



# College of CONTINUING EDUCATION

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# College of CONTINUING EDUCATION

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## General Information

The College of Continuing Education (CCE) provides high-quality continuing education and lifelong learning opportunities for professional development, personal enrichment, career transition, and academic growth. Established in 1913, CCE has one of the most comprehensive continuing education units in the country and serves as the University's main access point for nontraditional students, particularly adult and part-time learners.

CCE offers a variety of degrees, certificates, and continuing professional education opportunities. With programs and services that cross the usual boundaries of time, place, delivery mode, and academic discipline, CCE provides the knowledge and skills required in an information-based world and workplace. And, through CCE, nonadmitted students can access University courses.

## Advising

**CCE Information Center and Advising**—The CCE Information Center offers academic and financial aid advising to all students interested in CCE degrees and certificates. Advisers can help students select programs of study, determine prerequisites, interpret degree requirements, discuss transcripts of previous college work, and choose courses.

Students seeking a college degree through registration in CCE classes should consult an adviser early in their planning. For more information, contact the CCE Information Center at [cceinfo@umn.edu](mailto:cceinfo@umn.edu) or 612-624-4000.

## Admission to CCE Programs

**Admission to CCE Degree and Certificate Programs**—All CCE degree programs have their own admission policies and procedures and admit at the upper division only. For general questions about admission to CCE degree or certificate programs, contact the CCE Information Center at 612-624-4000. For more information, visit the CCE website at [www.cce.umn.edu](http://www.cce.umn.edu) and select the program of interest.

**Liberal Education Requirements**—Within CCE, the Inter-College Program (ICP) and the Program for Individualized Learning (PIL) follow the University's standardized set of liberal education requirements. The Bachelor of Applied Science (BAS) Program has liberal education requirements unique to each major. See the BAS website at [www.cce.umn.edu/Programs-and-Courses/Degrees](http://www.cce.umn.edu/Programs-and-Courses/Degrees) or contact the CCE Information Center for requirement information.

## CCE Scholastic Committee

The CCE Scholastic Committee is charged with interpreting and enforcing College and University regulations relating to academic affairs for students admitted to CCE credit certificate and degree programs and nonadmitted students assigned to CCE. The Committee handles registration exception requests to policies and procedures. The Committee seeks to maintain the spirit of the University's regulations and is empowered to make exceptions

in extenuating circumstances. CCE nonadmitted and admitted degree and credit certificate students should contact a CCE adviser at 612-624-4000.

## Degrees

Students have two broad options for earning baccalaureate degrees through CCE—an individualized degree or applied degree. For more information about these options, call 612-624-4000, or visit the CCE website at [www.cce.umn.edu](http://www.cce.umn.edu).

## Individualized Degree Programs

Individualized degree programs open up educational opportunities for highly motivated students who need flexibility to earn their bachelor of arts (B.A.) or bachelor of science (B.S.) degrees. Students develop degree programs tailored to their interests and talents.

CCE links the rich resources of the University's faculty and staff with the individual undergraduate. Students, faculty, and staff work together to take responsibility for the integrity of each degree program and the maintenance of high academic standards. As a result, our graduates gain a strong sense of ownership of their education and confidence in how that education is related to their lives.

CCE's individualized programs serve students by offering educational alternatives; the programs serve faculty by allowing them to develop and test innovative approaches to undergraduate education. Working together, the two groups help diversify learning experiences at the University.

**Inter-College Program (ICP)**—founded in 1930, offers students a credit-based, individualized baccalaureate degree program drawing on the curricular offerings and other educational resources of the entire University community. This program provides an alternative to an already established major by giving students the flexibility to incorporate both day school and evening coursework from more than one college to achieve their educational goals. Call 612-624-4000 for more information or see [www.cce.umn.edu/Inter-College-Program](http://www.cce.umn.edu/Inter-College-Program) on the web.

**Multidisciplinary Studies (Mds)**—first offered in 2005, is a new option in ICP which serves returning adult learners who wish to incorporate past postsecondary learning in the completion of a bachelor's degree. Mds provides a high quality, individualized degree completion option for returning learners and includes coursework drawn from across the University, with an emphasis on evening and online options. Admission is limited to students with a minimum of a two year gap in their postsecondary education. Call 612-624-4000 for more information or see [www.cce.umn.edu/Multidisciplinary-Studies](http://www.cce.umn.edu/Multidisciplinary-Studies) on the web.

**Program for Individualized Learning (PIL)**—The Program for Individualized Learning has been discontinued. The information contained herein is for current students only. While admission to PIL has been permanently suspended, the program will be fully supported through spring semester 2014. For more information, call 612-624-4000, or see [www.cce.umn.edu/Program-for-Individualized-Learning](http://www.cce.umn.edu/Program-for-Individualized-Learning) on the web.

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## Applied and Professional Studies (APS)

The **bachelor of applied science degree (B.A.Sc.)** provides the opportunity for niche-focused professional growth in specializations tied to key economic drivers. Working adults and admitted students may augment credentials or begin career study. Courses combine theory and application and are developed and taught in close collaboration with industry professionals. Students can pursue a major in one of three professional areas and, upon successful completion, be awarded a B.A.Sc. degree.

They may also incorporate major area courses or a major-related minor into another University degree, elect a certificate in any major area, or enroll in individual courses for professional advancement. For more information about these opportunities, go to [www.cce.umn.edu/Programs-and-Courses/Degrees](http://www.cce.umn.edu/Programs-and-Courses/Degrees).

The **B.A.Sc. with a major in construction management** combines building design and engineering with management and business studies. Students graduate with a strong applied knowledge base, prepared to deliver construction projects on time and within budget. The experience and education provided by this major can lead directly to a professional management career in high demand areas in the construction industry, including residential, commercial, industrial, institutional, highway/heavy, and process systems sectors.

A **minor in construction management** is also available to students who are currently enrolled in or are a graduate of an undergraduate degree program at the University of Minnesota.

The **B.A.Sc. with a major in information technology infrastructure** combines a strong foundation in computer technology components, processes, policies, and services with additional career focus in selected business areas. Students may choose a concentration in network, systems, or database administration; or business system analysis. Students learn to design, construct, and manage technology operations and to apply this knowledge to organizational and business needs. The curriculum prepares graduates to work as network engineers, data administrators, system administrators, business analysts, and other IT professionals, filling critical roles in the rapidly evolving enterprises of today's global economy.

The **B.A.Sc. with a major in manufacturing technology** provides essential tools and knowledge for professional growth in the emerging global manufacturing enterprise, with its constant demands for productivity and competitiveness. This course of study includes manufacturing systems and technologies, quality engineering and process improvement, supply chain management, regulatory affairs, project management, and business and finance. Graduates are prepared to work as production supervisors, project managers, team leaders, materials managers, lead technicians, order process analysts, purchasing managers, and business analysts.

A **minor in manufacturing technology** is also available to students who are currently enrolled in or a graduate of an undergraduate degree program at the University of Minnesota.

The **B.A.Sc. with a major in respiratory care** on the Twin Cities campus *has been discontinued*. Program requirements in the online University Catalogs are for current students only. To pursue a bachelor's degree in respiratory care, contact the University of Minnesota, Rochester campus ([www.r.umn.edu](http://www.r.umn.edu)). Courses are offered in partnership with Mayo School of Health Sciences, Rochester, Minn..

## Honors

The University Honors Program (UHP) offers rigorous and interdisciplinary curricula along with other honors experiences designed for highly qualified and motivated students. Honors courses, available only to honors students, offer small class size, close interaction with world-class faculty, and an engaging learning atmosphere. The University Honors Program serves honors students in all colleges. See the University Honors Program section at the front of this catalog for more information, or visit the University Honors Program website at [www.honors.umn.edu](http://www.honors.umn.edu).

