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 work force requirements.
• have 180 total credits to permit graduation in four years.
• contain 40 percent or 72 credit hours of applied general education.
• contain 33 percent or 60 credits hours of upper division coursework.
• contain 18 credit hours of open electives to permit student choice.

In addition, these programs help prepare students for employment. Therefore, all programs are

Employment-oriented
• Programs prepare students to participate in and manage a diverse work force.
• Programs are linked to employers in a variety of ways (such as field trips, on-site assignments, shadowing, and shared databases).
• Internship or field experience is required.
• Programs respond to changes in the work force via interaction between faculty and employers.
• Programs are evaluated by a Program Improvement Audit Committee whose membership comes from business and industry.

Designed around active learning and responsive teaching
• Teachers are team leaders and project directors.
• Students are active learners involved in the learning process.
• Programs emphasize application and solving real-world problems.
• Students develop portfolios of their experiences to demonstrate their personal and career development.

Technology-driven
• Technology outcomes are included in every course.
• A computer component is included in every course.
• Students gain technical competence that meets or exceeds the needs of industry.
• Students use voice mail, send assignments to faculty electronically, and use Internet (a worldwide computer network).
• Interactive television enables students to take courses delivered by other higher education institutions.
• Students develop the ability to adapt to technological change that will be essential to career success.

Focused on communication and human relations
• A communication component is included in every course.
• Effective communication and human relations skills are considered to be vital skills by employers.
• Communication and human relations skills enable students to interpret and influence their environment and enhance their learning.
• Courses help students to function as team leaders and team members.
• Students learn how to work cooperatively to complete tasks, solve problems, resolve conflicts, provide information, and offer support.

Outcome-based
• Learner outcomes are published for each course.
• Program outcomes are published for each program.
• Clear articulation exists between courses.
• Quality is judged by measurable outcomes.

Curricular Programs

UMC programs prepare students for employment in midmanagement (A.A.S.) or management (B.S.) positions and for a wide variety of personal and career goals. Students may explore their interests within the broad spectrum of the college’s offerings and, because of the many requirements common to the various programs, may transfer from one program to another within a division with little loss of time. Also, students in the associate in applied science (A.A.S.) programs may transfer into bachelor of science (B.S.) programs without loss of time in most cases.

Degree Programs—UMC offers programs leading to the associate in applied science (A.A.S.), the associate in science (A.S.), the bachelor of science (B.S.), and the bachelor in an applied field (B.A.H. or B.M.) degree. The A.A.S. programs require 96 to 105 credits depending on the program, with about two-thirds in technical coursework and one-third in liberal arts coursework. The A.S. programs require a minimum of 96 credits, with at least half in liberal arts coursework. The B.S. programs require 180 credits, with about 40 percent in general education coursework and 60 percent in coursework in the major and electives. All B.S. programs require 33 percent or 60 credit hours of upper division (3xxx) coursework. The bachelor in an applied field degree programs have specific requirements unique to each major. Upper division requirements include courses in general education and the major. Developmental courses in reading, writing, and math skills cannot be used for credit toward graduation. These courses are identified with 09xx course numbers.

General Education Requirements—An integral part of all UMC degree programs, general education is the set of common understanding and skills essential to successful living in a modern society and to functioning as a member in that society as a whole, integrated individual. Students seeking to complete the A.A.S., the A.S., or the B.S. must complete the general education requirements listed on this and the following page.

Internship Requirement—The internship requirement helps students obtain additional training to become better prepared for employment in their chosen field. It may be completed through on-the-job experience with a business firm, government agency, or home farm management program, as appropriate.
The internship program can be designed to fit the needs of individual students. If students do not plan to continue in a baccalaureate degree program, the internship is usually completed during the summer term between the first and second years of the A.A.S. program. Students who think they may continue in a baccalaureate degree program may substitute an upper division course for the A.A.S. internship requirement.

A minimum of 10 weeks of employment or volunteer assignments are 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.

