Programs of Study

Programs of Study

All baccalaureate degree programs at UMC

- lead to a bachelor of science or bachelor in an applied field degree.
- are applied and career-oriented. Emphasis areas permit programs to match student interests and workforce requirements.
- require a minimum of 120 total credits to permit graduation in four years.
- require a minimum of 40 credits of liberal education and 3 credits of technology (CA).
- require 40 upper division credits.

In accordance with the University of Minnesota, Crookston mission, all programs are

Employment-oriented

- Prepare students to participate in and manage a diverse workforce.
- Linked to employers in a variety of ways (such as field trips, on-site assignments, shadowing, and shared databases).
- Require an internship or field experience.
- Respond to changes in the workforce via interaction between faculty and employers.
- Are evaluated by a Program Improvement Advisory Committee whose membership comes from business and industry.
- Designed around active learning and responsive teaching
- Taught by team leaders and project directors.
- Actively involve students in the learning process.
- Emphasize application and solving real world problems.
- Allow students to develop portfolios of their experiences to demonstrate their personal and career development.

Technology-driven

- Technology outcomes are central to every course.
- Students gain technical competence that meets or exceeds the needs of industry.
- Students use email, interactive communication technology, and the Internet.
- Interactive television and online course delivery enables students to take courses offered by other higher education institutions.
- Students develop the ability to adapt to technological change—an essential ability for career success.

Focused on three core competencies

Every program has curriculum focused on developing skills in the following core areas:

- **Communication**
  - Reading
  - Writing
  - Speaking
  - Listening
  - Using technology

- **Critical thinking**
  - Problem solving
  - Applied learning

- **Working with others**
  - Teamwork
  - Diversity

Outcome-based

- Learner outcomes are published for each course.
- Program outcomes are published for each program.
- Active assessment of outcomes guides curriculum decisions.
- Quality is judged by measurable outcomes and programs undergo a formal review every four years.

UMC Degrees

Bachelor of Science

Accounting
Agricultural business
*Agricultural education[1]
  Agricultural science and technology education
  Natural and managed environmental education
Agricultural systems management
  Bio-fuels and renewable energy technology
  Farm and ranch management
  Power and machinery
  Precision agriculture
Agronomy
  Agronomic science
  Crop production
Animal science
  Animal science
  Pre-veterinary medicine
Applied studies
  Applied studies (offered online)
  Respiratory care
Aviation[2]
  Agricultural aviation
  Law enforcement aviation
Biology (*offered online*)
Business management
  Business aviation
  Entrepreneurship and small business management
  Management (offered online)
Communication
Criminal justice
  Corrections
  Law enforcement
Early childhood education
  Primary education
  Program management
Environmental sciences
  Agricultural environmental stewardship
  Environmental ecology
  Environmental health
  Environmental toxicology and chemistry
  Water quality
Equine science
  Equine science
  Pre-veterinary medicine
Golf and turf management
Health management (*offered online*)
Health sciences pre-professional

Horticulture
  Environmental landscaping
  Production horticulture
  Urban forestry
*Hotel, restaurant, and tourism management
Information technology management
  (*offered online*)
Marketing (*offered online*)
Natural resources
  Natural resources aviation[2]
  Natural resources law enforcement
  Natural resources management
  Park management
  Water resource management
  Wildlife management
*Organizational psychology
  Consumer services settings
  Industrial settings
Software engineering
Sport and recreation management

Bachelor in an Applied Field

Applied health (*offered online*)
Manufacturing management (*offered online*)
Quality management (*offered online*)

Minors

Agricultural business
Agricultural systems management
Agronomy
Animal science
Biology
Business management
Chemistry
Coaching
Communication
Criminal justice
Environmental sciences
Equine science
Horticulture
*Hotel, restaurant, and tourism management
Information technology management
Marketing
Music
*Organizational psychology

Certificates

Health informatics privacy and security for healthcare providers
Health informatics for software engineers and information technology professionals
Manufacturing management

Program Option

Aerospace studies Air Force ROTC[3]

Bachelor's Programs Offered Online

Accounting
Applied health
Applied studies
Business management (management emphasis)
Health management
Information technology management
Manufacturing management
Marketing
Quality management

Program Notations

[1] Degree awarded by UMC; teacher licensure awarded by the University of Minnesota, Twin Cities

[2] Cooperative program with University of North Dakota

[3] Cooperative program with North Dakota State University

* Program will be discontinued and is not accepting new students

Curricular Programs

UMC programs prepare students for successful careers and active citizenship. Students can explore their interests within the broad spectrum of the college's offerings and, because of the many requirements common to the various programs, can transfer from one program to another with little loss of time.

Degree Programs

UMC offers programs leading to the bachelor of science degree (B.S.), and the bachelor in an applied field degree. The B.S. programs require a minimum of 120 credits, with a minimum of 40 credits in liberal education. The bachelor in an applied field programs have requirements unique to each major. Upper division requirements include courses in liberal education and the major. Students must satisfy the 3-credit campus technology requirement—3 credits of any computer application (CA) courses. Developmental courses in reading, writing, and math skills cannot be used for credit toward graduation. These courses are identified with 09xx course numbers.

Liberal Education Requirements for Baccalaureate Degrees—An integral part of all UMC degree programs, liberal education is the set of common understanding and skills essential to successful living in a modern society and to functioning as a whole person integrated into that society. Specifically, there are three core competency areas of liberal education—communication, critical thinking, and working with others—that are integrated throughout the curriculum for every degree. Bachelor of science degree programs require a minimum of 40 credits of liberal education; the bachelor's degree in an applied field has separately established liberal education requirements. UMC's 40 credit liberal education requirement for all bachelor of science degrees also meets the 10 goal areas of the Minnesota Transfer Curriculum (MnTC), a collaborative effort among two- and four-year public colleges and universities in Minnesota to help students transfer their work in liberal education.

If you have completed a minimum of 40 credits of liberal education and 10 MnTC ten goal areas while a student in residence at the University of Minnesota, Crookston you may have your transcript certified to reflect that you have completed the requirements of the Minnesota Transfer Curriculum. Contact the Office of the Registrar to request that the notation be added to your transcript. After the notation is added to your transcript, you must request that an official copy of your transcript be sent to your destination school.

Students who complete the MnTC at a participating college and then transfer to the University of Minnesota, Crookston, will have completed the University's liberal education (LE) requirements. MnTC completion must be noted on the official transcript.

The faculty of the University of Minnesota, Crookston, recognizes the courses meeting the student competencies of the Minnesota Transfer Curriculum and UMC Liberal Education requirements. Because courses may be added or deleted from the list check the online Class Search at http://onestop2.umn.edu/courseinfo /searchcriteria.jsp?institution=UMNCR or with an academic adviser for the most current updates.

Technology Requirement—UMC is a technologically advanced campus that embraces the use of modern communications and information technology in teaching and learning. To assure all UMC graduates are well prepared for today's technology-driven workplace, all baccalaureate programs require at least 3 credits in computer applications (CA) coursework.

Internship Requirement—The internship or field experience requirement helps students obtain additional skills important to successful employment in their chosen field. It may be completed through on-the-job experience in the private sector, with a government agency, or through other appropriate work experience.

The internship program can be tailored to fit the needs of individual students. Baccalaureate degree students usually complete the internship requirement during the summer term between their third and fourth year.

A minimum of 450 hours of employment or volunteer assignments is usually required for satisfactory evaluation of the student's progress. The internship assignment will be supervised by the college staff in cooperation with the employer. Students must submit reports assigned by the college staff.

Transferring to UMC—The University of Minnesota, Crookston, values transfer students. Faculty and staff work closely with every student to make sure courses taken at other institutions are fully counted toward UMC graduation requirements. For example, students who complete the Minnesota Transfer Curriculum at any participating Minnesota college or university automatically fulfill UMC's liberal education requirements. In addition, all other previously earned credits are evaluated as to whether they fulfill graduation requirements for a specific program.

Prospective transfer students are encouraged to consult the Office of Admissions and an academic adviser in their proposed area of study for a complete transcript evaluation.

Online Degree Programs

The Crookston campus is the University of Minnesota's first campus to deliver a bachelor's degree entirely online. The Center for Adult Learning (CAL), in collaboration with the campus' academic departments, supports the University's online degrees with exceptional student support services while ensuring a successful academic online experience.

UMC's accredited online degrees are career oriented, creating opportunities for people and communities of practice, transcending geography, utilizing technology, and empowering personal and professional growth. Online courses are offered on a semester-based system (fall, spring, summer).

The University of Minnesota, Crookston, is accredited by the Higher Learning Commission (HLC) to deliver the following online undergraduate degrees:

- Bachelor of Applied Health
- Bachelor of Manufacturing Management
- Bachelor of Manufacturing Management in Quality Management
- Bachelor of Science in Accounting
- Bachelor of Science in Applied Studies
- Bachelor of Science in Business Management (management emphasis)
- Bachelor of Science in Health Management
- Bachelor of Science in Information Technology Management
- Bachelor of Science in Marketing

Transfer to UMC Online

University of Minnesota, Crookston online degrees are flexible. Students may start and complete a bachelor's degree entirely online. Previous college credit may be transferred and counted towards degree completion. Students who have previously earned an associate's degree from an accredited institution will receive 60 credits upon transfer.

Request Information

To learn more about online degrees and courses at the University of Minnesota, Crookston, please contact the Center for Adult Learning (218-281-8679; cronline@umn.edu; umcrookston.edu/online).

Minnesota Transfer Curriculum and Liberal Education Requirements for Bachelor of Science Degrees

UMC bachelor of science (B.S.) degree programs require a minimum of 40 credits of liberal education. This requirement also meets the 10 goal areas of the Minnesota Transfer Curriculum.

Goal Area 1: Written and Oral Communication—9 credits minimum
*COMP 1011—Composition I (3 cr)
*COMP 1013—Composition II (3 cr)
*SPCH 1101—Public Speaking (3 cr)
*required for bachelor of science degrees

Goal Area 2: Critical Thinking
Critical thinking is taught throughout the UMC liberal education curriculum. Upon completion of the other 9 Minnesota Transfer Curriculum goal areas, students will have met the critical thinking goal.

Goal Area 3: Biological and Physical Sciences (with labs)—3 credits each area minimum
+BIOL 1009—General Biology (4 cr; also Goal Area 10)
++CHEM 1001—Introductory Chemistry (4 cr)
++CHEM 1021—Chemical Principles I (4 cr; also Goal Area 10)
++CHEM 1401—Elementary Bioorganic Chemistry (4 cr; also Goal Area 10)
++GEOL 1001—Introductory Geology (3 cr; also Goal Area 10)
+NATR 3374—Ecology (4 cr)
++PHYS 1012—Introductory Physics (4 cr; also Goal Area 10)
++PHYS 1101—Introductory College Physics I (4 cr)
++PHYS 1102—Introductory College Physics II (4 cr)
+biological sciences course
++physical sciences course

Goal Area 4: Mathematical Thinking—3 credits minimum
MATH 1031—College Algebra (3 cr)
MATH 1142—Survey of Calculus (3 cr)
MATH 1150—Elementary Statistics (3 cr)
MATH 1250—Precalculus (4 cr)
MATH 1271—Calculus I (4 cr)

Goal Area 5: History and the Behavioral and Social Sciences—6 credits minimum
CRJS 1500—Introduction to Criminal Justice (4 cr; also Goal Area 9)
ECE 2100—Child Development and Learning (3 cr)
ECON 2101—Microeconomics (3 cr)
ECON 2102—Macroeconomics (3 cr)
GEOG 1104—World Regional Geography (3 cr; also Goal Area 8)
HIST 1301—American History I (3 cr)
HIST 1302—American History II (3 cr)
PSY 1001—General Psychology (3 cr)
PSY 1093—Lifespan Development (3 cr)
SOC 1001—Introduction to Sociology (3 cr; also Goal Area 7)
SOC 1102—Cultural Anthropology (3 cr; also Goal Area 8)

Goal Area 6: The Humanities (the arts, literature, and philosophy)—6 credits minimum
ART 1152—Drawing and Design (1–3 cr)
ART 1252—Color and Design (1–3 cr)
ART 1352—Art Design and Techniques (1–3 cr)
ART 2000—Elementary Art (3 cr)
COMM 2434—Oral Interpretation and Performance Techniques (3 cr)
HUM 1301—Introduction to Humanities (3 cr)
HUM 3310—Culture and Technology (3 cr; also Goal Area 8)
LIT 1005—Introduction to Literature (3 cr; also Goal Area 8)
LIT 1016—Readings in American Life (3 cr; also Goal Area 7)
LIT 3001—World Literature (3 cr; also Goal Area 8)
MUS 1011—University Singers (1 cr; R)
MUS 1021—Introduction to Music (3 cr; also Goal Area 7)
MUS 1041—Private Music Instruction (1 cr; R)
MUS 1042—Private Instruction: Class Piano (1 cr; R)
MUS 1051—Pep-Jazz Band (1 cr; R)
MUS 1071—Musical Theater (1 cr; R)
MUS 1111—Music Theory I: Foundations of Tonal Music (3 cr)
MUS 3011—University Singers (choir) (1 cr; R)
MUS 3029—Music of the Twentieth Century (3 cr; also Goal Area 7)
MUS 3041—Private Instruction (1 cr; R)
PHIL 1001—Introduction to Philosophy (3 cr; also Goal Area 9)
PHIL 2002—Introduction to Ethics (3 cr; also Goal Area 9)
TH 1121—Theater Production (1 cr; R)
(R) repeatable to 3 credits toward meeting Minnesota Transfer Curriculum and liberal education goal

Goal Area 7: Human Diversity—one course minimum
COMM 3001—Communication in Human Relationships (3 cr)
LIT 1016—Readings in American Life (3 cr; also Goal Area 6)
MUS 1021—Introduction to Music (3 cr; also Goal Area 6)
MUS 3029—Music of the Twentieth Century (3 cr; also Goal Area 6)
SOC 1001—Introduction to Sociology (3 cr; also Goal Area 5)

Goal Area 8: Global Perspective—one course minimum
ECON 1010—Global Trade Economics (3 cr)
GEOG 1104—World Regional Geography (3 cr; also Goal Area 5)
GNED 3000—Global Seminar (1–3 cr)
HIST 1021—World Civilization I (3 cr)
HIST 1022—World Civilization II (3 cr)
HUM 3310—Culture and Technology (3 cr) also Goal Area 6)
LIT 1005—Introduction to Literature (3 cr; also Goal Area 6)
LIT 3001—World Literature (3 cr; also Goal Area 6)
SOC 1102—Cultural Anthropology (3 cr; also Goal Area 5)

Goal Area 9: Ethical and Civic Responsibility—one course minimum
CRJS 1500—Introduction to Criminal Justice (4 cr; also Goal Area 5)
ECON 1111—Personal Economics (3 cr)
NATR 1226—Environmental Science and Sustainability (3 cr; also Goal Area 10)
PHIL 1001—Introduction to Philosophy (3 cr; also goal Area 6)
PHIL 2002—Introduction to Ethics (3 cr; also Goal Area 6)
POL 1001—American Government (3 cr)

Goal Area 10: People and the Environment—one course minimum
BIOL 1009—General Biology (4 cr; also Goal Area 3)
CHEM 1021—Chemical Principles I (4 cr; also Goal Area 3)
CHEM 1401—Elementary Bioorganic Chemistry (4 cr; also Goal Area 3)
GEOL 1001—Introductory Geology (3 cr; also Goal Area 3)
NATR 1226—Environmental Science and Sustainability (3 cr; also Goal Area 9)
PHYS 1012—Introductory Physics (4 cr; also Goal Area 3)

Accounting B.S.

Business Department

Required credits to graduate with this degree: 120.

Accounting is an information system that represents the economic resources and responsibilities of business or nonbusiness enterprises. Monitored over time, it is used as a decision-making tool for allocating resources and evaluating responsibilities.

Accounting information affects major economic decisions that have national and international impact. The accounting program teaches analytical, theoretical, communication, and leadership skills necessary for effective accounting and advancement in public, private, and government careers.

The program prepares students to become accountants in business and government by providing accounting, business, and liberal education courses.

Program outcomes—graduates will

- Use computer technology for accounting spreadsheet applications and general ledger accounting functions and demonstrate overall literacy in technology
- Develop and demonstrate skills in financial and cost accounting systems that are common to most businesses
- Develop and demonstrate skills in U.S. tax fundamentals for individuals and businesses
- Demonstrate skills and knowledge in auditing
- Demonstrate competencies in ethical decision making
- Demonstrate knowledge of liberal education that provides a foundation for the applied curriculum
- Demonstrate a commitment to continuing professional development
- Demonstrate skills in communication, working with others, and critical thinking

Admission Requirements

For information about University of Minnesota, Crookston admission requirements, visit the UMC Admissions website, **umcrookston.edu/apply**.

Program Requirements

Students must complete 40 upper division credits.

Accounting Requirements (59 cr)

ACCT 2101—Principles of Accounting I (3 cr)
ACCT 2102—Principles of Accounting II (3 cr)
ACCT 3201—Intermediate Accounting I (4 cr)
ACCT 3202—Intermediate Accounting II (4 cr)
ACCT 3301—Cost Accounting I (3 cr)
ACCT 3302—Cost Accounting II (3 cr)
ACCT 4110—Advanced Accounting I (3 cr)
ACCT 4111—Advanced Accounting II (3 cr)
ACCT 3220—Accounting Systems (3 cr)
ACCT 4221—Auditing I (3 cr)
ACCT 4310—Auditing II (3 cr)
ACCT 4404—Income Tax I (3 cr)
ACCT 4405—Income Tax II (3 cr)

COMM 3303—Writing in Your Profession (3 cr)
GBUS 3107—Legal Environment in Business (3 cr)
GBUS 3117—Business Law (3 cr)
MGMT 3100—Managerial Finance (3 cr)
MGMT 3200—Principles of Management (3 cr)
MKTG 3300—Principles of Marketing (3 cr)

Liberal Education Requirements

A minimum of 40 liberal education credits are required. Students must complete the 10 goal areas of the Minnesota Transfer Curriculum with the following specific liberal education courses required:

COMP 1011—Composition I, COMMUNICAT (3 cr)
COMP 1013—Composition II, COMMUNICAT (3 cr)
ECON 2101—Microeconomics, HI/BEH/SSC (3 cr)
ECON 2102—Macroeconomics, HI/BEH/SSC (3 cr)
MATH 1031—College Algebra, MATH THINK (3 cr)
MATH 1150—Elementary Statistics, MATH THINK (3 cr)
PSY 1001—General Psychology, HI/BEH/SSC (3 cr)
SPCH 1101—Public Speaking, COMMUNICAT (3 cr)

Technology Requirements (3 cr)

CA 1020—Spreadsheet Applications (3 cr)

Open and/or Recommended Electives

Students need to take enough open and/or recommended elective credits to satisfy the 120 credit requirement for graduation. The following are recommended electives: ACCT 3900, ACCT 4420, ACCT 4500, ACCT 4511, ACCT 4512, ACCT 4513, ACCT 4514.

Program Sub-plans

A sub-plan is not required for this program.

Accounting (Online) Sub-plan

The accounting online program has the same curriculum as the classroom delivered accounting program with the addition of one course. GBUS 1005—Orientation to Online Programs is a required one-credit course. This results in a one credit decrease in the number of open and/or recommended electives required.

Accounting is an information system that represents the economic resources and responsibilities of business or nonbusiness enterprises. Monitored over time, it is used as a decision-making tool for allocating resources and evaluating responsibilities.

Accounting information affects major economic decisions that have national and international impact. The accounting program teaches analytical, theoretical, communication, and leadership skills necessary for effective accounting and advancement in public, private, and government careers.

The program prepares students to become accountants in business and government by providing accounting, business, and liberal education courses.

Required Courses for the Accounting (Online) Sub-plan (1 cr)

GBUS 1005—Orientation to Online Programs (1 cr)

Aerospace Studies (Air Force ROTC)

(A cooperative program with North Dakota State University.)

UMC students may participate in the Air Force Reserve Officer Training Corps program through an agreement between UMC, North Dakota State University, the University of North Dakota, and the U.S. Air Force. The purpose of this program is to enable qualified undergraduate students to become commissioned officers in the United States Air Force. AFROTC learning experiences are of long-range value whether one pursues a military or civilian career. Upon completion of the AFROTC curriculum and graduation from UMC, students are commissioned as second lieutenants in the U.S. Air Force.

The program is conducted by North Dakota State University faculty on the University of North Dakota campus in Grand Forks, located 25 miles from the UMC campus.

The initial assignment options available to an Air Force second lieutenant include the following:

- Enter the Air Force and complete the designated technical training course prerequisite to the student's specialty, i.e., flight training, research and development, management, or support functions;

- Apply for a delay in entering active duty for the purpose of pursuing an advanced degree;

- Enroll in one of several Air Force-sponsored graduate study programs while serving with full pay as an Air Force officer.

- The aerospace studies curriculum is divided into two courses of instruction: the General Military Course (GMC), which parallels the freshman and sophomore academic years, and the Professional Officer Course (POC), which parallels the junior and senior academic years. Students in the four-year program normally attend four weeks of field training at a designated Air Force base during the summer between their sophomore and junior years. The student who chooses not to enroll in the GMC (first two years) may still earn a commission by enrolling in a special two-year program during the junior and senior years. Qualified students will then participate in a five-week field training program at an Air Force base the summer between their junior and senior year.

AFROTC college scholarships are awarded to the best-qualified students and are available for one to four years. These grants cover up to full tuition, incidental lab fees, and textbooks. Plus, cadets receive a monthly allowance from $250 for freshmen and up to $400 for seniors. Students interested in AFROTC can contact the University of North Dakota office at 1-800-CALL UND, ext. 4733/4957.

Agricultural Business B.S.

Agriculture and Natural Resources Department

Required credits to graduate with this degree: 120.

The program blends a strong base of agriculture, business, and general education courses while maximizing flexibility that allows students to choose electives to fit their career interests and expectations. A wide array of challenging, satisfying, and rewarding careers await graduates as demand for trained personnel in agribusiness continues to outstrip the supply of qualified graduates. Clusters of employment opportunities include agricultural sales and marketing, agribusiness management, agribusiness finance, agribusiness information management, food marketing management, global agribusiness, and rural economic development.

Program outcomes—graduates demonstrate

- skills that lead to satisfying and rewarding opportunities for agribusiness careers in either rural or urban settings

- knowledge of the basic general education that provides the foundation for applied knowledge and lifelong learning

- knowledge and technical skills required for careers in agribusiness

- polytechnic knowledge to make immediate contributions in the work place

- skills to advance the agricultural business program in concert with industry to ensure rapid response to evolving needs

Admission Requirements

For information about University of Minnesota, Crookston admission requirements, visit the UMC Admissions website, **umcrookston.edu/apply**.

Program Requirements

Students must complete 40 upper division credits.

Agricultural Business Requirements

ACCT 2101—Principles of Accounting I (3 cr)
AGEC 1005—World Agricultural Food Systems (3 cr)
AGEC 1004—Introduction to Agribusiness (3 cr)
AGEC 2310—Agribusiness Financial Records (3 cr)
AGEC 2530—Professional Agriselling (3 cr)
AGEC 3050—Economics for AgriBusiness Management (3 cr)
AGEC 3540—Farm Business Management (3 cr)
AGEC 3640—Agricultural Finance and Valuation (3 cr)
AGEC 4460—International Marketing Problems and Practices (3 cr)
AGEC 4760—Business Plan Development for Agribusiness (3 cr)
GNAG 3899—Pre-Internship Seminar (0.5 cr)
GNAG 3900—Internship (0.5–3 cr)
GNAG 3901—Post Internship Seminar (0.5 cr)
GNAG 4652—Senior Seminar (1 cr)
MGMT 3200—Principles of Management (3 cr)

MKTG 3300—Principles of Marketing (3 cr)
AGEC 4740—Grain and Livestock Marketing (3 cr)
or AGEC 4750—Agribusiness Marketing (3 cr)
AGRO 1183—Field Crops: Production Principles (3 cr)
or ANSC 1004—Introduction to Animal Science (4 cr)
COMM 3008—Business Writing (3 cr)
or COMM 3704—Business and Professional Speaking (3 cr)

Liberal Education Requirements

A minimum of 40 liberal education credits are required. Students must complete the 10 goal areas of the Minnesota Transfer Curriculum with the following specific liberal education courses required:

BIOL 1009—General Biology, BIOL SCI, PEOPLE/ENV (4 cr)
CHEM 1001—Introductory Chemistry, PHYS SCI (4 cr)
COMP 1011—Composition I, COMMUNICAT (3 cr)
COMP 1013—Composition II, COMMUNICAT (3 cr)
ECON 2101—Microeconomics, HI/BEH/SSC (3 cr)
MATH 1031—College Algebra, MATH THINK (3 cr)
MATH 1150—Elementary Statistics, MATH THINK (3 cr)
SPCH 1101—Public Speaking, COMMUNICAT (3 cr)

Technology Requirements

Take 3 credits of any CA courses.

Agriculture/Business/Technology Electives

Students must complete 18 credits selected in consultation with an adviser.

Open Electives

Students must take enough open electives credits to meet the 120 credit requirement for graduation.

Agricultural Business Minor

Agriculture and Natural Resources Department

(Minor Related to a Major)

Required credits in this minor: 21.

The agricultural business minor gives students a broad understanding of marketing techniques, livestock and grain commodities, financing, and economics of agriculture. This minor compliments many of the agriculture-based majors as well as business such that students learn valuable information regardless of whether they work in lending, consulting, sales, or run their own business.

Minor Requirements

Required Courses for the Minor (21 cr)

AGEC 2530—Professional Agriselling (3 cr)
AGEC 3540—Farm Business Management (3 cr)
AGEC 3640—Agricultural Finance and Valuation (3 cr)
MKTG 3300—Principles of Marketing (3 cr)

Choose one of the following:
ACCT 2102—Principles of Accounting II (3 cr)
or AGEC 2310—Agribusiness Financial Records (3 cr)

Choose one of the following:
AGEC 4740—Grain and Livestock Marketing (3 cr)
or AGEC 4750—Agribusiness Marketing (3 cr)

Choose one of the following:
COMM 3008—Business Writing (3 cr)
or COMM 3704—Business and Professional Speaking (3 cr)
or MGMT 3210—Supervision and Leadership (3 cr)

Agricultural Education B.S.