Students admitted to honors before fall 2008 will continue to follow the honors requirements outlined at the time they entered their college honors program. All students admitted to honors as of fall 2008 forward follow the requirements of the University Honors Program. Students admitted to a college honors program before fall 2008 and who change colleges, must apply to UHP if they want to participate in Honors. If admitted, they will be held to the new UHP requirements. See the University Honors Program section of this catalog for further instructions on how to apply.

## Certificates

In addition to baccalaureate degrees, undergraduate certificate programs offered through CCE provide an educational option for working adults. Certificates are short-term, focused college credentials that can supplement a student's experience and previously earned degree, or serve as a stepping stone to a degree. Certificates provide concentrated coursework related to occupational areas or general background to prepare students for further college work.

Coursework may be completed with evening classes, Online and Distance Learning, day classes, summer session classes, or any combination of these. For more information, call the CCE Information Center at 612-624-4000 or email [cceinfo@umn.edu](mailto:cceinfo@umn.edu).

## College of Continuing Education Certificates

For information regarding the following undergraduate certificates see [www.cce.umn.edu/Programs-and-Courses/Certificates](http://www.cce.umn.edu/Programs-and-Courses/Certificates).

- Accounting
- Addiction studies
- Applied business
- Construction management
- Dakota language teaching
- Information technology infrastructure
- Interpreting
- Manufacturing technology
- Nanotechnology practice
- Ojibwe language teaching
- Ophthalmology technician
- Teaching English as a second language

## Special Learning Opportunities and Resources

**Online and Distance Learning (ODL)**—is a program in the College of Continuing Education that offers distance versions of courses authorized by various academic departments. These courses offer full credits and are recorded on regular University transcripts. They use web-based technologies, and in some cases, postal mail to meet the needs of students who cannot or choose not to take courses on campus. No classroom meetings are required. Many courses are self-paced and give students up to nine months to complete the coursework. Other courses fit into the regular semester schedule. Credits can be used toward fulfilling distribution requirements in most undergraduate programs. ODL courses can also satisfy residency requirements, with approval from the student's college. Check with an adviser about using these course credits toward a specific program.

Students register for ODL courses the same way as regular day and evening courses. Courses are either extended-term (to be completed in up to nine months) or term-based (to be completed within one semester term). Credits for ODL courses qualify for any tuition caps that may be available for undergraduate, professional, or graduate tuition plans.

For students receiving financial aid administered by the Office of Student Finance (OSF), term-based online courses are automatically counted. Extended-term courses (both online and correspondence) are not eligible for OSF-administered aid, with one exception. If students are eligible for a Minnesota State Grant, OSF counts all ODL courses enrolled in by the end of the second week of the semester. This includes both extended-term and term-based courses.

For detailed program information and instructions on how to register, visit [www.cce.umn.edu/Online-Distance-and-Evening-Courses](http://www.cce.umn.edu/Online-Distance-and-Evening-Courses). Contact CCE at 612-624-4000 or 800-234-6564, or email [cceinfo@umn.edu](mailto:cceinfo@umn.edu).

**Independent Study (ICP 3075)**—CCE allows undergraduates, regardless of college affiliation, to pursue projects beyond the scope of a single department or college. Projects are interdisciplinary or are completed in departments that do not offer an appropriate independent study course. Students may take 3–5 credits of ICP 3075—Independent Study. For more information, contact ICP at 612-624-4000.

## Scholarships and Grants

Information about financial aid for CCE students is available online at [www.cce.umn.edu/financialaid](http://www.cce.umn.edu/financialaid). The website includes a link to the Financial Resources Wizard, an online tool that helps students quickly identify financial aid and other resources that are likely to match their individual situations. It contains in-depth information about each funding source.

Students admitted to a degree or eligible certificate program who complete the Free Application for Federal Student Aid (FAFSA) will be considered for aid administered by the Office of Student Finance. CCE scholarships and grants are available for noncredit, nonadmitted (nondegree), and degree and certificate admits. Most scholarships and grants require Minnesota residence, financial need, and a delay or interruption in education of two years or

more. Additional scholarships are available for students admitted to the Inter-College Program (ICP), Program for Individualized Learning (PIL), and Bachelor of Applied Science (BAS) Program; requirements vary by scholarship fund. Scholarships are awarded on the basis of academic ability and a statement of personal, educational, and career goals. They are supported by donations from CCE alumni and friends. CCE awards 150–200 scholarships per year; individual awards generally range from \$500 to \$2,500.

For additional information, contact the CCE Information Center at 612-624-4000 or 800-234-6564, or email [cceinfo@umn.edu](mailto:cceinfo@umn.edu).

# Directory

## CCE Information Center

20 Classroom Office Building  
 St. Paul, MN 55108  
 612-624-4000  
 Fax: 612-625-1511  
 Email: [cceinfo@umn.edu](mailto:cceinfo@umn.edu)

## Administration

### Office of the Dean

Dean: Mary Nichols  
 201 Coffey Hall  
 St. Paul, MN 55108  
 612-624-1751

## Departments

### Applied and Professional Studies

#### Bachelor of Applied Science (BAS)

- Construction management
  - Information technology infrastructure
  - Manufacturing technology
- 20 Classroom Office Building  
 St. Paul, MN 55108  
 612-624-4000  
 Email: [cceinfo@umn.edu](mailto:cceinfo@umn.edu)

#### Undergraduate Certificates

- Accounting
  - Addiction studies
  - Applied business
  - Construction management
  - Dakota language teaching
  - Information technology infrastructure
  - Interpreting
  - Manufacturing technology
  - Nanotechnology practice
  - Ojibwe language teaching
  - Ophthalmology technician
  - Teaching English as a second language
- 20 Classroom Office Building  
 St. Paul, MN 55108  
 612-624-4000  
 Email: [cceinfo@umn.edu](mailto:cceinfo@umn.edu)

#### Undergraduate Individualized Degrees

- Inter-College Program (ICP)
  - Multidisciplinary Studies (MdS)
  - Program for Individualized Learning (PIL)
- 20 Classroom Office Building  
 St. Paul, MN 55108  
 612-624-4000  
 Email: [cceinfo@umn.edu](mailto:cceinfo@umn.edu)  
[www.cce.umn.edu/Inter-College-Program](http://www.cce.umn.edu/Inter-College-Program)  
[www.cce.umn.edu/Multidisciplinary-Studies](http://www.cce.umn.edu/Multidisciplinary-Studies)  
[www.cce.umn.edu/Program-for-Individualized-Learning](http://www.cce.umn.edu/Program-for-Individualized-Learning)

# College of CONTINUING EDUCATION

## Degree Programs and Minors

### Construction Management B.A.Sc.

- Required credits to graduate with this degree: 120.
- Required credits within the major: 51.

Construction management transforms project design and its engineering requirements into a physical structure, focusing on management and business skills needed to deliver high quality construction results on time and within budget. The major offers experience and education leading directly to a professional management career in high demand areas in the construction industry, including residential, commercial, industrial, institutional, highway/heavy and process systems sectors. The construction management major is offered in close collaboration with the Minnesota construction industry.

### Admission Requirements

Students must complete 45 credits before admission to the program.

A GPA above 2.00 is preferred for the following:

- 2.50 for students already admitted to the degree-granting college.
- 2.50 for students transferring from another University of Minnesota college.
- 2.50 for students transferring from outside the University.

Each application for admission is individually reviewed in a holistic context.

For information about University of Minnesota admission requirements, visit the [Office of Admissions website](#).