All baccalaureate degrees require an internship or field experience.

Transfer—Some students complete part of their college work at UMC before attending other institutions for advanced specialization. Faculty advisers familiar with advanced specializations work closely with these students. Students may complete the A.S. before transferring to another institution.

Individuals who wish to take selected courses for self-improvement or to qualify for employment may enroll for as long as they think necessary to meet their objectives.

Accounting

(A shared major and cooperative degree program with Bemidji State University)

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. Therefore, the accounting program teaches analytical, theoretical, communication, and leadership skills necessary for effective accounting and advancement in public, private, and government careers.

After graduating, accounting majors may take the Uniform Certified Public Accounting Examination, the Certified Internal Auditor Examination, or the Certified Management Accountant Examination. Certificates are issued if a satisfactory score is earned and appropriate work experience is completed.

Accounting B.S. Program Outcomes

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

Accounting program graduates will

- use computer technology for accounting spreadsheet applications and general ledger accounting functions.
- develop and demonstrate skills in financial and cost accounting systems typical of most businesses.
Agricultural Aviation

Agricultural aviation degree programs train students to excel in the increasingly sophisticated and competitive profession of aerial application. The associate degree program includes a core of general education, agriculture, and aviation courses. The bachelor’s degree curriculum expands on these requirements by providing greater depth and includes a series of business-related courses. Both programs are offered in collaboration with the University of North Dakota Center for Aerospace Sciences. UND Aerospace, an internationally recognized collegiate flight training center, provides aircraft, simulators, flight instructors, and aviation course materials.

Only full-time students (taking 12 credits or more) may enroll in flight training courses; others must obtain consent from the chief flight instructor. FAA pilot certification courses include: private pilot, commercial pilot, instrument rating, certified flight instructor, instrument flight instructor, multi-engine rating, and multi-engine flight instructor. Students enrolling with previous flight experience may receive college credit for their training after a flight check with the chief flight instructor.

Agricultural aviation students attend all classes on the UMC campus. Flight training is conducted at the UMC flight training center located at the Crookston airport, five miles north of the University.

Agricultural aviation degree programs include flight courses for which students incur costs over and above regular tuition rates. The required aviation courses associated with both degree programs include private pilot certification, commercial pilot certification, instrument rating, introductory and advanced conventional aircraft operations, and aerial applicator training.

UMC is committed to keeping costs as low as possible for agricultural aviation degree candidates. However, these costs do vary and depend on the courses taken as well as the aircraft and flight instructor time used. Call the Agricultural Management Division Office (218/281-8101) for current cost estimates.

Typical agricultural aviation career opportunities include aerial applicator, aerial photographer, aerial firefighter, aviation sales representative, charter pilot, fixed-base operation manager, pilot representative for agricultural business, and professional flight instructor.

Agricultural Aviation

B.S. Program Outcomes

The agricultural aviation student will
• demonstrate competency in aeronautics,
• document appropriate aeronautical experience,
• demonstrate competency in agriculture and business,
• complete an internship experience,
• demonstrate team-building decision-making skills,
• demonstrate skills in using computer technology used in agricultural aviation,
• demonstrate ability to make contacts with various government, industry, and academic experts through collaboration,
• be prepared for a career in aviation,
• acquire appropriate aviation certification.
Agricultural Aviation

Course Requirements (B.S.)

Degree Requirements: A total of 180 credits are required for graduation. Of this total, 72 credits are required in general education, 90 credits in the major, and 18 credits in electives. Sixty credits are required in upper division courses.

