INFORMATION TECHNOLOGY (IT) INNOVATION, BACHELOR OF SCIENCE

The IT Innovation (ITIN) program involves the study of entrepreneurship as it relates to IT and an individual field of interest. Courses in this degree program are listed in the catalog as IT Innovation (ITIN).

Why major in IT Innovation?

- To have flexibility in designing your own curriculum
- To be able to take more courses that are aligned with your career goals
- To be prepared to be an entrepreneur (an ambitious leader who combines his/her ideas with labor and capital to create and market new goods or services)
- To be prepared to be an intrapreneur (using entrepreneurial skills as an employee within an established organization)
- To have a degree that appeals to a wide variety of potential employers

The IT Innovation degree has three simple but distinguishing features:

1. You pick 33 credit hours from anywhere on campus that line up with your career goals.
2. You participate in seminars, workshops, and conferences on entrepreneurship.
3. You take a solid core of IT courses, plus a two-semester senior capstone course where:
   - You have an idea for a new IT product or service.
   - You document your idea’s technical and market feasibility.
   - You carry your idea through to prototype stage.

Career outcomes from the IT Innovation program

In addition to the more general IT professions, students in the IT Innovation program have found employment in the more specific field of IT Innovation such as a(an) applications designer, digital artist, founder, graphics/web designer, innovation consultant, innovation evangelist, IT applications consultant, new product designer/developer, new ventures specialist, user experience designer, video game designer, and other similar fields.

Writing in the Discipline

All UNO students are required to take a writing-in-the-discipline course within their major. ITIN degree students must take CIST 3000.

Student Groups

UNO’s IT Innovation students are invited to join the Information Technology Innovation Group (IT Inc.) (https://www.unomaha.edu/college-of-information-science-and-technology/school-of-interdisciplinary-informatics/student-involvement/)

Requirements

A minimum of 120 credit hours is required for a Bachelor of Science degree in IT Innovation (BITI). Thirty of the last 36 hours must be University of Nebraska at Omaha (UNO) courses. Registering for courses without having taken the stated prerequisites could result in administrative withdrawal.

To obtain a BITI, a student must fulfill the university, college and departmental requirements. Some courses may satisfy requirements in more than one area, but credit is awarded only once, thereby reducing the total number of credit hours for the degree to 120. (This total does not include prerequisites.)

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>1.</td>
<td>CIST 1300 INTRODUCTION TO WEB DEVELOPMENT</td>
<td>3-4</td>
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<tr>
<td>2.</td>
<td>CIST 1200 &amp; CSCI 1204 COMPUTER SCIENCE PRINCIPLES and COMPUTER SCIENCE PRINCIPLES LABORATORY 1</td>
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<tr>
<td>3.</td>
<td>CIST 1300 INTRODUCTION TO WEB DEVELOPMENT</td>
<td>3</td>
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<tr>
<td>College of IS&amp;T Courses for ITIN Majors</td>
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<tr>
<td>ITIN 1010</td>
<td>ACTIVATING INNOVATION IN SOCIETY</td>
<td>3</td>
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<tr>
<td>ITIN 1110</td>
<td>INTRODUCTION TO IT INNOVATION</td>
<td>3</td>
</tr>
<tr>
<td>CYBR 1100</td>
<td>INTRODUCTION TO INFORMATION SECURITY</td>
<td>3</td>
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<tr>
<td>CIST 1400</td>
<td>INTRODUCTION TO COMPUTER SCIENCE</td>
<td>3</td>
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<tr>
<td>CIST 2100</td>
<td>ORGANIZATIONS, APPLICATIONS AND TECHNOLOGY</td>
<td>3</td>
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Math Tracks

Each ITIN student must fulfill requirements for one of the following math tracks. Each math track corresponds to an ITIN track. The three tracks are Software Development, Analytics and Statistics and Digital Humanities. Note about the three math tracks and the three corresponding ITIN tracks: when a student selects one of the three math tracks, a student must also fulfill requirements for the corresponding ITIN track of the same name (see the three ITIN tracks below).

