College of Continuing Education

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Degree Programs and Minors

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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, mode of delivery, and academic discipline, CCE provides the knowledge and skills required in an information-based world and workplace. And, through CCE, non-admitted students can access University courses. Therefore, students interested in earning a degree can start taking courses to fulfill requirements before formally applying to their college of choice.

Admission

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 CCE Student Support Services at 612-624-4000. For more specific information, see Admission Requirements for each program in the CCE Degree Program section or go to the CCE Web site at <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 degree (B.A.S.) has liberal education requirements unique to each major. Please see the B.A.S. Web site at <www.cce.umn.edu/bas> or contact a student support service adviser for requirement information.

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 Web site at <www.cce.umn.edu>.

Individualized Degree Programs

Individualized degree programs open up educational opportunities for highly motivated students who need flexibility to earn their B.A. or 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 612-624-2004 for more information or see <www.cce.umn.edu/icp> on the Web.

Program for Individualized Learning (PIL), founded in 1971, serves independent learners who wish to design and complete individualized study that incorporates a variety of learning resources and strategies, such as independent learning projects. PIL students work collaboratively with academic advisers and faculty throughout the University.

The program primarily serves students who live in the Twin Cities area, but also considers qualified students who can commute to campus for some learning activities. For more information, call 612-624-4020, e-mail pil@cce.umn.edu, or see <www.cce.umn.edu/pil> on the Web.

Bachelor of Applied Science (B.A.S.) Degrees

Students may also consider one of seven majors within the B.A.S. degree offered in partnership with Minnesota State Colleges and Universities (MnSCU)—primarily area community colleges. These majors are designed for career-minded adults and include clinical laboratory science, construction management, information networking, information technology infrastructure, manufacturing technology, network administration, and radiation therapy. For more information about any of the B.A.S. degrees, please go to the B.A.S. Web site at <www.cce.umn.edu/bas>.

The B.A.S. with a major in clinical laboratory science is a course of study that provides the education clinical laboratory technicians/medical laboratory technicians (CLT/MLT) need for career advancement. Clinical laboratory science gives students a strong foundation in the sciences together with rich experiences in the clinical laboratory. Graduates are prepared to work as clinical laboratory scientists, technical specialists, laboratory managers, lab coordinators, and quality control technologists. CLT/MLT individuals can obtain a B.A.S. degree and take the national certification examinations to practice as a clinical laboratory scientist/medical technologist (CLS/MT). Offered in partnership with MnSCU, students can complete a two-year CLT/MLT associate’s degree before enrolling in the B.A.S. program at the University of Minnesota.

The B.A.S with a major in construction management is offered in close collaboration with the construction industry and in partnership with North Hennepin Community College in Brooklyn Park and Inver Hills Community College in Inver Grove Heights. Construction management combines building design and engineering with management and business skills to equip students with the skills needed to deliver projects on time and within budget. The major offers experience and education for a professional management career in the construction industry.

The B.A.S. with a major in emergency health services is offered cooperatively with Inver Hills Community College in Inver Grove Heights and Regions Hospital in St. Paul. The program is designed to provide personnel working in pre-hospital medical care with the management, education, and skills necessary to coordinate and direct the delivery of emergency health services in a variety of settings, ranging from out-of-hospital, first-responder situations to occupational health and safety programs in large organizations.
The B.A.S. with a major in information networking is an interdisciplinary blend of computer science, management of information systems, liberal arts, science and engineering, and practical hands-on experience. Students study the design and management of voice, video, and data transmissions over various networks and between different platforms. Graduates are prepared to assume a wide range of positions related to network design, engineering, and administration. The B.A.S. in information networking is offered in partnership with area community colleges.

The B.A.S. with a major in information technology infrastructure is a course of study combining information technology infrastructure, math, science, and business curricula. Students may choose a network, system administration, or database concentration area. Graduates are able to design, construct, and manage technology operations. The B.A.S. in information technology infrastructure is offered in partnership with area community colleges. This major replaces the B.A.S. majors in information networking and network administration.

The B.A.S. with a major in manufacturing technology is a course of study that prepares students for career growth in the manufacturing industry. Students learn new skills in the areas of manufacturing systems and processes, computer technology, quality, operations, project management, business and finance, and interpersonal communication. Graduates are prepared to work as project managers, process engineers, materials managers, lead technicians, order process analysts, facilities engineers, and business analysts. The B.A.S. in manufacturing technology is offered in Rochester in partnership with the University of Minnesota—Rochester, Rochester Community and Technical College, and Winona State University—Rochester Center. The B.A.S. in manufacturing technology is offered in the Twin Cities in partnership with area community colleges.

The B.A.S. with a major in network administration is designed to educate students in business and networking technology so they can function in both environments. Students learn to make business decisions with an understanding of their technical implications and technical decisions with an understanding of their business purposes and needs. The program enables students to develop both practical technical skills, useful in entry level positions, and a broad, high-level understanding of computer networking and business information systems. The B.A.S. in network administration is offered in partnership with area community colleges.

The B.A.S. with a major in radiation therapy is a course of study designed to prepare individuals for a career in radiation therapy focusing on the changing demands of new technologies and advancements in treatment techniques. Students sharpen critical thinking and problem solving skills and expand their knowledge base to include the management and education skills necessary for future advancement. The medical and technical courses and clinical experience are provided through the Fairview-University Medical Center’s School of Radiation Therapy in the Twin Cities.