General Education Requirements
Bio 1009—General Biology (3)
Bio 1103—General Botany (4)
Chem 1001—Introduction to Chemistry (4)
Chem 1401—Elementary Biochemistry (4)
Comp 1011—Composition I (4)
Comp 1013—Composition II (4)
Comp 3024—Advanced Composition (4)
Econ 1101—Microeconomics (4)
Econ 1102—Macroeconomics (4)
Hist 1305—Cultural Pluralism in American History (4)
Hum 1xxx—Humanities elective (4)
INM 1010—Introduction to Information Technology (4)
Math 1121—College Algebra and Analytical Geometry (4)
Phil 1003—Ethics (4)
Phys 1001—Elementary Physics (4)
Psy 1001—Introduction to Psychology (4)
Spch 1001—Speech (4)

General education electives (3)

Program Requirements
Acct 1020—Principles of Accounting I (4)
AgAv 1102—Introduction to Aviation I (5)
AgAv 1103—Introduction to Aviation II (2)
AgAv 1251—Aircraft Systems and Instruments (4)
AgAv 1252—Basic Attitude Instrument Flying (4)
AgAv 1396—Advanced Conventional Aircraft Operations (2)
AgAv 3353—Airplane Aerodynamics (4)
AgAv 3354—I.F.R. Regulations and Procedures (4)
AgAv 3396—Advanced Conventional Aircraft Operations (2)
AgAv 3603—Aerial Application Procedures (5)
Agro 1063—Crop and Weed Identification (3)
Agro 1184—Field Crops—Production Principles (4)
Agro 1644—Agricultural Chemicals (4)
Agro 3164—Plant Pathology (4)
GnAg 3900—Internship (4)
MAg 1034—Agricultural Facilities Maintenance (4)
NatlR 1573—Introduction to Entomology (3)
Soil 1294—Soil Science (4)

Agricultural industries sales and management

Sales and Management

Agricultural industries sales and management graduates have many options in agribusiness careers. Employment opportunities in finance, marketing, sales, public relations, business management, commodities trading, consulting, production management, and commercial insurance are found in a wide array of agriculture-affiliated businesses:

- Agricultural sales and manufacturing firms
- Cooperatives
- Farm credit/financial agencies
- Government agencies
- Production management operations

Agricultural Industries Sales and Management B.S. Program Outcomes

The agricultural industries sales and management program prepares students to work in agribusiness. The curriculum blends a strong base of agriculture, business management, and general education courses with flexibility to choose courses that fit student interests.

- Graduates in the agricultural industries sales and management program will
  - demonstrate skills and competencies in agribusiness management.
  - demonstrate skill and experience in team building and decision making.
  - be able to use technology to support and enhance business information management and education opportunities.
  - demonstrate an understanding of the broad area of agriculture from producer to final consumer.
  - have experienced opportunities in participative and field learning.

Agricultural Industries

Sales and Management

Course Requirements (B.S.)

Degree Requirements: A total of 180 credits are required for graduation. Of this total, 72 credits are required in general education, 90 credits in the major, and 18 credits in electives. Sixty credits are required in upper division courses.
General Education Requirements
Biol 1009—General Biology (5)
Chem 1001—Introductory Chemistry (4)
Comp 1011—Composition I (4)
Comp 1013—Composition II (4)
Comp 3204—Advanced Composition (4)
Econ 1101—Microeconomics (4)
Econ 1102—Macroeconomics (4)
Hist 1305—Cultural Pluralism in American History (4)
INM 1010—Introduction to Information Technology (4)
Math 1111—College Algebra and Analytical Geometry (4)
Math 1150—Elementary Statistics (4)
Phil 1003—Ethics (4)
Psy 1001—Introduction to Psychology (4)
Sinp 1101—Speech (4)
General education electives (7)
Humansities elective (4)
Natural science elective (4)

Program Requirements
Acct 1020—Principles of Accounting I (4)
AgEc 1584—Professional Agriselling (4)
AgEc 3001—Applied Microeconomics (4)
AgEc 3005—Applied Macroeconomics (4)
AgEc 3404—Agricultural Marketing (4)
AgEc 3604—Agricultural Finance (4)
AgEc 3784—Agricultural Business Sales and Management (4)
GnAg 3900—Internship (4)
Mgmt 3200—Principles of Management (4)
Mktg 3300—Principles of Marketing (4)
Mktg 3360—Global Business (4)
Soil 1294—Soil Science (4)
Agriculture/management electives (26)
Agronomy/horticulture elective (4)
Animal science elective (4)
Mechanized agriculture elective (8)

Electives (18)

Agricultural Business
A.A.S. Program Outcomes
Students in the agricultural business two-year program focus on a combination of technical agriculture and business courses based on a general education foundation. Graduates of this program may be employed in mid-management positions in agribusiness firms such as rural cooperatives, grain and livestock marketing firms, implement dealerships, and chemical companies.