### Required Courses for Admission

#### Calculus

MATH 1142—Short Calculus (4 cr)  
*or* MATH 1271—Calculus I (4 cr)

#### Physics

PHYS 1101W—Introductory College Physics I, PHYS, WI (4 cr)  
*or* PHYS 1107—Introductory Physics Online I (4 cr)  
*or* PHYS 1301W—Introductory Physics for Science and Engineering I, PHYS, WI (4 cr)

### Building Construction Plan Reading

CMGT 3011—Construction Plan Reading (2 cr)

### Program Requirements

Consult a CCE construction management adviser about general education requirements for this major.

### Preparatory Courses

One course in arts, humanities or literature.  
ACCT 2050—Introduction to Financial Reporting (4 cr)  
CMGT 2019—AutoCAD for Construction Managers (2 cr)  
CMGT 3001—Introduction to Construction (3 cr)

### Technical Writing

ABUS 4023W—Communicating for Results, WI (3 cr)  
*or* WRIT 3562W—Technical and Professional Writing, WI (4 cr)

### Public Speaking or Interpersonal Communication

COMM 1101—Introduction to Public Speaking (3 cr)  
*or* COMM 3402—Introduction to Interpersonal Communication, SSCI (3 cr)  
*or* COMM 3605W—Persuasive Speaking and Speech Writing, WI (3 cr)  
*or* PSTL 1461—Multicultural Perspectives in Public Speaking (3 cr)

### Psychology or Sociology

PSTL 1211—Multicultural Perspectives in Sociology, SOCS, DSJ (4 cr)  
*or* PSTL 1281—Principles of Psychology, SOCS (4 cr)  
*or* PSY 1001—Introduction to Psychology, SSCI (4 cr)  
*or* SOC 1001—Introduction to Sociology, SOCS (4 cr)

### Microeconomics

APEC 1101—Principles of Microeconomics (3 cr)  
*or* ECON 1101—Principles of Microeconomics, SOCS (4 cr)

### Statics

BBE 3101—Introductory Statics and Structures for Construction Management (3 cr)  
*or* AEM 2011—Statics (3 cr)

### Introduction to Management

ABUS 4022—Management in Organizations (3 cr)  
*or* MGMT 3001—Fundamentals of Management (3 cr)

### Major Courses

ABUS 4101—Accounting and Finance for Managers (3 cr)  
ABUS 4701—Introduction to Marketing (3 cr)  
ARCH 4552—Integrated Design Processes (3 cr)  
CE 3202—Surveying and Mapping (2 cr)  
CE 4101W—Project Management, WI (3 cr)  
CMGT 4011—Construction Documents and Contracts (3 cr)  
CMGT 4012—Risk Management, Bonds, and Insurance (2 cr)  
CMGT 4013—Legal and Ethical Issues in Construction (3 cr)  
CMGT 4021—Construction Planning and Scheduling (3 cr)  
CMGT 4022—Construction Estimating (3 cr)  
CMGT 4031—Construction Safety and Loss Control (3 cr)  
CMGT 4041—Specifications and Technical Writing for Construction Professionals (3 cr)  
CMGT 4051—Construction Materials for Managers (3 cr)  
CMGT 4111—Construction Productivity Management (2 cr)  
CMGT 4201—Construction Accounting (3 cr)  
CMGT 4542—Building Energy Systems (3 cr)  
CMGT 4572—Structural Frames and Building Design/Construction (3 cr)  
CMGT 4196—Construction Management Internship (1–4 cr)

## Construction Management Minor

- Required credits in this minor: 19.

A minor in construction management provides foundation knowledge, industry insight, and business competencies essential in the construction sector.

### Admission Requirements

Students must complete 45 credits before admission to the program.

A GPA above 2.00 is preferred for the following:

- 2.50 for students already admitted to the degree-granting college.

- 2.50 for students transferring from another University of Minnesota college.
- 2.50 for students transferring from outside the University.

For information about University of Minnesota admission requirements, visit the [Office of Admissions website](#).

## Minor Requirements

Sixty percent of credits in the minor must be completed at the University of Minnesota-Twin Cities.

### Minor Courses

CMGT 3001—Introduction to Construction (3 cr)  
 CMGT 4011—Construction Documents and Contracts (3 cr)  
 CMGT 4021—Construction Planning and Scheduling (3 cr)  
 CMGT 4022—Construction Estimating (3 cr)  
 CMGT 4031—Construction Safety and Loss Control (3 cr)  
 CE 4101W—Project Management, WI (3 cr)  
 Department approved related 1-credit course

## Information Technology Infrastructure B.A.Sc.

- Required credits to graduate with this degree: 120.
- Required credits within the major: 50.

Information technology infrastructure (ITI) concerns the design, construction, and management of technology operations. The ITI major is the study and application of this knowledge to organizational and business needs. The curriculum combines a strong foundation in computer systems, networks, and data management with essential applied business courses. The ITI major prepares students for a variety of industrial, governmental, and business positions involving computer technology processes, policies, components, and services.

## Admission Requirements

Students must complete 45 credits before admission to the program.

A GPA above 2.00 is preferred for the following:

- 2.50 for students already admitted to the degree-granting college.
- 2.50 for students transferring from another University of Minnesota college.
- 2.50 for students transferring from outside the University.

Each application for admission is individually reviewed in a holistic context.

For information about University of Minnesota admission requirements, visit the [Office of Admissions website](#).

## Required Courses for Admission

CSCI 1103—Introduction to Computer Programming in Java (4 cr)  
 CSCI 1901—Structure of Computer Programming I (4 cr)  
 CSCI 1902—Structure of Computer Programming II (4 cr)  
 CSCI 2011—Discrete Structures of Computer Science (4 cr)  
 CSCI 2021—Machine Architecture and Organization (4 cr)

### Calculus

MATH 1142—Short Calculus (4 cr)  
*or* MATH 1271—Calculus I (4 cr)

### Physics

PHYS 1101W—Introductory College Physics I, PHYS, WI (4 cr)

*or* PHYS 1301W—Introductory Physics for Science and Engineering I, PHYS, WI (4 cr)

## Program Requirements

Consult a CCE ITI adviser about general education requirements for this major.

### Preparatory Courses

One course in arts, humanities or literature.  
 ACCT 2050—Introduction to Financial Reporting (4 cr)  
 INET 3101—C Programming for the Java Programmer (1 cr)

### English Composition

WRIT 1301—University Writing (4 cr)  
*or* WRIT 1401—Writing and Academic Inquiry (4 cr)

### Public Speaking or Interpersonal Communication

COMM 1101—Introduction to Public Speaking (3 cr)  
*or* COMM 3402—Introduction to Interpersonal Communication, SSCI (3 cr)  
*or* COMM 3605W—Persuasive Speaking and Speech Writing, WI (3 cr)  
*or* PSTL 1461—Multicultural Perspectives in Public Speaking (3 cr)

### Statistics

PSTL 1004—Statistics, MATH (4 cr)  
*or* OMS 2550—Business Statistics: Data Sources, Presentation, and Analysis (4 cr)  
*or* STAT 1001—Introduction to the Ideas of Statistics, MATH (4 cr)  
*or* STAT 3011—Introduction to Statistical Analysis, MATH (4 cr)

### Microeconomics

ECON 1101—Principles of Microeconomics, SOCS (4 cr)  
*or* APEC 1101—Principles of Microeconomics (3 cr)

### Technical Writing

*Take one technical writing course or writing intensive science course.*

PHYS 1101W—Introductory College Physics I, PHYS, WI (4 cr)  
*or* PHYS 1102W—Introductory College Physics II, PHYS, WI (4 cr)  
*or* PHYS 1301W—Introductory Physics for Science and Engineering I, PHYS, WI (4 cr)  
*or* PHYS 1302W—Introductory Physics for Science and Engineering II, PHYS, WI (4 cr)  
*or* WRIT 3001—Introduction to Scientific and Technical Communication (2 cr)  
*or* WRIT 3152W—Writing on Issues of Science and Technology, WI (4 cr)  
*or* WRIT 3257—Scientific and Technical Presentations (3 cr)  
*or* WRIT 3562W—Technical and Professional Writing, WI (4 cr)