Agriculture and Natural Resources Department

NOTE: *This program will be discontinued and is not accepting new students.*

Required credits to graduate with this degree: 128.

(A collaborative program with the University of Minnesota, Twin Cities [UMTC] campus.)

Two teaching emphasis (specializations) areas available to students at UMC are agricultural science and technology and natural and managed environmental education.

Both emphases serve students preparing to teach agriscience, agribusiness, agriculture, horticulture, food systems, agrimechanics, and natural resource management, all under the licensure field of agricultural education in public schools at the 5–12 level. Graduates of the agricultural science and technology specialization also are qualified for a broad array of agriculturally related positions in sales, management, finance, and production aspects of agriculture. Graduates with the natural and managed environmental education specialization have an emphasis in natural resource management and education and are prepared for work in environmental learning centers.

Specific degree requirements, admission requirements, program outcomes, and professional education course descriptions are congruent with those in the UMTC Undergraduate Catalog. Transfer within the collaborative agreement allows students to complete all four years on either the UMC or UMTC campus. It also allows students to make a seamless transfer between campuses.

Admission Requirements

For information about University of Minnesota, Crookston admission requirements, visit the UMC Admissions website, **umcrookston.edu/apply**.

Program Requirements

Students must complete 40 upper division credits.

Program Core

AGEC 1005—World Agricultural Food Systems (3 cr)
ANSC 1004—Introduction to Animal Science (4 cr)
ASM 1034—Facility Maintenance and Safety (4 cr)
CI 5452—Reading in the Content Areas for Initial Licensure Candidates (UMTC) (2 cr)
PHIL 2002—Introduction to Ethics, HUMANITIES, ETH/CIV RE (3 cr)
SOIL 1293—Soil Science (3 cr)
ASM 1044—Computer-Aided Drafting (3 cr)
or ASM 3360—Applications in Precision Agriculture (3 cr)
HORT 1010—Introduction to Horticulture (3 cr)
or AGRO 1183—Field Crops: Production Principles (3 cr)

Professional Education Courses

AFEE 1001—Intro to Agricultural Education and Extension (UMTC) (1 cr)
AFEE 1002—Principles of Career Planning for Agricultural Professional (UMTC) (1 cr)

AFEE 2096—Professional Practicum in Agricultural Education: Early Experience (UMTC) (1 cr)

AFEE 5111—Agricultural Education: Methods of Teaching (UMTC) (4 cr)

AFEE 5112—Agricultural Education Program Organization and Curriculum for Youth (UMTC) (3 cr)

AFEE 5114—Agricultural Education Teaching Seminar (UMTC) (1 cr)

AFEE 5116—Coordination of SAE Programs: Work-Based Learning (UMTC) (2 cr)

AFEE 5118—Strategies for Managing and Advising the FFA Organization (UMTC) (2 cr)

EDHD 5001—Learning, Cognition, and Assessment in the Schools (UMTC) (3 cr)

EDHD 5003—Developmental and Individual Differences in Educational Contexts (UMTC) (2 cr)

EDHD 5004—Teaching Students with Special Needs in Inclusive Settings (UMTC) (2 cr)

EDHD 5005—School and Society (UMTC) (2 cr)

EDHD 5007—Technology for Teaching and Learning (UMTC) (1.5 cr)

EDHD 5009—Human Relations: Applied Skills for School and Society (UMTC) (1 cr)

EDPA 5341—American Middle School (UMTC) (3 cr)

PUBH 3005—Fundamentals of Alcohol and Drug Abuse (UMTC) (1 cr)

AFEE 5697—Teaching Internship: School and Classroom Settings (UMTC) (2 cr)

AFEE 5698—Teaching Internship (UMTC) (6 cr)

Liberal Education Requirements

BIOL 1009—General Biology, BIOL SCI, PEOPLE/ENV (4 cr)

BIOL 3022—Principles of Genetics (3 cr)

COMP 1011—Composition I, COMMUNICAT (3 cr)

COMM 3303—Writing in Your Profession (3 cr)

CHEM 1001—Introductory Chemistry, PHYS SCI (4 cr)

CHEM 1401—Elementary Bioorganic Chemistry, PHYS SCI, PEOPLE/ENV (4 cr)

HUM 3310—Culture and Technology, HUMANITIES, GLOB PERSP (3 cr)

MATH 1031—College Algebra, MATH THINK (3 cr)

PHYS 1012—Introductory Physics, PHYS SCI, PEOPLE/ENV (4 cr)

PSY 1001—General Psychology, HI/BEH/SSC (3 cr)

SPCH 1101—Public Speaking, COMMUNICAT (3 cr)

LIT 1005—Introduction to Literature, HUMANITIES, GLOB PERSP (3 cr)

or LIT 1016—Readings in American Life, HUMANITIES, HUMAN DIV (3 cr)

or LIT 3001—World Literature, HUMANITIES, GLOB PERSP (3 cr)

History Electives

Students must take 3 credits of any history courses.

Program Sub-plans

Students are required to complete one of the following sub-plans.

Agricultural Science and Technology Education Sub-plan

Graduates with this emphasis are qualified for a broad array of agriculturally related positions in sales, management, finance, and production aspects of agriculture.

Required Courses for the Agricultural Science and Technology Education Sub-plan

Science and Technology

Take 3 credits of agricultural economics or accounting electives; 3 credits of agronomy, horticulture, or plant industries management electives; 2 credits of animal science or equine science electives; 3 credits of natural resources electives; and 1.5 credits of agriculture electives, all selected in consultation with an adviser. Also take the following courses.

AGEC 2530—Professional Agriselling (3 cr)

ECON 2101—Microeconomics, HI/BEH/SSC (3 cr)

HRT 1112—Hospitality Safety and Sanitation (2 cr)

Natural and Managed Environmental Education Sub-plan

Students with this emphasis focus on natural resource management and education and are prepared for work in environmental learning centers.

Required Courses for the Natural and Managed Environmental Education Sub-plan

Natural and Managed Environmental Education

Take 3 credits of agronomy, horticulture, or plant industries management electives; 2 credits of animal science or equine science electives; 6 credits of natural resources electives; 4 credits of soil and water management electives; and 0.5 credits of agriculture electives, all selected in consultation with an adviser. Also take one of the following courses.

AGEC 2530—Professional Agriselling (3 cr)

or ECON 2101—Microeconomics, HI/BEH/SSC (3 cr)

Agricultural Systems Management B.S.

Agriculture and Natural Resources Department

Required credits to graduate with this degree: 120.

This program combines students' interests in machinery, technology, and crop and livestock production with superior people skills, creative thinking, and problem solving to build a career in the agricultural and food production industry.

Agricultural systems management graduates are well versed in agricultural foundations and have working knowledge of economic systems with a well-developed sense of professionalism. Companies are looking for multitalented people who are confident around computers, machines, and business plans. The agricultural systems management program offers three areas of emphasis to provide a unique portfolio of technical and business skills that gives graduates an edge in the job market.

Program outcomes—graduates will

- be well versed in agricultural foundations

- be technically proficient and knowledgeable in agricultural technologies
- have working knowledge of economic systems and financial management
- possess speaking, listening, and writing communication skills
- have a well-developed sense of professionalism

Admission Requirements

For information about University of Minnesota, Crookston admission requirements, visit the UMC Admissions website, umcrookston.edu/apply.

Program Requirements

Students must complete 40 upper division credits.

Agricultural Systems Management Requirements (31 cr)

AGRO 1183—Field Crops: Production Principles (3 cr)

ASM 1021—Introduction to Agricultural Systems Management (2 cr)

ASM 1034—Facility Maintenance and Safety (4 cr)

ASM 2053—Electricity, Controls, and Sensors in Agriculture (3 cr)

ASM 3002—Agricultural Mobile Power Systems (3 cr)

GNAG 3899—Pre-Internship Seminar (0.5 cr)

GNAG 3900—Internship (0.5–3 cr)

GNAG 3901—Post Internship Seminar (0.5 cr)

GNAG 4652—Senior Seminar (1 cr)

SOIL 1293—Soil Science (3 cr)

Choose one of the following:

ACCT 2101—Principles of Accounting I (3 cr)

or ENTR 2200—Introduction to Entrepreneurship and Small Business (3 cr)

Choose one of the following:

ANSC 3004—Livestock Facilities and Environmental Systems (3 cr)

or ASM 3005—Facilities Planning and Selection (3 cr)

Choose one of the following:

COMM 2334—Communication Topics (3 cr)

or COMM 3303—Writing in Your Profession (3 cr)

or COMM 3431—Persuasion (3 cr)

or COMM 3704—Business and Professional Speaking (3 cr)

Liberal Education Requirements

A minimum of 40 liberal education credits are required. Students must complete the 10 goal areas of the Minnesota Transfer Curriculum with the following specific liberal education courses required:

BIOL 1009—General Biology, BIOL SCI, PEOPLE/ENV (4 cr)

CHEM 1001—Introductory Chemistry, PHYS SCI (4 cr)

COMP 1011—Composition I, COMMUNICAT (3 cr)

COMP 1013—Composition II, COMMUNICAT (3 cr)

ECON 2101—Microeconomics, HI/BEH/SSC (3 cr)

MATH 1031—College Algebra, MATH THINK (3 cr)

MATH 1150—Elementary Statistics, MATH THINK (3 cr)

PHYS 1012—Introductory Physics, PHYS SCI, PEOPLE/ENV (4 cr)

SPCH 1101—Public Speaking, COMMUNICAT (3 cr)

Technology Requirement

Required courses—3 credits

CA 1020—Spreadsheet Applications (3 cr)

Program Sub-plans

Students are required to complete one of the following sub-plans.

Bio-Fuels and Renewable Energy Technology Sub-plan

This emphasis focuses on the development, economics, and processes in bio-fuels and renewable energy technology. Energy conservation and efficiencies are vital parts to sustainable energy systems. World demand for energy is driving the need for sustainable energy systems.

Required Courses for the Bio-Fuels and Renewable Energy Technology Sub-plan

Bio-Fuels/Renewable Energy Systems Requirements

Required courses—30 credits

AGEC 2530—Professional Agriselling (3 cr)

AGEC 3640—Agricultural Finance and Valuation (3 cr)

ASM 2200—Introduction to Renewable Energy Systems (3 cr)

ASM 3201—Bio-Fuels Technology (3 cr)

ASM 3202—Solar, Wind, and Geo-Thermal Systems (3 cr)

CA 1060—Database Applications (3 cr)

MGMT 3200—Principles of Management (3 cr)

MKTG 3300—Principles of Marketing (3 cr)

NATR 1226—Environmental Science and Sustainability, ETH/CIV RE, PEOPLE/ENV (3 cr)

NATR 3344—Land Use Planning (3 cr)

Agriculture/Management Electives

Students should take 6 credits of agriculture/management electives.

Open Electives

Students must take enough open electives credits to satisfy the 120 credit graduation requirement.

Farm and Ranch Management Sub-plan

This emphasis focuses on a blend of business and production management. The program's goal is to provide a solid foundation to allow the graduate to be competitive and succeed in the changing world of modern agriculture.

Required Courses for the Farm and Ranch Management Sub-plan

Farm and Ranch Operation Requirements

Required courses—25 to 26 credits

AGEC 2310—Agribusiness Financial Records (3 cr)

AGEC 3540—Farm Business Management (3 cr)

AGEC 3640—Agricultural Finance and Valuation (3 cr)

AGEC 4740—Grain and Livestock Marketing (3 cr)

ANSC 1004—Introduction to Animal Science (4 cr)

ASM 2043—Welding and Manufacturing Processes (3 cr)

ASM 2250—Agricultural Machinery Management (3 cr)

Choose one of the following:

ANSC 2104—Feeds and Feeding (4 cr)

or ASM 3360—Applications in Precision Agriculture (3 cr)

Agriculture/Management Electives

Students should take 9 to 10 credits of agriculture/management electives.

Open Electives

Students must take enough open electives credits to satisfy the 120 credit graduation requirement.

Power and Machinery Sub-plan

New technology and labor-saving innovations in machinery, engines, and equipment drive a multi-billion dollar global business. Excellent careers exist in servicing, testing, and sales and marketing of new products for agricultural, industrial, and consumer applications.

Required Courses for the Power and Machinery Sub-plan

Power and Machinery Requirements

Required courses—24 credits
AGEC 2530—Professional Agriselling (3 cr)
AGEC 3050—Economics for AgriBusiness Management (3 cr)
AGEC 3640—Agricultural Finance and Valuation (3 cr)
ASM 2043—Welding and Manufacturing Processes (3 cr)
ASM 2250—Agricultural Machinery Management (3 cr)
ASM 3360—Applications in Precision Agriculture (3 cr)
CA 1060—Database Applications (3 cr)
MGMT 3210—Supervision and Leadership (3 cr)

Agriculture/Management Electives

Students should take 11 credits of agriculture/management electives.

Open Electives

Students must take enough open electives credits to satisfy the 120 credit graduation requirement.

Precision Agriculture Sub-plan

Work in the field or in an office to help others improve agriculture production practices (chemical application, planting, pest management) by using satellites, geographical information systems (GIS), and precision data analysis. Field data collection, analysis, and application are keys to improving agricultural production management practices and implementing efficiencies.

Required Courses for the Precision Agriculture Sub-plan

Precision Agriculture Requirements

Required courses—31 credits
AGEC 2310—Agribusiness Financial Records (3 cr)
AGEC 2530—Professional Agriselling (3 cr)
AGRO 2640—Applied Agriculture Chemicals (3 cr)
ASM 2250—Agricultural Machinery Management (3 cr)
ASM 3009—Surveying (4 cr)
ASM 3360—Applications in Precision Agriculture (3 cr)
ASM 3511—Yield Monitoring and Data Interpretation (1 cr)
ASM 3512—Remote Sensing Applications in Precision Agriculture (1 cr)
CA 1060—Database Applications (3 cr)
NATR 2630—Introduction to Geographic Information Systems (3 cr)
SOIL 3414—Soil Fertility and Plant Nutrition (4 cr)

Agriculture/Management Electives

Students should take 4 credits of agriculture/management electives.

Open Electives

Students must take enough open electives credits to satisfy the 120 credit graduation requirement.

Agricultural Systems Management Minor

Agriculture and Natural Resources Department

(Minor Related to a Major)

A minor in agricultural systems management provides an opportunity for students to learn the principles of agricultural technologies and how they relate to crop and livestock production and modern agricultural machinery. The opportunity exists for students to gain valuable knowledge in the area of renewable energy and bio-fuels technology and how that relates to agricultural enterprises.

Minor Requirements

Agricultural Systems Management Minor Requirements

ASM 1034—Facility Maintenance and Safety (4 cr)
ASM 3002—Agricultural Mobile Power Systems (3 cr)
ASM 3005—Facilities Planning and Selection (3 cr)

Take 6 or more credit(s) from the following:
ASM 2200—Introduction to Renewable Energy Systems (3 cr)
ASM 3201—Bio-Fuels Technology (3 cr)
ASM 3202—Solar, Wind, and Geo-Thermal Systems (3 cr)

Take 6 or more credit(s) from the following:
AGEC 3540—Farm Business Management (3 cr)
AGEC 3640—Agricultural Finance and Valuation (3 cr)
ASM 2053—Electricity, Controls, and Sensors in Agriculture (3 cr)
ASM 2250—Agricultural Machinery Management (3 cr)
ASM 3360—Applications in Precision Agriculture (3 cr)

Take 6 or more credit(s) from the following:
ASM 3009—Surveying (4 cr)
ASM 3511—Yield Monitoring and Data Interpretation (1 cr)
ASM 3512—Remote Sensing Applications in Precision Agriculture (1 cr)
ASM 3513—Precision Farming Data (1 cr)
SOIL 3414—Soil Fertility and Plant Nutrition (4 cr)

Agronomy B.S.

Agriculture and Natural Resources Department

Required credits to graduate with this degree: 120.

The B.S. in agronomy is a career-oriented program that combines science-based agriculture training and education with a strong liberal arts background to produce graduates skilled in the highly technical fields of agronomic science and crop production. The flexibility of the two tracks, agronomy and crop production, enables students to build a thorough understanding of crop science with a

concentration in areas such as crop production, agricultural chemicals, fertilizers, integrated pest management, seed conditioning and technology, and other areas related to production and quality in the food and fiber industry.

Program outcomes—graduates will

- Demonstrate appropriate skills necessary for employment in agronomic sciences or crop production
- Demonstrate skills in general education and management that provide a foundation for the applied curriculum
- Develop and demonstrate an attitude of continued inquiry and lifelong learning

Admission Requirements

For information about University of Minnesota, Crookston admission requirements, visit the UMC Admissions website, umcrookston.edu/apply.

Program Requirements

Students must complete 40 upper division credits.

Agronomy Program Requirements

Required courses—48 credits
AGRO 1030—Crop and Weed Identification (3 cr)
AGRO 1183—Field Crops: Production Principles (3 cr)
AGRO 1540—Seed Conditioning and Technology (4 cr)
AGRO 2573—Entomology (3 cr)
AGRO 2640—Applied Agriculture Chemicals (3 cr)
AGRO 2840—Grain and Seed Evaluation (4 cr)
AGRO 3023—Plant Breeding and Genetics (4 cr)
AGRO 3130—Forages (3 cr)
AGRO 3230—Introduction to Plant Pathology (3 cr)
AGRO 3444—Crop Production (4 cr)
AGRO 3630—Integrated Crop Management (Capstone) (3 cr)
GNAG 3899—Pre-Internship Seminar (0.5 cr)
GNAG 3900—Internship (0.5-3 cr)
GNAG 3901—Post Internship Seminar (0.5 cr)
GNAG 4652—Senior Seminar (1 cr)
SOIL 1293—Soil Science (3 cr)
SOIL 3414—Soil Fertility and Plant Nutrition (4 cr)

Liberal Education Requirements

A minimum of 40 liberal education credits required. Students must complete the 10 goal areas of the Minnesota Transfer Curriculum with the following specific liberal education courses required:
BIOL 1009—General Biology, BIOL SCI, PEOPLE/ENV (4 cr)
BIOL 2022—General Botany (3 cr)
CHEM 1001—Introductory Chemistry, PHYS SCI (4 cr)
COMP 1011—Composition I, COMMUNICAT (3 cr)
COMP 1013—Composition II, COMMUNICAT (3 cr)
SPCH 1101—Public Speaking, COMMUNICAT (3 cr)
MATH 1031—College Algebra, MATH THINK (3 cr)
or MATH 1150—Elementary Statistics, MATH THINK (3 cr)

Technology Requirement

Students must take 3 credits of any CA courses.
CA 1xxx

Program Sub-plans

Students are required to complete one of the following sub-plans.

Agronomic Science Sub-plan

The agronomic science track allows students to build a thorough understanding of crop science with a concentration in areas such as agricultural chemicals, fertilizers, integrated pest management, and seed conditioning and technology.

Required Courses for the Agronomic Science Sub-plan

Agronomic Science Requirements

Required courses—13 credits
AGRO 3030—Research Techniques (3 cr)
AGRO 3640—Weed Science (3 cr)
BIOL 3131—Plant Physiology (3 cr)
CHEM 1401—Elementary Bioorganic Chemistry, PHYS SCI, PEOPLE/ENV (4 cr)

Agriculture/Natural Resources Electives

Students should take 7 credits of agriculture/natural resources electives selected from the following departments: AGBU, AGEC, AGRO, ASM, ANSC, GNAG, HORT, NATR, TURF.

Open Electives

Students must take enough open electives credits to satisfy the 120 credit graduation requirement. Approximately 9 credits are needed.

Crop Production Sub-plan

The crop production track, along with building strong agronomic skills, has an agricultural business component that allows students to develop their marketing and farm business management skills.

Required Courses for the Crop Production Sub-plan

Crop Production Requirements

Required courses—13 credits
AGEC 2310—Agribusiness Financial Records (3 cr)
AGEC 3540—Farm Business Management (3 cr)
AGEC 4740—Grain and Livestock Marketing (3 cr)
SWM 3224—Soil and Water Conservation (4 cr)

Agriculture/Natural Resources Electives

Students should take 7 credits of agriculture/natural resources electives selected from the following departments: AGBU, AGEC, AGRO, ANSC, ASM, GNAG, HORT, NATR, TURF.

Open Electives

Students must take enough open electives credits to satisfy the 120 credit graduation requirement. Approximately 9 credits are needed.

Agronomy Minor

Agriculture and Natural Resources Department

(Minor Related to a Major)

Required credits in this minor: 24 to 25.

The agronomy minor prepares graduates to work in crop production operations and provides entry level education for jobs in the agriculture service sector. Potential employers include seed, feed,

fertilizer, and chemical companies, grain inspection facilities, and grain elevators.

Minor Requirements

Agronomy Minor Requirements

Required courses—24 to 25 credits
AGRO 1030—Crop and Weed Identification (3 cr)
AGRO 2640—Applied Agriculture Chemicals (3 cr)
AGRO 3023—Plant Breeding and Genetics (4 cr)
SOIL 3414—Soil Fertility and Plant Nutrition (4 cr)

Choose one of the following:
AGRO 1540—Seed Conditioning and Technology (4 cr)
or AGRO 2840—Grain and Seed Evaluation (4 cr)

Choose one of the following:
AGRO 2573—Entomology (3 cr)
or AGRO 3230—Introduction to Plant Pathology (3 cr)

Choose one of the following:
AGRO 3130—Forages (3 cr)
or AGRO 3444—Crop Production (4 cr)

Animal Science B.S.

Agriculture and Natural Resources Department

Required credits to graduate with this degree: 120 to 124.

The B.S. in animal science leads to careers in livestock production and management or one of the many allied industries such as feed production, artificial insemination, and livestock or farm equipment support and sales. In addition, students can meet the requirements to attend graduate school or veterinary college.

Coursework includes computer and communications training, sales, and business management. Other required coursework is traditional to livestock degrees, but students have the option of taking courses specific to their interests. Options also exist for students who wish to pursue pre-veterinary studies.

Program outcomes—graduates will
- demonstrate competencies in dairy/livestock management;
- demonstrate individual communication skills;
- demonstrate personal problem solving, decision-making, and critical thinking skills;
- demonstrate technology skills used for dairy/livestock management decision making and problem solving;
- work effectively in teams;
- be able to obtain a career in the dairy/livestock industry

Admission Requirements

For information about University of Minnesota, Crookston admission requirements, visit the UMC Admissions website, **umcrookston.edu/apply**.

Program Requirements

Students must complete 40 upper division credits.

Required Courses for the Program

Animal Science Program Requirements

Required courses—54 credits
ANSC 1004—Introduction to Animal Science (4 cr)
ANSC 1101—Animal Evaluation (1 cr)
ANSC 2104—Feeds and Feeding (4 cr)
ANSC 3004—Livestock Facilities and Environmental Systems (3 cr)
ANSC 3023—Animal Breeding (3 cr)
ANSC 3104—Applied Animal Nutrition (4 cr)
ANSC 3203—Animal Anatomy and Physiology (4 cr)
ANSC 3204—Dairy Production (4 cr)
ANSC 3303—Beef Production (3 cr)
ANSC 3304—Reproduction, AI, and Lactation (4 cr)
ANSC 3503—Animal Health and Disease (3 cr)
ANSC 4204—Animal Systems Management (4 cr)
BIOL 2032—General Microbiology (4 cr)
BIOL 3022—Principles of Genetics (3 cr)
GNAG 3899—Pre-Internship Seminar (0.5 cr)
GNAG 3900—Internship (0.5-3 cr)
GNAG 3901—Post Internship Seminar (0.5 cr)
GNAG 4652—Senior Seminar (1 cr)
ANSC 1205—Beef and Dairy Production Techniques (2 cr)
or ANSC 1206—Sheep and Swine Production Techniques (2 cr)

Liberal Education Requirements

A minimum of 40 liberal education credits required. Students must complete the 10 goal areas of the Minnesota Transfer Curriculum with the following specific liberal education courses required:
BIOL 1009—General Biology, BIOL SCI, PEOPLE/ENV (4 cr)
COMP 1011—Composition I, COMMUNICAT (3 cr)
COMP 1013—Composition II, COMMUNICAT (3 cr)
ECON 2101—Microeconomics, HI/BEH/SSC (3 cr)
MATH 1031—College Algebra, MATH THINK (3 cr)
SPCH 1101—Public Speaking, COMMUNICAT (3 cr)

Technology Requirement

Students must take 3 credits of any CA courses.
CA 1xxx

Program Sub-plans

Students are required to complete one of the following sub-plans.

Animal Science Sub-plan

This emphasis leads graduates to careers within the livestock industry such as production and management, feed production, artificial insemination, livestock and farm equipment support/sales, pharmaceutical sales, and veterinary technician. Students are exposed to classroom instruction and hands-on experiential learning in the laboratory. Coursework includes computer and communications training, sales training, and business management. Other required coursework is traditional to livestock degrees and may include nutrition, breeding, reproduction, evaluation, feeds, production and management, and facilities. Students can take courses specific to their interest.

Required Courses for the Animal Science Sub-plan

Animal Science Requirements

Required courses—18 credits

AGEC 3540—Farm Business Management (3 cr)

AGEC 4740—Grain and Livestock Marketing (3 cr)

ANSC 1201—Advanced Animal Evaluation (1 cr)

CHEM 1401—Elementary Bioorganic Chemistry, PHYS SCI, PEOPLE/ENV (4 cr)

Choose one of the following:

CHEM 1001—Introductory Chemistry, PHYS SCI (4 cr)

or CHEM 1021—Chemical Principles I, PHYS SCI, PEOPLE/ENV (4 cr)

Choose one of the following:

GNAG 3203—Ag Products and Processing (3 cr)

or GNAG 3204—International Agricultural Production, Processing, and Marketing (3 cr)

Agriculture Electives

Students must complete enough credits of agriculture electives (selected in consultation with their adviser) to meet the 120 credit graduation requirement. Number of credits needed will depend on LE course selections. Approximately 9 credits will be needed.

Pre-Veterinary Medicine Sub-plan

The pre-veterinary medicine emphasis meets the course entry requirements for admission to the University of Minnesota College of Veterinary Medicine; however, similar entry requirements among colleges of veterinary medicine, coupled with sufficient flexibility within the curriculum, allow graduates to meet the admission requirements for many other institutions. Students who graduate are well prepared to pursue their career goal of becoming a veterinarian. Students are exposed to traditional classroom instruction as well as hands-on/experiential learning in the laboratory.