The agricultural business curriculum is flexible to allow specialization in student interest areas. Graduates in the agricultural business program will demonstrate:
- an understanding of the broad field of agriculture.
- an understanding of the development and use of business records.
- the ability to evaluate entrepreneurial opportunities in production agriculture and/or agribusiness.
- the skills necessary to obtain entry-level jobs in agribusiness.

Agricultural Business
Course Requirements (A.A.S.)
Degree Requirements: A total of 100 credits are required for graduation. Of this total, 96 credits must be earned in academic coursework and 4 credits in internship.

Agricultural Management Division Requirements
Acct 1020—Principles of Accounting I (4)
AgEc 1211—Agricultural Computing (1)
AgEc 1374—Farm Records and Analysis (4)
AgEc 1584—Professional Agriselling (4)
AgEc 3404—Agricultural Marketing (4)
AgEc 3554—Principles of Farm Management (4)
AgEc 3604—Agricultural Finance (4)
AgEc 3784—Agricultural Business Sales and Management (4)
Agro 1184—Field Crops-Production Principles (4)
AnSc 1024—Introduction to Animal Science (4)
GrAg 3900—Internship (4)
Soil 1294—Soil Science (4)
Agriculture/management electives (14)
Mechanized agriculture elective (4)

General Education Requirements
Biol 1009—General Biology (5)
Chem 1001—Introductory Chemistry (4)
Comp 1011—Composition I (4)
Comp 1101—Composition II (4)
Econ 1101—Microeconomics (4)
Econ 1102—Macroeconomics (4)
Soil 1294—Soil Science (4)

Agricultural Business

General Education Requirements
Biol 1009—General Biology (5)
Chem 1001—Introductory Chemistry (4)
Comp 1011—Composition I (4)
Comp 1101—Composition II (4)
Econ 1101—Microeconomics (4)
Econ 1102—Macroeconomics (4)

One of the following:
- Math 1001—Technical Mathematics (4)
- Math 1111—College Algebra and Analytical Geometry (4)

One of the following:
- Hist 1305—Cultural Pluralism in American History (4)
- Phil 1003—Ethics (4)
- INM 1010—Introduction to Information Technology (4)
- Sinp 1101—Speech (4)

Animal Industries Management

The animal industries management major leads to careers in livestock production and management or one of the many allied areas that support livestock production.

Each of the two animal industries management emphases includes computer and communications training, sales, and business management. Other required coursework is traditional to livestock degrees, but students have the option of taking those courses specific to their individual interests.

Students in these degree emphases may find employment in livestock/dairy businesses or one of many support industries such as feed, artificial insemination, and livestock or farm equipment.

Graduates may pursue careers in sales, marketing, research, and management. Typical career opportunities in these fields include artificial breeding manager, artificial breeding supervisor, farm record consultant, commission firm buyer, dairy equipment salesperson, dairy inspector, dairy products procurer, dairy research aide, DHIA supervisor, feed salesperson, livestock equipment salesperson, individual, institutional, or corporate livestock farm owner, manager, herder, feedlot supervisor, or specialty supervisor; livestock fieldworker; quality control technician; or research aide.

Animal Industries Management (B.S.) Program Outcomes

The animal industries management major prepares students to be managers of livestock/dairy businesses and sales representatives for livestock/dairy service companies and breed associations.