### Core Courses

CSCI 4061—Introduction to Operating Systems (4 cr)  
 CSCI 4211—Introduction to Computer Networks (3 cr)  
 INET 4031—System Administration (4 cr)  
 INET 4051—IT Infrastructure Operations (3 cr)  
 INET 4082—IT Infrastructure Projects and Processes (2 cr)  
 INET 4153—Policy and Regulation: Effects on Global IT Infrastructure (3 cr)  
 INET 4707—Practice of Database Systems (3 cr)  
*or* CSCI 4707—Practice of Database Systems (3 cr)

### Technical Electives

*Take 10 or more credit(s) from the following:*

INET 4011—Network Administration (4 cr)  
 INET 4021—Network Programming (4 cr)  
 INET 4032—Storage Design and Administration (2 cr)  
 INET 4041—Emerging Network Technologies and Applications (3 cr)  
 INET 4061—Introduction to Data Warehousing (3 cr)  
 INET 4083—System Analysis and Design (2 cr)  
 INET 4165—Information Security: Technology, Ethics, Legality, and Standards (3 cr)  
 INET 4709—Database Administration (2 cr)  
 INET 4596—Internship (1–3 cr)

or INET 4193—Directed Study (1–4 cr)

## Business/Communication Courses

### Management

ABUS 4022—Management in Organizations (3 cr)

or HSM 4561—Health Care Administration and Management (3 cr)

### Business Communication

ABUS 4023W—Communicating for Results, WI (3 cr)

or HSM 4501—Writing for the Health Professions (3 cr)

### Cost Accounting

ABUS 4101—Accounting and Finance for Managers (3 cr)

or HSM 4541—Health Care Finance (3 cr)

or MT 4001—Manufacturing Cost Accounting, Analysis, and Control (3 cr)

### Quality and Process Improvement

ABUS 3301—Introduction to Quality Management (3 cr)

or MT 4201—Quality Engineering and Process Improvement (3 cr)

### Business/Communication Electives

Must be ABUS courses or other dept approved electives not included in core or technical requirement.

Take 6 or more credit(s) from the following:

ABUS 3xxx, 4xxx

## Inter-College Program B.A.

- Required credits to graduate with this degree: 120.
- Required credits within the major: 50.

Founded in 1930, the Inter-College Program (ICP) embodies the University of Minnesota's commitment to individualized undergraduate education by providing cross-college, course/credit-based degree options. Drawing upon the curricular offerings of most of the University's colleges and departments, students design either a bachelor of arts (B.A.) or a bachelor of science (B.S.) degree incorporating a significant amount of coursework from at least two different colleges within the University system.

Most students design a degree drawing from two or three departmental areas from the University. Examples include addiction studies and psychology, or Carlson School of Management, manufacturing technology, and economics.

ICP is most appropriate for self-directed students whose educational backgrounds and career and intellectual interests require both a clear personal focus and a flexible interdisciplinary approach.

Interested students should attend an information session held several times each week. Academic advisers provide a detailed introduction to the program and help students begin the planning process.

## Admission Requirements

Students must complete 50 credits before admission to the program.

Students are considered for admission based on a review of their application. The review includes factors such as GPA, grade trends, performance in coursework relevant to proposed areas of study, and demonstrated ability to meet curricular and developmental expectations of individualized undergraduate education. Students must have attended a program information session and an initial degree planning appointment with an adviser.

Preferred benchmarks are a 2.50 GPA and 50 semester credits completed.

Students must develop a degree plan that includes:

- Academic and career goals.
- Courses proposed for the program.
- Approval of the plan from at least two faculty or departmental advisers.

For information about University of Minnesota admission requirements, visit the [Office of Admissions website](#).

## Program Requirements

Students are required to take 2 semester(s) of any second language.

Students are required to complete a second language requirement.

- **Option 1:** successfully complete the fourth semester of a single second language.
- **Option 2:** successfully complete the second semester of a single second language, plus 8 credits of additional language or culture study.

In applicable departmental areas, successful completion of the following courses will count toward the 50 credits: CHEM 2302, CSCI 2021, DHA 2463, FW 2001, PSY 2801.

## ICP Program Options

Students are required to complete one of the following course groups.

### Two Area Cross-College Program

This plan combines courses from two area cross-college programs, such as CSOM and mass communications or youth studies and applied business.

- Complete 20 approved credits of upper division coursework in one area of concentration.
- Complete 20 approved credits of upper division coursework in a second area of concentration.
- Complete 10 credits of elective upper division coursework.

### Three Area Cross-College Program

This plan combines courses from three area cross-college programs, such as applied business, communication studies, and psychology, or public health, child psychology, and family social science.

- Complete 20 approved credits of upper division coursework in one area of concentration.
- Complete 12 approved credits of upper division coursework in a second area of concentration.
- Complete 12 approved credits of upper division coursework in a third area of concentration.
- Complete 6 credits of elective upper division coursework.

### Thematic Cross-College Program

A thematic cross-college program, such as aging studies, integrates coursework from several departments—sociology, public health, family social science, and social work. Thematic programs are appropriate only when students' objectives are clearly focused on one topic that cannot be pursued in a two- or three-area program.

- Complete 40 approved upper division credits on a theme with no more than 15 credits in any one department.
- Complete 10 credits of elective upper division coursework.

### Multidisciplinary Studies

Students who select this option follow the requirements for the multidisciplinary studies sub-plan.



## Program Sub-plans

A sub-plan is not required for this program.

### Multidisciplinary Studies Sub-plan

Students complete courses in three of five defined areas of emphasis (applied, technical, and professional; arts and humanities; communication; history and social sciences; science and health science). Unlike two and three area programs, where areas are limited to specific academic departments, the Multidisciplinary Studies areas of emphasis each embody many departmental options. A growing number of courses are available online and students have the option of completing the multidisciplinary studies degree completely online. The largest concentrations of online courses are currently in communication; science and health science; and applied, technical, and professional. Additional online courses in these and the other areas of emphasis are continually being added.

To be admitted to this program, students must have at least a two-year gap in their postsecondary pursuit of a degree; that gap need not be continuous.

### Required Courses for the Sub-plan

ICP 3001W—Introduction to Multidisciplinary Studies, WI (3 cr)

At least 15 approved upper division credits in each of three of the following five areas: arts and humanities, history and social sciences, communication, science and health science, and applied, technical, and professional, to total 50 upper division credits.

### Honors (UHP) Sub-plan

Students admitted to the University Honors Program (UHP) must fulfill UHP requirements in addition to degree program requirements. Honors courses used to fulfill degree program requirements will also fulfill UHP requirements. Current departmental honors course offerings are listed at [www.honors.umn.edu/academics/curriculum/dept\\_courses\\_current.html](http://www.honors.umn.edu/academics/curriculum/dept_courses_current.html).

Honors students complete an honors thesis project in the final year, most often in conjunction with an honors thesis course, or with an honors directed studies or honors directed research course. Students select honors courses and plan for a thesis project in consultation with their UHP adviser and their departmental faculty adviser.

## Inter-College Program B.S.

- Required credits to graduate with this degree: 120.
- Required credits within the major: 50.

Founded in 1930, the Inter-College Program (ICP) embodies the University of Minnesota's commitment to individualized undergraduate education by providing cross-college, course/credit-based degree options. Drawing upon the curricular offerings of most of the University's colleges and departments, students design either a bachelor of arts (B.A.) or a bachelor of science (B.S.) degree incorporating a significant amount of coursework from at least two different colleges within the University system.

