1-6 credits)
This course allows a graduate student to conduct a research project in IT Innovation or a related area. The project is expected to place an emphasis on applied, implementations-based, or experimental research. The process for development and approval of the project must include: 1) apply for eligibility to take ITIN 8960 with a chosen faculty advisor, 2) register for 6 credits of ITIN 8960 to complete the chosen project, 3) participate in a public oral defense of their project work to the Graduate Concentration Committee. The approved written project will be submitted to the Office of Graduate Studies by the advertised deadlines.
Prerequisite(s): Permission of graduate advisor. Not open to non-degree graduate students.

ITIN 8990 THESIS (1-6 credits)
This course is required for the Master of Science degree in the MS in IT Innovation Program. The purpose of this course is to conduct original research in IT Innovation, under supervision of a faculty member, culminating in a paper document that represents the student's competency in their chosen field, as well as scholarly contributions. With consultation from their committee, MS in IT Innovation thesis students should be prepared to independently complete the writing of their thesis and successfully defend their thesis.
Prerequisite(s): Graduate major in ITIN and approval of the Thesis Advisory Committee.

ITIN 9300 SOCIAL COMPUTING AND ITS APPLICATIONS (3 credits)
It is indisputable that social media and the Internet more broadly reshaped information disbursement and processing. Digital participation and communication has become the 'new normal' and the dividing line between off- and online communities is increasingly blurred. This leads to specific challenges in the extraction and analysis of online social media data, and the management of new communication.
Prerequisite(s): Open to all currently-admitted doctoral students. Students should have a technical aptitude; experience with at least one web scripting language, (e.g. PHP, rails, python etc) is helpful. Experience with JSON is advantageous but not essential.