Graduates in the animal industries management program will:
- demonstrate competencies in livestock/dairy management.
- have skills in teamwork and individual decision making.
- demonstrate computer skills for problem solving and decision making.
- be prepared for careers in the livestock/dairy industry.
- demonstrate integration of both general education and technical coursework.
- gain practical experience through an internship.
- demonstrate the ability to make contacts with experts in the livestock/dairy industry.
Animal Industries Management
Course Requirements (B.S.)

Degree Requirements: A total of 180 credits are required for graduation. Of this total, 72 credits are required in general education, 90 credits in the major, and 18 credits in electives. Sixty credits are required in upper division courses.

General Education Requirements
Biol 1009—General Biology (5)
One of the following:
Biol 1106—General Zoology (meat animal management emphasis) (4)
Biol 1665—Microbiology (dairy management and meat animal management emphasis) (4)
Biol 3022—Principles of Genetics (4)
Chem 1004—General Principles of Chemistry I (5)
Chem 1401—Elementary Biochemistry (4)
Comp 1011—Composition I (4)
Comp 1013—Composition II (4)
Comp 3024—Advanced Composition (4)
Econ 1201—Microeconomics (4)
Hist 1305—Cultural Pluralism in American History (4)
INM 1010—Introduction to Information Technology (4)
Math 1111—College Algebra and Analytical Geometry (4)
Phil 1003—Ethics (4)
Psy 1001—Introduction to Psychology (4)
Spc 1101—Speech (4)

General Education electives (2-3)
Humanities elective (4)
Social science elective (4)

Program Requirements (both emphases)
AnSc 1014—Introduction to Animal Science (4)
AnSc 1141—Animal Evaluation (1)
AnSc 1208—Feeds and Feeding (4)
AnSc 1442—Advanced Animal Evaluation (2)
AnSc 3004—Principles of Animal Nutrition (4)
AnSc 3322—Reproduction of Farm Animals (4)
AnSc 3404—Applied Animal Nutrition (4)
AnSc 3454—Animal Anatomy and Physiology (4)
AnSc 3654—Animal Health and Disease (4)
AnSc 3703—Animal Science Seminar (2)
GnAg 3900—Internship (4)
Soil 1294—Soil Science (4)

Program Requirements—Dairy Management Emphasis
AgEc 1374—Professional Agriselling (4)
AgEc 3554—Principles of Farm Management (4)
AnSc 1303—Dairy Techniques (3)
AnSc 3102—Dairy Products (2)
AnSc 3220—Animal Breeding (4)
AnSc 3604—Dairy Production (4)
AnSc 3904—Dairy Farm Management (5)
One course from each of the following:
Agricultural economics elective (4)
Agronomy elective (4)
Mechanized agriculture elective (4)

Program Requirements—Meat Animal Management Emphasis
One of the following:
AgEc 1374—Farm Records and Analysis (4)
Acct 1020—Principles of Accounting I (4)
One of the following:
AgEc 1584—Professional Agriselling (4)
Mktg 3200—Personal Selling (4)
One of the following:
AgEc 3404—Agricultural Marketing (4)
Mktg 3300—Principles of Marketing (4)
One of the following:
AgEc 3554—Principles of Farm Management (4)
Mgmt 3320—Small Business Management (4)
One of the following:
Agro 1184—Field Crops—Production Principles (4)
Agro 3120—Forages (4)
Two of the following:
AnSc 3601—Swine Production and Management (4)
AnSc 3602—Sheep Production and Management (4)
AnSc 3603—Beef Production and Management (4)
Agriculture electives (13)
Mechanized agriculture electives (8)

Electives (18)

Animal/Dairy Science
A.A.S. Program Outcomes

The animal science major prepares students for occupations related to the livestock industry.