Bachelor of science degrees are those that pertain to the physical or biological sciences, have significant quantitative or investigative tools/methods expectations, or have a pronounced applied/professional component (e.g., public health, education, business, social work).

Most students design a degree drawing from two or three departmental areas from the University. Examples include addiction studies and psychology, or Carlson School of Management, manufacturing technology, and economics.

ICP is most appropriate for self-directed students whose educational backgrounds and career and intellectual interests require both a clear personal focus and a flexible interdisciplinary approach.

Interested students should attend an information session held several times each week. Academic advisers provide a detailed introduction to the program and help students begin the planning process.

## Admission Requirements

Students must complete 50 credits before admission to the program.

Students are considered for admission based on a review of their application. The review includes factors such as GPA, grade trends, performance in coursework relevant to proposed areas of study, and demonstrated ability to meet curricular and developmental expectations of individualized undergraduate education. Students must have attended a program information session and an initial degree planning appointment with an adviser.

Preferred benchmarks are 2.50 GPA and 50 semester credits completed.

Students must develop a degree plan that includes:

- Academic and career goals.
- Courses proposed for the program.
- Approval of the plan from at least two faculty or departmental advisers.

For information about University of Minnesota admission requirements, visit the [Office of Admissions website](#).

## Program Requirements

In applicable departmental areas, successful completion of the following courses will count toward the 50 credits: CHEM 2302, CSCI 2021, DHA 2463, FW 2001, PSY 2801.

### ICP Program Options

Students are required to complete one of the following course groups.

#### Two Area Cross-College Program

This plan combines courses from two area cross-college programs, such as Carlson School of Management and mass communications, or computer science and French.

- Complete 21 approved credits of upper division coursework in one area of concentration.
- Complete 21 approved credits of upper division coursework in a second area of concentration.
- Complete 8 supporting upper division credits in approved coursework.

#### Three Area Cross-College Program

This plan combines courses from three area cross-college programs, such as applied business, communication studies, and psychology, or public health, child psychology, and family social science.

- Complete 20 approved credits of upper division coursework in one area of concentration.
- Complete 15 approved credits of upper division coursework in a second area of concentration.
- Complete 15 approved credits of upper division coursework in a third area of concentration.

### Thematic Cross-College Program

The thematic cross-college program, such as aging studies, integrates coursework from several departments—sociology, public health, family social science, and social work. Thematic programs are appropriate only when students' objectives are clearly focused on one topic that cannot be pursued in a two- or three-area program.

- Complete 50 approved upper division credits with no more than 15 credits in any one department.

### Thematic Health and Wellness Program

The thematic health and wellness program integrates coursework from several departments for students with health-related interests. Students who select this option follow the requirements for the thematic health and wellness program sub-plan.

### Multidisciplinary Studies

Students who select this option follow the requirements for the multidisciplinary studies sub-plan.

## Program Sub-plans

A sub-plan is not required for this program.

### Multidisciplinary Studies Sub-plan

Students complete courses in three of five defined areas of emphasis (applied, technical, and professional; arts and humanities; history and social sciences; communication; science and health science). Unlike two and three area programs, where areas are limited to specific academic departments, the multidisciplinary studies areas of emphasis each embody many departmental options. A growing number of courses are available online and students have the option of completing the multidisciplinary studies degree completely online. The largest concentrations of online courses are currently in communication; science and health science; and applied, technical, and professional. Additional online courses in these and the other areas of emphasis are continually being added.

To be admitted to this program, students must have at least a two-year gap in their postsecondary pursuit of a degree; that gap need not be continuous.

### Required Courses for the Sub-plan

ICP 3001W—Introduction to Multidisciplinary Studies, WI (3 cr)

At least 15 approved upper division credits in each of three of the following five areas: arts and humanities; history and social sciences; communication; science and health science; and applied, technical, and professional to total 50 upper division credits.

### Thematic Health and Wellness Program Sub-plan

#### Required Lower Division Health and Wellness Foundation Courses

#### Biology

PSTL 1135 will not be approved in conjunction with a Life Science Focus.

BIOL 1009—General Biology, BIOL (4 cr)

or BIOL 1011—General Biology for Institute of Technology Students (4 cr)

or PSTL 1131—Principles of Biological Science, BIOL (4 cr)

or PSTL 1135—Essentials of Human Anatomy and Physiology, BIOL (4 cr)

#### Chemistry

##### Chemistry Option 1

CHEM 1021—Chemical Principles I (4 cr)

and CHEM 1022—Chemical Principles II (4 cr)

### Chemistry Option 2

CHEM 1015—Introductory Chemistry: Lecture (3 cr)

and CHEM 1017—Introductory Chemistry: Laboratory (1 cr)

and BIOC 2011—Biochemistry for the Agricultural and Health Sciences (3 cr)

### Nutrition

FSCN 1112—Principles of Nutrition (3 cr)

### Social Science (Micro- or Macroeconomics)

ECON 1101—Principles of Microeconomics, SOCS (4 cr)

or ECON 1102—Principles of Macroeconomics, IP, SSCI (4 cr)

or APEC 1101—Principles of Microeconomics (3 cr)

or APEC 1102—Principles of Macroeconomics, IP, SSCI (3 cr)

### Social Science

*Take one additional course from this list.*

PSY 1001—Introduction to Psychology, SSCI (4 cr)

or PSTL 1281—Principles of Psychology, SOCS (4 cr)

or SOC 1001—Introduction to Sociology, SOCS (4 cr)

or PSTL 1211—Multicultural Perspectives in Sociology, SOCS, DSJ (4 cr)

or ANTH 1003W—Understanding Cultures, IP, SSCI, WI (4 cr)

or PSTL 2283W—Psychology of Human Development, WI (4 cr)

### Upper Division Health and Wellness General Core Requirements

Students must complete a minimum of 31 upper division credits from the general core. Must earn grade of C- or better in all courses; overall general core GPA must be at least 2.00. **Note:** to be competitive for graduate and professional programs in the health sciences, GPA should be 3.00 or better. These courses may overlap with University of Minnesota Liberal Education requirements, but core requirements may not be double-counted in emphasis/focus/specialty.

### Anatomy

ANAT 3001—Human Anatomy (3 cr)

or ANAT 3601—Principles of Human Anatomy (3 cr)

or ANAT 3611—Principles of Human Anatomy (3 cr)

or KIN 3111—Human Anatomy (2 cr)

or KIN 3027—Human Anatomy for Kinesiology Students (3 cr)

### Physiology

PHSL 3051—Human Physiology (4 cr)

or PHSL 3061—Principles of Physiology (4 cr)

or PHSL 3063—Principles of Human Physiology (6 cr)

or KIN 3385—Human Physiology (4 cr)

or BIOL 3211—Animal Physiology (3 cr)

### Terminology

PHAR 5201—Health Sciences Applied Terminology (2 cr)

or PHAR 1002—Health Sciences Terminology (2 cr)

### Public Health

PUBH 3001—Personal and Community Health (2 cr)

or PUBH 3004—Basic Concepts in Personal and Community Health (4 cr)

### Health and Fitness

KIN 3001—Lifetime Health and Wellness, SOCS (3 cr)

### Nutrition

#### Upper Division

FSCN 3612—Life Cycle Nutrition (3 cr)

or FSCN 3614—Nutrition Education and Counseling (3 cr)

or FSCN 3615—Sociocultural Aspects of Food, Nutrition, and Health (3 cr)

or FSCN 4612—Advanced Human Nutrition (4 cr)

or FSCN 4614—Community Nutrition, CD (3 cr)

or PUBH 3905—Human Nutrition and Health (2 cr)