Software Development Track

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<thead>
<tr>
<th>Code</th>
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<tbody>
<tr>
<td>MATH 1930</td>
<td>CALCULUS FOR THE MANAGERIAL, LIFE, AND SOCIAL SCIENCES</td>
<td>3</td>
</tr>
<tr>
<td>or MATH 1950</td>
<td>CALCULUS I</td>
<td>3</td>
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<tr>
<td>CIST 2500</td>
<td>INTRODUCTION TO APPLIED STATISTICS FOR IS&amp;T</td>
<td>3</td>
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Data Analytics and Statistics Track

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<tr>
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<tbody>
<tr>
<td>MATH 1320</td>
<td>PRE-CALCULUS ALGEBRA</td>
<td>3</td>
</tr>
<tr>
<td>STAT 1530</td>
<td>ELEMENTARY STATISTICS</td>
<td>3</td>
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</table>

Digital Humanities Track

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<tr>
<td>MATH 1320</td>
<td>PRE-CALCULUS ALGEBRA</td>
<td>3</td>
</tr>
<tr>
<td>STAT 1530</td>
<td>ELEMENTARY STATISTICS</td>
<td>3</td>
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College of IS&T Courses for ITIN Majors, prerequisites/electives, and Area of Emphasis Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>CSCI 1200 &amp; CSCI 1204 COMPUTER SCIENCE PRINCIPLES and COMPUTER SCIENCE PRINCIPLES LABORATORY 1</td>
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</tbody>
</table>

Note about the three math tracks and the three corresponding ITIN tracks: when a student selects one of the three math tracks, a student must also fulfill requirements for the corresponding ITIN track of the same name.
ITIN 2220  APPLIED I.T. INNOVATION  3
ITIN 2990  I.T. INNOVATION SYMPOSIUM5  3
ISQA 4150  ADVANCED STATISTICAL METHODS FOR IS&T  3
CIST 3110  INFORMATION TECHNOLOGY ETHICS 3  3
ITIN 3330  PRODUCT DESIGN AND DEVELOPMENT  3
ISQA 3310  MANAGING THE DATABASE ENVIRONMENT  3
ITIN 4440  AGILE DEVELOPMENT METHODS  3
ITIN 4980  INFORMATION TECHNOLOGY INNOVATION CAPSTONE PROJECT I  3
ITIN 4990  INFORMATION TECHNOLOGY INNOVATION CAPSTONE PROJECT PART II  3

**Area of Emphasis**

| Approval of ITIN Undergraduate Program Committee members | 33 |
| Total Credits | 78-79 |

**ITIN Tracks**

In addition to the above IS&T courses, ITIN core courses, and the Area of Emphasis courses, all of which are required of all ITIN majors, each ITIN major must also select a track (below). Each track has separate additional course requirements. The three tracks are Software Development, Analytics and Statistics, and Digital Humanities. Note about the three tracks and math requirements: when a student selects one of the three tracks below, a student must also fulfill requirements for the corresponding math requirement track of the same name (see math requirements above).

**Software Development ITIN Track**

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<tr>
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<tbody>
<tr>
<td>CSCI 1620</td>
<td>INTRODUCTION TO COMPUTER SCIENCE II</td>
<td>3</td>
</tr>
<tr>
<td>CSCI 2240</td>
<td>INTRODUCTION TO C PROGRAMMING</td>
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**Analytics and Statistics ITIN Track**

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<tr>
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<tr>
<td>CIST 2500</td>
<td>INTRODUCTION TO APPLIED STATISTICS FOR IS&amp;T</td>
<td>3</td>
</tr>
<tr>
<td>CYBR 2980</td>
<td>SPECIAL TOPICS IN CYBERSECURITY</td>
<td>3</td>
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**Digital Humanities ITIN Track**

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<tbody>
<tr>
<td>CIST 2500</td>
<td>INTRODUCTION TO APPLIED STATISTICS FOR IS&amp;T</td>
<td>3</td>
</tr>
<tr>
<td>ISQA 4900</td>
<td>FULL STACK DEVELOPMENT</td>
<td>3</td>
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**Total Credits with Elected Track**

84–85

1. NOTE: CSCI 1200 and CSCI 1204 count toward the Natural and Physical Sciences requirement.
2. NOTE: CYBR 1100 counts toward Global Diversity requirement.
3. NOTE: CIST 2100 and ITIN 1010 counts toward Social Sciences requirement.
4. NOTE: CIST 3110 counts toward Humanities requirement.
5. ITIN 2990 is normally a 1 credit course that is taken three times, for a total of 3 credits

Students are encouraged to submit their area of emphasis proposal at the end of their sophomore year and/or after they complete or are about to complete ITIN 2220. Proposed courses for the area of emphasis cannot include courses that are already part of the required core curriculum for ITIN and the required core curriculum for all IS&T majors (including prerequisites like IS&T 1300, etc.). In addition, the student cannot include a course that is already being used to satisfy general education requirements. The Program Committee expects courses to be mostly upper level, although it is understood that, sometimes, lower level courses are appropriate (because they may be the only place where necessary skills can be learned, or they may be required prerequisites for necessary upper level courses, or they are sufficiently rigorous despite their lower level designation).