Note: Students are limited to taking a maximum of 25 business or management content course credits in a major, and are also limited to a maximum of 25 percent business or management course credits for a degree.

The applied business major with the bachelor of applied science degree program has been discontinued. We are no longer able to accept applications for admission to this program. Please see the other B.A.S. degree programs, the Program for Individualized Learning, or the Inter-College Program for alternative degree program options in CCE. If you have concerns about how this change may affect your academic plans, contact the department at bas@cce.umn.edu or CCE Student Support Services at 612-624-4000.

Other Degree Programs
Several other University of Minnesota degrees may be earned entirely or almost entirely through CCE registration in evening and Independent and Distance Learning courses.

Certificates
In addition to baccalaureate degrees, 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, Independent and Distance Learning, day classes, summer session classes, or any combination of these. For more information, call CCE Student Support Services at 612-624-4000 or e-mail adv@cce.umn.edu.

College of Continuing Education Certificates
Accounting
Addictions studies
Business administration
Child abuse prevention studies
Civil engineering
Computer science
Electrical and computer engineering
Engineering and science
Information networking
Mechanical engineering
Ophthalmology technician
Organizational and professional communication
Policy issues on work and pay
Radiation therapy

Honors
All CCE degree programs recognize outstanding academic achievement by offering an honors and/or distinction option for graduating students.

Graduation Requirements
A minimum of 120 credits acceptable to the college are required for all CCE bachelor degrees. A minimum of 30 University credits must apply to the degree and students must maintain a minimum GPA of 2.00. See JCP and PIL in the Degree Programs section for detailed graduation requirements.
Advising

CCE Student Support Services—The CCE Student Support Services office offers academic advising 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 CCE Student Support Services at adv@cce.umn.edu or 612-624-4000.

Special Learning Opportunities and Resources

Independent and Distance Learning (IDL) courses use mail and electronic technologies to meet the needs of students who cannot or choose not to take courses on campus. Most courses are self-paced and give students up to nine months to complete the coursework. Credits are recorded on students’ transcripts and can be used toward fulfilling distribution requirements in most undergraduate programs. IDL courses can also satisfy residency requirements, with approval from the student’s college. Check with an adviser about using these course credits toward a program.

Students may register by fax, mail, or in person. Courses are either extended term (to be completed in up to nine months) or term-based (to be completed within one semester term). 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.

For information on courses, policies, and registration, please visit <www.cce.umn.edu/idl> or request an Independent and Distance Learning Catalog. Contact us at 612-624-4000 or 800-234-6564, or e-mail indstudy@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 612-624-2004.

Scholarships and Grants

The College of Continuing Education Student Support Services administers CCE scholarship and grant programs and provides information to CCE students about other financial aid options.

CCE grant and scholarship programs are designed for students who reside in Minnesota, who have had to delay or interrupt their education, and have financial need but are unserved or underserved by other grant, scholarship, or tuition reimbursement programs. In addition to financial need, 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. For more information, go to <www.cce.umn.edu> and click on Financial Aid, contact CCE Student Support Services at 612-624-4000 or e-mail adv@cce.umn.edu.
Inter-College Program (ICP)

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.

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.

ICP Degree Program Design

An ICP degree program may be structured in one of the following ways:

- **A two area** cross-college program, such as business and history (through the Carlson School of Management and CLA), or educational psychology and French (through the College of Education and Human Development and CLA).

  Students seeking a B.A. degree must complete 20 upper division credits in each of the two areas. Students pursuing a B.S. degree must complete 21 upper division credits in each area and 8 supporting upper division credits.

- **A three area** cross-college program, such as applied business, speech communication, and psychology (through CCE and CLA); or housing, child psychology, and public health (through the College of Human Ecology, CLA, and School of Public Health).

  B.A. students must complete 20 upper division credits in one area and 12 in each of the other two areas. B.S. students must complete 20 upper division credits in one area and 15 in each of the other two.

- **A thematic** cross-college program, such as “aging studies,” integrates coursework from several departments—sociology (CLA), public health (School of Public Health), family education (College of Education and Human Development), and social work (College of Human Ecology).

  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.

  B.A. students must complete 40 upper division credits on a theme. B.S. students must complete 50 upper division credits, with no more than 15 credits in any one department. B.A. students must complete ICP’s second-language requirement.

Special Learning Resources

ICP students may blend a variety of learning experiences—internships, foreign study, directed study or research—with their formal coursework; however, these are generally arranged as credit-bearing experiences.

Admission Process

Admission to ICP has both procedural and academic components. Once students have met the academic requirements, they can be admitted at various points in the degree-planning process. All students begin this process with a First Step meeting and should complete degree planning within a semester. Timely admission to the program requires close communication with an ICP adviser.

A. First Step Meetings

Several times each week, ICP holds small-group informational sessions called First Step meetings. Academic advisers provide a detailed introduction to the program and help students begin the planning process. Students are advised to attend a First Step meeting early in the process.

To schedule an appointment for a First Step meeting, call 612-624-2004 or visit the ICP office at 107 Armory, 15 Church Street S.E., Minneapolis, MN 55455.

B. Admission Requirements

Admission into ICP requires:

- An overall GPA of 2.00; a 2.00 GPA in upper division coursework; and a 2.00 GPA in each proposed area of concentration.
- Completion of 50 credits of college-level learning.
Developing a Degree Proposal and Plan

A. Meetings with Academic Advisers
After attending a First Step meeting, students work individually with an ICP academic adviser to develop a degree proposal. This proposal includes a comprehensive statement of academic and career goals and a corresponding list of courses and other activities that students expect to complete in the degree program. Through meetings with an academic adviser, students refine their proposals and identify the best courses and special learning resources to achieve educational goals.