**Statistics**

**Note:** STAT 3011, SOC 3811, EPSY 3264, NURS 3710 also satisfy the Mathematical Thinking requirement.

STAT 3011—Introduction to Statistical Analysis, MATH (4 cr)  
 or STAT 3021—Introduction to Probability and Statistics (3 cr)  
 or EPSY 3264—Basic and Applied Statistics (3 cr)  
 or SOC 3811—Basic Social Statistics, MATH (4 cr)  
 or PUBH 6450—Biostatistics I (4 cr)  
 or NURS 3710—Statistics for Clinical Practice and Research (3 cr)

**Pathology**

LAMP 4177—Nature of Disease: Pathology for the Health Professions (3 cr)

**Management/Economics**

**Note:** Some of these courses have a micro- or macroeconomics prerequisite.

APEC 3801—Health Economics and Policy (3 cr)  
 or PUBH 3801—Health Economics and Policy (3 cr)  
 or HSM 3521—Health Care Delivery Systems (3 cr)

**Ethics**

**Note:** PHIL 3302W also satisfies the Citizenship/Public Ethics requirement.

PHIL 3302W—Moral Problems of Contemporary Society, CIV, WI (4 cr)

**Complementary/Alternative Healing**

CSPH 5101—Introduction to Complementary Healing Practices (3 cr)  
 or CSPH 1001—Principles of Holistic Health and Healing (2 cr)

**Communication Upper Division**

WRIT 3562W—Technical and Professional Writing, WI (4 cr)  
 or WRIT 3221W—Communication Modes and Methods, WI (4 cr)  
 or WRIT 3257—Scientific and Technical Presentations (3 cr)  
 or WRIT 3029W—Business and Professional Writing, WI (3 cr)

**Health and Wellness Emphases/Foci/Specialties**

Complete at least 12 to 16 upper division credits in one department area. Overall emphasis/focus/specialty GPA must be at least 2.00. Must earn grade of C- or better in all courses. The list of emphases is not exhaustive. Any relevant department course selection, certificate, or minor can be considered.

**Public Health**

Possible course options include:

PUBH 3003—Fundamentals of Alcohol and Drug Abuse (2 cr)  
 or PUBH 3010—Public Health Approaches to HIV/AIDS (2 cr)  
 or PUBH 3040—Dying and Death in Contemporary Society: Implications for Intervention (2 cr)  
 or PUBH 3093—Directed Study: Public Health (1–4 cr)  
 or PUBH 3102—Issues in Environmental and Occupational Health (3 cr)  
 or PUBH 3639—Prevention: Theory, Practice, and Application in Public Health Services (3 cr)  
 or PUBH 3801—Health Economics and Policy (3 cr)  
 or PUBH 3905—Human Nutrition and Health (2 cr)

**or Nutrition**

Follows the nutrition minor.

**or Life Science**

Possible course options include:

BIOC 3021—Biochemistry (3 cr)  
 or CHEM 2302—Organic Chemistry II (3 cr)  
 or BIOL 4004—Cell Biology (3 cr)  
 or BIOL 4003—Genetics (3 cr)  
 or BIOL 3409—Evolution (3 cr)  
 or BIOL 3407—Ecology (3 cr)

**or Business Management**

Business management courses chosen in consultation with area adviser.

**or Business and Marketing Education**

Possible course options from BIE department.

or possible course options from HRD department.  
 or possible course options from WHRE department.

**or Applied Business**

Possible course options from the Applied Business department.

**or Education and Behavior Change**

Possible course options from AdEd department.

or possible course options from EPsy department.

**or Spirituality and Healing**

CSPH 5101 is required.

CSPH 5101—Introduction to Complementary Healing Practices (3 cr)

**or Family Social Science**

Follows the family social science minor.

**or Addiction Studies**

Addiction studies courses chosen in consultation with area adviser.

**or Health Systems Management**

Possible course options from the Health Systems Management department.

**or other department areas available****Upper Division Health and Wellness Electives**

To reach the 50 upper division credits required for the major, students may use appropriate individual course selections from an emphasis area or may select related elective courses such as those listed below (not a comprehensive list).

AFRO 4231—The Color of Public Policy: African Americans, American Indians, and Chicanos in the United States (3 cr)  
 or AMIN 4231—The Color of Public Policy: African Americans, American Indians, and Chicanos in the United States (3 cr)  
 or CHIC 4231—The Color of Public Policy: African Americans, American Indians, and Chicanos in the United States (3 cr)  
 or ANTH 4075—Cultural Histories of Healing, SOCS, GP (3 cr)  
 or GEOG 3411W—Geography of Health and Health Care, WI (4 cr)  
 or PHAR 4200W—Drugs and the U.S. Health Care System, WI (3 cr)  
 or PHCL 3100—Pharmacology for Pre-Med and Life Science Students (2 cr)  
 or PSY 3666—Human Sexuality (3 cr)  
 or SOC 4246—Sociology of Health and Illness (3 cr)  
 or GWSS 3202—Biology of Women (4 cr)  
 or Possible upper division course options from EHS department.  
 or Possible upper division course options from HMed department.  
 or Course options from other department areas available.

**Honors (UHP) Sub-plan**

Students admitted to the University Honors Program (UHP) must fulfill UHP requirements in addition to degree program requirements. Honors courses used to fulfill degree program requirements will also fulfill UHP requirements. Current departmental honors course offerings are listed at [www.honors.umn.edu/academics/curriculum/dept\\_courses\\_current.html](http://www.honors.umn.edu/academics/curriculum/dept_courses_current.html).

Honors students complete an honors thesis project in the final year, most often in conjunction with an honors thesis course, or with an honors directed studies or honors directed research course. Students select honors courses and plan for a thesis project in consultation with their UHP adviser and their departmental faculty adviser.

## Joint Military Science Leadership Minor

This is a free-standing minor.

- Required credits in this minor: 18 to 20.

This minor provides students with basic concepts and principles of military science and the art of leadership. Areas of study include citizenship, military history, values, ethics, integrity, honor, responsibility, management, and leadership skills. Students gain practical leadership experience, develop self-discipline, and gain confidence—all of which are valuable qualities when applied to service in a military or civilian career. In consultation with the ROTC programs, this minor is now distinct from participation in ROTC, is open to all qualified students, and does not require physical training.

### Admission Requirements

Significant practical leadership experience.

For information about University of Minnesota admission requirements, visit the [Office of Admissions website](#).

### Minor Requirements

Students choose one of four program tracks: Aerospace Science, Military Science, Naval Science-Navy, or Naval Science-Marines.

### Program Sub-plans

Students are required to complete one of the following sub-plans. (Note for the Twin Cities and Morris campuses: The honors sub-plan does not meet this requirement. Honors students are required to complete one sub-plan plus the honors sub-plan. Please see an adviser if no honors sub-plan is listed for the program.)

#### Aerospace Science Sub-plan

##### Required Courses for the Sub-plan

The history requirement can be satisfied by the completion of AIR 1204 and AIR 1205 or by the completion of Air Force ROTC Field Training.

AIR 1204—History of Airpower and Communication Skills (1 cr)

AIR 1205—Quality Air Force, Group Leadership Problems, and Presentation Techniques (1 cr)

AIR 3301—Air Force Leadership, Quality, and Communication (3 cr)

AIR 3302—Air Force Officership, Quality, and Communication (3 cr)

AIR 3401—National Security Policy (3 cr)

AIR 3402—Preparation for Active Duty (3 cr)

Complete a 4-credit philosophy, rhetoric, or leadership course approved by the Professor of Aerospace/Chair of the Department of Aerospace Science.