Graduates in the animal/dairy science A.A.S.
program will
• be able to balance rations to meet major nutritional needs of livestock.
• be able to properly handle livestock.
• be able to maintain necessary records for financial analysis.
• be able to make appropriate management decisions.
• demonstrate technical knowledge for efficient livestock production.
• demonstrate math and science knowledge pertinent to animal/dairy science.
• gain practical experience through an internship.
• be able to perform techniques necessary to breed quality livestock.
• demonstrate knowledge about herd health practices for preventive measures and problem treatment.
• demonstrate knowledge of livestock breeds and their impact on the livestock industry.
• be prepared to play an active role in the livestock industry and its impact on society.

Animal/Dairy Science
Course Requirements (A.A.S.)

Degree Requirements: A total of 100 credits are required for graduation. Of this total, 96 credits must be earned in academic coursework and 4 credits in internship.

Agricultural Management Division Requirements
Agro 1184—Field Crops—Production Principles (4)
AnSc 1014—Introduction to Animal Science (4)
AnSc 1141—Animal Evaluation (1)
AnSc 1204—Feeds and Feeding (4)
AnSc 3004—Principles of Animal Nutrition (4)
AnSc 3454—Animal Anatomy and Physiology (4)
AnSc 3654—Animal Health and Disease (4)
GnAg 3900—Internship (4)
Soil 1294—Soil Science (4)

Agricultural economics electives (8)
(AnSc 1374, AgEc 3554 recommended)
Agronomy elective (4)
Animal science electives (8)
Mechanized agriculture electives (8)

General Education Requirements
Biol 1009—General Biology (5)
Comp 1011—Composition I (4)
Comp 1013—Composition II (4)
Econ 1101—Microeconomics (4)
INM 1010—Introduction to Information Technology (4)
One of the following:
Biol 1106—Zoology (4)
Biol 1665—Microbiology (4)
Biol 3022—Principles of Genetics (4)
One of the following:
Chem 1004—General Principles of Chemistry I (4)
Chem 1401—Elementary Biochemistry (4)
Hist 1305—Cultural Pluralism in American History (4)
One of the following:
Math 1001—Technical Mathematics (4)
Math 1111—College Algebra and Analytical Geometry (4)
One of the following:
Hist 1305—Cultural Pluralism in American History (4)
Phil 1003—Ethics (4)

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Applied Studies

Applied Studies
B.S. Program Outcomes

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.

Graduates will
• tailor and complete a course of study that builds on their prior education and experience.
• focus the program of study on their career development goals.
• apply active learning experiences and technology through the entire UMC curriculum.
• demonstrate skills in communication, ethical decision making, and critical thinking.

Applied Studies
Course Requirements (B.S.)

Degree Requirements: A total of 180 credits are required for graduation. Of this total, 72 credits are required in general education, 72 credits in the major, and 36 credits are electives. Sixty credits are required in upper division courses.

General Education Requirements
Biol 1009—General Biology (5)
Comp 1011—Composition I (4)
Comp 1013—Composition II (4)
Econ 1101—Microeconomics (4)
Hist 1305—Cultural Pluralism in American History (4)
INM 1010—Introduction to Information Technology (4)
Math 1111—College Algebra and Analytical Geometry (4)
Phil 1003—Ethics (4)
Psy 1001—Introduction to Psychology (4)
Srch 1101—Speech (4)
Additional credits in:
• Communication (4)
• Humanities (4)
• Natural science (8)
• Social science (4)
• General education (11)

Program Requirements
Students develop an individual program of study involving a minimum of two areas of study, at least one of which must have an occupational direction. This is an individualized program. Contact the Arts and Sciences Division for sample listings of courses that may be taken to fulfill requirements.

ApIS 3001—Individual Program Development (1)
ApIS 3652—Applied Studies Seminar (2)
ApIS 3900—Internship/Field Experience (4)
First area of study—Technical or occupational (minimum 40)
Second area of study—Additional courses selected across the curriculum to meet career objectives (minimum 25)
Electives

For more information about admission to this program, contact the Arts and Sciences Division, 109 Conference Center (218/281-8256).