B. Preparing a Statement of Academic and Career Goals
The first task in developing a degree plan is preparing a statement of personal educational goals and objectives. While the statement need not be lengthy, it must clearly describe what students want to learn and why. The document identifies the specific skills, information, or knowledge that students hope to acquire and their reasons for wanting them. It should also describe long-range goals, including plans for a specific career or academic study beyond the baccalaureate degree.

C. Preparing a Course List
The second part of the degree plan is the course list, which includes the learning experiences proposed for the degree program. Students must develop a list of all the courses and other learning experiences planned for the ICP degree program, including any appropriate courses that have already been completed.

D. Meetings with Faculty Advisers
At the end of the degree planning process, students meet with faculty and/or academic professional advisers in their proposed area of study for departmental review, input, and approval of the degree program. If necessary, students may be referred to faculty/department advisers earlier in the process. All changes to areas of concentration must be approved by these departmental advisers.

Completing an ICP Degree
After admission to ICP, students may take day, evening, or correspondence courses.

Faculty advisers offer guidance throughout the program. If necessary, they can help revise the degree plan as students move through the program and may help design and complete independent studies and research.

ICP’s academic advisers can also assist throughout the degree program by answering questions about program revisions, independent study, honors options, and completion of graduation requirements.

Financial Aid—Many forms of financial assistance are available to all University students, including grants, loans, scholarships, or work-study. For information on all sources of financial aid and to obtain the application packet, contact the Office of Student Finance, 210 Fraser Hall, 106 Pleasant Street S.E., Minneapolis, MN 55455 (612-625-1665). Students who are employed should investigate their companies’ tuition reimbursement programs; contact the personnel or human resource development office for more information.

Career and Placement Services—Early planning is important to prepare for a specific career or for admission to graduate or professional schools. ICP academic advisers refer students to career development and placement services on campus and help in planning for graduate or professional education.

Liberal Education
A foundation in liberal education is required to provide breadth to learning and to integrate different academic disciplines and methods of inquiry into the process. ICP students must complete Twin Cities liberal education requirements and the oral/written communication requirements in effect at the time of the student’s admission or readmission to the University.

Graduation Requirements
To earn the ICP degree, students must satisfy the following graduation requirements:

- Complete the courses and other learning activities selected for the ICP degree program.
- Complete liberal education requirements for the B.A. or B.S.
- Complete a minimum of 120 credits, including transfer and extension courses.
- Complete 50 upper division credits for the B.A. or B.S.
- Complete 30 University of Minnesota credits that apply to the degree.
- Complete a residency requirement of at least 24 semester credits in the program.
- Maintain at least a 2.00 GPA overall, in upper division work and in degree program work, computed separately.

Program for Individualized Learning (PIL)

PIL allows students to use their creativity and academic skills to shape their undergraduate college education. By designing and implementing their own degree programs, students embark on one of the most stimulating and challenging experiences of their educational careers.

The program blends tradition and innovation, allowing students to combine the best of traditional practices and resources with new concepts and strategies for defining curriculum, learning independently, and evaluating learning. The program strives to recognize the knowledge and experience that distinguishes adult students and allows them more control over the content, structure, and pace of learning.

The length of time or cost required to complete a PIL degree program is difficult to predict. It usually requires about as much time as a traditional program, but can offer greater flexibility and control of students’ time.

The program began in 1971 as one of the original University Without Walls programs founded through cooperative efforts at institutions around the country. The program was based on the belief that people learn in many different ways, at different times and places in their lives, and that they should be actively involved in their own learning.

PIL is headquartered on the University’s Minneapolis campus, but students may work with faculty on any of the University campuses.
Criterion-Based Education
This program challenges students to think about learning in new ways. 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.

Graduation Criteria for the B.A. and B.S. Degrees
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.

I. Depth Criteria: Area of Concentration
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 three depth criteria:

Criterion A: Primary Area Studies (B.A. and B.S.)—
Through learning activities in their primary area studies, 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.

Criterion B: Major Project (B.A. and B.S.)—
As a culmination of study in their area of concentration, students complete a major project that reflects substantive understanding of their field of study.

Criterion C: Extended Studies in the Area of Concentration (B.S. only)—
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.

Areas of concentration of some recent students include: children’s mental health, community development and education, conservation biology, early and Celtic Christianity, environmental communication, family systems in the health sciences, international business with emphasis on Russia, organizational training, development, and communication, preservation of historic architecture, zoology and zoo management.

II. Breadth Criteria: Liberal Education

Learning in the liberal arts comprises a substantial portion of the individualized degree program. The goal of liberal education is to help students explore new ideas, concepts, and ways of viewing the world.

All PIL students include study in the broad areas that typify a liberal education. Whether seeking a B.A. or B.S., all students must complete learning for criteria 1–6; at least three of these criteria should incorporate upper division learning. In addition, students seeking a B.A. must complete requirements for Criterion 7.

Criterion 1: Physical and Biological Sciences—
Studies involve comprehension of physical and biological principles; understanding of and an ability to use the methods of scientific inquiry—the ways in which scientists investigate physical and biological phenomena; and appreciation of the importance of science and the value of a scientific perspective.