#### Military Science Sub-plan

##### Required Courses for the Sub-plan

HIST 3891—American Military History (4 cr)

Complete a 4-credit philosophy, rhetoric, or leadership course approved by the Professor of Military Science/Chair of the Department of Military Science.

MIL 3301—Adaptive Tactical Leadership (3 cr)

MIL 3302—Leadership in Changing Environments (3 cr)

MIL 3401—Developing Adaptive Leaders (3 cr)

MIL 3402—Leadership in a Complex World (3 cr)

#### Naval Science—Marines Sub-plan

##### Required Courses for the Sub-plan

NAV 1102—Seapower and Maritime Affairs (3 cr)

NAV 3310—Evolution of Warfare (3 cr)

NAV 4401W—Leadership and Management I, WI (3 cr)

NAV 4402W—Leadership and Ethics, WI (3 cr)

NAV 4410—Amphibious Warfare (3 cr)

Complete a 4-credit philosophy, rhetoric, or leadership course approved by the Professor of Military/Chair of the Department of Naval Science.

#### Naval Science—Navy Sub-plan

##### Required Courses for the Sub-plan

NAV 1102—Seapower and Maritime Affairs (3 cr)

NAV 2201—Ship Systems I: Naval Engineering (3 cr)

NAV 3301—Navigation I: Piloting and Celestial Navigation (3 cr)

NAV 4401W—Leadership and Management I, WI (3 cr)

NAV 4402W—Leadership and Ethics, WI (3 cr)

Complete a 4-credit philosophy, rhetoric, or leadership course approved by the Professor of Military Science/Chair of the Department of Naval Science.

## Manufacturing Technology B.A.Sc.

- Required credits to graduate with this degree: 120.
- Required credits within the major: 51.

Manufacturing technology is the study of the factors and strategies that sustain productivity and competitiveness in today's global manufacturing sector. The curriculum combines a strong foundation in manufacturing systems and processes, design and supply chain technology, quality management, operations, project management, and regulatory affairs with essential applied business knowledge. Graduates are prepared to work as production supervisors, materials managers, manufacturing managers, production planners, project leaders, lead technicians, order process analysts, and business analysts. The MT major is offered in close collaboration with Minnesota manufacturing industries.

### Admission Requirements

Students must complete 45 credits before admission to the program.

A GPA above 2.00 is preferred for the following:

- 2.50 for students already admitted to the degree-granting college.
- 2.50 for students transferring from another University of Minnesota college.
- 2.50 for students transferring from outside the University.

Each application for admission is individually reviewed in a holistic context.

For information about University of Minnesota admission requirements, visit the [Office of Admissions website](#).

### Required Courses for Admission

#### Calculus

MATH 1142—Short Calculus (4 cr)

or MATH 1271—Calculus I (4 cr)

#### Physics

PHYS 1101W—Introductory College Physics I, PHYS, WI (4 cr)

or PHYS 1301W—Introductory Physics for Science and Engineering I, PHYS, WI (4 cr)

or PHYS 1107—Introductory Physics Online I (4 cr)

#### Chemistry

CHEM 1011—Introductory Chemistry: Lecture and Laboratory (4 cr)

or PSTL 1166—Principles of Chemistry (3 cr)

## Program Requirements

Consult a CCE MT adviser about general education requirements for this major. Up to 24 ABUS credits are allowed within the 120 credits required for graduation.

### Preparatory Courses

One course in arts, humanities or literature  
ACCT 2050—Introduction to Financial Reporting (4 cr)

### Oral Communication

COMM 1101—Introduction to Public Speaking (3 cr)  
or COMM 3402—Introduction to Interpersonal Communication, SSCI (3 cr)  
or COMM 3605W—Persuasive Speaking and Speech Writing, WI (3 cr)  
or PSTL 1461—Multicultural Perspectives in Public Speaking (3 cr)

### Economics

ECON 1101—Principles of Microeconomics, SOCS (4 cr)  
or ECON 1102—Principles of Macroeconomics, IP, SSCI (4 cr)  
or APEC 1101—Principles of Microeconomics (3 cr)  
or APEC 1102—Principles of Macroeconomics, IP, SSCI (3 cr)

### Statistics

STAT 1001—Introduction to the Ideas of Statistics, MATH (4 cr)  
or STAT 3011—Introduction to Statistical Analysis, MATH (4 cr)  
or PSTL 1004—Statistics, MATH (4 cr)  
or OMS 2550—Business Statistics: Data Sources, Presentation, and Analysis (4 cr)

### Technical Writing

One technical writing course or writing intensive science course  
PHYS 1101W—Introductory College Physics I, PHYS, WI (4 cr)  
or PHYS 1102W—Introductory College Physics II, PHYS, WI (4 cr)  
or PHYS 1301W—Introductory Physics for Science and Engineering I, PHYS, WI (4 cr)  
or PHYS 1302W—Introductory Physics for Science and Engineering II, PHYS, WI (4 cr)  
or WRIT 3001—Introduction to Scientific and Technical Communication (2 cr)  
or WRIT 3152W—Writing on Issues of Science and Technology, WI (4 cr)  
or WRIT 3257—Scientific and Technical Presentations (3 cr)  
or WRIT 3562W—Technical and Professional Writing, WI (4 cr)

### Major Courses

MT 3001—Manufacturing in a Global Economy (3 cr)  
MT 4001—Manufacturing Cost Accounting, Analysis, and Control (3 cr)  
MT 4011—Design of Manufacturing Systems and Simulation (3 cr)  
MT 4012—Manufacturing Processes and Technology (3 cr)  
MT 4035—Global Supply Chain Technology (3 cr)  
MT 4045—Manufacturing Regulation, Compliance, and Ethics (3 cr)  
MT 4201—Quality Engineering and Process Improvement (3 cr)  
MT 4501—Global Manufacturing Enterprise (3 cr)  
ABUS 4022—Management in Organizations (3 cr)  
ABUS 4023W—Communicating for Results, WI (3 cr)  
ABUS 4043—Project Management in Practice (3 cr)  
ABUS 4102—Operations in Manufacturing and Service Businesses (3 cr)

### Cognate Elective Courses

Other related 3xxx or 4xxx courses may be substituted with department approval.  
*Take 15 or more credit(s) from the following:*  
ABUS 4041—Dynamics of Leadership (3 cr)  
ABUS 4151—Innovation for Leaders and Organizations (3 cr)  
ABUS 4515—Strategy and Management for a Sustainable Future (3 cr)  
ABUS 4701—Introduction to Marketing (3 cr)  
HSM 4501—Writing for the Health Professions (3 cr)  
HSM 4541—Health Care Finance (3 cr)  
HSM 4561—Health Care Administration and Management (3 cr)  
PHAR 3700—Fundamentals of Pharmacotherapy (3 cr)  
MT 3111—Elements of Microelectronic Manufacturing (3 cr)

MT 3121—Thin Films Deposition (3 cr)  
MT 3131—Introduction to Materials Characterization (4 cr)  
MT 3141—Principles and Applications of Bionanotechnology (4 cr)  
MT 3142—Nanoparticle Technology and Engineering Laboratory (1 cr)  
MT 4550—Special Topics in Manufacturing (1 cr)

## Manufacturing Technology Minor

- Required credits in this minor: 15.

The manufacturing technology minor explores systems, processes, and tools integral to global enterprise. Essential study of the emerging manufacturing environment and quality engineering combines with technical elective options to enhance effectiveness in diverse research/production oriented industries (biomedical, chemical, construction, electronic, environmental, food, textiles, and transportation).

## Admission Requirements

Students must complete 45 credits before admission to the program.

A GPA above 2.00 is preferred for the following:

- 2.50 for students already admitted to the degree-granting college.
- 2.50 for students transferring from another University of Minnesota college.
- 2.50 for students transferring from outside the University.