Required Courses for the Pre-Veterinary Medicine Sub-plan

Pre-Veterinary Medicine Requirements

Required courses—28 credits

BIOL 2012—General Zoology (4 cr)

CHEM 1021—Chemical Principles I, PHYS SCI, PEOPLE/ENV (4 cr)

CHEM 1022—Chemical Principles II (4 cr)

CHEM 2301—Organic Chemistry I (3 cr)

CHEM 2310—Organic Chemistry Laboratory I (2 cr)

CHEM 3021—Biochemistry (3 cr)

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

PHYS 1102—Introductory College Physics II, PHYS SCI (4 cr)

Agriculture Electives

Students must complete enough agriculture electives credits to meet the 124 credit graduation requirement. Number of credits needed will depend on LE course selections. Approximately 5 credits will be needed.

Animal Science Minor

Agriculture and Natural Resources Department

(Minor Related to a Major)

Required credits in this minor: 24 to 26.

The animal science minor allows students to attain valuable information with regard to the essentials of livestock (meat) and dairy production principles. Students earning this minor are trained for careers in areas such as ranching, herdsmen, dairymen, and other allied industry positions.

Minor Requirements

Animal Science Minor Requirements

Required courses—24 to 26 credits

ANSC 1101—Animal Evaluation (1 cr)

ANSC 2104—Feeds and Feeding (4 cr)

ANSC 3203—Animal Anatomy and Physiology (4 cr)

ANSC 3304—Reproduction, AI, and Lactation (4 cr)

ANSC 3503—Animal Health and Disease (3 cr)

Choose one of the following:

ANSC 1205—Beef and Dairy Production Techniques (2 cr)

or ANSC 1206—Sheep and Swine Production Techniques (2 cr)

Choose one of the following:

ANSC 3004—Livestock Facilities and Environmental Systems (3 cr)

or ANSC 3023—Animal Breeding (3 cr)

or ANSC 3104—Applied Animal Nutrition (4 cr)

or ASM 3005—Facilities Planning and Selection (3 cr)

Choose one of the following:

ANSC 3204—Dairy Production (4 cr)

or ANSC 3303—Beef Production (3 cr)

Applied Health B.A.H.

Math, Science and Technology

Required credits to graduate with this degree: 120.

The bachelor of applied health (B.A.H.) is an integrated four-year baccalaureate degree program delivered via distance education through the Internet. The program includes a liberal education core curriculum, clinical occupational field, and management component. The applied curriculum combines the knowledge and experiences necessary to provide leadership in the changing health care arena and in entrepreneurial health care settings where clinical expertise is valued.

Program outcomes—graduates will

- communicate effectively and work as a team in a health care setting
- demonstrate leadership skills in problem solving, conflict resolution, and change management
- demonstrate an understanding of the legal, regulatory, and ethical issues inherent to health care
- demonstrate the ability to adapt to changing public policy, economic, and financial issues in health care

- demonstrate assessment skills related to improving clinical care and customer service
- apply technology in the workplace

Admission Requirements

Students must complete an associate degree in a health care field before enrolling in this degree program.

For information about University of Minnesota, Crookston admission requirements, visit the UMC Admissions website, **umcrookston.edu/apply**.

Program Requirements

Students must complete 40 upper division credits.

Program Core Requirements

HSM 3020—Quality Improvement and Risk Management (4 cr)
HSM 3100—Essentials of Managed Care (3 cr)
HSM 3130—Health Management Information Systems (3 cr)
HSM 3200—Health Care Leadership and Planning (4 cr)
HSM 3230—Administration of Continuum Care Facilities (3 cr)
HSM 3240—Health Care Policy and Comparative Systems (4 cr)
HSM 3900—Internship (1–3 cr)
HSM 4100—Health Care Finance (3 cr)
HSM 4210—Health Care Law and Biomedical Ethics (4 cr)
HSM 4212—Regulatory Management (3 cr)
ABUS 4012—Problem Solving in Complex Organizations (UMTC) (3 cr)
or MGMT 3210—Supervision and Leadership (3 cr)
ABUS 4023—Communicating for Results (UMTC) (3 cr)
or COMM 3008—Business Writing (3 cr)
or COMM 3303—Writing in Your Profession (3 cr)
ABUS 4104—Management and Human Resource Practices (UMTC) (3 cr)
or MGMT 3220—Human Resource Management (3 cr)

Liberal Education Requirements

Students must take 3 credits of humanities and 3 credits of social sciences in addition to the following.
COMP 1011—Composition I, COMMUNICAT (3 cr)
SPCH 1101—Public Speaking, COMMUNICAT (3 cr)
MATH 1031—College Algebra, MATH THINK (3 cr)
or MATH 1150—Elementary Statistics, MATH THINK (3 cr)
PSY 1001—General Psychology, HI/BEH/SSC (3 cr)
or SOC 1001—Introduction to Sociology, HI/BEH/SSC, HUMAN DIV (3 cr)

Technology Requirement

Take 3 or more credit(s) from the following:
CA 1xxx

Occupational Course Requirements

Take 42 credits of occupational courses from partner schools, selected in consultation with an adviser.

Science Electives

Take 9 credits.

Electives

Take 5 credits of electives.

Applied Studies B.S.

Liberal Arts and Education Department

Required credits to graduate with this degree: 120.

The applied studies program addresses the needs of individuals whose educational objectives cannot be met through traditional degree programs. It provides a professionally accommodating entry point for students with previous educational and technical competencies to develop an individualized B.S. degree.

Program outcomes—graduates will

- complete an individually tailored course of study that builds upon prior education and experience
- demonstrate technical competencies in selected areas of study in an internship setting
- demonstrate skills in communication, problem solving and working with others in a capstone experience
- meet career development goals related to achieving a baccalaureate degree.

Admission Requirements

Students must complete 60 credits before admission to the program.

For information about University of Minnesota, Crookston admission requirements, visit the UMC Admissions website, **umcrookston.edu/apply**.

Program Requirements

Students develop a program of study selected to meet career goals. A specific program track in respiratory care is also available. Students must complete 40 upper division credits.

Applied Studies Seminar

APLS 4652—Applied Studies Seminar (2.5 cr)

Liberal Education Requirements

A minimum of 40 liberal education credits required. Students must complete the 10 goal areas of the Minnesota Transfer Curriculum with the following specific liberal education courses required:
COMP 1011—Composition I, COMMUNICAT (3 cr)
COMP 1013—Composition II, COMMUNICAT (3 cr)
SPCH 1101—Public Speaking, COMMUNICAT (3 cr)

Technology Requirement

Students must take 3 credits of any CA courses.
CA 1xxx

Applied Studies Options

Students either design a program with two fields of study, in consultation with an adviser, or they complete the respiratory care requirements.

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

Self-Designed Program

Students complete at least two areas of study, with at least one area having an occupational direction. Technical courses taken at a technical college may be used to complete one area of study.

The first area of study requires at least 27 credits of technical or occupational courses. The second area of study requires at least 18 credits of additional courses selected across the curriculum to meet specific career objectives.

All courses must be selected in consultation with an adviser.

APLS 3001—Individual Program Development (0.5 cr)
APLS 3900—Internship/Field Experience (1–3 cr)
First area of study (27 crs)
Second area of study (18 crs)
Electives (need max of 26 crs)

Respiratory Care

Complete the requirements in the respiratory care sub-plan.

Program Sub-plans

A sub-plan is not required for this program.

Respiratory Care Sub-plan

Program outcomes—graduates will

- demonstrate respiratory care competencies in clinical settings as appropriate for certification in respiratory care
- demonstrate skills in communication, problem solving and working with others in an appropriate capstone experience
- meet career development goals related to achieving a baccalaureate degree

Courses taken at Northland Community and Technical College, East Grand Forks, will be transferred in to complete the first area (23 credits) and second area (31 credits) of study.

Required Courses for the Respiratory Care Sub-plan

1st Area of Study

Courses taken at Northland Community and Technical College—minimum 23 credits: BIOL 2221, 2252, 2254, RESP 1104, 1110, 1120, 1124

2nd Area of Study

Courses taken at Northland Community and Technical College—minimum 31 credits: RESP 2206, 2212, 2242, 2248, 2252, 2258, 2262, 2266, 2276

Electives

Students need to take a maximum of 20.5 credits of electives to reach the 120 credits needed for graduation.

Online Sub-plan

The applied studies bachelor of science program is available online. Its requirements are identical with those of the on-campus B.S. program.

Required Courses for the Online Sub-plan

Requirements are identical with those of the on-campus B.S. program.

Aviation B.S.

Agriculture and Natural Resources Department

Required credits to graduate with this degree: 120.

(A collaborative program with the University of North Dakota Aviation Foundation)

The aviation program trains students to excel in the increasingly sophisticated and competitive profession of aviation. Extensive coursework in aviation, liberal education, and other disciplines provides the graduate with the skills for success. The University of North Dakota (UND AEROSPACE), an internationally recognized collegiate flight training center, provides aircraft, simulators, flight instructors, and aviation course materials under contract.

Only full-time students (taking 12 credits or more) may enroll in flight training courses; others must obtain consent from the aviation program manager. Pilot certification courses include private pilot, commercial pilot, instrument rating, certified flight instructor, instrument flight instructor, multi-engine rating, and multi-engine flight instructor. Non-certificate courses include conventional gear (tail wheel) operations, advanced conventional gear operations, and natural resources/law enforcement applications. Students enrolling with previous flight training or experience may receive college credit after a practical test is administered by the aviation program manager or an appointed check pilot. Aviation students attend all classes on the UMC campus. Flight training is conducted at the UMC flight training center located at the Crookston Municipal Airport, three miles north of the University.

The aviation program includes flight courses for which students incur costs over and above regular tuition rates. These costs vary and depend on the courses taken as well as the aircraft and flight instructor time used. Call the aviation program manager for more information (218-281-8114).

Depending upon career interest, students may choose from two areas of emphasis: agricultural or law enforcement aviation. Two other options available are the business management major with a business aviation emphasis or natural resources major with a natural resources aviation emphasis.

Admission Requirement: No medical or physical limitation that would prevent the student from holding a F.A.A. second class medical certificate.

Admission Requirements

For information about University of Minnesota, Crookston admission requirements, visit the UMC Admissions website, **umcrookston.edu/apply**.

Program Requirements

Students must complete 40 upper division credits.

Aviation Program Requirements

AVIA 1103—Introduction to Aviation (4 cr)
AVIA 1104—Introduction to Aviation Flight Lab (1 cr)
AVIA 1396—Conventional Aircraft Operations (1 cr)
AVIA 2220—Basic Attitude Instrument Flying (2 cr)
AVIA 2221—Basic Attitude Instrument Flying Lab (1 cr)
AVIA 2222—IFR Regulations and Procedures (2 cr)
AVIA 2223—IFR Regulations and Procedures Flight Lab (1 cr)
AVIA 3320—Airplane Aerodynamics (2 cr)
AVIA 3321—Airplane Aerodynamics Flight lab (1 cr)
AVIA 3324—Aircraft Systems and Instruments (3 cr)
AVIA 3396—Advanced Conventional Aircraft Operations (UND) (1 cr)
BIOL 2022—General Botany (3 cr)
COMM 3303—Writing in Your Profession (3 cr)
NATR 3899—Pre-Internship Seminar (0.5 cr)
NATR 3900—Internship (0.5-4 cr)
NATR 3901—Post-Internship Seminar (0.5 cr)
NATR 4652—Seminar (1 cr)

Liberal Education Requirements

A minimum of 40 liberal education credits are required. Students must complete the 10 goal areas of the Minnesota Transfer Curriculum with the following specific liberal education courses required:

BIOL 1009—General Biology, BIOL SCI, PEOPLE/ENV (4 cr)
CHEM 1001—Introductory Chemistry, PHYS SCI (4 cr)
COMP 1011—Composition I, COMMUNICAT (3 cr)
COMP 1013—Composition II, COMMUNICAT (3 cr)
MATH 1031—College Algebra, MATH THINK (3 cr)
PHYS 1012—Introductory Physics, PHYS SCI, PEOPLE/ENV (4 cr)
SPCH 1101—Public Speaking, COMMUNICAT (3 cr)

Technology Requirements

Take 3 or more credit(s) from the following:
CA 1xxx

Program Sub-plans

Students are required to complete one of the following sub-plans.

Agricultural Aviation Sub-plan

This emphasis leads to careers in aerial application, aerial fire fighting, aerial photography, charter pilot, or pilot representative for an agricultural business.

Program outcomes—graduates will

- demonstrate competency in aeronautics
- demonstrate competency in applied agronomy
- demonstrate the use of current technology in aviation, agriculture, and applied business
- demonstrate critical thinking to analyze situations in aeronautics and applied agriculture

Required Courses for the Agricultural Aviation Sub-plan

Agricultural Aviation Emphasis Requirements

AGRO 1030—Crop and Weed Identification (3 cr)
AGRO 1183—Field Crops: Production Principles (3 cr)
AGRO 2573—Entomology (3 cr)
AGRO 2640—Applied Agriculture Chemicals (3 cr)
AGRO 3230—Introduction to Plant Pathology (3 cr)
AGRO 3444—Crop Production (4 cr)
ENTR 2200—Introduction to Entrepreneurship and Small Business (3 cr)
MKTG 2200—Personal Selling (3 cr)
SOIL 1293—Soil Science (3 cr)
SWM 3103—Meteorology and Climatology (3 cr)

Agriculture/Natural Resources Electives

Students must take 7 credits.

Open Electives

Students must take enough Open Electives credits to meet the 120 credit requirement for graduation.

Law Enforcement Aviation Sub-plan

This emphasis provides training in aviation, law enforcement, and liberal education. It leads to careers as law enforcement pilots employed by local, state and federal agencies such as the U.S. Customs and Border Protection, state/ federal conservation offices, and state/county/local law enforcement agencies.

Program outcomes—graduates will

- demonstrate competency in aeronautics
- perform group problem solving, decision making, and conflict management activities
- demonstrate critical thinking to analyze situations in aeronautics and law enforcement
- be prepared to attend the peace officer's skills training academy

After completing all required coursework, students may attend a skills session and take the Minnesota Peace Officer Standards and Training (P.O.S.T) certification examination as coordinated by Bemidji State University.

Required Courses for the Law Enforcement Aviation Sub-plan

Law Enforcement Aviation Emphasis Requirements

AVIA 3602—Natural Resources and Enforcement Applications (2 cr)
CRJS 1500—Introduction to Criminal Justice, HI/BEH/ SSC, ETH/CIV RE (4 cr)
CRJS 2500—Introduction to Policing (3 cr)
CRJS 2550—Traffic Law (2 cr)
CRJS 2560—First Responder (3 cr)
CRJS 3505—Judicial Process (3 cr)
CRJS 3525—Juvenile Justice and Delinquency (3 cr)
CRJS 3530—Criminal Justice Diversity (3 cr)
CRJS 3550—Criminal Investigation (3 cr)
CRJS 3575—Critical Issues in Policing (3 cr)
CRJS 4510—Victimology (3 cr)
CRJS 4540—Criminal Law (4 cr)
CRJS 4550—Criminal Procedure (4 cr)

Agriculture/Natural Resources/Business Electives

Students must take 6 credits.

Open Electives

Students must take enough Open Electives credits to meet the 120 credit requirement for graduation.

Biology B.S.
Math, Science and Technology

Required credits to graduate with this degree: 120.

The B.S. in biology provides students with a broad knowledge of the biological sciences while introducing them to the practical skills needed in today's biotech industries and the background required to be successful applicants to graduate programs. Students may choose from advanced courses designed to emphasize studies in either animal or plant systems while participating in a common core of courses which provide knowledge in the basic principles relevant to both areas.

Program outcomes—graduates will

- explain and reconstruct the scientific method and can apply this mode of inquiry in a laboratory setting
- explain and apply basic principles of biology in work setting
- demonstrate teamwork skills
- apply, critique, and synthesize protocols from current literature
- demonstrate and critique effective oral and written communication skills
- formulate proper data collection and analysis methods
- interpret and practice professional and ethical behavior related to biological research
- identify, provide examples, differentiate, and integrate current biology techniques into their scientific investigations

Admission Requirements

For information about University of Minnesota, Crookston admission requirements, visit the UMC Admissions website, umcrookston.edu/apply.

Biology Core Requirements

BIOL 1001—Nature of Life (2 cr)
BIOL 1009H—Honors: General Biology, BIOL SCI, PEOPLE/ENV, H (4 cr)
BIOL 2032—General Microbiology (4 cr)
BIOL 3022—Principles of Genetics (3 cr)
BIOL 3027—Cell Biology (3 cr)
BIOL 3122—Evolution (3 cr)
BIOL 3822—Techniques in Molecular Biology (4 cr)
BIOL 3899—Pre-Internship Seminar (0.5 cr)
BIOL 3900—Internship (1–2 cr)
BIOL 3901—Post-Internship Seminar (0.5 cr)
BIOL 4101—Biology Seminar (1 cr)
COMM 3303—Writing in Your Profession (3 cr)
NATR 3374—Ecology, BIOL SCI (4 cr)
BIOL 2012—General Zoology (4 cr)
or BIOL 2022—General Botany (3 cr)

Chemistry Core Requirements

CHEM 1021—Chemical Principles I, PHYS SCI, PEOPLE/ENV (4 cr)
CHEM 1022—Chemical Principles II (4 cr)
CHEM 2301—Organic Chemistry I (3 cr)
CHEM 2302—Organic Chemistry II (3 cr)
CHEM 2310—Organic Chemistry Laboratory I (2 cr)
CHEM 2311—Organic Chemistry Laboratory II (2 cr)
CHEM 3021—Biochemistry (3 cr)

Math and Physics Core Requirements

MATH 1150—Elementary Statistics, MATH THINK (3 cr)
MATH 1271—Calculus I, MATH THINK (4 cr)
PHYS 1101—Introductory College Physics I, PHYS SCI (4 cr)
PHYS 1102—Introductory College Physics II, PHYS SCI (4 cr)

Liberal Education Requirements

A minimum of 40 liberal education credits required. Students must complete the 10 goal areas of the Minnesota Transfer Curriculum with the following specific liberal education courses required:

COMP 1011—Composition I, COMMUNICAT (3 cr)
COMP 1013—Composition II, COMMUNICAT (3 cr)
SPCH 1101—Public Speaking, COMMUNICAT (3 cr)

Technology Requirement

Students must take 3 credits of CA courses.

Biology Major Electives

Take 10—12 credit(s) from the following:
AGRO 3030—Research Techniques (3 cr)
AGRO 3230—Introduction to Plant Pathology (3 cr)
ANSC 3203—Animal Anatomy and Physiology (4 cr)
ANSC 3304—Reproduction, AI, and Lactation (4 cr)
BIOL 2103—Human Anatomy and Physiology I (4 cr)
BIOL 2104—Human Anatomy and Physiology II (4 cr)
BIOL 3131—Plant Physiology (3 cr)
BIOL 3140—Histology (4 cr)
BIOL 3464—Mammalogy (3 cr)
BIOL 3466—Ornithology (3 cr)
BIOL 3722—Limnology (3 cr)
BIOL 3994—Undergraduate Research (1–3 cr)
BIOL 4361—Developmental Biology (4 cr)
HSCI 1123—Fundamentals of Nutrition, BIOL SCI (3 cr)
GEOL 1001—Introductory Geology, PHYS SCI, PEOPLE/ENV (3 cr)
MATH 1272—Calculus II (4 cr)
NATR 3364—Plant Taxonomy (3 cr)
SOIL 1293—Soil Science (3 cr)
AGRO 2573—Entomology (3 cr)
or NATR 2573—Entomology (3 cr)

Open Electives

Students must take enough open electives credits to meet the 120 credit graduation requirement.

Biology Minor
Math, Science and Technology

(Minor Related to a Major)

Required credits in this minor: 20 to 21.

The biology minor program introduces students to the core concepts in a broad range of biological areas with two possible emphases, animal or plant biology. It is designed to complement majors in animal sciences, agriculture, and natural resources but can be tailored for students in other majors as well.

Minor Requirements

Required Courses for the Minor

Required courses—20 to 21 credits

BIOL 3022—Principles of Genetics (3 cr)
BIOL 3027—Cell Biology (3 cr)
BIOL 3122—Evolution (3 cr)
NATR 3374—Ecology, BIOL SCI (4 cr)
BIOL 1009—General Biology, BIOL SCI, PEOPLE/ENV (4 cr)
or BIOL 1009H—Honors: General Biology, BIOL SCI, PEOPLE/ENV, H (4 cr)
BIOL 2012—General Zoology (4 cr)
or BIOL 2022—General Botany (3 cr)

Business Management B.S.

Crookston Business Department

Required credits to graduate with this degree: 120.

All organizations require managers to plan, organize, lead, and evaluate the organization's effectiveness. Businesses need individuals who can manage resources, identify and solve problems, work with others, understand markets, collect and analyze data, and evaluate organizational performance.

This program prepares graduates for management positions in corporations, small businesses, and other organizations. It provides a well-rounded education in business operations, preparing individuals for a variety of management positions in business and government.

Program outcomes—graduates will

- demonstrate analytical and critical-thinking skills with direct application to business environments
- demonstrate the ability to communicate clearly and concisely in personal and business communication
- demonstrate capability to effectively manage human relations and diversity in professional and business environments
- demonstrate capability to apply global multidisciplinary concepts in business and industry
- demonstrate skill in the use of technology and computer software applications in business and industry
- demonstrate capability to apply ethical and environmental values to general business principles and practices

Admission Requirements

For information about University of Minnesota, Crookston admission requirements, visit the UMC Admissions website, **umcrookston.edu/apply**.

Program Requirements

Students must complete 40 upper division credits.

Business Management Program Requirements

Required courses—21 credits

ACCT 2101—Principles of Accounting I (3 cr)
ACCT 2102—Principles of Accounting II (3 cr)
GBUS 3107—Legal Environment in Business (3 cr)
MGMT 3100—Managerial Finance (3 cr)
MGMT 3200—Principles of Management (3 cr)
MGMT 3900—Internship (1–3 cr)
MKTG 3300—Principles of Marketing (3 cr)

Liberal Education Requirements

A minimum of 40 liberal education credits required. Students must complete the 10 goal areas of the Minnesota Transfer Curriculum with the following specific liberal education courses required:

COMP 1011—Composition I, COMMUNICAT (3 cr)
COMP 1013—Composition II, COMMUNICAT (3 cr)
ECON 2101—Microeconomics, HI/BEH/SSC (3 cr)
ECON 2102—Macroeconomics, HI/BEH/SSC (3 cr)
MATH 1031—College Algebra, MATH THINK (3 cr)
MATH 1150—Elementary Statistics, MATH THINK (3 cr)
PSY 1001—General Psychology, HI/BEH/SSC (3 cr)
SPCH 1101—Public Speaking, COMMUNICAT (3 cr)

Technology Requirements

Required courses—3 credits

CA 1020—Spreadsheet Applications (3 cr)

Program Sub-plans

Students are required to complete one of the following sub-plans.

Business Aviation Sub-plan

The business management—aviation emphasis includes courses and experiences that enhance students' opportunities for entry into corporate aviation. Students who complete the program and the appropriate number of flight hours and flight examinations will earn the following certifications: private pilot (FAA), commercial pilot (FAA), instrument rating, certified flight instructor, and instrument flight instructor.

Program outcomes—graduates will

- demonstrate technical competency in aeronautics
- demonstrate the use of current technology in aviation and applied business

Required Courses for the Business Aviation Sub-plan

Business Aviation Emphasis Requirements

Required courses—44 credits

AVIA 1103—Introduction to Aviation (4 cr)
AVIA 1104—Introduction to Aviation Flight Lab (1 cr)
AVIA 2220—Basic Attitude Instrument Flying (2 cr)
AVIA 2221—Basic Attitude Instrument Flying Lab (1 cr)
AVIA 2222—IFR Regulations and Procedures (2 cr)
AVIA 2223—IFR Regulations and Procedures Flight Lab (1 cr)
AVIA 3320—Airplane Aerodynamics (2 cr)
AVIA 3321—Airplane Aerodynamics Flight lab (1 cr)
AVIA 3324—Aircraft Systems and Instruments (3 cr)
AVIA 3412—CFI Certification (4 cr)
AVIA 3413—CFI Certification Flight Lab (1 cr)
MGMT 3210—Supervision and Leadership (3 cr)
MGMT 4800—Strategic Management (3 cr)
PHYS 1012—Introductory Physics, PHYS SCI, PEOPLE/ENV (4 cr)
SWM 3103—Meteorology and Climatology (3 cr)

MGMT 3220—Human Resource Management (3 cr)
or MKTG 3250—Integrated Marketing Communication (3 cr)
MGMT 3250—Operations Management (3 cr)
or MKTG 3360—International Marketing (3 cr)
COMM 2334—Communication Topics (3 cr)
or COMM 3008—Business Writing (3 cr)

Business/Technology Electives

Take 3 credits of business or technology electives.

Open Electives

Students must take enough open electives credits to meet the 120 credit graduation requirement.

Entrepreneurship and Small Business Management Sub-plan

The business management—entrepreneurship emphasis focuses on small business development and growth. Students learn how to identify and capitalize on entrepreneurial opportunities. Careers for the emphasis include small business management, rural economic development, and small business ownership.

Program outcomes—graduates will

- demonstrate the capability and initiative to identify entrepreneurial opportunity, assess and evaluate risk, and plan for small business ventures
- demonstrate the leadership and entrepreneurial competencies required to conceptualize, plan, finance, resource, manage, and grow small business

Required Courses for the Entrepreneurship and Small Business Management Sub-plan

Entrepreneurship and Small Business Management Emphasis Requirements

Required courses—30 credits
ENTR 2200—Introduction to Entrepreneurship and Small Business (3 cr)
ENTR 3200—Business Plan Development (3 cr)
ENTR 3400—Entrepreneurial and Small Business Finance (3 cr)
ENTR 4100—Entrepreneurial Marketing (3 cr)
ENTR 4200—Field Studies in Entrepreneurship and Small Business (3 cr)
ENTR 4800—Entrepreneurship and Small Business Strategies (3 cr)
GBUS 3500—Business Ethics (3 cr)
ITM 3020—Introduction to Management Information Systems (3 cr)
MGMT 3500—International Business Management (3 cr)
COMM 3008—Business Writing (3 cr)
or COMM 3303—Writing in Your Profession (3 cr)

Computer Applications Electives

Take 3 credits of any CA courses.