Criterion 2: Social Sciences and Humanities—
Studies involve knowledge of how social scientists, artists, and humanistic scholars think, describe, analyze, and portray human experiences and behavior; study of the interrelationships among individuals, institutions, structures, events, and ideas; understanding of the roles individuals play in their cultural, social, economic, aesthetic, and political worlds; and understanding of aesthetic judgments.

Criterion 3: Historical Perspective—
Studies involve knowledge of how historians describe and analyze human experiences and behavior; and understanding of the roles individuals play in their historical worlds.

Criterion 4: Mathematical Thinking—
Studies involve acquiring mathematical modes of thinking; ability to evaluate arguments, detect fallacious reasoning, and evaluate complex reasoning chains; and appreciation of the breadth of applications of mathematics and its foundations.

Criterion 5: Communication—
Studies involve examining communication theory and skills. Learning may focus on developing second-language skills or developing and refining knowledge and abilities in areas such as small group communication, public speaking and presentation, organizational communication, visual communication, and mass communication.

Criterion 6: Understanding of Place—
Studies involve an understanding of the student’s place in the world by examining relationships among nations, peoples, and cultures. This criterion specifically calls for students to make connections between a variety of perspectives, including historical, geographical, social, economic, artistic, cultural, and religious factors.

For B.A. programs:

Criterion 7: 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.

The University’s liberal education requirements are integrated into PIL through its breadth criteria, learning matrix, and reading and writing criteria. Because PIL is not credit-based, the precise amount of learning needed to
II. Learning Matrix

To broaden perspectives on liberal learning, degree programs must also examine a set of liberal education themes. Each theme focuses on an issue of compelling importance to the nation and the world, the understanding of which is informed by many disciplines and interdisciplinary fields of knowledge. While planning learning activities for the breadth criteria, and in some cases the depth criteria, students must ensure that their degree program incorporates the following themes from the learning matrix:

I. Cultural Diversity—Understanding the roles gender, ethnicity, and race play in structuring the human experience in and developing the social and cultural fabric of the United States.

II. International Perspectives—Comprehending the ways in which you are part of a rapidly changing global environment dominated by the internationalization of most human endeavors.

III. Environment—Knowledge of the interaction and interdependence of the biophysical systems of the natural environment and human, social, and cultural systems.

IV. Citizenship and Public Ethics—Reflection on and determination of a clearer sense of your present and future civic relationships and obligations to the community.

V. Creation of Meaning—Understanding the ways people and cultures make meaning out of their existence through myths, religions, rituals, folklore, symbols, and cosmologies.

III. Program Implementation Stage

Upon approval of the degree plan, students are ready to carry out learning activities. These may include completing new independent projects, taking classes through the University or other institutions, or seeking evaluations for projects based on prior knowledge.

Students register in the program for the following types of activities:

PIL 3251. Individualized Study—(4 credits)

Individualized study involves developing, implementing, and having independent projects evaluated, based on either new or prior learning. Students register for PIL 3251 when doing independent work. Students must attend the Individualized Study Seminar, which meets several times during the semester. Students draw up a contract that identifies the activities they plan to complete during the semester.

PIL 3281. Major Project—(8 credits)

The major project, usually the final learning activity of the program implementation stage, demonstrates expertise gained in the area of concentration. Students register for the major project at the end of the program implementation stage. The major project is completed on an independent basis in consultation with advisers, who assist in areas such as project design, research strategy, and writing.
In addition to these registrations, students may also include a number of new courses in their degree plans.

**New Courses**—New courses selected for the degree program may be taken through the University of Minnesota, including Independent and Distance Learning courses. Students may also choose to take courses from other accredited colleges and universities in the United States or abroad. Other credit-based learning activities may be used in the degree program.

Any University of Minnesota courses included in the program require separate registration and tuition. Tuition and fees for other credit-based learning activities vary. Students who complete coursework at other institutions must pay the tuition rates of those institutions.

**IV. Graduation Stage**

After students complete the coursework detailed in the degree plan, attaining the PIL bachelor’s degree requires the additional step of completing an extensive record of their undergraduate education, known as the graduation dossier. The dossier is then submitted to a graduation review committee.

**PIL 3291. Graduation Preparation**—(8 credits)

During the time students register for graduation preparation, they finish their graduation dossiers, demonstrating completion of requirements for a bachelor’s degree. The dossier includes an introductory essay demonstrating readiness to graduate, the major project, University of Minnesota transcript, PIL narrative transcript (written evaluations of independent learning), examples of academic work, and degree plan. The area specialist and program staff provides a preliminary review of the dossier to ensure that graduation criteria have been met.

**PIL 4299. Graduation Review**—(4 credits)

The final PIL registration is for graduation review, which is required after passing preliminary review. Students submit the final version of the dossier to a graduation review committee, which votes on whether to recommend a baccalaureate degree.

**Special Information**

**Use of PIL Credits**

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, i.e., they are not used to measure progress in the program or readiness to graduate, nor are they necessarily transferable to other programs or colleges.

**Residency Requirements**

PIL students fulfill the University’s residency requirement through program registrations, not necessarily through physical presence on campus. Regardless of where they live, all students are expected to make regular campus visits during their programs. Students must attend seminars and establish a pattern of regular visits with advisers on campus. Those few students who are admitted and live beyond commuting distance will make two or three visits to campus each year. The timing and length of campus visits are negotiable.