**Minor Offered**

- ITIN Minor (http://catalog.unomaha.edu/undergraduate/college-information-science-technology/school-interdisciplinary-informatics-si2/itin-minor/)

**ITIN 1010 ACTIVATING INNOVATION IN SOCIETY (3 credits)**

This course surveys and applies the use of qualitative methods, especially interview-based research, in order to maximize the insight that informs and activates the innovation process, with emphasis on technological innovation.

**Prerequisite(s)/Corequisite(s):** Not open to non-degree graduate students.

**Distribution:** Social Science General Education course

**ITIN 1110 INTRODUCTION TO IT INNOVATION (3 credits)**

In almost every modern human endeavor, creativity and Information Technology are essential. In the Internet age, information has become a commodity that is available to everyone. Similarly, current technology has largely become commoditized. Therefore, creating new value is becoming the basis for successful professionals. This course introduces students to tools, techniques, and methods for generating innovative information technology ideas and solutions. It teaches them to think about future possibilities and equips them with the ability to critically evaluate proposed innovations and ideas. The goal of the course is to increase students’ ability to creatively solve challenging problems in new ways using information technology. This class is inherently interdisciplinary as IT now touches every aspect of modern academic pursuits.

**Prerequisite(s)/Corequisite(s):** Not open to non-degree graduate students.

**ITIN 2150 AUDIO FOR MULTIMEDIA (3 credits)**

This course provides an overview of audio production techniques as they pertain to multimedia.

**Prerequisite(s)/Corequisite(s):** Not open to non-degree graduate students.

**ITIN 2220 APPLIED IT INNOVATION (3 credits)**

The course extends the concepts learned in the Introduction to IT Innovation course and focuses on market dynamics and monetizing innovations. It moves past idea generation and focuses on identifying and gathering resources, innovation implementation, sustainable innovation models and how ideas can be monetized. The goal is for students to take their original ideas from concept to initial implementation with thoughts towards commercialization. Upon completing the course, students will have created at least a rudimentary implementation of an original idea and have a defensible plan for how the idea can be monetized.

**Prerequisite(s)/Corequisite(s):** ITIN 1110 & CIST 1400. Not open to non-degree graduate students.
ITIN 2990 IT INNOVATION SYMPOSIUM (1 credit)
The seminar exposes students to information technology innovators from multiple industries and varied backgrounds. It teaches the practical aspects of IT Innovation from those that have done it and are doing it in both research and practice. The purpose is to cause students to reflect on applying innovation to the real-world, connect them to the innovation community and to equip them with best practices and tools to make their innovations a reality.
Prerequisite(s)/Corequisite(s): Enrollment in the IT Innovation Major or IT Innovation Minor. Not open to non-degree graduate students.

ITIN 3100 MUSIC INFORMATICS (3 credits)
Surveys the use of digital music data in the study, composition, performance, analysis, storage, and dissemination of music. Various computational approaches and technologies in music informatics including music information retrieval will be explored and implemented by students. (Cross-listed with MUS 3100).
Prerequisite(s)/Corequisite(s): Successful completion of one of the following three courses satisfies the prerequisite requirement: CIST 1300 or MUS 3170 or MUS 3180. Not open to non-degree graduate students.

ITIN 3180 DIGITAL SYNTHESIS (3 credits)
An exploration of the potentials of computer music synthesis. Concepts of music synthesis are presented through the use of a computer, keyboard, and appropriate software. Students create assignments that demonstrate the application of basic techniques. (Cross-listed with MUS 3180).