Open Electives

Students must take enough open electives credits to meet the 120 credit graduation requirement.

Management Sub-plan

The business management—management emphasis gives graduates the know-how to effectively and efficiently manage people, methods, materials, equipment, and money. The program focuses on entrepreneurial leadership, effective communication, technology mastery, critical thinking, and teamwork.

Program outcomes—graduates will

- demonstrate knowledge and skill of leadership required to effectively and efficiently plan, organize, and control an organization for a competitive advantage
- demonstrate skill in problem definition, problem solving, resource allocation and decision-making

Required Courses for the Management Sub-plan

Management Emphasis Requirements

Required courses—33 credits
ENTR 2200—Introduction to Entrepreneurship and Small Business (3 cr)
GBUS 3300—Business Analytics (3 cr)
GBUS 3500—Business Ethics (3 cr)
ITM 3020—Introduction to Management Information Systems (3 cr)
MGMT 3210—Supervision and Leadership (3 cr)
MGMT 3220—Human Resource Management (3 cr)
MGMT 3250—Operations Management (3 cr)
MGMT 3500—International Business Management (3 cr)
MGMT 3600—Change, Creativity, and Innovation Management (3 cr)
MGMT 4800—Strategic Management (3 cr)
COMM 3008—Business Writing (3 cr)
or COMM 3303—Writing in Your Profession (3 cr)

Computer Applications Electives

Take 3 credits of any CA courses.

Open Electives

Students must take enough open electives credits to meet the 120 credit graduation requirement.

Online Sub-plan

The B.S. in business management—management emphasis (online) gives graduates the know-how to effectively and efficiently manage people, methods, materials, equipment, and money. The program focuses on entrepreneurial leadership, effective communication, technology mastery, critical thinking, and teamwork.

Program outcomes—graduates will

- demonstrate knowledge and skill of leadership required to effectively and efficiently plan, organize, and control an organization for a competitive advantage
- demonstrate skill in problem definition, problem solving, resource allocation and decision-making

Required Courses for the Online Sub-plan

Management Emphasis (Online) Requirements

Required courses—34 credits

ENTR 2200—Introduction to Entrepreneurship and Small Business (3 cr)
GBUS 1005—Orientation to Online Programs (1 cr)
GBUS 3300—Business Analytics (3 cr)
GBUS 3500—Business Ethics (3 cr)
ITM 3020—Introduction to Management Information Systems (3 cr)
MGMT 3210—Supervision and Leadership (3 cr)
MGMT 3220—Human Resource Management (3 cr)
MGMT 3250—Operations Management (3 cr)
MGMT 3500—International Business Management (3 cr)
MGMT 3600—Change, Creativity, and Innovation Management (3 cr)
MGMT 4800—Strategic Management (3 cr)
COMM 3008—Business Writing (3 cr)
 or COMM 3303—Writing in Your Profession (3 cr)

Computer Applications Electives

Take 3 credits of any CA courses.

Open Electives

Students must take enough open electives credits to meet the 120 credit graduation requirement.

Business Management Minor

Crookston Business Department

(Minor Related to a Major)

Required credits in this minor: 21.

The business management minor introduces students to current business theories and practices in one of three business management clusters: entrepreneurship, international business, or management. A common core of business courses provides a basic business knowledge foundation and the cluster allows students to select other courses in a specific area of interest.

The business management minor gives students interested in business more marketability in all types of professions from agriculture and natural sciences to information technology and more.

The demand for professionals in entrepreneurship, international business, and management continues to grow at a fast pace.

Program outcomes—students who earn a business management minor will

Entrepreneurship Cluster
• demonstrate an understanding of small business financing options
• demonstrate an understanding of legal forms of business establishment
• demonstrate the ability to develop effective business plans

International Business Cluster
• demonstrate an understanding of global marketing issues
• develop an appreciation for diverse cultures

• demonstrate an understanding of political and legal differences worldwide

Management Cluster
• demonstrate an understanding of the management roles of planning, leading, organizing, and controlling
• demonstrate the ability to use management planning tools
• develop an understanding of the impact of human relations and interpersonal effectiveness in the workplace

Minor Requirements

Required Courses—12 credits

MGMT 3100—Managerial Finance (3 cr)
MGMT 3200—Principles of Management (3 cr)
MGMT 3270—Fundamentals of E-Business (3 cr)
MKTG 3300—Principles of Marketing (3 cr)

Business Management Minor Clusters

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

Entrepreneurship Cluster

Required courses—9 credits
ENTR 2200—Introduction to Entrepreneurship and Small Business (3 cr)
ENTR 3200—Business Plan Development (3 cr)
ENTR 3400—Entrepreneurial and Small Business Finance (3 cr)
 or ENTR 4100—Entrepreneurial Marketing (3 cr)

International Business Cluster

Required courses—9 credits
GBUS 3190—Topics in Business (1–3 cr)
MKTG 3360—International Marketing (3 cr)
ECON 1010—Global Trade Economics, GLOB PERSP (3 cr)
 or ENTR 4100—Entrepreneurial Marketing (3 cr)

Management Cluster

Required courses—9 credits
MGMT 3210—Supervision and Leadership (3 cr)
MGMT 3250—Operations Management (3 cr)
MGMT 3220—Human Resource Management (3 cr)
 or MGMT 4200—Project Management (3 cr)

Chemistry Minor

Math, Science and Technology

(Free-Standing Minor)

Required credits in this minor: 25.

Chemistry is the central science that plays an unparalleled role in our society. It helps us understand the world at the molecular level. A minor in chemistry opens up opportunities in diverse fields such as medicine, forensic science, clinical laboratory science, environmental chemistry, and biotechnology.

Minor Requirements

CHEM 1021—Chemical Principles I, PHYS SCI, PEOPLE/
ENV (4 cr)
CHEM 1022—Chemical Principles II (4 cr)
CHEM 2301—Organic Chemistry I (3 cr)
CHEM 2302—Organic Chemistry II (3 cr)
CHEM 2310—Organic Chemistry Laboratory I (2 cr)
CHEM 2311—Organic Chemistry Laboratory II (2 cr)
CHEM 3022—Analytical Chemistry and Spectroscopy (4 cr)
CHEM 3021—Biochemistry (3 cr)
or CHEM 3994—Undergraduate Research in Chemistry
(1–3 cr)

Coaching Minor

Business

(Free-Standing Minor)

Required credits in this minor: 19.

The coaching minor develops future coaches by
teaching current theories and practices in coaching
and with practical experience through the coaching
practicum. This helps to prepare students for
coaching at the youth, elementary, high school,
college, or even professional levels. The minor
can be taken by students in any major and has a
requirement of 18 credits.

Since 1997, Minnesota has not required a teaching
or coaching license to coach high school athletics.
The coaching minor helps train and develop future
coaches in the areas of practice planning, skill
development, and coaching strategies in their sport
of interest. In addition, it gives those students
interested in coaching more marketability for
coaching positions.

Any student, regardless of major, can earn a
coaching minor.

Minor Requirements

Program Core

BIOL 2103—Human Anatomy and Physiology I (4 cr)
SRM 2000—Prevention and Care of Athletic Injuries (3 cr)
SRM 2100—Psychology of Sport (3 cr)
SRM 3001—Sports Nutrition (3 cr)
SRM 2010—Topics in Coaching (1–3 cr)
SRM 3020—Coaching Practicum (1 cr)
SRM 3320—Exercise Physiology (3 cr)

Communication B.S.

Liberal Arts and Education Department

Required credits to graduate with this degree: 120.

The B.S. in communication prepares students to
be effective communicators in many professional
settings. Graduates can expect to find or create jobs
in areas such as general corporate management,
human resources, marketing, public relations,
sports information, and technical communication.
Communication graduates also may hold jobs
as communication consultants, communication
directors, event planners, political campaign leaders,
public affairs officers, public information officers,
publication designers and editors, speech writers,
and online content managers.

The program provides transferable skills by
emphasizing communication theory and practice
in the creation, development, presentation, and
evaluation of coherent messages. Students use
communication strategies to create publications
(newsletters, brochures, flyers, news releases,
communication plans), design online resources,
plan events, and manage projects.

The concentration area lets students select courses
to focus their professional career preparation.

Program outcomes—graduates will

- demonstrate proficiencies in applying theory,
  listening, reading, speaking, and writing
  professional contexts
- demonstrate technology proficiencies in
  computer applications
- demonstrate critical thinking and problem-
  solving skills, including analyzing, interpret-
  ing, and evaluating applied communication
- demonstrate proficiencies in interpersonal
  and group processes, conflict management,
  collaboration, team building, and leadership
- demonstrate understanding of the ethical
  behavior practiced in professional contexts
- demonstrate awareness and sensitivity required
  for communicating in culturally diverse groups

Admission Requirements

For information about University of Minnesota,
Crookston admission requirements, visit the UMC
Admissions website, **umcrookston.edu/apply**.

Program Requirements

Students must complete 40 upper division credits.

Communication Core

Communication Core—27 credits

COMM 3000—Communication Theory (3 cr)
COMM 3001—Communication in Human Relationships,
HUMAN DIV (3 cr)
COMM 3303—Writing in Your Profession (3 cr)
COMM 3431—Persuasion (3 cr)
COMM 3704—Business and Professional Speaking (3 cr)
COMM 3900—Internship (3 cr)
COMM 4703—Communication Ethics (3 cr)
COMM 4704—Organizational Communication (3 cr)

Concentration Courses

Select 18 credits in consultation with an adviser,
focusing on a defined area of study.

Liberal Education Requirements

A minimum of 40 liberal education credits required.
Students must complete the 10 goal areas of the
Minnesota Transfer Curriculum with the following
specific liberal education courses required:

COMP 1011—Composition I, COMMUNICAT (3 cr)
COMP 1013—Composition II, COMMUNICAT (3 cr)
SPCH 1101—Public Speaking, COMMUNICAT (3 cr)

Technology Requirements

Take 3 credits of any CA courses.

CA 1xxx

Communication Electives

Take 12 or more credit(s) from the following:
COMM 2002—Interpersonal and Group Processes (3 cr)
COMM 2223—English Grammar and Usage (3 cr)
COMM 2334—Communication Topics (3 cr)
COMM 2434—Oral Interpretation and Performance Techniques, HUMANITIES (3 cr)
COMM 3008—Business Writing (3 cr)
COMM 3537—Visual Communication (3 cr)
COMM 3804—Individual Studies (1–3 cr)
COMM 3855—Topics in Communication (3 cr)
COMM 4800—Crisis Communication (3 cr)
COMM 4802—Publication Design and Management (3 cr)
COMM 4900—Public Relations (3 cr)

Technology Electives

Choose 6 credits from Computer Application (CA) courses.

Open Electives

Students must take enough Open Electives credits to satisfy the 120 credit graduation requirement.

Communication Minor

Arts, Humanities, Social Science

(Minor Related to a Major)

Required credits in this minor: 18.

The communication minor complements all UMC degree programs by preparing students to be effective communicators in any profession. The minor emphasizes communication theory and practice as well as the creation, development, presentation, and evaluation of coherent messages.

The minor provides students with the flexibility to select courses that enhance their professional career preparations.

Program outcomes—students will

- demonstrate proficiencies in applying theory, listening, reading, speaking, and writing in the profession
- demonstrate critical thinking and problem-solving skills, including analyzing, interpreting, and evaluating applied communication
- demonstrate proficiencies in interpersonal and group processes, conflict management, collaboration, team building, and leadership
- demonstrate understanding of the ethical behavior practiced in the profession
- demonstrate awareness and sensitivity required for communicating in culturally diverse groups

Minor Requirements

Required Courses (12 cr)

COMM 3000—Communication Theory (3 cr)
COMM 3001—Communication in Human Relationships, HUMAN DIV (3 cr)
COMM 3303—Writing in Your Profession (3 cr)
COMM 3704—Business and Professional Speaking (3 cr)

Electives (6 cr minimum)

Take 2 or more course(s) totaling 6 or more credit(s) from the following:
COMM 2002—Interpersonal and Group Processes (3 cr)
COMM 2223—English Grammar and Usage (3 cr)

COMM 2334—Communication Topics (3 cr)
COMM 2434—Oral Interpretation and Performance Techniques, HUMANITIES (3 cr)
COMM 3008—Business Writing (3 cr)
COMM 3431—Persuasion (3 cr)
COMM 3537—Visual Communication (3 cr)
COMM 3804—Individual Studies (1–3 cr)
COMM 3855—Topics in Communication (3 cr)
COMM 3900—Internship (3 cr)
COMM 4703—Communication Ethics (3 cr)
COMM 4704—Organizational Communication (3 cr)
COMM 4800—Crisis Communication (3 cr)
COMM 4802—Publication Design and Management (3 cr)
COMM 4900—Public Relations (3 cr)

Criminal Justice B.S.

Liberal Arts and Education Department

Required credits to graduate with this degree: 120.

The career oriented bachelor of science in criminal justice degree at the University of Minnesota, Crookston, is designed for students interested in a professional career in the rapidly expanding criminal justice field. The program has an interdisciplinary criminal justice curriculum that provides students the opportunity to incorporate learning that is identified by employers as being critical to career success. The program provides high quality education in both academic and professional areas, offers unique training and internship experiences, a positive entry-level employment outlook among criminal justice agencies, and an academic platform to continue graduate training in fields such as political science, law, public administration, criminal justice/criminology, psychology, and social work.

Criminal justice majors choose either a law enforcement or corrections emphasis. Both emphases include elective credits that allow students to choose courses of specific interest. Students who complete the law enforcement emphasis and approved skills training will be eligible to take the state board exam to become a licensed police officer.

Program outcomes—graduates will

- demonstrate a comprehensive understanding and knowledge of the criminal justice system, juvenile justice system, public administration/policy, criminal behavior, law, criminal justice issues, and criminology
- identify the ethical issues inherent in criminal justice
- demonstrate proficiencies in policing philosophies, including analyzing, understanding, and evaluating criminal evidence, investigation and surveillance techniques
- explain correctional philosophies and understand the historical and current dilemmas in corrections
- discuss the concepts of due process of law, criminal procedure, defendant's rights, victim's rights, and constitutional rights
- describe programs and services that are effective for combating crime

Admission Requirements

For information about University of Minnesota, Crookston admission requirements, visit the UMC Admissions website, umcrookston.edu/apply.

Program Core

Required courses—38 credits

CRJS 1500—Introduction to Criminal Justice, HI/BEH/SSC, ETH/CIV RE (4 cr)
CRJS 2100—Crime and Criminology (3 cr)
CRJS 2400—Introduction to Corrections (3 cr)
CRJS 2500—Introduction to Policing (3 cr)
CRJS 3505—Judicial Process (3 cr)
CRJS 3515—Criminal Justice Ethics (3 cr)
CRJS 3525—Juvenile Justice and Delinquency (3 cr)
CRJS 3530—Criminal Justice Diversity (3 cr)
CRJS 3900—Criminal Justice Field Placement (Internship) (3 cr)
CRJS 4540—Criminal Law (4 cr)
PSY 3604—Abnormal Psychology (3 cr)
SOC 3001—Social and Behavioral Science Research Methods (3 cr)

Liberal Education Requirements

Minimum of 40 liberal education credits required. Students must complete the 10 goal areas of the Minnesota Transfer Curriculum with the following specific liberal education courses required:

COMP 1011—Composition I, COMMUNICAT (3 cr)
COMP 1013—Composition II, COMMUNICAT (3 cr)
MATH 1150—Elementary Statistics, MATH THINK (3 cr)
POL 1001—American Government, ETH/CIV RE (4 cr)
PSY 1001—General Psychology, HI/BEH/SSC (3 cr)
SOC 1001—Introduction to Sociology, HI/BEH/SSC, HUMAN DIV (3 cr)
SPCH 1101—Public Speaking, COMMUNICAT (3 cr)

Technology Requirement

Take 3 credits of any CA courses.
CA 1xxx

Program Sub-plans

Students are required to complete one of the following sub-plans.

Corrections Sub-Plan

Students can complete the corrections emphasis to better prepare themselves in the field of adult and juvenile corrections.

Required Courses for the Corrections Sub-Plan

Corrections Requirements

Required courses—12 credits

CRJS 3455—Institutional Corrections (3 cr)
CRJS 3465—Strategies in Correctional Rehabilitation (3 cr)
CRJS 3475—Community Corrections (3 cr)
CRJS 4435—Theories of Punishment (3 cr)

Corrections Electives

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

CRJS 1803—Directed Studies (1–3 cr)
CRJS 2550—Traffic Law (2 cr)
CRJS 2560—First Responder (3 cr)
CRJS 3350—Criminal Justice Administration (3 cr)
CRJS 3520—Natural Resource Law Enforcement Techniques (3 cr)
CRJS 3550—Criminal Investigation (3 cr)
CRJS 3575—Critical Issues in Policing (3 cr)
CRJS 3804—Individual Studies (1–3 cr)
CRJS 4315—Women and Crime (3 cr)
CRJS 4390—Special Topics in Criminal Justice (1–3 cr)
CRJS 4510—Victimology (3 cr)
CRJS 4550—Criminal Procedure (4 cr)
MGMT 3210—Supervision and Leadership (3 cr)
PUBH 3005—Fundamentals of Alcohol and Drug Abuse (UMTC) (1 cr)

Corrections Open Electives

Students must complete enough open electives credits to meet the 120 credit graduation requirement (approximately 21 credits will be needed).

Law Enforcement Sub-Plan

Students can complete the academic requirements needed for Peace Officer Standards & Training in order to become a law enforcement officer in Minnesota.

Required Courses for the Law Enforcement Sub-Plan

Law Enforcement Requirements

Required courses—18 credits

CRJS 2550—Traffic Law (2 cr)
CRJS 2560—First Responder (3 cr)
CRJS 3550—Criminal Investigation (3 cr)
CRJS 3575—Critical Issues in Policing (3 cr)
CRJS 4510—Victimology (3 cr)
CRJS 4550—Criminal Procedure (4 cr)

Law Enforcement Electives

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

CRJS 1803—Directed Studies (1–3 cr)
CRJS 3350—Criminal Justice Administration (3 cr)
CRJS 3455—Institutional Corrections (3 cr)
CRJS 3465—Strategies in Correctional Rehabilitation (3 cr)
CRJS 3475—Community Corrections (3 cr)
CRJS 3520—Natural Resource Law Enforcement Techniques (3 cr)
CRJS 3804—Individual Studies (1–3 cr)
CRJS 4315—Women and Crime (3 cr)
CRJS 4390—Special Topics in Criminal Justice (1–3 cr)
CRJS 4435—Theories of Punishment (3 cr)
MGMT 3210—Supervision and Leadership (3 cr)
PUBH 3005—Fundamentals of Alcohol and Drug Abuse (UMTC) (1 cr)

Law Enforcement Open Electives

Students must complete enough open electives credits to meet the 120 credit graduation requirement (approximately 15 credits will be needed).

Criminal Justice Minor

Arts, Humanities, Social Science

(Minor Related to a Major)

Required credits in this minor: 20.

The minor in criminal justice provides an opportunity for students interested in obtaining a bachelor's degree in a different field of study to take coursework to gain an understanding of

the criminal justice system. The minor is designed to provide students with a broad overview of the criminal justice field by focusing on criminological theory, corrections, policing, juvenile justice issues, and criminal law.

Minor Requirements

Required Courses

CRJS 1500—Introduction to Criminal Justice, HI/BEH/SSC, ETH/CIV RE (4 cr)
CRJS 2100—Crime and Criminology (3 cr)
CRJS 2400—Introduction to Corrections (3 cr)
CRJS 2500—Introduction to Policing (3 cr)
CRJS 3525—Juvenile Justice and Delinquency (3 cr)
CRJS 4540—Criminal Law (4 cr)

Early Childhood Education B.S.

Liberal Arts and Education Department

Required credits to graduate with this degree: 120 to 125.

The B.S. degree in early childhood education is a career-oriented program that prepares students to earn their Minnesota teacher's license, a professional licensure that allows teaching young children from birth through third grade.

Graduates of this teacher education program design, implement, and evaluate developmentally appropriate learning experiences for young children in a variety of early childhood settings. They are prepared to work collaboratively with families and in the community. Significant opportunities for professional positions exist in these educational programs: infant and toddler care and education, preschool programs, K-3 classrooms, Head Start, and early childhood family education.

This degree program has four academic core areas of required coursework—education core, early childhood and family core, infant and toddler education core, preprimary education core—and two areas of emphasis—primary education and program management.

Students who expect to apply for teacher licensure must complete the primary education emphasis. Graduates with the primary education emphasis demonstrate competencies as described in the MN Board of Teaching, Rules 8710.3000, Standard for Teachers of Early Childhood Education (ECE) and in MN Rules 8710.2000, Standards for Effective Practice for all Teachers. See program outcomes listed in the sub-plan descriptions below.

Admission Requirements

A GPA of

- 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.

In addition, students must:

1. Earn a minimum GPA of 2.50 overall.
2. Take the Minnesota Teacher Licensure Examination (MTLE), Basic Skills tests.
3. Purchase personal Liability Insurance: can be obtained inexpensively through an annual student membership in Education Minnesota.
4. Successful completion of ED 2200, Foundations of Education.
5. Complete and submit Teacher Education Application Packet.

For information about University of Minnesota, Crookston admission requirements, visit the UMC Admissions website, **umcrookston.edu/apply**.

Program Requirements

Students must complete 40 upper division credits. Students must maintain a minimum GPA of 2.50 throughout their enrollment in the program and must earn a C- or better in all program required courses plus ART 2000 and ECE 2100.

Early Childhood and Family Core

Required courses—15 credits
ECE 2300—Introduction to Early Childhood Education (3 cr)
ECE 4500—Young Children With Special Needs (3 cr)
ECE 4730—Understanding and Supporting Parenting (3 cr)
ECE 4750—Family, School, and Community Relations (3 cr)
ECE 4880—Administration of Early Childhood Programs (3 cr)

Education Core

Required courses—10 credits
ECE 3901—The Professional Teacher I (0.5 cr)
ECE 3902—The Professional Teacher II (0.5 cr)
ED 2200—Foundations of Education (3 cr)
ED 3000—Cultural Immersion (1 cr)
ED 3110—Educational Psychology (3 cr)
EDHD 5009—Human Relations: Applied Skills for School and Society (UMTC) (1 cr)
PUBH 3005—Fundamentals of Alcohol and Drug Abuse (UMTC) (1 cr)

Infant and Toddler Education Core

Required courses—11 credits
ECE 3410—Learning Environments for Infants and Toddlers (4 cr)
ECE 3420—Nurturing and Collaborative Relationships for Infants and Toddlers (3 cr)
ECE 4440—Infant and Toddler Student Teaching (4 cr)

Preprimary Education Core

Required courses—21 credits
ECE 4700—Creative Arts and Language Arts: Preprimary (4 cr)
ECE 4702—Mathematics, Social Studies, and Sciences: Preprimary (4 cr)
ECE 4811—Preprimary Student Teaching I (6 cr)
ECE 4812—Preprimary Student Teaching II (K) (4 cr)
ED 3010—Child Guidance and Classroom Management (3 cr)

Liberal Education Requirements

A minimum of 40 liberal education credits are required. Students must complete the 10 goal areas of the Minnesota Transfer Curriculum with the following specific liberal education courses required.

ART 2000—Elementary Art, HUMANITIES (3 cr)
COMP 1011—Composition I, COMMUNICAT (3 cr)
COMP 1013—Composition II, COMMUNICAT (3 cr)
ECE 2100—Child Development and Learning, HI/BEH/SSC (3 cr)
SPCH 1101—Public Speaking, COMMUNICAT (3 cr)

Technology Requirements

Take 3 credits of any CA courses.
CA 1xxx

Program Sub-plans

Students are required to complete one of the following sub-plans.

Primary Education Sub-plan

The primary education emphasis is for students who wish to teach in public school classrooms with kindergarten through third grade, as well as early childhood education programs for infants, toddlers, and preschoolers.

Program outcomes—graduates will

- promote child development/learning
- encourage infant/toddler development/learning
- facilitate preprimary-aged children's development/learning
- facilitate primary-aged children's development/learning
- assist in building family relationships
- document and assess to support young children
- become a reflective professional

The emphasis requires 25 credits and completes requirements for Board of Teaching licensure.

Required Courses for the Primary Education Sub-plan

Primary Education Emphasis Requirements

Required courses—25 credits
ED 3201—Reading and Language Arts I (4 cr)
ED 3202—Reading and Language Arts II (2 cr)
ED 3301—Creating Meaning Through Literature and Arts (4 cr)
ED 3860—Mathematics in Elementary Education (1 cr)
ED 3870—Mathematics in the Primary Grades (3 cr)
ED 2877—Social Studies and Sciences in the Primary Grades (3 cr)
ED 4827—Primary Student Teaching (8 cr)

Program Management Sub-plan

The program management emphasis is for students who wish to increase their academic preparation for supervisory, management, and/or leadership roles in child care and education programs.

Program outcomes—graduates will

- promote child development/learning
- encourage infant/toddler development/learning
- facilitate preprimary-aged children's development/learning

- assist in building family relationships
- document and assess to support young children
- become a reflective professional
- demonstrate ability to perform tasks associated with planning, organizing, staffing, leading, monitoring and controlling for quality in childcare programs

The emphasis requires 20 credits without Board of Teaching licensure.

Required Courses for the Program Management Sub-plan

Program Management Emphasis Requirements

Required courses—15 credits
ACCT 2101—Principles of Accounting I (3 cr)
ENTR 2200—Introduction to Entrepreneurship and Small Business (3 cr)
MGMT 3200—Principles of Management (3 cr)
MGMT 3210—Supervision and Leadership (3 cr)
MKTG 3300—Principles of Marketing (3 cr)

Electives

Students must take enough electives credits (selected in consultation with and approved by their adviser) to meet the 120 credit graduation requirement. Number of credits needed (approximately 5 credits) depends on LE course selections.

Environmental Sciences B.S.

Math, Science and Technology

Required credits to graduate with this degree: 120.

Required credits within the major: 120.

The B.S. in environmental sciences is designed to provide students with the scientific background and practical skills needed to successfully address environmental issues and the background required to be successful applicants to graduate programs. Students may choose from advanced courses designed to emphasize studies in biological remediation technologies, water quality, or agriculture while participating in a common core of courses which provide knowledge in the basic principles relevant to all areas.