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**Bachelor of Applied Science Degrees**

*In Partnership with Area Community Colleges*

**Clinical Laboratory Science**

**B.A.S.**

This degree is designed to prepare laboratory scientists and technologists who wish to expand their clinical knowledge and add to their business and supervisory skills. Students develop skills to work as clinical laboratory scientists, technical specialists, laboratory managers or coordinators, and quality control technologists. The clinical laboratory science program is offered in partnership with Minnesota State Colleges and Universities (MnSCU). Clinical laboratory technicians/medical laboratory technicians (CLT/MLT) can obtain a B.A.S. degree and take the national certification examinations to practice as a clinical laboratory scientist/medical technologist (CLS/MT). This program provides a strong foundation in the sciences together with rich experiences in the clinical laboratory. The CLS program requires full-time student attendance during daytime classes. Degree requirements include completing four semesters of courses and four to six months of clinical rotation.

**Admission Requirements**—To be considered for admission to the program, students must have either a CLT or MLT two-year degree. Since CLT/MLT associate degree programs vary, prospective students may need to complete additional liberal education and science courses. These course requirements can be completed at the University of Minnesota using day, evening, or distance learning (online or correspondence) classes. These course requirements must be met before a student is officially admitted to the program.

**Degree Requirements**

Students must complete a minimum of 122* credits of required and elective courses; 16 in required general education courses, 20-28 in science courses, 6 in professional and technical courses, and 10 in clinical courses.

*Total credits vary depending on transfer school and MLT program.
The interdisciplinary curriculum of the construction management program includes:

- Strong foundation in the mathematics and sciences necessary to work effectively with the design, technological, and engineering aspects of construction projects.
- Specific construction management techniques.
- Elements that comprise construction, design, and problem solving.
- Thorough understanding of construction technology and processes.
- Strong business and management skills for business operations.
- Effective communication and interpersonal skills.

**Required Courses**

- Biol 1009—General Biology
- Biol 4003—Genetics
- or GCD 3022—Genetics
- Chem 1022—Chemical Principles II
- Chem 2301—Organic Chemistry I
- Chem 2302—Organic Chemistry II
- MedT 4064—Introduction to Clinical Immunohematology
- MedT 4065—Introduction to Clinical Immunohematology: Laboratory
- MedT 4082—Applied Clinical Chemistry
- MedT 4085—Applied Clinical Hematology
- MedT 4086—Applied Immunohematology
- MedT 4088—Applied Diagnostic Microbiology
- MedT 4089—Specialty Rotation
- MedT 4100—Virology, Mycology, and Parasitology for Medical Technologists
- MedT 4104—Principles of Diagnostic Microbiology I
- MedT 4105—Principles of Diagnostic Microbiology II
- MedT 4127W—Introduction to Management and Education I
- MedT 4251—Hematology I: Basic Techniques
- MedT 4252—Hematology II: Morphology and Correlation
- MedT 4253—Hemostasis
- MedT 4310—Clinical Chemistry I: Lecture
- MedT 4311—Clinical Chemistry I: Laboratory
- MedT 4320—Clinical Chemistry II: Lecture
- MedT 4321—Clinical Chemistry II: Laboratory
- MedT 4400—Immunological and Molecular Basis of Laboratory Testing
- Phsl 3051—Human Physiology

**Construction Management**

**B.A.S.**

This practitioner-oriented degree can enhance a student’s professional career in the construction industry by combining structure design and engineering concepts with management and business skills. The degree concentrates on key competencies of science/technology, management, and communication.

Courses in construction management have been created specifically for the degree. In addition, the program draws on the expertise and coursework in architecture, civil engineering, and other University departments.

The construction management program has been designed to equip construction managers with the necessary skills to deliver projects on time, safely, and within budget. The Construction Management Advisory Board, consisting of representatives from the construction industry and faculty and staff from the University and area community colleges, has developed the curriculum and reviewed the program’s requirements.

**Admission Requirements**—To be admitted to the program, students must have completed 45 credits with a cumulative GPA of 2.50 or higher. Admission requirements include:

- One semester of calculus—completed or in progress.
- One semester of physics—completed or in progress.
- One course in “construction plan reading” or equivalent.

Remaining credits of the 45-credit total may be earned through curriculum for the A.S. in construction management at a community college or through related coursework approved by the B.A.S. Admissions Committee at the University of Minnesota.

**Degree Requirements**

Students must complete the 120 credits required for the degree with a cumulative GPA of at least 2.00.

**Emergency Health Services**

**B.A.S.**

This degree is designed to prepare workers to meet the changing needs of emergency health services. The program will equip students with the education and skills needed to coordinate and direct the delivery of emergency health services in a variety of settings, ranging from out-of-hospital, in-hospital education and leadership, to occupational health and safety units in business and government. This is a partnership degree program from the University of Minnesota and Twin Cities community colleges through the Twin Cities Higher Education Partnership.

**Admission Requirements**—To be admitted to the program, a candidate must be a current registered nurse currently employed in an emergency medical setting or an EMT-paramedic with current state certification.
Students must also have completed at least 50 semester (or 70 quarter) credits transferable to the program, including biology or chemistry, anatomy, physiology, English composition, and speech with a minimum GPA of 2.50. Contact a B.A.S. adviser for a list of approved courses that can be taken at Twin Cities area community colleges or the University of Minnesota.