ITIN 3330 PRODUCT DESIGN AND DEVELOPMENT (3 credits)
This course will cover elements and principles of excellent product design and development. The history of design will be reviewed and overarching tenets of design will be introduced. The course will particularly focus on innovation and students will be expected to develop an original concept and create quality designs and low-fidelity prototype implementations of their unique idea. The proposed solutions must be novel and meet a real-world market need. This course will be hands-on and will examine developmental models for innovation.
Prerequisite(s)/Corequisite(s): ITIN 2220. Not open to non-degree graduate students.

ITIN 4000 SPECIAL TOPICS IN IT INNOVATION (1-6 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 8006).
Prerequisite(s)/Corequisite(s): Permission of instructor. Additional prerequisites may be required for particular topic offerings.

ITIN 4090 PRINCIPLES OF COLLABORATION (3 credits)
Students will work with techniques for team leadership, interpersonal collaboration, consensus-building, creative problem solving, negotiation, facilitation, group process design, collaborative workspace design, and collaboration engineering. Students will gain hands-on experience with collaboration technologies. (Cross-listed with BSAD 8096, MGMT 4090).
Prerequisite(s)/Corequisite(s): Junior standing or permission of instructor.

ITIN 4260 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 8266).
Prerequisite(s)/Corequisite(s): Required: C- or better in CIST 2500 and junior standing, or by permission of instructor. Recommended: C- or better in CSCI 4250 or ITIN 3330.

ITIN 4440 AGILE DEVELOPMENT METHODS (3 credits)
The course presents an introduction to agile development methods for IT application development. Students will also learn Unified Modeling Techniques as they go through the agile iterations. This course is a foundation course for the IT Innovation capstone course.
Prerequisite(s)/Corequisite(s): CSCI 4850 or ISQA 3310. Not open to non-degree graduate students.

ITIN 4500 INDEPENDENT STUDIES (1-3 credits)
A variable credit course for the junior or senior 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 Undergraduate Program Committee at least three weeks prior to registration.
Prerequisite(s)/Corequisite(s): Written permission required.

ITIN 4510 INFORMATION TECHNOLOGY INNOVATION 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 ITIN undergraduate program. The internship gives students professional work experience and exposure to the challenges and opportunities faced by professionals in the workplace.
Prerequisite(s)/Corequisite(s): Junior/Senior standing and permission of School of interdisciplinary Informatics Director. Not open to non-degree graduate students.

ITIN 4720 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 8256, MGMT 4720, MKT 4720).
Prerequisite(s)/Corequisite(s): ITIN 1110 and junior standing or above or by instructor permission.

ITIN 4880 SYSTEMS SIMULATION AND MODELING (3 credits)
The course provides an introduction to the modeling and simulation with special emphasis on decision-theoretic models and rational decision-making. The ability to make good decisions is key to individuals and organizations and studying decision-making and improving decisions is vital to success. Students are given a background into systematic decision-making processes, and then are introduced to formal methods for decision modeling and analysis. Building on these foundational models, students learn how to perform process modeling and optimization. Finally, the course concludes with a look at psychological biases and traps that may affect decision-makers. (Cross-listed with ISQA 4880).
Prerequisite(s)/Corequisite(s): ITIN 1110 and junior standing or above.

ITIN 4980 INFORMATION TECHNOLOGY INNOVATION CAPSTONE PROJECT I (3 credits)
This course serves as Part 1 of the capstone project for the Information Technology Innovation program. As such the student will design a prototype of an IT product or service as well as a business case pertaining to what is required to launch their project commercially. This effort will be under the guidance of an advisory committee.
Prerequisite(s)/Corequisite(s): ITIN 4440. ITIN 4980 is for seniors who are enrolled in the BS in IT innovation degree. Before enrolling in ITIN 4980, a student must gain approval, from the ITIN Program Committee, of their Area of Emphasis. Not open to non-degree graduate students.
ITIN 4990 INFORMATION TECHNOLOGY INNOVATION CAPSTONE PROJECT PART II (3 credits)
This course serves as Part 2 of the capstone project for the Information Technology Innovation program. Following the designs and business plan developed in Part I ITIN 4980, the student will create a prototype of an IT product or service as well as refine and implement the required business aspects involved in launching their project commercially. This effort will be under the guidance of an advisory committee.

Prerequisite(s)/Corequisite(s): ITIN 4980. This course is for seniors who are enrolled in the BS in IT Innovation degree. Not open to non-degree graduate students.