Admission Requirements

For information about University of Minnesota, Crookston admission requirements, visit the UMC Admissions website, **umcrookston.edu/apply**.

Program Requirements

Environmental Sciences Core (30 cr)

BIOL 1009—General Biology, BIOL SCI, PEOPLE/ENV (4 cr)
BIOL 2032—General Microbiology (4 cr)
BIOL 3420—Ecotoxicology (3 cr)
BIOL 3899—Pre-Internship Seminar (0.5 cr)
BIOL 3900—Internship (1–2 cr)
BIOL 3901—Post-Internship Seminar (0.5 cr)

ENSC 3124—Environmental Science and Remediation Techniques (3 cr)

ENSC 3720—Fate of Chemicals in the Environment (4 cr)

ENSC 4022—Risk Assessment and Environmental Impact Statements (3 cr)

ENSC 4100—Capstone in Environmental Science (3 cr)

NATR 1226—Environmental Science and Sustainability, ETH/CIV RE, PEOPLE/ENV (3 cr)

Chemistry Core (13 cr)

Some courses may also count towards the liberal education requirements.

CHEM 1021—Chemical Principles I, PHYS SCI, PEOPLE/ENV (4 cr)

CHEM 1022—Chemical Principles II (4 cr)

CHEM 2301—Organic Chemistry I (3 cr)

CHEM 2310—Organic Chemistry Laboratory I (2 cr)

Math and Physics Core (7 cr)

Some courses may also count towards the liberal education requirements.

MATH 1150—Elementary Statistics, MATH THINK (3 cr)

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

Liberal Education Requirements

A minimum of 40 liberal education credits are required. Students must complete the 10 goal areas of the Minnesota Transfer Curriculum with the following specific liberal education courses required.

COMM 3303—Writing in Your Profession (3 cr)

COMP 1011—Composition I, COMMUNICAT (3 cr)

COMP 1013—Composition II, COMMUNICAT (3 cr)

ECON 1010—Global Trade Economics, GLOB PERSP (3 cr)

ECON 2101—Microeconomics, HI/BEH/SSC (3 cr)

SPCH 1101—Public Speaking, COMMUNICAT (3 cr)

Technology Requirement

Students must take 3 credits of any CA courses.

Take 1 or more course(s) totaling 3 or more credit(s) from the following:

CA 1xxx

Program Sub-plans

Students are required to complete one of the following sub-plans.

Agricultural Environmental Stewardship Sub-plan

The B.S. in environmental sciences with an emphasis in agricultural environmental stewardship trains students with the scientific background and practical skills needed to successfully address environmental issues. It also provides them with the background of agricultural operations that enables them to understand the fate of chemicals in the environment and the impact agriculture can have on the fate and transport of chemicals in the environment. Students also learn about techniques in various fields of agriculture that minimize the impact on the environment while still producing the food, energy, shelter, and other commodities needed to sustain the human population.

Program outcomes—graduates will

- be ideally suited to bridge the gap between agricultural production and environmental science.

- be ideally suited for employment with government agencies such as NRCS, USDA, EPA, and others.

Required Courses for the Agricultural Environmental Stewardship Sub-plan

Agricultural Environmental Stewardship Requirements (24-25 cr)

AGRO 1183—Field Crops: Production Principles (3 cr)

AGRO 3030—Research Techniques (3 cr)

AGRO 3640—Weed Science (3 cr)

ANSC 3004—Livestock Facilities and Environmental Systems (3 cr)

ASM 2200—Introduction to Renewable Energy Systems (3 cr)

NATR 2630—Introduction to Geographic Information Systems (3 cr)

SOIL 1293—Soil Science (3 cr)

MATH 1142—Survey of Calculus, MATH THINK (3 cr)

or MATH 1271—Calculus I, MATH THINK (4 cr)

Agricultural Environmental Stewardship Electives

Students must complete enough electives credits from the following courses to satisfy the 120 credit requirement for graduation.

Take 15 or more credit(s) from the following:

AGRO 3130—Forages (3 cr)

AGRO 3444—Crop Production (4 cr)

ANSC 1205—Beef and Dairy Production Techniques (2 cr)

ANSC 2104—Feeds and Feeding (4 cr)

ANSC 3204—Dairy Production (4 cr)

ASM 3009—Surveying (4 cr)

ASM 3202—Solar, Wind, and Geo-Thermal Systems (3 cr)

ASM 3360—Applications in Precision Agriculture (3 cr)

NATR 3344—Land Use Planning (3 cr)

NATR 3635—Geographic Information Systems Applications (3 cr)

SOIL 3414—Soil Fertility and Plant Nutrition (4 cr)

SWM 3009—Hydrology and Water Quality (4 cr)

SWM 3224—Soil and Water Conservation (4 cr)

SWM 3225—Watershed Management (3 cr)

Environmental Ecology Sub-plan

The B.S. in environmental sciences with an emphasis in environmental ecology is designed to not only provide students with the scientific background and practical skills needed to successfully address environmental issues, but also to provide graduating students with an ecological perspective on the relationships and interdependence of organisms in terrestrial and aquatic habitats. Students electing to pursue this emphasis area become familiar with water quality issues, soil quality issues, and research and analytical techniques used to analyze various substrates for environmental contaminants. Students learn the impact that human activities can have on these biota, but also how the biota can be used in biological remediation techniques to remove the contamination caused by human activities.

Program outcomes—graduates will

- be ideally suited for environmental consulting firms
- understand the ecological relationships between biota and also how the ecosystems can be impacted by human activities.
- understand how to protect sensitive ecosystems and how to restore ecosystems that have already been impaired by human activities.

Required Courses for the Environmental Ecology Sub-plan

Environmental Ecology Requirements (35 cr)

AGRO 3030—Research Techniques (3 cr)
BIOL 2022—General Botany (3 cr)
CHEM 3022—Analytical Chemistry and Spectroscopy (4 cr)
GEOL 1001—Introductory Geology, PHYS SCI, PEOPLE/ ENV (3 cr)
MATH 1271—Calculus I, MATH THINK (4 cr)
NATR 3374—Ecology, BIOL SCI (4 cr)
NATR 3699—Integrated Resource Management (3 cr)
SOIL 1293—Soil Science (3 cr)
SOIL 3414—Soil Fertility and Plant Nutrition (4 cr)
SWM 3009—Hydrology and Water Quality (4 cr)

Environmental Ecology Electives

Students must complete enough electives credits from the following courses to satisfy the 120 credit requirement for graduation.

Take 5 or more credit(s) from the following:
AGRO 3640—Weed Science (3 cr)
ANSC 3004—Livestock Facilities and Environmental Systems (3 cr)
BIOL 3131—Plant Physiology (3 cr)
NATR 2630—Introduction to Geographic Information Systems (3 cr)
NATR 3364—Plant Taxonomy (3 cr)
NATR 3376—Wetland and Riparian Ecology and Management (3 cr)
NATR 3660—Prairie Ecosystem Management (2 cr)
NATR 3699—Integrated Resource Management (3 cr)
PHYS 1102—Introductory College Physics II, PHYS SCI (4 cr)
SWM 3224—Soil and Water Conservation (4 cr)

Environmental Health Sub-plan

The B.S. in environmental sciences with an emphasis in environmental health trains students with the scientific background and practical skills needed to successfully address environmental issues. It also provides them with an understanding of how environmental or occupational factors (physical, chemical, and biological) interact with a human body causing an adverse impact on human health or the ecological balances essential to long-term human survivorship.

Program outcomes—graduates will

- understand how environmental or occupational factors impact human health.
- be able to make recommendations as to when an environmental or occupational hazard needs to be remediated due to its impacts on human health.

- be ideal candidates for environmental health graduate programs, and as government health officials and environmental health and safety specialists within any organization.

Required Courses for the Environmental Health Sub-plan

Environmental Health Requirements (33 cr)

AGRO 3030—Research Techniques (3 cr)
BIOL 2012—General Zoology (4 cr)
BIOL 2103—Human Anatomy and Physiology I (4 cr)
BIOL 2104—Human Anatomy and Physiology II (4 cr)
CHEM 3022—Analytical Chemistry and Spectroscopy (4 cr)
ENSC 3104—Toxicology (3 cr)
MATH 1271—Calculus I, MATH THINK (4 cr)
NATR 3374—Ecology, BIOL SCI (4 cr)
PUBH 3102—Issues in Environmental and Occupational Health (UMTC) (3 cr)

Environmental Health Electives

Students must complete enough electives credits from the following courses to satisfy the 120 credit requirement for graduation.

Take 7 or more credit(s) from the following:
AGRO 3640—Weed Science (3 cr)
CHEM 3021—Biochemistry (3 cr)
ENSC 3132—Air, Water, and Human Health (3 cr)
ENSC 3524—Global Climate Change and Human Health (3 cr)
HSCI 1123—Fundamentals of Nutrition, BIOL SCI (3 cr)
PHYS 1102—Introductory College Physics II, PHYS SCI (4 cr)

Environmental Toxicology and Chemistry Sub-plan

The B.S. in environmental sciences with an emphasis in environmental toxicology and chemistry trains students with the scientific background and practical skills needed to successfully address environmental issues while also providing them with an understanding of the impacts of environmental contaminants on the biota. Chemical and toxicological aspects of environmental science are emphasized.

Program outcomes—graduates will

- understand what factors (chemical, biological, physical) impact the fate and transport of chemicals in the environment.
- understand phase partitioning and how to determine the ultimate fate of a chemical released into the environment.
- be ideally suited for environmental consulting firms, pharmaceutical companies, and government agencies such as EPA, USGS, and others.
- be ideal candidates for graduate programs in environmental toxicology, chemistry, ecotoxicology, or any other science based graduate program.

Required Courses for the Environmental Toxicology and Chemistry Sub-plan

Environmental Toxicology and Chemistry Requirements (28-29 cr)

AGRO 3030—Research Techniques (3 cr)
CHEM 2302—Organic Chemistry II (3 cr)
CHEM 2311—Organic Chemistry Laboratory II (2 cr)
CHEM 3021—Biochemistry (3 cr)
CHEM 3022—Analytical Chemistry and Spectroscopy (4 cr)
ENSC 3104—Toxicology (3 cr)
MATH 1271—Calculus I, MATH THINK (4 cr)
SOIL 1293—Soil Science (3 cr)
BIOL 2012—General Zoology (4 cr)
 or   BIOL 2022—General Botany (3 cr)

Environmental Toxicology and Chemistry Electives

Students must complete enough electives credits from the following courses to satisfy the 120 credit requirement for graduation.

Take 11 or more credit(s) from the following:
AGRO 3640—Weed Science (3 cr)
ENSC 3133—Global Change and Biogeochemistry (3 cr)
ENSC 3143—Environmental Microbiology (3 cr)
ENSC 4608—Biodegradation and Bioremediation (3 cr)
GEOL 1001—Introductory Geology, PHYS SCI, PEOPLE/ENV (3 cr)
NATR 3374—Ecology, BIOL SCI (4 cr)
NATR 3699—Integrated Resource Management (3 cr)
PHYS 1102—Introductory College Physics II, PHYS SCI (4 cr)
SOIL 3414—Soil Fertility and Plant Nutrition (4 cr)
SWM 3009—Hydrology and Water Quality (4 cr)

Individualized Environmental Sciences Sub-plan

The B.S. in environmental sciences with an emphasis in individualized environmental sciences allows students and advisers to select courses from the entire list of environmental science electives for the environmental sciences major. This allows students to work out an individual plan of study in cooperation with their academic advisers to prepare them for any particular aspect of environmental sciences that may not be covered by one of the existing emphasis areas. This emphasis area also allows great flexibility for individual students while maintaining the strong background in the sciences needed to be a successful environmental scientist.

Required Courses for the Individualized Environmental Sciences sub-plan

Individualized Environmental Sciences Electives

Students must complete enough electives credits from the following courses to satisfy the 120 credit requirement for graduation.

Take 40 or more credit(s) from the following:
AGRO 3130—Forages (3 cr)
AGRO 3444—Crop Production (4 cr)
AGRO 3640—Weed Science (3 cr)
ANSC 1205—Beef and Dairy Production Techniques (2 cr)

ANSC 2104—Feeds and Feeding (4 cr)
ANSC 3004—Livestock Facilities and Environmental Systems (3 cr)
ANSC 3204—Dairy Production (4 cr)
ASM 3009—Surveying (4 cr)
ASM 3202—Solar, Wind, and Geo-Thermal Systems (3 cr)
ASM 3360—Applications in Precision Agriculture (3 cr)
BIOL 3131—Plant Physiology (3 cr)
CHEM 2302—Organic Chemistry II (3 cr)
CHEM 2311—Organic Chemistry Laboratory II (2 cr)
CHEM 3021—Biochemistry (3 cr)
ENSC 3104—Toxicology (3 cr)
ENSC 3132—Air, Water, and Human Health (3 cr)
ENSC 3133—Global Change and Biogeochemistry (3 cr)
ENSC 3143—Environmental Microbiology (3 cr)
ENSC 3524—Global Climate Change and Human Health (3 cr)
ENSC 4608—Biodegradation and Bioremediation (3 cr)
HSCI 1123—Fundamentals of Nutrition, BIOL SCI (3 cr)
NATR 2630—Introduction to Geographic Information Systems (3 cr)
NATR 3344—Land Use Planning (3 cr)
NATR 3364—Plant Taxonomy (3 cr)
NATR 3376—Wetland and Riparian Ecology and Management (3 cr)
NATR 3635—Geographic Information Systems Applications (3 cr)
NATR 3660—Prairie Ecosystem Management (2 cr)
NATR 3699—Integrated Resource Management (3 cr)
PHYS 1102—Introductory College Physics II, PHYS SCI (4 cr)
SOIL 3414—Soil Fertility and Plant Nutrition (4 cr)
SWM 3009—Hydrology and Water Quality (4 cr)
SWM 3103—Meteorology and Climatology (3 cr)
SWM 3224—Soil and Water Conservation (4 cr)
SWM 3225—Watershed Management (3 cr)

Water Quality Sub-plan

The B.S. in environmental sciences with an emphasis in water quality trains students with the scientific background and practical skills needed to successfully address environmental issues. It also provides them with an understanding of water movement in terrestrial and aquatic systems and how this water movement impacts pollutant movement. In addition students will understand how the presence of pollutants in aquatic systems impacts the water quality and how watersheds can be managed to minimize the presence of pollutants and their impact on human and environmental health.

Program outcomes—graduates will

• understand water movement and how water movement impacts pollutant movement.

• be ideally suited for environmental consulting firms, government agencies such as USGS, and others.

Required Courses for the Water Quality Sub-plan

Water Quality Requirements (34 cr)

AGRO 3030—Research Techniques (3 cr)
BIOL 2022—General Botany (3 cr)
BIOL 3722—Limnology (3 cr)

CHEM 3022—Analytical Chemistry and Spectroscopy (4 cr)
GEOL 1001—Introductory Geology, PHYS SCI, PEOPLE/ENV (3 cr)
MATH 1271—Calculus I, MATH THINK (4 cr)
NATR 3374—Ecology, BIOL SCI (4 cr)
NATR 3699—Integrated Resource Management (3 cr)
SOIL 1293—Soil Science (3 cr)
SWM 3009—Hydrology and Water Quality (4 cr)

Water Quality Electives

Students must complete enough electives credits from the following courses to satisfy the 120 credit requirement for graduation.
Take 6 or more credit(s) from the following:
AGRO 3640—Weed Science (3 cr)
ENSC 3133—Global Change and Biogeochemistry (3 cr)
ENSC 3143—Environmental Microbiology (3 cr)
ENSC 4608—Biodegradation and Bioremediation (3 cr)
NATR 2630—Introduction to Geographic Information Systems (3 cr)
NATR 3376—Wetland and Riparian Ecology and Management (3 cr)
PHYS 1102—Introductory College Physics II, PHYS SCI (4 cr)
SOIL 3414—Soil Fertility and Plant Nutrition (4 cr)
SWM 3103—Meteorology and Climatology (3 cr)
SWM 3224—Soil and Water Conservation (4 cr)
SWM 3225—Watershed Management (3 cr)

Environmental Sciences Minor

Math, Science and Technology

(Minor Related to a Major)

Required credits in this minor: 20.

The environmental sciences minor introduces students to the core concepts of environmental sciences. Students will gain an overall understanding of environmental sciences and its importance in today's society. This minor meshes well with major courses of study in biology, agronomy, horticulture, animal science, and natural resources giving these students a feel for how their disciplines interact with environmental sciences. It also helps develop critical thinking skills in applying science-based decision making as it pertains to the environment.

Minor Requirements

Required Courses (20 cr)

BIOL 3420—Ecotoxicology (3 cr)
ENSC 3124—Environmental Science and Remediation Techniques (3 cr)
ENSC 3720—Fate of Chemicals in the Environment (4 cr)
ENSC 4022—Risk Assessment and Environmental Impact Statements (3 cr)
NATR 1226—Environmental Science and Sustainability, ETH/CIV RE, PEOPLE/ENV (3 cr)
SWM 3009—Hydrology and Water Quality (4 cr)

Equine Science B.S.

Agriculture and Natural Resources Department

Required credits to graduate with this degree: 120 to 124.

Graduates of UMC's equine science program understand and are able to meet the daily care, nutrition, health care, and exercise/training needs of horses in their care. They have the knowledge and skills necessary to succeed in equine or equine-related employment and have the business and management experience necessary to operate an equine or related business. The program balances the practical skills students need to work with and care for horses and the theory required to build a successful career. The focus is on the business and management aspects of the horse industry, thus providing a broad-based education which appeals to employers. Options also exist for students who wish to pursue graduate school or pre-veterinary studies.

Program outcomes—graduates will

- demonstrate knowledge of theory and practical experience in physiology, nutrition, health, and reproduction of the horse;
- demonstrate a working knowledge of equine ownership responsibility and husbandry;
- be able to apply management theories and software and marketing strategies to equine and related enterprises;
- demonstrate horsemanship and training skills in a variety of disciplines and discern what methods work most effectively with horses of different temperaments and breeding/conformation;
- have practical skills and knowledge that will lead to a variety of employment opportunities in the equine industry.

Admission Requirements

For information about University of Minnesota, Crookston admission requirements, visit the UMC Admissions website, **umcrookston.edu/apply**.

Program Requirements

Students must complete 40 upper division credits.

Equine Science Requirements

Required courses—49 credits
ANSC 1004—Introduction to Animal Science (4 cr)
ANSC 2104—Feeds and Feeding (4 cr)
ANSC 3023—Animal Breeding (3 cr)
ANSC 3104—Applied Animal Nutrition (4 cr)
ANSC 3203—Animal Anatomy and Physiology (4 cr)
ANSC 3304—Reproduction, AI, and Lactation (4 cr)
ANSC 3503—Animal Health and Disease (3 cr)
BIOL 3022—Principles of Genetics (3 cr)
EQSC 1002—Equine Careers and Husbandry Practices (1 cr)
EQSC 1202—Equine Evaluation (2 cr)
EQSC 2102—Horse Production (4 cr)
EQSC 3403—Equine Exercise Physiology (3 cr)

EQSC 4102—Equine Management (3 cr)
GBUS 3107—Legal Environment in Business (3 cr)
GNAG 3899—Pre-Internship Seminar (0.5 cr)
GNAG 3900—Internship (0.5-3 cr)
GNAG 3901—Post Internship Seminar (0.5 cr)
GNAG 4652—Senior Seminar (1 cr)

Liberal Education Requirements

A minimum of 40 liberal education credits required. Students must complete the 10 goal areas of the Minnesota Transfer Curriculum with the following specific liberal education courses required:

BIOL 1009—General Biology, BIOL SCI, PEOPLE/ENV (4 cr)
COMP 1011—Composition I, COMMUNICAT (3 cr)
COMP 1013—Composition II, COMMUNICAT (3 cr)
ECON 2101—Microeconomics, HI/BEH/SSC (3 cr)
MATH 1150—Elementary Statistics, MATH THINK (3 cr)
SPCH 1101—Public Speaking, COMMUNICAT (3 cr)

Technology Requirements

Students must take 3 credits of any CA courses.
CA 1xxx

Agriculture Electives

Students must take 2 credits of agriculture electives, selected in consultation with their adviser.

Open Electives

Students must take enough open electives credits to meet the 120–124 credit graduation requirement.

Program Sub-plans

Students are required to complete one of the following sub-plans.

Pre-Veterinary Medicine Sub-plan

The pre-veterinary medicine emphasis meets the course entry requirements for admission to the University of Minnesota College of Veterinary Medicine; however, similar entry requirements among colleges of veterinary medicine coupled with sufficient flexibility within the curriculum allow graduates to meet the admission requirements for many other institutions. Students who graduate are well prepared to pursue their career goal of becoming a veterinarian. Students are exposed to traditional classroom instruction as well as hands-on/experiential learning in the laboratory.

Required Courses for the Pre-Veterinary Medicine sub-plan

Pre-Veterinary Medicine Requirements

Required courses—35 credits
BIOL 2012—General Zoology (4 cr)
BIOL 2032—General Microbiology (4 cr)
CHEM 1021—Chemical Principles I, PHYS SCI, PEOPLE/ENV (4 cr)
CHEM 1022—Chemical Principles II (4 cr)
CHEM 2301—Organic Chemistry I (3 cr)
CHEM 2310—Organic Chemistry Laboratory I (2 cr)
CHEM 3021—Biochemistry (3 cr)
PHYS 1101—Introductory College Physics I, PHYS SCI (4 cr)
PHYS 1102—Introductory College Physics II, PHYS SCI (4 cr)

Choose one of the following:
MATH 1031—College Algebra, MATH THINK (3 cr)
or MATH 1142—Survey of Calculus, MATH THINK (3 cr)

Pre-Veterinary Medicine Electives

Take 3 or more credit(s) from the following:
EQSC 1000—Light Horse Driving (2 cr)
EQSC 1100—Western Equitation (3 cr)
EQSC 1200—Hunt Seat & Dressage Equitation (3 cr)
EQSC 1300—Saddle Seat Equitation (3 cr)
EQSC 3441—Topics in Advanced Western Equitation (3 cr)
EQSC 3443—Topics in Advanced Equitation Over Fences (3 cr)

Equine Science Sub-plan

This emphasis leads graduates to equine careers, including management, training/showing, riding instruction, breeding/reproduction, feed production/sales, sales of equestrian equipment or pharmaceutical/health care products, and veterinary technician. Students receive classroom instruction and hands-on experiential learning. Focus is on the business/management aspect of the horse industry. Curriculum includes computer, communications training and sales training. Coursework includes riding instruction, nutrition, breeding, reproduction, horse production, evaluation, feeds, health/disease, management, training/showing, and facilities. Students can take courses specific to their interest.

Required Courses for the Equine Science sub-plan

Equine Science Requirements

Required courses—23 credits
AGEC 3540—Farm Business Management (3 cr)
AGEC 4740—Grain and Livestock Marketing (3 cr)
CHEM 1401—Elementary Bioorganic Chemistry, PHYS SCI, PEOPLE/ENV (4 cr)
EQSC 3305—Equine Reproductive Techniques (3 cr)
EQSC 3413—Horse Training and Showing (3 cr)
MATH 1031—College Algebra, MATH THINK (3 cr)

Choose one of the following:
CHEM 1001—Introductory Chemistry, PHYS SCI (4 cr)
or CHEM 1021—Chemical Principles I, PHYS SCI, PEOPLE/ENV (4 cr)

Equine Science Electives

Take 7 or more credit(s) from the following:
EQSC 1000—Light Horse Driving (2 cr)
EQSC 1100—Western Equitation (3 cr)
EQSC 1200—Hunt Seat & Dressage Equitation (3 cr)
EQSC 1300—Saddle Seat Equitation (3 cr)
EQSC 2001—Concepts in Dressage Equitation (3 cr)
EQSC 3441—Topics in Advanced Western Equitation (3 cr)
EQSC 3443—Topics in Advanced Equitation Over Fences (3 cr)

Equine Science Minor
Agriculture and Natural Resources Department

(Minor Related to a Major)

Required credits in this minor: 25 to 27.

The minor in equine science introduces students to the pertinent areas of management and production of the equine industry. Students learn core concepts of the equine industry, including training in reproduction, exercise physiology, nutrition, management of equine facilities, and rider instructor training.

Minor Requirements

Required Courses for the Program
Required courses—25 to 27 credits
ANSC 2104—Feeds and Feeding (4 cr)
ANSC 3203—Animal Anatomy and Physiology (4 cr)
ANSC 3503—Animal Health and Disease (3 cr)
EQSC 1202—Equine Evaluation (2 cr)
EQSC 2102—Horse Production (4 cr)
EQSC 4102—Equine Management (3 cr)

Choose one of the following:
EQSC 1000—Light Horse Driving (2 cr)
or EQSC 1100—Western Equitation (3 cr)
or EQSC 1200—Hunt Seat & Dressage Equitation (3 cr)
or EQSC 1300—Saddle Seat Equitation (3 cr)

Choose one of the following:
ANSC 3304—Reproduction, AI, and Lactation (4 cr)
or EQSC 3305—Equine Reproductive Techniques (3 cr)
or EQSC 3403—Equine Exercise Physiology (3 cr)

Golf and Turf Management B.S.
Agriculture and Natural Resources Department

Required credits to graduate with this degree: 120.

Golf course superintendents and turfgrass professionals use technology and talent to balance the needs of people with those of nature. The golf and turf management degree provides students with skills and experiences to build and maintain functional, and aesthetically pleasing turfgrass environments. Extensive coursework in plant science, horticulture, and turf management helps students develop the technical skills needed to be successful. Complementary courses in facility management and communication provide the fundamentals for managing employees and interacting with customers.

Student learning incorporates hands-on activities along with technological applications in a practical, career-oriented environment. Internships may be completed at golf courses, athletic fields, park and recreation areas, or with industry suppliers. Graduates will hold positions in the golf industry, sports field management, lawn care, sod production, grounds maintenance, sales, or pursue advanced degrees.

Program outcomes—graduates will
- demonstrate competencies in turfgrass management
- demonstrate problem-solving skills in relation to turfgrass pests and fertility issues
- understand the use of integrated pest management and resource preservation
- demonstrate an awareness of the need for continual professional development
- demonstrate skills in written and oral communication and human resource management

Admission Requirements
For information about University of Minnesota, Crookston admission requirements, visit the UMC Admissions website, **umcrookston.edu/apply**.