**Degree Requirements**
Students must complete at least 120 credits, including at least 55 credits in the major.

The program’s upper division segment requires a core set of courses in the areas of finance and budgeting; leadership and ethics; communication and interpersonal effectiveness; and research. Students must also complete a management or education track; both tracks include a practicum and elective courses.

**Required Courses**

*Complete at least 27 credits of courses from the following:*

- *ABus 4023—Communicating for Results*
- *EHS 4011—Concepts of Emergency Health Services*
- *EHS 4021—EMS Planning and Fiscal Management*
- *EHS 5031—Basic Principles of Research*
- *Phil 3305—Medical Ethics*
- *PubH 5170—Introduction to Occupational Health and Safety*

*Choose one course from:*

- *AdEd 5103, HRD 5629, CI 5133*
- *EdPA 5036—Ethics, Morality, and Values in Education*
- *EPsy 5115—Psychology of Adult Learning and Instruction*
- *AdEd 5101—Strategies for Teaching Adults*

**Management Track**

*Complete at least 25 credits from the following:*

- *Abus 4101—Accounting and Finance for Managers*
- *Abus 4104—Management and Human Resources Practices*
- *Abus 4012—Problem Solving in Complex Organizations*
- *OMS 3059—Quality Management and Six Sigma*
- *Abus 4022—Managing Organizational Relationships*
- *Mgmt 3001—Fundamentals of Management*
- *OMS 3001—Introduction to Operations Management*

Practicum in the management track

*Choose 3 or more credits of elective courses in consultation with a B.A.S. adviser.*

*Check for online availability.*

**Education Track**

*Complete at least 25 credits from the following:*

- *AdEd 5101—Strategies for Teaching Adults*
- *EPsy 5115—Psychology of Adult Learning and Instruction*
- *EdPA 5036—Ethics, Morality, and Values in Education*

*Choose one course from: EdPA 5021, EdPA 5032, WCFE 5301*

*Choose one course from: AdEd 5103, HRD 5629, CI 5133*

*Choose 3 credits from: HRD 5661, CI 5330, CI 5331, CI 5336, or CI 5155*

Practicum in education track

*Three or more credits of elective courses chosen in consultation with a B.A.S. adviser.*

## Information Networking

**B.A.S.**

This degree is an interdisciplinary blend of computer science, management and information systems, engineering, and liberal arts. Students develop skills to become computer network architects or engineers or pursue other professional career tracks related to information networking. The information networking program is offered in partnership with Twin Cities area community colleges such as North Hennepin Community College (NHCC), Brooklyn Park. Approximately 60 credits of lower division requirements can be completed at a community college.

The program was designed by faculty from the University and networking professionals from industry in response to the needs, confirmed by market research, for networking professionals in all areas of business, education, and government.

**Admission Requirements**—To be considered for admission to the program, students must complete at least 45 lower division credits, transferable to the information networking program. These courses must be completed with a GPA of at least 2.60, and students must have a cumulative GPA of at least 2.60. For more information, please go to the B.A.S. Web site at <www.ccc.umn.edu/bas>.

**Degree Requirements**

Students must complete at least 120 credits required for the degree with a cumulative GPA of at least 2.00.

**Required Courses**

Required courses for the information networking major come from other programs and departments, such as computer science and electrical and computer engineering. Students must complete the following:

- *Abus 4021—Small Group Behavior and Teamwork*
- *Abus 4023—Communicating for Results (or a technical writing course)*
- *Abus 4043—Project Management in Practice*
- *Acct 2050—Financial Reporting*
- *Comm 1101—Introduction to Public Speaking*
- *Csci 4011—Introduction to Information System Analysis*
- *Csci 4021—Basic Principles of Microelectronics*
- *CSci 4022—Managing Organizational Relationships*
- *Csci 4061—Introduction to Operating Systems*
- *CSci 4081W—Introduction to Software Engineering*
- *Csci 4211—Data Communications and Computer Networks*
- *Econ 1101—Principles of Microeconomics*
- *Econ 1102—Principles of Macroeconomics*
- *EE 3005—Fundamentals of Electrical Engineering Laboratory*
- *EngC 1011—University Writing and Critical Reading*
- *IDSc 4102—Introduction to Information System Analysis*
- *IDSc 4153—Telecommunications: Domestic and International Policy and Regulation*
- *INet 4011—Network Administration*
- *INet 4021—Network Programming*
- *INet 4041—Emerging Network Technologies and Applications*
- *Math 1271—Calculus I*
- *Math 1272—Calculus II*
- *Math 2243—Linear Algebra and Differential Equations*
- *Phys 1301—Introductory Physics for Science and Engineering I*
- *Phys 1302—Introductory Physics for Science and Engineering II*
- *Psy 1001—Introduction to Psychology*
- *Stat 3011—Introduction to Statistical Analysis*

*Check for online availability.*
Electives
Students take 6 credits in upper division courses from ABus, CSci, EE, IDSc, or INet.

Final Project
Students are encouraged to complete an internship during their final year in the program.

Information Technology Infrastructure

B.A.S.
This degree is an interdisciplinary blend of information technology infrastructure, math, science, and business curricula. Students may choose a network, system administration, or database concentration area. Students develop skills to design, construct, and manage technology operations. (This major will eventually replace the B.A.S. majors in information networking and network administration.)

The program was designed by faculty from the University and information technology professionals from industry in response to the needs, confirmed by market research, for information technology professionals in all areas of business, education, and government.