For information about University of Minnesota admission requirements, visit the [Office of Admissions website](#).

## Minor Requirements

**Note:** MT 4035 prerequisite is ABUS 4102 or equivalent operations course or professional experience.

MT 3001—Manufacturing in a Global Economy (3 cr)  
MT 4201—Quality Engineering and Process Improvement (3 cr)

*Take 3 or more course(s) from the following:*

MT 4001—Manufacturing Cost Accounting, Analysis, and Control (3 cr)  
MT 4011—Design of Manufacturing Systems and Simulation (3 cr)  
MT 4012—Manufacturing Processes and Technology (3 cr)  
MT 4035—Global Supply Chain Technology (3 cr)  
MT 4045—Manufacturing Regulation, Compliance, and Ethics (3 cr)

## Program for Individualized Learning B.A.

**Note:** *The Program for Individualized Learning (PIL) has been discontinued. The information contained herein is for current students only. While admission to PIL has been permanently suspended, the program will be fully supported through spring semester 2014.*

- Required credits to graduate with this degree: 120.
- Required credits within the major: 50 to 70.

This program challenges students to think alternatively and holistically about learning. A set of standards, called graduation criteria, describes the basic academic structure of the bachelor's degree. These criteria, rather than number of credits, provide the framework for structuring the degree program and assessing its success.

Students use the graduation criteria to build their own degree programs. Students are encouraged to be creative and to use a variety of learning activities (courses and projects) to satisfy each criterion. Courses that have already been completed may be used to fulfill the graduation criteria; students can also demonstrate

college-level learning achieved through work, experience, and independent study. New learning activities may explore untapped interests or build on prior learning. These activities may include independent projects, internships, work-based projects, and classroom and correspondence coursework.

A PIL degree requires achievement and excellence equal to other baccalaureate programs at the University of Minnesota. The graduation criteria require in-depth knowledge in an area of concentration (depth criteria) and broad learning in the liberal arts (breadth criteria). Regardless of the area of concentration, the B.S. emphasizes the student's field of study, while the B.A. emphasizes broader learning in the breadth criteria.

### Admission Requirements

Students must complete 30 credits before admission to the program.

To be considered for admission, students must submit an application that documents their ability to undertake a self-directed, individualized degree program. The program seeks students who: know why they are seeking a bachelor's degree and why PIL is a sound choice for them; can describe their proposed academic area of study; and write well in English.

For information about University of Minnesota admission requirements, visit the [Office of Admissions website](#).

### Program Requirements

The program serves students who want to develop an area of concentration with some or all of the following attributes:

- Focused on interdisciplinary or multidisciplinary studies, or a specialized study within a broader academic context
- Built on the academic strengths of the University
- Designed as a foundation for graduate or professional education
- Not readily available as a structured undergraduate degree program

The area of concentration, traditionally called a "major," should reflect balance, depth, and quality in a field of study. The student's area of concentration must fulfill the following criteria:

**Primary Area Studies:** Through learning activities in their primary area of study, students acquire familiarity with the basic literature and vocabulary of their field, knowledge of its main theories and methods of investigation, ability to use the skills of the field, and an awareness of its relationship to contemporary and future society.

**Major Project:** As a culmination of study in their area of concentration, students complete a major project that reflects substantive understanding of their field of study.

**Extended Studies in the Liberal Arts:** Studies involve acquiring in-depth and advanced understanding of a focused liberal arts area; an interdisciplinary approach may also be proposed. Learning should include critical and theoretical understanding and upper division knowledge. This work goes beyond the basic requirements reflected in the LE requirements, as interpreted in the Breadth and Learning Matrix requirements in PIL.

### Major Registrations

The PIL program is not credit-based, but it uses credits to ensure that registrations are recognized within the University system and that students qualify for residency and financial aid requirements. Tuition credits attached to registrations are not the same as

conventional coursework credits and are not used to measure progress in the program or readiness to graduate, nor are they necessarily transferable to other programs or colleges. Additional registrations in PIL 3251 may be required.

PIL 3211—Degree Planning (5 cr)

PIL 3251—Project 1 Seminar (5 cr)

PIL 3281—Major Project (5 cr)

PIL 3291—Graduation Preparation (5 cr)

PIL 3252—Project 2 (5 cr)

Most students will also need to register multiple times in one or both of the following:

PIL 3200—Continuing Studies (1–2 cr)

## Program for Individualized Learning B.S.

**Note:** *The Program for Individualized Learning (PIL) has been discontinued. The information contained herein is for current students only. While admission to PIL has been permanently suspended, the program will be fully supported through spring semester 2014.*

- Required credits to graduate with this degree: 120.
- Required credits within the major: 50 to 70.

This program challenges students to think alternatively and holistically about learning. A set of standards, called graduation criteria, describes the basic academic structure of the bachelor's degree. These criteria, rather than number of credits, provide the framework for structuring the degree program and assessing its success.

Students use the graduation criteria to build their own degree programs. Students are encouraged to be creative and to use a variety of learning activities (courses and projects) to satisfy each criterion. Courses that have already been completed may be used to fulfill the graduation criteria; students can also demonstrate college-level learning achieved through work, experience, and independent study. New learning activities may explore untapped interests or build on prior learning. These activities may include independent projects, internships, work-based projects, and classroom and correspondence coursework.

A PIL degree requires achievement and excellence equal to other baccalaureate programs at the University of Minnesota. The graduation criteria require in-depth knowledge in an area of concentration (depth criteria) and broad learning in the liberal arts (breadth criteria). Regardless of the area of concentration, the B.S. emphasizes the student's field of study, while the B.A. emphasizes broader learning in the breadth criteria.

### Admission Requirements

Students must complete 30 credits before admission to the program.

To be considered for admission, students must submit an application that documents their ability to undertake a self-directed, individualized degree program. The program seeks students who know why they are seeking a bachelor's degree and why PIL is a sound choice for them; can describe their proposed academic area of study; and write well in English.

For information about University of Minnesota admission requirements, visit the [Office of Admissions website](#).

## Program Requirements

The program serves students who want to develop an area of concentration with some or all of the following attributes:

- Focused on interdisciplinary or multidisciplinary studies, or a specialized study within a broader academic context.
- Built on the academic strengths of the University.
- Designed as a foundation for graduate or professional education.
- Not readily available as a structured undergraduate degree program.

The area of concentration, traditionally called a “major,” should reflect balance, depth, and quality in a field of study. The student’s area of concentration must fulfill the following criteria:

**Primary Area Studies:** Through learning activities in their primary area of study, students acquire familiarity with the basic literature and vocabulary of their field, knowledge of its main theories and methods of investigation, ability to use the skills of the field, and an awareness of its relationship to contemporary and future society.

**Major Project:** As a culmination of study in their area of concentration, students complete a major project that reflects substantive understanding of their field of study.

**Extended Studies in the Area of Concentration:** Students complete learning activities that bring a broader perspective to their area of concentration. These studies add knowledge that complements and expands on the primary area studies.

Students also complete the University’s liberal education requirements as reflected in the PIL Breadth and Learning Matrix requirements.

### Major Registrations

The PIL program is not credit-based, but it uses credits to ensure that registrations are recognized within the University system and that students qualify for residency and financial aid requirements. Tuition credits attached to registrations are not the same as conventional coursework credits and are not used to measure progress in the program or readiness to graduate, nor are they necessarily transferable to other programs or colleges. Additional registrations in PIL 3251 may be required.

PIL 3211—Degree Planning (5 cr)

PIL 3251—Project 1 Seminar (5 cr)

PIL 3281—Major Project (5 cr)

PIL 3291—Graduation Preparation (5 cr)

Students may be required to register one or more times for the following.

PIL 3200—Continuing Studies (1–2 cr)