Program Requirements
Students must complete 40 upper division credits.

Required Courses
Required courses—34 credits
AGRO 2573—Entomology (3 cr)
AGRO 3230—Introduction to Plant Pathology (3 cr)
BIOL 2022—General Botany (3 cr)
HORT 1010—Introduction to Horticulture (3 cr)
HORT 1021—Woody Plant Materials (4 cr)
NATR 3899—Pre-Internship Seminar (0.5 cr)
NATR 3900—Internship (0.5-4 cr)
NATR 3901—Post-Internship Seminar (0.5 cr)
NATR 4652—Seminar (1 cr)
SOIL 1293—Soil Science (3 cr)
SOIL 3414—Soil Fertility and Plant Nutrition (4 cr)
SPAN 1104—Beginning Spanish I (4 cr)
COMM 3008—Business Writing (3 cr)
or COMM 3303—Writing in Your Profession (3 cr)
or COMM 3431—Persuasion (3 cr)

Major Requirements
Required courses—21 credits
HORT 3040—Landscape Installation and Maintenance (3 cr)
MGMT 3210—Supervision and Leadership (3 cr)
SPAN 1204—Beginning Spanish II (4 cr)
TURF 1072—Principles of Turf Management (3 cr)
TURF 3074—Turfgrass Pest Management (3 cr)
TURF 3076—Turfgrass Management Systems (3 cr)
TURF 3077—Turf and Landscape Irrigation Design and Installation (2 cr)

Liberal Education Requirements
A minimum of 40 liberal education credits required. Students must complete the 10 goal areas of the Minnesota Transfer Curriculum with the following specific liberal education courses required:
BIOL 1009—General Biology, BIOL SCI, PEOPLE/ENV (4 cr)
CHEM 1001—Introductory Chemistry, PHYS SCI (4 cr)
COMP 1011—Composition I, COMMUNICAT (3 cr)
COMP 1013—Composition II, COMMUNICAT (3 cr)
SPCH 1101—Public Speaking, COMMUNICAT (3 cr)
MATH 1031—College Algebra, MATH THINK (3 cr)
or MATH 1150—Elementary Statistics, MATH THINK (3 cr)

Technology Requirement

Students must take 3 credits of any CA courses.

CA 1xxx

Program Electives

Take 12 or more credit(s) from the following:

AGRO 2640—Applied Agriculture Chemicals (3 cr)

ASM 1034—Facility Maintenance and Safety (4 cr)

ASM 2043—Welding and Manufacturing Processes (3 cr)

ASM 2250—Agricultural Machinery Management (3 cr)

ASM 3009—Surveying (4 cr)

BIOL 3131—Plant Physiology (3 cr)

CHEM 1401—Elementary Bioorganic Chemistry, PHYS SCI, PEOPLE/ENV (4 cr)

HORT 1025—Introduction to Arboriculture (2 cr)

HORT 3025—Applications in Arboriculture (3 cr)

HORT 3030—Landscape Design (4 cr)

HORT 3031—Herbaceous Perennial Plant Materials (2 cr)

HORT 3034—Commercial Floriculture Crops-Spring (4 cr)

HORT 3036—Plant Propagation (4 cr)

HORT 3045—Urban Forestry Planning and Management (3 cr)

MGMT 3200—Principles of Management (3 cr)

MGMT 3220—Human Resource Management (3 cr)

MGMT 3250—Operations Management (3 cr)

NATR 2630—Introduction to Geographic Information Systems (3 cr)

NATR 3203—Park and Recreation Management (3 cr)

NATR 3344—Land Use Planning (3 cr)

NATR 3468—Wildlife Habitat Management Techniques (3 cr)

PHYS 1012—Introductory Physics, PHYS SCI, PEOPLE/ENV (4 cr)

SRM 3000—Foundations of Sport and Recreation Management (3 cr)

SRM 3003—Facility and Equipment Management (3 cr)

SWM 3225—Watershed Management (3 cr)

Open Electives

Students must take enough open electives credits to meet the 120 credit graduation requirement. The number of credits needed depends on liberal education and program electives course selections. Approximately 9 credits will be needed.

Health Informatics Privacy and Security for Health Care Providers Certificate

Math, Science, and Technology Department

Required credits for certificate: 18.

This certificate program will prepare students to support the secure collection, management, retrieval, exchange, and/or analysis of information in electronic form in health care and public health organizations.

Program Outcomes

- Proficiency in Database principles
- Understanding of how/why information systems are used in health care
- Knowledge representation of secure data collection and retrieval
- Understanding of the use of health information workflow, analysis and design in supporting clinical decisions

- Awareness of Social, Legal and Ethical Issues in Health Informatics
- Awareness of Privacy and Security Policies around health informatics

Admission Requirements

- Must be enrolled in or completed a bachelor degree, or completed an associate degree in health, allied health, clinical lab science, or public health.
- Must have a Grade Point Average (GPA) of 2.50 or above (on a 4.00 scale).
- Must provide an official transcript showing completion of a degree or current enrollment in a degree in a health or public health program.
- Must provide a current curriculum vitae (preferred) or resume.
- Must provide 2 letters of recommendation, preferably from current or previous health care place of employment or study.
- Must provide a personal statement of goals and expected impacts of study.
- Must be proficient in English. If your native language is not English, you must take the Test of English as a Foreign Language (TOEFL) and score at least 586 (written), 240 (computerized), or 95 (IBT). We will accept TOEFL or MELAB exams taken within three years of the time of application.

Certificate Requirements

HI 2060—Database Management in Health Information Systems (3 cr)

HI 3020—Introduction to Health Information Systems (3 cr)

HI 3060—Secure Data Collection and Retrieval (3 cr)

HI 3100—Health Information Workflow Process Analysis and Design (3 cr)

HI 3200—Social, Legal, Ethical Issues in Health Informatics (3 cr)

HI 3215—Health Information Assurance and Security (3 cr)

Health Informatics for Software Engineers and IT Professionals Certificate

Math, Science, and Technology Department

Required credits for certificate: 22.

This certificate will prepare students with an existing background in Information Technology, programming, and software engineering to apply their expertise to the domain of health informatics in order to build advanced Information Systems for health care and public health organizations.

Program Outcomes

- Understanding of how/why information systems are used in health care
- Understanding of the use of health information workflow, analysis and design in supporting clinical decisions
- Awareness of Social, Legal and Ethical Issues in Health Informatics

- Awareness of Privacy and Security Policies around health informatics
- Demonstrate understanding of health care organizations
- Understanding of how to integrate, manipulate and query vast amounts of data for decision making
- Apply software engineering knowledge to design systems in the health informatics domain.

Admission Requirements

- Must be enrolled in or completed a bachelor degree, or completed an associate degree in health, allied health, clinical lab science, or public health.
- Must have a Grade Point Average (GPA) of 2.5 or above (on a 4.0 scale).
- Must provide an official transcript showing completion of a degree or current enrollment in a degree in a health or public health program.
- Must provide a current curriculum vitae (preferred) or resume.
- Must provide 2 letters of recommendation, preferably from current or previous health care place of employment or study.
- Must provide a personal statement of goals and expected impacts of study.
- Must be proficient in English. If your native language is not English, you must take the Test of English as a Foreign Language (TOEFL) and score at least 586 (written), 240 (computerized), or 95 (IBT). We will accept TOEFL or MELAB exams taken within three years of the time of application.

Certificate Requirements

HI 3020—Introduction to Health Information Systems (3 cr)
HI 3100—Health Information Workflow Process Analysis and Design (3 cr)
HI 3200—Social, Legal, Ethical Issues in Health Informatics (3 cr)
HI 3215—Health Information Assurance and Security (3 cr)
HI 3300—Organization of EHR Systems (3 cr)
HSM 1010—Medical Terminology (2 cr)
HSM 2010—Introduction to Health Services Organizations (2 cr)
SE 3060—Data Warehousing and Mining (3 cr)

Health Management B.S.

Math, Science and Technology

Required credits to graduate with this degree: 120.

The health management program provides career-entry opportunities for high school graduates and professional advancement opportunities for health care personnel. Career opportunities for students with baccalaureate degrees in health management include management positions in hospitals, long-term care facilities, health maintenance and other managed care organizations, public health departments, community-based and home health agencies, medical equipment companies, government regulatory agencies, and health insurance companies.

The health management program focuses on developing managerial, administrative, and computer skills, supplementing those skills with an in-depth knowledge of the health care system. The program prepares graduates to offer managerial excellence to employers.

Long-Term Care Administration—The health management program has been approved by the Minnesota Board of Examiners for Nursing Home Administrators and meets Minnesota regulations for long-term health care administration. Health management program graduates are eligible to take the Minnesota licensure examination for nursing home administration.

Program outcomes—graduates will

- communicate effectively and work as a team in a health care setting
- demonstrate leadership ability in problem solving, conflict resolution, and change management
- understand the legal, regulatory, and ethical issues inherent to health care
- show the ability to adapt to changing public policy, economic, and financial issues in health care
- demonstrate assessment skills related to improving clinical care and customer service
- understand technology and how to apply it to the workplace

Admission Requirements

For information about University of Minnesota, Crookston admission requirements, visit the UMC Admissions website, **umcrookston.edu/apply**.

Program Requirements

Students must complete 40 upper division credits.

Health Management Core (57 cr)

ACCT 2101—Principles of Accounting I (3 cr)
ACCT 2102—Principles of Accounting II (3 cr)
HSM 1010—Medical Terminology (2 cr)
HSM 2010—Introduction to Health Services Organizations (2 cr)
HSM 3020—Quality Improvement and Risk Management (4 cr)
HSM 3030—Health Care and Medical Needs (2 cr)
HSM 3100—Essentials of Managed Care (3 cr)
HSM 3130—Health Management Information Systems (3 cr)
HSM 3200—Health Care Leadership and Planning (4 cr)
HSM 3230—Administration of Continuum Care Facilities (3 cr)
HSM 3240—Health Care Policy and Comparative Systems (4 cr)
HSM 3900—Internship (1–3 cr)
HSM 4100—Health Care Finance (3 cr)
HSM 4210—Health Care Law and Biomedical Ethics (4 cr)
HSM 4212—Regulatory Management (3 cr)
MGMT 3200—Principles of Management (3 cr)
MGMT 3210—Supervision and Leadership (3 cr)
MGMT 3220—Human Resource Management (3 cr)
MKTG 3300—Principles of Marketing (3 cr)

Liberal Education Requirements

A minimum of 40 liberal education credits required. Students must complete the 10 goal areas of the Minnesota Transfer Curriculum with the following specific liberal education courses required:

COMP 1011—Composition I, COMMUNICAT (3 cr)
COMP 1013—Composition II, COMMUNICAT (3 cr)
ECON 2101—Microeconomics, HI/BEH/SSC (3 cr)
MATH 1031—College Algebra, MATH THINK (3 cr)
SPCH 1101—Public Speaking, COMMUNICAT (3 cr)

Technology Requirement (3 cr)

CA 1020—Spreadsheet Applications (3 cr)

CA Electives

Take 2 credits of CA electives.

Electives

Students must take enough open elective credits to meet the 120-credit graduation requirement. Approximately 18 credits will be needed.

Program Sub-plans

A sub-plan is not required for this program.

Health Management B.S. Online Sub-plan

The health management program provides career-entry opportunities for high school graduates and professional advancement opportunities for health care personnel. Career opportunities for students with baccalaureate degrees in health management include management positions in hospitals, long-term care facilities, health maintenance and other managed care organizations, public health departments, community-based and home health agencies, medical equipment companies, government regulatory agencies, and health insurance companies.

The health management program focuses on developing managerial, administrative, and computer skills, supplementing those skills with an in-depth knowledge of the health care system. The program prepares graduates to offer managerial excellence to employers.

Long-Term Care Administration—The health management program has been approved by the Minnesota Board of Examiners for Nursing Home Administrators and meets Minnesota regulations for long-term health care administration. Health management program graduates are eligible to take the Minnesota licensure examination for nursing home administration.

The curriculum for the Health Management Online program is the same as the classroom-delivered program.

Health Sciences Pre-Professional B.S.

Math, Science and Technology

Required credits to graduate with this degree: 120.

The B.S. in health sciences provides students with the prerequisite knowledge and skills required for admission to professional programs in chiropractic, dentistry, medicine, optometry, occupational therapy, pharmacy, physical therapy, and veterinary medicine. UMC also provides a two-year pre-nursing course of study. Admission is competitive and specific admission requirements, including courses and experiences, vary by professional program and institution. Completion of the B.S. does not guarantee admission to professional programs at the University of Minnesota or other universities. The course requirements shown are common to similar programs at other institution; however, students are advised to check with their specific professional program to be sure all prerequisite courses are met. Most professional programs have additional admission requirements, and students are advised to contact the program(s) to which they plan to apply to identify all admission requirements.

Program outcomes—graduates will

- explain and reconstruct the scientific method and can apply this mode of inquiry in a laboratory setting
- explain and apply basic principles of biology in work setting
- demonstrate teamwork skills
- apply, critique, and synthesize protocols from current literature
- demonstrate and critique effective communication skills orally and in writing
- formulate proper data collection and analysis methods
- interpret and practice professional and ethical behavior related to biological research
- identify, provide examples, differentiate, and integrate current biology techniques into their scientific investigations
- produce evidence of their ability to be admitted into health science professional programs

Admission Requirements

For information about University of Minnesota, Crookston admission requirements, visit the UMC Admissions website, **umcrookston.edu/apply**.

Program Requirements

Students must complete 40 upper division credits. Students work with their adviser to develop an individualized program of study that meets their health science educational goals (pre-chiropractic, pre-dentistry, pre-medicine, pre-occupational therapy, pre-pharmacy, pre-physical therapy).

Core Curriculum

These courses are common to all pre-health sciences programs.

CHEM 1021—Chemical Principles I, PHYS SCI, PEOPLE/ENV (4 cr)
CHEM 1022—Chemical Principles II (4 cr)
COMP 1011—Composition I, COMMUNICAT (3 cr)
COMP 1013—Composition II, COMMUNICAT (3 cr)
PHYS 1101—Introductory College Physics I, PHYS SCI (4 cr)
PHYS 1102—Introductory College Physics II, PHYS SCI (4 cr)
PSY 1001—General Psychology, HI/BEH/SSC (3 cr)
SPCH 1101—Public Speaking, COMMUNICAT (3 cr)

Horticulture B.S.

Agriculture and Natural Resources Department

Required credits to graduate with this degree: 120.

The B.S. in horticulture is a career-oriented program that combines science-based education, liberal arts education, and technical training. All horticulture students are introduced to botany, woody plants, entomology, plant pathology, and soil science as part of the program requirements. These courses together with liberal arts courses and program specific courses prepare students for careers in the Green Industry. Students select from three areas of emphasis: environmental landscaping, horticulture production, or urban forestry.

Program outcomes—graduates will

- demonstrate competency in identification of plant species, diseases, pests, and disorders of horticultural plants
- understand the use of horticultural plants for aesthetic improvement and sustainability of the environment
- apply principles of plant science, nutrition, soils, and pest management, and exhibit an awareness of environmental health and safety issues
- demonstrate an awareness of the need for continuing professional development
- demonstrate communication skills, ability to make sound decisions, and willingness to work as part of a team in providing leadership and accountability
- use computer technology to effectively communicate, manage, and enhance business operations

Admission Requirements

For information about University of Minnesota, Crookston admission requirements, visit the UMC Admissions website, umcrookston.edu/apply.

Program Requirements

Students must complete 40 upper division credits.

Core Requirements

Required courses—34 credits
AGRO 3230—Introduction to Plant Pathology (3 cr)
BIOL 2022—General Botany (3 cr)
HORT 1010—Introduction to Horticulture (3 cr)
HORT 1021—Woody Plant Materials (4 cr)
NATR 3899—Pre-Internship Seminar (0.5 cr)

NATR 3900—Internship (0.5-4 cr)
NATR 3901—Post-Internship Seminar (0.5 cr)
NATR 4652—Seminar (1 cr)
SOIL 1293—Soil Science (3 cr)
SOIL 3414—Soil Fertility and Plant Nutrition (4 cr)
SPAN 1104—Beginning Spanish I (4 cr)
COMM 3008—Business Writing (3 cr)
or COMM 3303—Writing in Your Profession (3 cr)
or COMM 3431—Persuasion (3 cr)
AGRO 2573—Entomology (3 cr)
or NATR 2573—Entomology (3 cr)

Liberal Education Requirements

A minimum of 40 liberal education credits required. Students must complete the 10 goal areas of the Minnesota Transfer Curriculum with the following specific liberal education courses required:

BIOL 1009—General Biology, BIOL SCI, PEOPLE/ENV (4 cr)
CHEM 1001—Introductory Chemistry, PHYS SCI (4 cr)
COMP 1011—Composition I, COMMUNICAT (3 cr)
COMP 1013—Composition II, COMMUNICAT (3 cr)
SPCH 1101—Public Speaking, COMMUNICAT (3 cr)
MATH 1031—College Algebra, MATH THINK (3 cr)
or MATH 1150—Elementary Statistics, MATH THINK (3 cr)

Technology Requirements

Students must take 3 credits of any CA courses.
CA 1xxx

Program Sub-plans

Students are required to complete one of the following sub-plans.

Environmental Landscaping Sub-plan

Environmental landscaping includes courses in landscape design, planning and development of residential and commercial landscapes, and plant science. Reducing impact on the environment and sustainability are a major focus as well as appropriate use of plants and proper installation and management of landscape features. Many students include business courses in their elective curriculum to prepare them for all aspects of the industry. Graduates are prepared to be a landscape designer, installer, or contractor. They may also choose landscape supply sales, nursery management, land reclamation, or garden center management.

Required Courses for the Environmental Landscaping Sub-plan

Environmental Landscaping Requirements

Required courses—22 credits
HORT 3030—Landscape Design (4 cr)
HORT 3031—Herbaceous Perennial Plant Materials (2 cr)
HORT 3034—Commercial Floriculture Crops-Spring (4 cr)
HORT 3036—Plant Propagation (4 cr)
HORT 3040—Landscape Installation and Maintenance (3 cr)
TURF 1072—Principles of Turf Management (3 cr)
TURF 3077—Turf and Landscape Irrigation Design and Installation (2 cr)

Environmental Landscaping Electives

Take 12 or more credit(s) from the following:
ACCT 2101—Principles of Accounting I (3 cr)
AGRO 2640—Applied Agriculture Chemicals (3 cr)
ASM 1034—Facility Maintenance and Safety (4 cr)
ASM 1044—Computer-Aided Drafting (3 cr)
ASM 3009—Surveying (4 cr)
BIOL 3131—Plant Physiology (3 cr)
CHEM 1401—Elementary Bioorganic Chemistry, PHYS SCI, PEOPLE/ENV (4 cr)
ENTR 2200—Introduction to Entrepreneurship and Small Business (3 cr)
HORT 1025—Introduction to Arboriculture (2 cr)
HORT 3025—Applications in Arboriculture (3 cr)
HORT 3033—Commercial Floriculture Crops-Fall (4 cr)
HORT 3045—Urban Forestry Planning and Management (3 cr)
MGMT 3200—Principles of Management (3 cr)
MGMT 3210—Supervision and Leadership (3 cr)
MGMT 3220—Human Resource Management (3 cr)
MKTG 3300—Principles of Marketing (3 cr)
NATR 2630—Introduction to Geographic Information Systems (3 cr)
NATR 3203—Park and Recreation Management (3 cr)
NATR 3344—Land Use Planning (3 cr)
NATR 3364—Plant Taxonomy (3 cr)
NATR 3374—Ecology, BIOL SCI (4 cr)
SPAN 1204—Beginning Spanish II (4 cr)
TURF 3074—Turfgrass Pest Management (3 cr)
TURF 3076—Turfgrass Management Systems (3 cr)

Open Electives

Students must take enough open electives credits to meet the 120 credit graduation requirement. The number of credits needed will depend on liberal education course selections. Approximately 8 credits will be needed.

Urban Forestry Sub-plan

Urban forestry combines conservation and horticulture topics presented in an outdoor, applied setting. Different than focusing on large scale forests used for commercial purposes, urban forestry includes municipalities, park districts, utility companies, private homeowners, and commercial tree service companies; each utilizing trees for a different purpose. The tree care industry has grown extensively over the years and now includes conservation and management issues. Extensive employment opportunities are available nation-wide as society becomes more urbanized.

Required Courses for the Urban Forestry Sub-plan

Urban Forestry Requirements

Required courses—22 credits
ENTR 2200—Introduction to Entrepreneurship and Small Business (3 cr)
HORT 1025—Introduction to Arboriculture (2 cr)
HORT 3025—Applications in Arboriculture (3 cr)
HORT 3030—Landscape Design (4 cr)
HORT 3040—Landscape Installation and Maintenance (3 cr)
HORT 3045—Urban Forestry Planning and Management (3 cr)
NATR 1244—Elements of Forestry (4 cr)

Urban Forestry Electives

Take 12 or more credit(s) from the following:
ACCT 2101—Principles of Accounting I (3 cr)
AGRO 2640—Applied Agriculture Chemicals (3 cr)
ASM 1034—Facility Maintenance and Safety (4 cr)
ASM 1044—Computer-Aided Drafting (3 cr)
ASM 3009—Surveying (4 cr)
BIOL 3131—Plant Physiology (3 cr)
CHEM 1401—Elementary Bioorganic Chemistry, PHYS SCI, PEOPLE/ENV (4 cr)
HORT 3034—Commercial Floriculture Crops-Spring (4 cr)
HORT 3036—Plant Propagation (4 cr)
MGMT 3200—Principles of Management (3 cr)
MGMT 3210—Supervision and Leadership (3 cr)
NATR 2630—Introduction to Geographic Information Systems (3 cr)
NATR 3203—Park and Recreation Management (3 cr)
NATR 3344—Land Use Planning (3 cr)
NATR 3374—Ecology, BIOL SCI (4 cr)
NATR 3699—Integrated Resource Management (3 cr)
SPAN 1204—Beginning Spanish II (4 cr)
TURF 1072—Principles of Turf Management (3 cr)

Open Electives

Students must take enough open electives credits to meet the 120 credit graduation requirement. The number of credits needed will depend on liberal education course selections. Approximately 9 credits will be needed.

Production Horticulture Sub-plan

Production horticulture concentrates on crops produced in greenhouses and nurseries. Students experience plant propagation, identification of herbaceous plants, cultivation of indoor and outdoor plants, and floral design. In greenhouse production courses, students produce crops that are sold to industry. Graduates are employed as greenhouse or nursery growers, garden center managers, garden designers, floral designers, and floriculture extension specialists. Faculty work with students to develop a plan of study tailored to the individual.

Required Courses for the Production Horticulture Sub-plan

Production Horticulture Requirements

Required courses—23 credits
HORT 1091—Indoor Flowering and Foliage Plants (2 cr)
HORT 3030—Landscape Design (4 cr)
HORT 3031—Herbaceous Perennial Plant Materials (2 cr)
HORT 3033—Commercial Floriculture Crops-Fall (4 cr)
HORT 3034—Commercial Floriculture Crops-Spring (4 cr)
HORT 3036—Plant Propagation (4 cr)
NATR 3364—Plant Taxonomy (3 cr)

Production Horticulture Electives

Take 12 or more credit(s) from the following:
ACCT 2101—Principles of Accounting I (3 cr)
AGRO 2640—Applied Agriculture Chemicals (3 cr)
ASM 1034—Facility Maintenance and Safety (4 cr)
BIOL 3022—Principles of Genetics (3 cr)
BIOL 3131—Plant Physiology (3 cr)

CHEM 1401—Elementary Bioorganic Chemistry, PHYS SCI, PEOPLE/ENV (4 cr)

ENTR 2200—Introduction to Entrepreneurship and Small Business (3 cr)

ENTR 3200—Business Plan Development (3 cr)

HORT 1092—Floral Design (2 cr)

HORT 3040—Landscape Installation and Maintenance (3 cr)

HORT 3093—Advanced Floral Design and Florist Operations (2 cr)

MGMT 3200—Principles of Management (3 cr)

MGMT 3210—Supervision and Leadership (3 cr)

MGMT 3220—Human Resource Management (3 cr)

MKTG 2200—Personal Selling (3 cr)

MKTG 3300—Principles of Marketing (3 cr)

AGRO 3023—Plant Breeding and Genetics (4 cr)

SPAN 1204—Beginning Spanish II (4 cr)

TURF 1072—Principles of Turf Management (3 cr)

TURF 3077—Turf and Landscape Irrigation Design and Installation (2 cr)

Open Electives

Students must take enough open electives credits to meet the 120 credit graduation requirement. The number of credits needed will depend on liberal education course selections. Approximately 7 credits will be needed.

Horticulture Minor

Natural Resources

(Minor Related to a Major)

Required credits in this minor: 18.

The horticulture minor provides an opportunity for students in other majors (e.g., natural resources related, agronomy, ag business, business management, golf and turf management) to take a selected group of horticulture courses and strengthen their credentials in this area.

Minor Requirements

Core Requirements

HORT 1010—Introduction to Horticulture (3 cr)

HORT 1021—Woody Plant Materials (4 cr)

HORT 3036—Plant Propagation (4 cr)

HORT 3033—Commercial Floriculture Crops-Fall (4 cr)

or HORT 3034—Commercial Floriculture Crops-Spring (4 cr)

Take 3 or more credit(s) from the following:

HORT 3030—Landscape Design (4 cr)

HORT 3031—Herbaceous Perennial Plant Materials (2 cr)

HORT 1091—Indoor Flowering and Foliage Plants (2 cr)

HORT 1092—Floral Design (2 cr)

HORT 3093—Advanced Floral Design and Florist Operations (2 cr)

HORT 3040—Landscape Installation and Maintenance (3 cr)

Hotel, Restaurant, and Tourism Management B.S.

Crookston Business Department

NOTE: *This program will be discontinued and is not accepting new students.*

Required credits to graduate with this degree: 120.

The hotel, restaurant, and tourism management program at UMC prepares students for managerial positions in the rapidly growing hospitality industry. Students graduating with this degree possess the technical and intellectual skills required of the twenty-first century hospitality professional.