Admission Requirements—To be considered for admission to the program, students must complete at least 45 lower division credits, transferable to the information technology infrastructure program. These courses must be completed with a GPA of at least 2.60, and students must have a cumulative GPA of at least 2.60. For more information, please go to the B.A.S. Web site at <www.cce.umn.edu/bas>.

Degree Requirements
The curriculum contains lower and upper division courses in three broad areas: general education, business, and technical. In total there are 125 credits of required and elective courses; 33 in required general education courses, 34 in core program courses, and 58 credits in required technical courses.

Three areas of specialization are defined: networking, system administration, and database administration.

Required Courses
*ABus 4021—Small Group Behavior and Teamwork
*ABus 4023—Communicating for Results
ABus 4032—Quantitative Skills for Decision Making
*ABus 4041—Leadership in a Global and Diverse Workplace
*ABus 4043—Project Management in Practice

*ABus 4102—Operations in Manufacturing and Service Businesses
Acct 2050—Introduction to Financial Reporting
CSci 1103—Introduction to Computer Programming in Java
CSci 1901—Structure of Computer Programming I
CSci 1902—Structure of Computer Programming II
CSci 2011—Discrete Structures of Computer Science
CSci 2021—Machine Architecture and Organization
CSci 4061—Introduction to Operating Systems
CSci 4081W—Introduction to Software Engineering
CSci 4211—Introduction to Computer Networks
or CSci 5211—Data Communications and Computer Networks
Econ 1101—Principles of Microeconomics
or Econ 1102—Principles of Macroeconomics
EngC 1011—University Writing and Critical Reading
GC 1511—Introduction to Business and Society
INet 4051—I.T. Infrastructure Operations
Math 1142—Short Calculus
or Math 1271—Calculus I
Phys 1101W—Introductory College Physics I
Phys 1102W—Introductory College Physics II
Rhet 1223—Oral Presentations in Professional Settings
or Spch 3402—Introduction to Interpersonal Communication
or Spch 3411—Introduction to Small Group Communication
or GC 1464—Group Process and Discussion in a Multicultural Society
Stat 3011—Introduction to Statistical Analysis
or GC 1454—Statistics
or OMS 1550—Business Statistics: Data Sources, Presentation, and Analysis
WCFE 3011W—Introduction to Technology and Public Ethics
or IDSc 4153—Telecommunications: Domestic and International Policy and Regulation
Three courses in information networking, computer science, information decision sciences, or applied business
One course in psychology, sociology, or history
Two courses in humanities, literature, philosophy, music, theatre, or art
*Check for online availability.

Specializations
Students must take 6 credits in one of the following specializations.

Networking Specialization
INet 4011—Network Administration
INet 4021—Network Programming
INet 4041—Emerging Network Technologies and Applications
INet 4193—Directed Study

System Administration Specialization
INet 4011—Network Administration
INet 4021—Network Programming
INet 4031—System Administration
INet 4041—Emerging Network Technologies and Applications
INet 4193—Directed Study

Database Administration Specialization
IDSc 4103—Database Design, Manipulation, and Management
IDSc 4131—Advanced Database Design and Administration
IDSc 4431—Advanced Database Design
IDSc 4432—Advanced Database Management and Administration
Manufacturing Technology

B.A.S.
This is a new degree designed for students working in, or planning to enter, careers in manufacturing. The program provides students with knowledge and skills in the areas of manufacturing systems and processes, computer technology, quality, operations, project management, business and finance, and interpersonal skills including, communications, leadership, teamwork, and diversity. Students are prepared to work as project managers, process engineers, materials managers, lead technicians, order process analysts, facilities engineers, and business analysts.

The degree in manufacturing technology (MT) was designed with manufacturers to meet the needs of their industries in a competitive global economy. It is offered in Rochester in partnership with the University of Minnesota—Rochester, Rochester Community and Technical College (RCTC), and Winona State University—Rochester Center. The B.A.S. in manufacturing technology is offered in the Twin Cities in partnership with MnSCU.

Admission Requirements—To be considered for admission to the program, students must complete at least 45 lower division credits, transferable to the manufacturing technology program. These courses must be completed with a GPA of at least 2.60, and students must have a cumulative GPA of at least 2.60. For more information, please go to the B.A.S. Web site at <www.cce.umn.edu/bas>.

Degree Requirements
The curriculum contains lower and upper division courses in three broad areas: general education, business, and technical. In total there are 124 credits of required and elective courses; 33 in required general education courses, 87 in MT core program courses, and 4 in professional required courses.

Required Courses
The lower division curriculum is provided by Rochester and Twin Cities metro area community and technical colleges. For more information, please go to the B.A.S. Web site at <www.cce.umn.edu/bas>.

ABus 4041—Leadership in a Global and Diverse Workplace
ABus 4043—Project Management in Practice
ABus 4102—Operations in Manufacturing and Service Businesses
MT 4011—Design of Manufacturing Systems and Simulation
MT 4012—Manufacturing Processes
MT 4015—Quality Engineering
MT 4021—Properties of Materials
MT 4025—Computer Integrated Manufacturing
MT 4031—Engineering Materials Processing I
MT 4032—Engineering Materials Processing II
MT 4041—Fluid Mechanics
MT 4042—Manufacturing Automation
MT 4102—Machine Control
MT 4105—Machine Tool Design
MT 4201—Statistical Process Control
MT 4301—Design and Analysis of Experiments
MT 4501—Manufacturing Product/System Design I
MT 4511—Manufacturing Product/System Design II

*Check for online availability.