Program outcomes—graduates will

- show competency in industry standards regarding financial accountability;
- demonstrate communication skills appropriate for the industry;
- use critical thinking processes to analyze hospitality systems;
- demonstrate collaboration within team settings;
- demonstrate appropriate use of technology as used in the hospitality industry.

Admission Requirements

For information about University of Minnesota, Crookston admission requirements, visit the UMC Admissions website, **umcrookston.edu/apply**.

Program Requirements

Students must complete 40 upper division credits.

Program Core

Students must complete two separate internships (HRI 3900). Internship I: 1-3 credits; Internship II: 2-3 credits.

ACCT 2101—Principles of Accounting I (3 cr)

ACCT 2102—Principles of Accounting II (3 cr)

GBUS 3107—Legal Environment in Business (3 cr)

HRT 1111—Principles of Professional Food Production (3 cr)

HRT 1112—Hospitality Safety and Sanitation (2 cr)

HRT 2231—Management by Menu (3 cr)

HRT 3241—Selection and Procurement for the Hospitality Industry (3 cr)

HRT 3311—Restaurant Operational and Catering Management (3 cr)

HRT 3332—Global Tourism and Marketing (3 cr)

HRT 3900—Internship (1–3 cr)

HRT 4421—Hotel, Restaurant, and Travel Law (3 cr)

HRT 4422—Hospitality Cost Control Management (3 cr)

HRT 4493—Destination Operational Management (3 cr)

MGMT 3100—Managerial Finance (3 cr)

MGMT 3200—Principles of Management (3 cr)

MGMT 3210—Supervision and Leadership (3 cr)

MKTG 3300—Principles of Marketing (3 cr)

SPAN 1104—Beginning Spanish I (4 cr)

Liberal Education Requirements

A minimum of 40 liberal education credits required. Students must complete the 10 goal areas of the Minnesota Transfer Curriculum with the following specific liberal education courses required.

COMP 1011—Composition I, COMMUNICAT (3 cr)
COMP 1013—Composition II, COMMUNICAT (3 cr)
ECON 2101—Microeconomics, HI/BEH/SSC (3 cr)
ECON 2102—Macroeconomics, HI/BEH/SSC (3 cr)
MATH 1031—College Algebra, MATH THINK (3 cr)
PSY 1001—General Psychology, HI/BEH/SSC (3 cr)
SPCH 1101—Public Speaking, COMMUNICAT (3 cr)

Technology Requirements

CA 1020—Spreadsheet Applications (3 cr)

Recommended Electives

Take exactly 3 credit(s) from the following:
GBUS 3500—Business Ethics (3 cr)
HRT 4431—Wine, Beverage, and Food Pairing (3 cr)

Open Electives

Students must take enough open electives credits to meet the 120 credit requirement for graduation. Approximately 20 credits are needed.

Hotel, Restaurant, and Tourism Management Minor

Crookston Business Department

(Minor Related to a Major)

NOTE: *This program will be discontinued and is not accepting new students.*

Required credits in this minor: 18.

The minor in hotel, restaurant, and tourism management is designed to provide a business component that complements various majors at UMC. The minor includes a course in professional food production; menu design; global tourism and marketing; hotel, restaurant, and travel law; and procedures/principles pertaining to destination facilities. Students select an additional hotel, restaurant, and tourism management course to complete the minor.

Minor Requirements

Required Courses

HRT 1111—Principles of Professional Food Production (3 cr)
HRT 2231—Management by Menu (3 cr)
HRT 3332—Global Tourism and Marketing (3 cr)
HRT 4421—Hotel, Restaurant, and Travel Law (3 cr)
HRT 4493—Destination Operational Management (3 cr)

Electives

Take 1 or more course(s) from the following:
HRT 1112—Hospitality Safety and Sanitation (2 cr)
HRT 3241—Selection and Procurement for the Hospitality Industry (3 cr)
HRT 3311—Restaurant Operational and Catering Management (3 cr)
HRT 4431—Wine, Beverage, and Food Pairing (3 cr)
HRT 4422—Hospitality Cost Control Management (3 cr)

Information Technology Management B.S.

Math, Science and Technology

Required credits to graduate with this degree: 120.

Required credits within the major: 120.

The information technology management program prepares students for technical and management positions in business and industry. Graduates have the knowledge, experience, and skills to succeed in technology related careers as well as the business and management competencies for mid-management positions such as information technology specialists, application developers, network administrators, webmasters, technology project and information systems managers.

Program outcomes—graduates will

- demonstrate abilities in the use of information systems hardware, operating systems, programming languages, and application software
- use computer technology in preparing programs, presentations, and written reports
- demonstrate the ability to communicate clearly and concisely in written and oral communications through technical reports, solutions to information technology problems, and feasibility studies
- demonstrate human relations and career/life adaptability skills in problem solving, decision making, and responding to change
- demonstrate an environmental perspective in the development of solutions for business and information technology problem solving
- demonstrate global and ethical perspectives in information technology management
- demonstrate an understanding of the role of finance, marketing, and management as job responsibilities of the information technology professional

Admission Requirements

For information about University of Minnesota, Crookston admission requirements, visit the UMC Admissions website, **umcrookston.edu/apply**.

Program Requirements

Students must complete 40 upper division credits.

Information Technology Management Core

Required courses—54 credits
ACCT 2101—Principles of Accounting I (3 cr)
ACCT 2102—Principles of Accounting II (3 cr)
GBUS 3107—Legal Environment in Business (3 cr)
ITM 3020—Introduction to Management Information Systems (3 cr)
ITM 3110—Microcomputer Operating Systems (3 cr)
ITM 3130—Messaging Systems (3 cr)
ITM 3900—Internship (1–3 cr)
ITM 4020—Analysis and Design of Information Systems (3 cr)
ITM 4900—Senior Project in Information Technology Management (3 cr)

MGMT 3100—Managerial Finance (3 cr)
MGMT 3200—Principles of Management (3 cr)
MGMT 4200—Project Management (3 cr)
MKTG 3300—Principles of Marketing (3 cr)
NT 3120—Networking Standards and Protocols (3 cr)
NT 3215—Information Assurance and Systems Security (3 cr)
SE 2050—Introduction to Programming I (3 cr)
SE 2100—Microcomputer Systems Architecture (3 cr)
SE 3050—Database Management Systems (3 cr)

Liberal Education Requirements

A minimum of 40 liberal education credits required. Students must complete the 10 goal areas of the Minnesota Transfer Curriculum with the following specific liberal education courses required:

BIOL 1009—General Biology, BIOL SCI, PEOPLE/ENV (4 cr)
COMP 1011—Composition I, COMMUNICAT (3 cr)
COMP 1013—Composition II, COMMUNICAT (3 cr)
ECON 2101—Microeconomics, HI/BEH/SSC (3 cr)
ECON 2102—Macroeconomics, HI/BEH/SSC (3 cr)
HUM 3310—Culture and Technology, HUMANITIES, GLOB PERSP (3 cr)
MATH 1031—College Algebra, MATH THINK (3 cr)
MATH 1150—Elementary Statistics, MATH THINK (3 cr)
PHIL 1001—Introduction to Philosophy, HUMANITIES, ETH/CIV RE (3 cr)
PHYS 1012—Introductory Physics, PHYS SCI, PEOPLE/ENV (4 cr)
or PHYS 1101—Introductory College Physics I, PHYS SCI (4 cr)
PSY 1001—General Psychology, HI/BEH/SSC (3 cr)
SPCH 1101—Public Speaking, COMMUNICAT (3 cr)

Technology Requirement (3 cr)

CA 1040—Web Site Development (3 cr)

Electives

Students must take enough electives credits to meet the 120 credit graduation requirement. Approximately 21 to 22 credits will be needed.

Program Sub-plans

A sub-plan is not required for this program.

ITM Online Sub-plan

The information technology management program prepares students for technical and management positions in business and industry. Graduates have the knowledge, experience, and skills to succeed in technology related careers as well as the business and management competencies for mid-management positions such as information technology specialists, application developers, network administrators, Webmasters, technology project and information systems managers.

The ITM (Online) program has the same curriculum as the on-campus ITM program with the exception of a one-credit orientation to online learning.

Required Courses for the Online Sub-plan

GBUS 1005—Orientation to Online Programs (1 cr)

Information Technology Management Minor

Math, Science and Technology

(Minor Related to a Major)

Required credits in this minor: 18.

An information technology management minor gives students a general background in technology, computer applications, services, and systems.

Students completing the information technology management minor will:

- demonstrate abilities in the use of information systems hardware, operating systems, and industry leading computer applications
- use computer technology in preparing programs, presentations, and written reports
- demonstrate the ability to communicate clearly and concisely in written and oral communications through technical reports, solutions to information technology problems, and feasibility studies
- demonstrate human relations and career/life adaptability skills in problem solving, decision making, and responding to change
- demonstrate an environmental perspective in the development of solutions for business and information technology problem solving
- demonstrate global and ethical perspectives in information technology management

Minor Requirements

Program Core

SE 2050—Introduction to Programming I (3 cr)
SE 3050—Database Management Systems (3 cr)
ITM 3110—Microcomputer Operating Systems (3 cr)

Take 9 or more credit(s) from the following:
SE 2070—Introduction to Programming II (3 cr)
NT 3120—Networking Standards and Protocols (3 cr)
ITM 3130—Messaging Systems (3 cr)
SE 3145—XML (3 cr)
ITM 3190—Topics in Information Technology Management (3 cr)
NT 3215—Information Assurance and Systems Security (3 cr)
ITM 4020—Analysis and Design of Information Systems (3 cr)

Manufacturing Management B.M.M.

Crookston Business Department

Required credits to graduate with this degree: 120.

The bachelor of manufacturing management (B.M.M.) is a career-oriented program that prepares students to manage people and machines in a manufacturing environment. Graduates will be able to supervise a manufacturing process, manage human and mechanical resources within budgetary constraints, and assure product quality.

The program is designed to meet the needs of people already in the workplace and two-year graduates who want to continue their education to the bachelor's degree level with seamless integration of prior credits earned. The program is available for in-class instruction on campus and as well as through online education. The online education components of the program are delivered through asynchronous electronic communication technologies and self-directed learning.

Program outcomes—graduates will

- play a growing role in their workplace especially in supervision and management
- contribute to manufacturing system technology and quality control
- establish a quality control department and train staff to meet quality audits
- develop grades and standards of quality
- set up acceptance sampling and inspection procedures
- prepare quality control charts and reports
- control the movement of materials in the most efficient manner at the right time, to and from the correct place in the required quantity
- do a safety audit through a comprehensive approach to problems of safety in the workplace, including meeting the OSHA standards

Admission Requirements

For information about University of Minnesota, Crookston admission requirements, visit the UMC Admissions website, **umcrookston.edu/apply**.

Program Requirements

Students must complete 40 upper division credits.

Manufacturing Management Core

Manufacturing Management Core Requirements—27 credits

ACCT 2101—Principles of Accounting I (3 cr)
BM 3012—Applied Engineering Principles (3 cr)
BM 3034—Quality Management Systems (3 cr)
MGMT 3100—Managerial Finance (3 cr)
MGMT 3200—Principles of Management (3 cr)
MGMT 3210—Supervision and Leadership (3 cr)
MGMT 3250—Operations Management (3 cr)
MKTG 3300—Principles of Marketing (3 cr)
COMM 3008—Business Writing (3 cr)
or COMM 3303—Writing in Your Profession (3 cr)

Liberal Education Requirements

Liberal Education Requirements—18 credits

COMP 1011—Composition I, COMMUNICAT (3 cr)
COMP 1013—Composition II, COMMUNICAT (3 cr)
ECON 2101—Microeconomics, HI/BEH/SSC (3 cr)
MATH 1031—College Algebra, MATH THINK (3 cr)
MATH 1150—Elementary Statistics, MATH THINK (3 cr)
SPCH 1101—Public Speaking, COMMUNICAT (3 cr)

Upper Division Business/Technology Requirements

Students must complete 10 credits of upper division business/technology credits taken from the following (ACCT, BM, ENTR, GBUS, ITM, MGMT, MKTG, SE).

Upper Division Electives

Students must complete 6 credits of Upper Division Electives.

Transfer Credits or Open Electives Credits

Transfer Credits or Open Electives Credits requirements are 58 to 59 credits.

Program Sub-plans

A sub-plan is not required for this program.

Online Sub-plan

The manufacturing management program is a career-oriented program that prepares students to manage people and machines in a manufacturing environment. Graduates will be able to supervise a manufacturing process, manage human and mechanical resources within budgetary constraints, and assure product quality. The manufacturing management online program is the same as the on-campus program with the exception that students take GBUS 1005 and one less credit of transfer or open electives credits.

Required Courses for the Online Sub-plan

Manufacturing Management (Online) Requirements

GBUS 1005—Orientation to Online Programs (1 cr)

Manufacturing Management Certificate
Business Department

Required credits for certificate: 18.

The manufacturing management certificate is a workplace centered continuing education program designed to meet the increasing demand for management skills in a production based industrial environment. The program content provides an educational base that enables employees to meet the demands of modern management within a technological work setting.

This flexible program fits the schedules of part-time students and students already in the workplace and is offered for credit or noncredit based on the students' background. The courses taken for the certificate program will transfer into the bachelor of manufacturing program.

Certificate Requirements

BM 3034—Quality Management Systems (3 cr)
MGMT 3210—Supervision and Leadership (3 cr)
MGMT 3255—Logistics and Supply Chain Management (3 cr)
MGMT 4200—Project Management (3 cr)

Elective Courses (6 cr)

Courses from two areas are strongly recommended.

BM 3005—Facilities Planning and Selection (3 cr)
BM 3012—Applied Engineering Principles (3 cr)
BM 3020—Industrial Safety (3 cr)
MGMT 3100—Managerial Finance (3 cr)
MGMT 3200—Principles of Management (3 cr)
MGMT 3250—Operations Management (3 cr)
MKTG 3300—Principles of Marketing (3 cr)

Marketing B.S.

Crookston Business Department

Required credits to graduate with this degree: 120.

The importance of marketing for organizations today cannot be underestimated. The best product in the world can fail if it is not marketed appropriately. Marketing is a very broad degree program covering such diverse topics as personal selling, integrated marketing communication, advertising, sales promotion, the psychology of consumer behavior, marketing research, retail marketing, marketing ethics, logistics, internet marketing, and strategic marketing. Organizations need individuals who can identify consumer needs and configure appropriate solutions, and a marketing degree provides graduates with such skills.

A degree in marketing prepares graduates for a variety of careers in marketing, including brand management, sales management, personal selling, account executives, advertising, marketing research, and retailing.

Program outcomes—Graduates will

- demonstrate analytical and critical-thinking skills with direct application to business environments
- demonstrate the ability to communicate clearly and concisely in personal and business communication
- demonstrate an ability to effectively apply human relations and team dynamic concepts in professional and business environments
- demonstrate the ability to value diversity and apply global multidisciplinary concepts in business and industry
- demonstrate skill in the use of technology and computer software applications in business and industry
- demonstrate capability to apply ethical and environmental values to general business principles and practices
- understand the importance of having a consumer orientation and demonstrate how to effectively establish, develop, and maintain business relationships
- demonstrate working knowledge of technological and global developments that are changing the scope of the marketing discipline

Admission Requirements

For information about University of Minnesota, Crookston admission requirements, visit the UMC Admissions website, umcrookston.edu/apply.

Program Requirements

Marketing Core

Required courses—54 credits
ACCT 2101—Principles of Accounting I (3 cr)
ACCT 2102—Principles of Accounting II (3 cr)
COMM 3008—Business Writing (3 cr)
GBUS 3107—Legal Environment in Business (3 cr)
GBUS 3300—Business Analytics (3 cr)
GBUS 3500—Business Ethics (3 cr)
ITM 3020—Introduction to Management Information Systems (3 cr)
MGMT 3100—Managerial Finance (3 cr)
MGMT 3200—Principles of Management (3 cr)
MGMT 3900—Internship (1–3 cr)
MKTG 2200—Personal Selling (3 cr)
MKTG 3230—Internet Marketing (3 cr)
MKTG 3250—Integrated Marketing Communication (3 cr)
MKTG 3300—Principles of Marketing (3 cr)
MKTG 3310—Consumer Behavior (3 cr)
MKTG 3360—International Marketing (3 cr)
MKTG 3400—Marketing Research (3 cr)
MKTG 4800—Marketing Strategies (3 cr)

Liberal Education Requirements

A minimum of 40 liberal education credits required. Students must complete the 10 goal areas of the Minnesota Transfer Curriculum with the following specific liberal education courses required:
COMP 1011—Composition I, COMMUNICAT (3 cr)
COMP 1013—Composition II, COMMUNICAT (3 cr)
ECON 2101—Microeconomics, HI/BEH/SSC (3 cr)
ECON 2102—Macroeconomics, HI/BEH/SSC (3 cr)
MATH 1031—College Algebra, MATH THINK (3 cr)
MATH 1150—Elementary Statistics, MATH THINK (3 cr)
PSY 1001—General Psychology, HI/BEH/SSC (3 cr)
SPCH 1101—Public Speaking, COMMUNICAT (3 cr)

Technology Requirements

Required courses—3 credits
CA 1020—Spreadsheet Applications (3 cr)

Marketing Program Electives

Take 3 or more credit(s) from the following:
MGMT 3255—Logistics and Supply Chain Management (3 cr)
MKTG 3700—Brand Management (3 cr)
MKTG 3710—Sales Management (3 cr)
MKTG 4100—Retail Management (3 cr)
SRM 3006—Sports Marketing (3 cr)

Open Electives

Students must take enough Open Electives credits to meet the 120 credit requirement for graduation.

Program Sub-plans

A sub-plan is not required for this program.

Online Sub-plan

A degree in marketing prepares graduates for a variety of careers in marketing, including brand management, sales management, personal selling, account executives, advertising, marketing research, and retailing. The marketing online program has the same curriculum as the classroom delivered marketing program.

Required Courses for the Marketing Online Sub-plan

Technology Requirement
GBUS 1005—Orientation to Online Programs (1 cr)

Marketing Minor

Crookston Business Department

(Minor Related to a Major)

Required credits in this minor: 18 to 19.

A minor in marketing complements a wide array of majors. The marketing minor introduces students to current marketing theories and practices. Students pursuing a minor in marketing will learn the basics of marketing principles, effective personal selling, the psychology of consumer behavior, and marketing research methods.

Several electives are offered to provide five areas of specialization for students seeking the marketing minor.

Program outcomes—students who earn a marketing minor will

- understand the importance of having a consumer orientation and demonstrate how to effectively establish, develop, and maintain business relationships
- demonstrate working knowledge of technological and global developments that are changing the scope of the marketing discipline

Minor Requirements

Required Courses

Required courses—18 credits

MKTG 2200—Personal Selling (3 cr)
MKTG 3250—Integrated Marketing Communication (3 cr)
MKTG 3300—Principles of Marketing (3 cr)
MKTG 3310—Consumer Behavior (3 cr)
MKTG 3400—Marketing Research (3 cr)

Take 3 or more credit(s) from the following:
MKTG 3230—Internet Marketing (3 cr)
MKTG 3360—International Marketing (3 cr)
MKTG 3700—Brand Management (3 cr)
MKTG 3710—Sales Management (3 cr)
MKTG 4100—Retail Management (3 cr)
SRM 3006—Sports Marketing (3 cr)

Program Sub-plans

A sub-plan is not required for this program.

Marketing Minor (Online) Sub-plan

A minor in marketing complements a wide array of majors. The marketing minor introduces students to current marketing theories and practices. Students pursuing a minor in marketing will learn the basics of marketing principles, effective personal selling, the psychology of consumer behavior, and marketing research methods. The marketing minor (online) has the same curriculum as the classroom delivered marketing minor.

Required Courses for the Marketing Minor (Online) Sub-plan

Technology Requirement

GBUS 1005—Orientation to Online Programs (1 cr)

Music Minor

Arts, Humanities, Social Science

(Free-Standing Minor)

Required credits in this minor: 18.

The music minor allows students to develop a concentrated course of studies in the area of music while pursuing a major in another area. Students who plan to earn a baccalaureate degree at UMC are generally able to complete the music minor if they have an appropriate musical background and/or interest. Students completing the minor may pursue opportunities in teaching beginning to intermediate piano lessons, playing church organ, directing volunteer choirs, directing community musicals, etc. The minor complements all UMC major degree programs.

Program outcomes—students develop

- broader knowledge of music
- vocal or instrumental skills for performance
- enhanced appreciation of the performing arts
- skills for part-time employment in music field

Minor Requirements

Required Courses

MUS 1021—Introduction to Music, HUMANITIES, HUMAN DIV (3 cr)
MUS 1111—Music Theory I: Foundations of Tonal Music, HUMANITIES (3 cr)
MUS 1121—Music Theory II: Diatonic Tonality, Harmony and Voice Leading (3 cr)

Take 3 or more credit(s) from the following:
MUS 1011—University Singers, HUMANITIES (1 cr)
MUS 1041—Private Music Instruction, HUMANITIES (1 cr)
MUS 1042—Private Instruction: Class Piano, HUMANITIES (1 cr)
MUS 1051—Pep-Jazz Band, HUMANITIES (1 cr)
MUS 1071—Musical Theater, HUMANITIES (1 cr)

Take 6 or more credit(s) from the following:
MUS 3011—University Singers (Choir), HUMANITIES (1 cr)
MUS 3029—Music of the Twentieth Century, HUMANITIES, HUMAN DIV (3 cr)
MUS 3041—Private Instruction, HUMANITIES (1 cr)
MUS 3051—Pep-Jazz Band (1 cr)
MUS 3091—Instrumental and Choral Conducting (2 cr)

Natural Resources B.S.

Agriculture and Natural Resources Department

Required credits to graduate with this degree: 120.

Managing natural resources is increasingly important, with increasing human populations and limited natural resources and habitats. Natural resource managers help balance the needs of people with the ability of ecosystems to sustainably support soil, water, forests, wildlife, fish, and recreational resources.

UMC's bachelor of science (B.S.) in natural resources provides an integrated approach to soil and water conservation, wildlife and fisheries management, forestry, and recreation. This combination enables graduates to work with a variety of resources and people and to build a career tailored to their interests. Students select one of the following emphases:

- natural resources aviation
- natural resources law enforcement
- natural resources management
- park management
- water resource management
- wildlife management

Program outcomes—graduates will

- apply an integrated approach to resource management that incorporates environmental, economic, and social considerations
- demonstrate appropriate technical knowledge and practical applications necessary for employment in the natural resources field
- perform group problem solving, decision-making, and conflict management to be effective in resource management
- demonstrate oral and written communication skills appropriate for a beginning natural resource professional
- be aware of the necessity of continuing education and professional development to be successful in a changing natural resources workplace

Admission Requirements

For information about University of Minnesota, Crookston admission requirements, visit the UMC Admissions website, **umcrookston.edu/apply**.

Program Requirements

Students must complete 40 upper division credits.

Natural Resources Program Core

COMM 3303—Writing in Your Profession (3 cr)
MGMT 3210—Supervision and Leadership (3 cr)
NATR 1233—Introduction to Natural Resources (3 cr)
NATR 1244—Elements of Forestry (4 cr)
NATR 2630—Introduction to Geographic Information Systems (3 cr)
NATR 3374—Ecology, BIOL SCI (4 cr)
NATR 3899—Pre-Internship Seminar (0.5 cr)
NATR 3900—Internship (0.5-4 cr)
NATR 3901—Post-Internship Seminar (0.5 cr)
NATR 4652—Seminar (1 cr)

Liberal Education Requirements

A minimum of 40 liberal education credits required. Students must complete the 10 goal areas of the Minnesota Transfer Curriculum with the following specific liberal education courses required.

BIOL 1009—General Biology, BIOL SCI, PEOPLE/ENV (4 cr)
CHEM 1001—Introductory Chemistry, PHYS SCI (4 cr)
COMP 1011—Composition I, COMMUNICAT (3 cr)
COMP 1013—Composition II, COMMUNICAT (3 cr)
PHYS 1012—Introductory Physics, PHYS SCI, PEOPLE/ENV (4 cr)
SPCH 1101—Public Speaking, COMMUNICAT (3 cr)

Technology Requirements
Take 3 or more credit(s) from the following:
CA 1xxx

Program Sub-plans

Students are required to complete one of the following sub-plans.

Natural Resources Aviation Sub-plan

This emphasis leads to careers as natural resource pilots employed by state/federal agencies such as the National Park Service, U.S. Fish and Wildlife Service, U.S. Forest Service, and state departments of natural resources.

Program outcomes—graduates will

- demonstrate competency in aeronautics
- apply an integrated approach to resource management that incorporates environmental, economic, and social considerations
- perform group problem solving, decision making, and conflict management to be effective in resource management
- understand ecological management principles that apply to wildlife, fish, forest, soil, water, and recreation resources

Required Courses for the Natural Resources Aviation Sub-plan

Natural Resources Aviation Emphasis Requirements

AVIA 1103—Introduction to Aviation (4 cr)
AVIA 1104—Introduction to Aviation Flight Lab (1 cr)
AVIA 1396—Conventional Aircraft Operations (1 cr)
AVIA 2220—Basic Attitude Instrument Flying (2 cr)
AVIA 2221—Basic Attitude Instrument Flying Lab (1 cr)
AVIA 2222—IFR Regulations and Procedures (2 cr)
AVIA 2223—IFR Regulations and Procedures Flight Lab (1 cr)
AVIA 3320—Airplane Aerodynamics (2 cr)
AVIA 3321—Airplane Aerodynamics Flight lab (1 cr)
AVIA 3324—Aircraft Systems and Instruments (3 cr)
AVIA 3396—Advanced Conventional Aircraft Operations (UND) (1 cr)
AVIA 3602—Natural Resources and Enforcement Applications (2 cr)
BIOL 2022—General Botany (3 cr)
NATR 3203—Park and Recreation Management (3 cr)
NATR 3344—Land Use Planning (3 cr)
NATR 3364—Plant Taxonomy (3 cr)
NATR 3654—Wildlife Ecology and Management (4 cr)
NATR 3699—Integrated Resource Management (3 cr)
AGRO 1183—Field Crops: Production Principles (3 cr)
  or BIOL 2012—General Zoology (4 cr)
  or HORT 1010—Introduction to Horticulture (3 cr)
NATR 3464—Mammalogy (3 cr)
  or SWM 3224—Soil and Water Conservation (4 cr)
NATR 3466—Ornithology (3 cr)
  or SOIL 1293—Soil Science (3 cr)

Liberal Education Requirement

Will count towards the 40 credits required in liberal education.