Network Administration

B.A.S.
This degree is designed to educate students in business and networking technology so they can function in both environments. Students learn to make business decisions with an understanding of their technical implications and technical decisions with an understanding of their business purposes and needs. The degree program enables students to develop both practical technical skills useful in entry level positions and a broad high level understanding of computer networking and business information systems. The network administration program is offered in partnership with area community colleges such as Inver Hills Community College (IHCC), Inver Grove Heights. Approximately 60 credits of lower division coursework can be completed at a community college.

Admission Requirements—To be considered for admission to the program, students must complete at least 45 lower division credits, transferable to the network administration program. These courses must be completed with a GPA of at least 2.60, and students must have a cumulative GPA of at least 2.60. For more information, please go to the B.A.S. Web site at <www.cce.umn.edu/bas>.

Degree Requirements
The curriculum contains lower and upper division courses in three broad areas: general education, business, and technical. Students must complete the 120 credits required for the degree with a cumulative GPA of at least 2.00.

Required Courses
*ABus 4021—Small Group Behavior and Teamwork
*ABus 4023—Communicating for Results
ABus 4032—Quantitative Skills for Decision Making
*ABus 4041—Leadership in a Global and Diverse Workplace
*ABus 4043—Project Management in Practice
Acct 2050—Introduction to Financial Reporting
BLaw 3058—The Legal Environment of Business
Comm 3402—Introduction to Interpersonal Communication
CSci 1103—Introduction to Computer Programming in Java
or a java programming course from a partner community college
CSci 1113—Introduction to C/C++ Programming for Scientists and Engineers
CSci 4041—Algorithms and Data Structures
CSci 4061—Introduction to Operating Systems
CSci 4211—Data Communications and Computer Networks
Econ 1101—Microeconomics
Econ 1102—Macroeconomics
EngC 1011—University Writing and Critical Reading
IDSc 3001—Information Systems for Business Process Management
IDSc 4102—Introduction to Information Systems Analysis
IDSc 4151—Data Communications Systems
IDSc 4153—Telecommunications: Domestic and International Policy and Regulation
INet 4011—Network Administration
INet 4021—Network Programming
INet 4051—Capstone: I.T. Infrastructure Operations
Math 1142—Short Calculus
Phil 1001—Introduction to Logic
Phys 1101W—Introductory College Physics I
Phys 1102—Introductory College Physics I
Rhet 3502—Technical and Professional Writing
Stat 1001—Introduction to the Ideas of Statistics
WCFE 3011W—Introduction to Technology and Public Ethics

*Check for online availability.
Introduction to networking course (only available at partner community colleges)
One course in humanities, music, theatre, art, or literature taken at either location
One course in sociology or psychology taken at either location
* Check for online availability.

Specialization
Students must complete 6 credits from a list of courses in networking, software engineering, or database design and management. See a B.A.S. adviser for a list of acceptable courses.

Radiation Therapy

B.A.S.
The radiation therapy program is designed to prepare individuals for a career in radiation therapy focusing on the changing demands of new technologies and advancements in treatment techniques. This full-time program of study prepares professionals to deliver quality radiation therapy treatment that helps diagnose and treat various health problems in a variety of settings ranging from a university environment to a freestanding radiation oncology practice. Graduates gain the education and experience for dosimetry (treatment planning) and/or management roles.

The degree program in radiation therapy is a partnership between the University of Minnesota and the Fairview-University Medical Center. The degree requires the completion of 120 credits. It is open to both non-radiographers and radiographers.

Admission Requirements—To be considered for admission to the program, students must complete all preprofessional/nonradiation therapy courses with a cumulative GPA of at least 2.50. Students must meet the required essential or physical requirements and CPR requirements for the program. A criminal background check is required. Students must meet the immunization standard for Fairview-University Medical Center. Students are admitted to the program fall semester only.

Degree Requirements
Students must complete the 120 credits required for the degree, including 72 in nonradiation therapy courses and 48 in radiation therapy courses. Students must earn a cumulative GPA of at least 2.00.

Required Courses
Biol 1009—General Biology
Chem 1011—General Principles of Chemistry
Comm 1101—Introduction to Public Speaking
EngC 1011—University Writing and Critical Reading
GC 1135—Human Anatomy and Physiology
GC 1571—Introduction to Microcomputer Applications (waiver available)
Math 1031—College Algebra and Probability
Phar 1002—Health Sciences Terminology
or Phar 5201—Health Sciences Applied Terminology
Phil 1003W—Introduction to Ethics
Phys 1101W—Introductory College Physics I
Psy 1001—Introduction to Psychology
or Soc 1001—Introduction to Sociology
RTT 3001—Introduction to Radiation Therapy
RTT 3100—Mathematics
RTT 3110—Basic Physics
RTT 3120—Radiation Physics I
RTT 3121—Radiation Physics II
RTT 3122—Advanced Dosimetry
RTT 3130—Principles of Oncology I
RTT 3131—Principles of Oncology II
RTT 3132—Medical Oncology
RTT 3140—Radiation Biology/Hyperthermia
RTT 3150—Brachytherapy
RTT 3160—Methods of Patient Care
RTT 3171—Clinical Radiation I
RTT 3172—Clinical Radiation II
RTT 3173—Clinical Radiation III
RTT 3174—Clinical Radiation IV

Guided Electives
Students take credits in upper division courses from physics or math (7-8 cr) and business/management or a related field (12 cr).