MATH 1031—College Algebra, MATH THINK (3 cr)

Open Electives

Students must take enough Open Electives credits to meet the 120 credit requirement for graduation.

Natural Resources Law Enforcement Sub-plan

This emphasis provides integrated instruction in natural resources management and law enforcement. General classes in natural resources, wildlife and fisheries management, forestry recreation, and land use planning are combined with criminal justice/law enforcement classes. After completing coursework and training in first aid and traffic law, students may attend a skills session and take the Minnesota Peace Officer Standards and Training (P.O.S.T.) certification examination.

Program outcomes—graduates will

* understand the role of education and law enforcement in natural resource management
* be qualified to attend the peace officer's skills training academy

Required Courses for the Natural Resources Law Enforcement Sub-plan

Natural Resources Law Enforcement Emphasis Requirements

CRJS 1500—Introduction to Criminal Justice, HI/BEH/SSC, ETH/CIV RE (4 cr)
CRJS 2500—Introduction to Policing (3 cr)
CRJS 2550—Traffic Law (2 cr)
CRJS 2560—First Responder (3 cr)
CRJS 3505—Judicial Process (3 cr)
CRJS 3525—Juvenile Justice and Delinquency (3 cr)
CRJS 3530—Criminal Justice Diversity (3 cr)
CRJS 3550—Criminal Investigation (3 cr)
CRJS 3575—Critical Issues in Policing (3 cr)
CRJS 4510—Victimology (3 cr)
CRJS 4540—Criminal Law (4 cr)
CRJS 4550—Criminal Procedure (4 cr)
SOIL 1293—Soil Science (3 cr)
NATR 3203—Park and Recreation Management (3 cr)
NATR 3654—Wildlife Ecology and Management (4 cr)
BIOL 2012—General Zoology (4 cr)
or BIOL 2022—General Botany (3 cr)
CRJS 3520—Natural Resource Law Enforcement Techniques (3 cr)
or NATR 3520—Natural Resource Law Enforcement Techniques (3 cr)

Liberal Education Requirements

Will count towards the 40 credits required in liberal education.
MATH 1031—College Algebra, MATH THINK (3 cr)
or MATH 1150—Elementary Statistics, MATH THINK (3 cr)

Open Electives

Students must take enough Open Electives credits to meet the 120 credit requirement for graduation.

Natural Resources Management Sub-plan

This emphasis provides an integrated approach to land use and the conservation of wildlife, fish, forest, and recreation resources. This major is especially appropriate for students seeking a broad understanding of resource management principles and environmental issues. A combination of coursework in natural resources, agriculture, and liberal education prepares students for land management positions in which a balance between environmental, economic, and social concerns is sought.

Program outcomes—graduates will

* understand ecological management principles that apply to wildlife, fish, forest, soil, water, and recreation resources

Required Courses for the Natural Resources Management Sub-plan

Natural Resources Management Emphasis Requirements

ASM 3009—Surveying (4 cr)
BIOL 2022—General Botany (3 cr)
NATR 3203—Park and Recreation Management (3 cr)
NATR 3344—Land Use Planning (3 cr)
NATR 3364—Plant Taxonomy (3 cr)
NATR 3654—Wildlife Ecology and Management (4 cr)
NATR 3660—Prairie Ecosystem Management (2 cr)
NATR 3699—Integrated Resource Management (3 cr)
SOIL 1293—Soil Science (3 cr)
SWM 3224—Soil and Water Conservation (4 cr)
AGRO 1183—Field Crops: Production Principles (3 cr)
or HORT 1010—Introduction to Horticulture (3 cr)

Liberal Education Requirements

Will count towards the 40 credits required in liberal education.
MATH 1031—College Algebra, MATH THINK (3 cr)
or MATH 1150—Elementary Statistics, MATH THINK (3 cr)

Agriculture/Natural Resources Electives

Students must take 9 credits selected in consultation with an adviser.

Open Electives

Students must take enough Open Electives credits to meet the 120 credit requirement for graduation.

Park Management Sub-plan

This emphasis provides an integrated approach to park and recreation area management. A combination of natural resources, horticulture, and management courses prepare students for park and resource management positions, typically with federal/state/county/city recreation agencies. Flexibility in the choice of major electives allows students to build a customized program that meets their specific career goals.

Program outcomes—graduates will

* understand the interrelatedness of and techniques used to manage both visitor use and recreational resources

Required Courses for the Park Management Sub-plan

Park Management Emphasis Requirements

BIOL 2022—General Botany (3 cr)
NATR 3203—Park and Recreation Management (3 cr)

NATR 3344—Land Use Planning (3 cr)
NATR 3364—Plant Taxonomy (3 cr)
NATR 3699—Integrated Resource Management (3 cr)
SOIL 1293—Soil Science (3 cr)

Liberal Education Requirements

Will count towards the 40 credits required in liberal education.

MATH 1031—College Algebra, MATH THINK (3 cr)
or MATH 1150—Elementary Statistics, MATH THINK (3 cr)

Agriculture/Natural Resources Electives

Students must take 15 credits.

Horticulture Electives

Students must take 7 credits.

Management Electives

Students must take 3 credits.

Open Electives

Students must take enough Open Electives credits to meet the 120 credit requirement for graduation.

Water Resource Management Sub-plan

Courses in natural resources along with agriculture, geology, soils, fisheries management, water quality, and land use planning provide a background focused on water resources. Watersheds are studied by land cover and mapping technologies in relationship to field monitoring of lakes and streams.

Program outcomes—graduates will

- understand methods of assessing land management practices at the watershed scale and how they affect water quality
- measure and use appropriate water quality parameters to assess the health of land and aquatic systems
- recommend appropriate land/water management practices to achieve soil conservation and water quality goals

Required Courses for the Water Resource Management Sub-plan

Water Resource Management Emphasis Requirements

AGRO 1183—Field Crops: Production Principles (3 cr)
ASM 3009—Surveying (4 cr)
BIOL 2022—General Botany (3 cr)
BIOL 3722—Limnology (3 cr)
GEOL 1001—Introductory Geology, PHYS SCI, PEOPLE/ENV (3 cr)
NATR 1663—Principles of Fisheries Management (3 cr)
NATR 3344—Land Use Planning (3 cr)
NATR 3364—Plant Taxonomy (3 cr)
NATR 3376—Wetland and Riparian Ecology and Management (3 cr)
NATR 3699—Integrated Resource Management (3 cr)
SOIL 1293—Soil Science (3 cr)
SWM 3009—Hydrology and Water Quality (4 cr)
SWM 3224—Soil and Water Conservation (4 cr)
SWM 3225—Watershed Management (3 cr)

Liberal Education Requirements

Will count towards the 40 credits required in liberal education.

MATH 1031—College Algebra, MATH THINK (3 cr)
or MATH 1150—Elementary Statistics, MATH THINK (3 cr)

Open Electives

Students must take enough Open Electives credits to meet the 120 credit requirement for graduation.

Wildlife Management Sub-plan

This emphasis concentrates on wildlife and habitats. The major focuses on land and wetland habitats and their animal associates with some emphasis on fisheries management. Graduates fulfill the educational requirements for certification as an Associate Wildlife Biologist by The Wildlife Society. Professional relationships and student development are enhanced by a student chapter of The Wildlife Society.

Program outcomes—graduates will

- understand the interrelatedness and techniques used to manage vertebrate populations and their habitat
- understand the dynamics of wildlife populations, habitats, and appropriate monitoring techniques

A minimum GPA of 3.00 is required for graduation.

Required Courses for the Wildlife Management Sub-plan

Wildlife Management Emphasis Requirements

AGRO 3030—Research Techniques (3 cr)
ANSC 3203—Animal Anatomy and Physiology (4 cr)
ASM 1034—Facility Maintenance and Safety (4 cr)
ASM 3009—Surveying (4 cr)
BIOL 2012—General Zoology (4 cr)
BIOL 2022—General Botany (3 cr)
NATR 3344—Land Use Planning (3 cr)
NATR 3364—Plant Taxonomy (3 cr)
NATR 3464—Mammalogy (3 cr)
NATR 3466—Ornithology (3 cr)
NATR 3468—Wildlife Habitat Management Techniques (3 cr)
NATR 3654—Wildlife Ecology and Management (4 cr)
NATR 3660—Prairie Ecosystem Management (2 cr)
NATR 3699—Integrated Resource Management (3 cr)
SOIL 1293—Soil Science (3 cr)

Liberal Education Requirements

Will count towards the 40 credits required in liberal education.

MATH 1031—College Algebra, MATH THINK (3 cr)
MATH 1150—Elementary Statistics, MATH THINK (3 cr)

Open Electives

Students must take enough Open Electives credits to meet the 120 credit requirement for graduation.

Organizational Psychology B.S.

Arts, Humanities, Social Science

NOTE: *This program will be discontinued and is not accepting new students.*

Required credits to graduate with this degree: 120.

The B.S. in organizational psychology provides academic and applied experiences focused on ameliorating organizational and social problems. Courses cover both a core of subjects in the main subfields of psychology and a set of subspecialties as electives. Applied experiences provide students with practical skills in one of two emphasis areas, leading to careers in either industrial/production management or consumer service sectors (retail, community nonprofits, government human services).

Admission Requirements

For information about University of Minnesota, Crookston admission requirements, visit the UMC Admissions website, **umcrookston.edu/apply**.

Program Requirements

Psychology Core Requirements

GBUS 1981—Internship Seminar (1 cr)
HSM 2010—Introduction to Health Services Organizations (2 cr)
MGMT 3200—Principles of Management (3 cr)
MGMT 3220—Human Resource Management (3 cr)
PSY 1093—Lifespan Development, HI/BEH/SSC (3 cr)
PSY 2253—Human Behavior and Diversity Issues (3 cr)
PSY 3201—Social Psychology (3 cr)
PSY 3520—Industrial and Organization Psychology (4 cr)
PSY 3604—Abnormal Psychology (3 cr)
PSY 3707—Organizational Psychology (3 cr)
PSY 3900—Internship (1–6 cr)
PSY 4203—Organization and Transitional Change Seminar (3 cr)
PUBH 1003—Alcohol and College Life (UMTC) (1 cr)

Technology Requirements (3 cr)

CA 1010—Introduction to Computer Technology (1 cr)
CA 1xxx

Liberal Education Requirements

A minimum of 40 liberal education credits required. Students must complete the 10 goal areas of the Minnesota Transfer Curriculum with the following specific liberal education courses required:
BIOL 1009—General Biology, BIOL SCI, PEOPLE/ENV (4 cr)
COMP 1011—Composition I, COMMUNICAT (3 cr)
COMP 1013—Composition II, COMMUNICAT (3 cr)
MATH 1031—College Algebra, MATH THINK (3 cr)
MATH 1150—Elementary Statistics, MATH THINK (3 cr)
PSY 1001—General Psychology, HI/BEH/SSC (3 cr)
SPCH 1101—Public Speaking, COMMUNICAT (3 cr)

Program Electives

Select 9 credits from courses with the following designators: PSY, COMM, GBUS, MGMT, MKTG.

Open Electives

Select 15 credits from any courses.

Program Sub-plans

Students are required to complete one of the following sub-plans.

Consumer Services Settings Sub-Plan

Applied experiences in consumer services settings introduce students to the practical professional skills needed to further connect theory to practice where efficient labor force management and consumer service problems are encountered. Settings include: a) for-profit organizations in areas where customer relations, consumer satisfaction, organization communications are interrelated and b) community nonprofit and governmental human services where community-based issues such as education, health, productivity, and general welfare of human populations in their diverse ecological contexts are emphasized.

Required Courses for the Consumer Services Settings Sub-Plan

Consumer Services Settings Requirements

HSM 3130—Health Management Information Systems (3 cr)

Consumer Services Settings Electives

At least 3 credits must be in COMM and 3 credits in MKTG.
Take 9 or more credit(s) from the following:
COMM 3704—Business and Professional Speaking (3 cr)
COMM 4800—Crisis Communication (3 cr)
MKTG 2200—Personal Selling (3 cr)
MKTG 3250—Integrated Marketing Communication (3 cr)
MKTG 3300—Principles of Marketing (3 cr)
MKTG 3310—Consumer Behavior (3 cr)

Industrial Settings Sub-Plan

Applied experiences in industrial settings provide students with professional skills in labor force management and in addressing problems concerning labor relations, training and development, and quality management systems.

Required Courses for the Industrial Settings Sub-Plan

Industrial Settings Requirements

COMM 4704—Organizational Communication (3 cr)

Industrial Settings Electives

At least 3 credits must be in COMM and 3 credits in MGMT.
Take 9 or more credit(s) from the following:
COMM 3704—Business and Professional Speaking (3 cr)
COMM 4900—Public Relations (3 cr)
MGMT 3210—Supervision and Leadership (3 cr)
MGMT 4200—Project Management (3 cr)

Organizational Psychology Minor

Arts, Humanities, Social Science

(Minor Related to a Major)

NOTE: *This program will be discontinued and is not accepting new students.*

Required credits in this minor: 21.

The organizational psychology minor introduces students to the core concepts of psychology in a unique research and interdisciplinary context. It is designed to complement majors in biology, communications, and business, and to contribute to broader career perspectives on human behavioral implications. The minor can be tailored for students in other majors as well.

Minor Requirements

Required Courses

PSY 1001—General Psychology, HI/BEH/SSC (3 cr)
PSY 3707—Organizational Psychology (3 cr)

Elective Courses

Take 6 or more credit(s) from the following:
PSY 1093—Lifespan Development, HI/BEH/SSC (3 cr)
PSY 2253—Human Behavior and Diversity Issues (3 cr)
PSY 3201—Social Psychology (3 cr)
PSY 3520—Industrial and Organization Psychology (4 cr)
PSY 3604—Abnormal Psychology (3 cr)
PSY 4203—Organization and Transitional Change Seminar (3 cr)

Business Electives

Take 3 or more credit(s) from the following:
MGMT 3200—Principles of Management (3 cr)
MGMT 3210—Supervision and Leadership (3 cr)
MGMT 3220—Human Resource Management (3 cr)
MGMT 3270—Fundamentals of E-Business (3 cr)
MKTG 3310—Consumer Behavior (3 cr)

Communication Electives

Take 3 or more credit(s) from the following:
COMM 2002—Interpersonal and Group Processes (3 cr)
COMM 3000—Communication Theory (3 cr)
COMM 3001—Communication in Human Relationships, HUMAN DIV (3 cr)
COMM 3704—Business and Professional Speaking (3 cr)
COMM 4704—Organizational Communication (3 cr)
COMM 4800—Crisis Communication (3 cr)
COMM 4900—Public Relations (3 cr)

Quality Management B.M.M.

Crookston Business Department

Required credits to graduate with this degree: 120.

The Bachelor of Manufacturing Management (B.M.M.) degree in Quality Management responds to increased employer demand for employees with a solid background in manufacturing techniques combined with a qualification in quality. Many companies that outsource production discover the need for more stringent quality assurance of products made in foreign countries, causing an increased need for graduates with a good grounding in Quality Management. The high demand is concomitant with above average starting salaries.

The Quality Management degree was designed with learner outcomes designed to: (1) meet the employability requirements of industry; (2) incorporate changing consumer interests, attitudes, and concerns for quality management; (3) offer students an attractive, well differentiated educational option to complete their bachelor level education; (4) utilize existing intellectual and physical resources.

The Quality Management program prepares graduates for employment in industry and public regulatory agencies. University of Minnesota, Crookston graduates have the knowledge and skills to contribute to the quality functions at their prospective employers. At present a search on the website of I Hire Quality Control yielded 1629 middle management positions in Quality Control/Assurance Management.

The Quality Management program is transfer friendly and an attractive option for Technical College graduates to complete their academic qualification to bachelor level. It is especially tailored to those individuals who would like to become part of the management team within their workplaces. The university recognizes the value of the technical skills that students acquired at other institutions and the experience they have gained during their careers. The right combination of communication and management skills and pertinent quality-related learning are added to prepare the students for future opportunities. The program is offered on campus and also online to respond to the needs of busy working adults.

Admission Requirements

For information about University of Minnesota, Crookston admission requirements, visit the UMC Admissions website, **umcrookston.edu/apply**.

Program Requirements

B.M.M. in Quality Management Options

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

Transfer Credits

Students transfer in 59 credits. If they transfer in less, they take the credits as electives until they have satisfied the 59 transfer credit requirement.

-OR_

B.M.M. in Quality Management Online

Complete the requirements of the B.M.M. in Quality Management Online option.

Required Courses for the Program

Quality Management Core Requirements

ACCT 2101—Principles of Accounting I (3 cr)
BM 3006—Maintenance and Safety Management (3 cr)
BM 3007—Metrology (3 cr)
BM 3008—Regulations and Compliance (3 cr)

BM 3012—Applied Engineering Principles (3 cr)
BM 3034—Quality Management Systems (3 cr)
BM 3053—Product Development Management (3 cr)
MGMT 3100—Managerial Finance (3 cr)
MGMT 3200—Principles of Management (3 cr)
MGMT 3250—Operations Management (3 cr)
MGMT 3255—Logistics and Supply Chain Management
   (3 cr)
MGMT 3210—Supervision and Leadership (3 cr)
or MKTG 3300—Principles of Marketing (3 cr)

Liberal Education Requirements

COMM 3008—Business Writing (3 cr)
COMP 1011—Composition I, COMMUNICAT (3 cr)
COMP 1013—Composition II, COMMUNICAT (3 cr)
ECON 2101—Microeconomics, HI/BEH/SSC (3 cr)
MATH 1031—College Algebra, MATH THINK (3 cr)
MATH 1150—Elementary Statistics, MATH THINK (3 cr)
SPCH 1101—Public Speaking, COMMUNICAT (3 cr)

Upper Division Electives

Students must take 4 credits of upper division electives.

Program Sub-plans

A sub-plan is not required for this program.

B.M.M. in Quality Management Online Sub-plan

The Bachelor of Manufacturing Management (B.M.M.) in Quality Management responds to increased employer demand for employees with a solid background in manufacturing techniques combined with a qualification in quality.

The Quality Management degree is transfer friendly and an attractive option for Technical College graduates to complete their academic qualification to bachelor level. It is especially tailored to those individuals who would like to become part of the management team within their workplaces. The program is offered on campus and also online to respond to the needs of busy working adults.

Required Courses for the B.M.M. in Quality Management (Online) Sub-plan

Transfer Credits

Students transfer in 58 credits. If they transfer in less, they take the credits as electives until they have satisfied the 58 transfer credit requirement.

Technology Requirement

GBUS 1005—Orientation to Online Programs (1 cr)

Software Engineering B.S.

Math, Science and Technology

Required credits to graduate with this degree: 120.

As technology penetrates every sector of the economy, software needs are becoming increasingly complex. This need has seen the evolution of a relatively new area of study, software engineering. The U.S. Department of Labor, Bureau of Labor Statistics state that computer software engineering will be among the fastest growing occupations for the next 10 years.

The software engineering program combines the theory behind good software engineering practices along with applied projects throughout the IEEE standardized curriculum. This approach provides graduates the knowledge and skills to be successful in the workplace or in graduate studies.

Program outcomes—graduates will

- show mastery of the software engineering knowledge and skills and professional issues necessary to begin practice as a software engineer
- work as an individual and as part of a team to develop and deliver quality software artifacts
- reconcile conflicting project objectives, finding acceptable compromises within limitations of cost, time, knowledge, existing systems, and organizations
- design appropriate solutions in one or more application domains using software engineering approaches that integrate ethical, social, legal, and economic concerns
- demonstrate an understanding of and apply current theories, models, and techniques that provide a basis for problem identification and analysis, software design, development, implementation, verification, and documentation
- demonstrate an understanding and appreciation for the importance of negotiation, effective work habits, leadership, and good communication with stakeholders in a typical software development environment
- learn new models, techniques, and technologies as they emerge and appreciate the necessity of such continuing professional development

Admission Requirements

For information about University of Minnesota, Crookston admission requirements, visit the UMC Admissions website, **umcrookston.edu/apply**.

Program Requirements

Students must complete 40 upper division credits.

Liberal Education Requirements

A minimum of 40 liberal education credits required. Students must complete the 10 goal areas of the Minnesota Transfer Curriculum with the following specific liberal education courses required:

BIOL 1009—General Biology, BIOL SCI, PEOPLE/ENV
   (4 cr)
COMP 1011—Composition I, COMMUNICAT (3 cr)
COMP 1013—Composition II, COMMUNICAT (3 cr)
ECON 2101—Microeconomics, HI/BEH/SSC (3 cr)
HUM 3310—Culture and Technology, HUMANITIES,
   GLOB PERSP (3 cr)
PHIL 1001—Introduction to Philosophy, HUMANITIES,
   ETH/CIV RE (3 cr)
PHYS 1101—Introductory College Physics I, PHYS SCI
   (4 cr)
SPCH 1101—Public Speaking, COMMUNICAT (3 cr)
PSY 1001—General Psychology, HI/BEH/SSC (3 cr)
MATH 1271—Calculus I, MATH THINK (4 cr)
MATH 1150—Elementary Statistics, MATH THINK (3 cr)

Technology Requirement

Students must take 3 credits of any CA courses.

Program Requirements

Students must complete 17 open electives.

Recommended electives for financial/e-commerce systems specialization: ACCT 2101, ITM 3215, MGMT 3100, MGMT 3270

Recommended electives for network-centric systems specialization: ITM 3130, ITM 3145, ITM 3200, ITM 3215

SE 1500—Discrete Structures I (3 cr)
SE 1600—Discrete Structures II (3 cr)
SE 2090—Data Structures and Algorithms (3 cr)
SE 2100—Microcomputer Systems Architecture (3 cr)
SE 2200—Introduction to Software Engineering (3 cr)
SE 2300—Software Construction (3 cr)
SE 2400—Software Engineering Approach to Human Computer Interaction (3 cr)
SE 3200—Software Design and Architecture (3 cr)
SE 3300—Software Quality Assurance and Testing (3 cr)
SE 3400—Software Requirements Analysis (3 cr)
SE 3700—Software Project Management (3 cr)
SE 3900—Internship (3 cr)
SE 4500—Senior Project I (3 cr)
SE 4510—Senior Project II (3 cr)
SE 2050—Introduction to Programming I (3 cr)
SE 3050—Database Management Systems (3 cr)
SE 2070—Introduction to Programming II (3 cr)
ITM 3110—Microcomputer Operating Systems (3 cr)
NT 3120—Networking Standards and Protocols (3 cr)
MGMT 3200—Principles of Management (3 cr)

Sport and Recreation Management B.S.

Crookston Business Department

Required credits to graduate with this degree: 120.

The sport and recreation management program gives students the opportunity to develop knowledge and expertise in sport and recreation with an orientation toward management. It is employment-oriented, designed around active learning and responsive teaching, and technology-driven, focused on communication and human relations.

Program graduates will be able to manage, assist in the management of, or find employment in sport and recreation organizations. Career opportunities include positions in professional sport franchises, sport and recreation facilities, participative sport event management, spectator sport event management, licensed athletic apparel companies, corporate fitness programs, college and university athletic departments, park and tourist attraction sites, community centers, senior centers, health clubs, sport and recreation camps, clinics, and seminars.

Program outcomes—graduates will demonstrate

- competencies in general business disciplines (i.e. management, marketing, finance) as related to sport and recreation management
- skills in written and oral communication that relate to the sport and recreation industry

- ability to apply industry-specific technological tools and operating procedures for sport and recreation
- team building skills and the ability to work in groups

Admission Requirements

For information about University of Minnesota, Crookston admission requirements, visit the UMC Admissions website, **umcrookston.edu/apply**.

Program Requirements

Students must complete 40 upper division credits.

Sport and Recreation Management Core

ACCT 2101—Principles of Accounting I (3 cr)
ACCT 2102—Principles of Accounting II (3 cr)
GBUS 3107—Legal Environment in Business (3 cr)
HLTH 1062—First Aid and CPR (2 cr)
HSCI 1072—Wellness (3 cr)
MGMT 3100—Managerial Finance (3 cr)
MGMT 3200—Principles of Management (3 cr)
MKTG 3250—Integrated Marketing Communication (3 cr)
MKTG 3300—Principles of Marketing (3 cr)
SRM 2100—Psychology of Sport (3 cr)
SRM 2200—Socio-Cultural Dimensions in Sport (3 cr)
SRM 3000—Foundations of Sport and Recreation Management (3 cr)
SRM 3002—Legal Aspects of Sport (3 cr)
SRM 3003—Facility and Equipment Management (3 cr)
SRM 3005—Communication in Sport (3 cr)
SRM 3006—Sports Marketing (3 cr)
SRM 2010—Topics in Coaching (1–3 cr)
SRM 3900—Internship in Sport and Recreation Management (1–3 cr)
SRM 4099—Seminar in Sport and Recreation Management (1 cr)
COMM 3008—Business Writing (3 cr)
or COMM 3303—Writing in Your Profession (3 cr)
MGMT 3210—Supervision and Leadership (3 cr)
or MGMT 3220—Human Resource Management (3 cr)
or MGMT 3600—Change, Creativity, and Innovation Management (3 cr)
or MKTG 3400—Marketing Research (3 cr)

Take 4 or more credit(s) from the following:
PER 1xxx

Take 2 or more credit(s) from the following:
CA 1xxx
ITM 1xxx
ITM 2xxx
ITM 3xxx
ITM 4xxx
MGMT 3xxx
MGMT 4xxx
MKTG 3xxx
MKTG 4xxx

Liberal Education Requirements

A minimum of 40 liberal education credits required. Students must complete the 10 goal areas of the Minnesota Transfer Curriculum with the following specific liberal education courses required:

COMP 1011—Composition I, COMMUNICAT (3 cr)
COMP 1013—Composition II, COMMUNICAT (3 cr)
ECON 2101—Microeconomics, HI/BEH/SSC (3 cr)
ECON 2102—Macroeconomics, HI/BEH/SSC (3 cr)

MATH 1031—College Algebra, MATH THINK (3 cr)
MATH 1150—Elementary Statistics, MATH THINK (3 cr)
SPCH 1101—Public Speaking, COMMUNICAT (3 cr)

Computer Applications Electives

Take 3 credits of any CA courses.

Open Electives

Students must take enough Open Electives credits to meet
the 120 credit requirement for graduation.