Bachelor of Applied Health

The bachelor of applied health (B.A.H.) is an integrated, four-year baccalaureate degree program developed in collaboration with Northwest Technical College (East Grand Forks, Minnesota), Red River Community College (Winnipeg, Manitoba), several regional health care facilities, and University College on the Twin Cities campus. The B.A.H. program is a distance education program delivered through computer technology, the World Wide Web, and ITV.

The program of study includes a fully integrated general education core curriculum, clinical occupational field, and skill-oriented clinical management component. The applied curriculum integrates knowledge and experiences necessary to provide clinical leadership in the changing health care arena and in entrepreneurial health care settings where clinical expertise is valued.

Bachelor of Applied Health
Program Outcomes

Bachelor of applied health program graduates will
• use computer technology as a tool to effectively communicate, collaborate, manage, and present health care ideas and issues.
• demonstrate clinical leadership skills through the promotion and practice of collaborative behavior with members of teams and across teams.
• integrate multidisciplinary and multicultural perspectives and ethical values into decision making processes.
• demonstrate the ability to plan, develop, and manage a department budget within the constraints of the regulatory health care environment.

Bachelor of Applied Health
Course Requirements (B.A.H.)

Degree Requirements: A total of 180 credits are required for graduation. Of this total, 44 credits are required in general education and 76 credits must be transferred from Northwest Technical College or Red River Community College. Sixty credits are required in upper division courses.

General Education Requirements
Biol 1464—Human Anatomy and Physiology I (4)
Biol 1474—Human Anatomy and Physiology II (4)
Biol 1505—Microbiology (3)
Chem 1001—Introductory Chemistry (4)
Comp 1334—Technical Writing (4)
Hist 1305—Cultural Pluralism in American History (4)
HPER 1072—Wellness (2)
INM 1010—Introduction to Information Technology (4)
Math 2402—Probability and Statistics (3)*
Phil 1003—Ethics (4)
Psy 1001—Introduction to Psychology (4)
Srch 1101—Speech (4)

Occupational Course Requirements (Northwest Technical College, Red River Community College)
Course prefixes, numbers, and titles vary by institution and clinical program.

B.A.H. Upper Division Requirements

ABus 3012—Problem Solving in Complex Organizations (4)**
ABus 3021—Small-Group Behavior and Teamwork (4)**
ABus 3023—Communicating for Results (4)**
ABus 3031—Accessing and Using Information Effectively (4)**
ABus 3041—Leadership in a Global and Diverse Workplace (4)**
ABus 3104—Management and Human Resource Practices (4)**
BAH 3010—Budget Planning, Development, and Management (4)
BAH 3020—Quality Assurance, Utilization Review, and Risk Management (4)
HRD 5762—Management of Conflict (4)**
HSM 3100—Essentials of Managed Care (4)
HSM 3200—Management, Leadership, and Health Care Planning (4)
HSM 3210—Health Law and Biomedical Ethics (4)
HSM 3300—Comparative Systems, Global Issues, and Trends in Health Care Management (4)
HSM 3310—Finance and Regulatory Compliance in Health Care (4)
HSM 3900—Internship (4)

* Northwest Technical College course
** University College, Twin Cities course
Bachelor of Manufacturing
(An integrated, four-year baccalaureate degree program with Northwest Technical College)

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

The program is technology-focused and offers seamless progression between coursework students complete at the technical college and coursework they complete at UMC while working in industry. Students are prepared to enter their field with a specific set of technical skills and make an immediate contribution in the manufacturing industry. While working, students complete management and technological coursework to fulfill degree requirements.

The program is for Northwest Technical College incoming freshmen and working graduates in industrial and business fields who have experience in manufacturing or other business settings. Graduates with A.S. and A.A.S. qualifications are also eligible for admission. Distance education components of the program are delivered through interactive and real-time electronic communication technology at a variety of locations. It is also possible to complete all four years of the program at Northwest Technical College.

Bachelor of Manufacturing
(B.M.) Program Outcomes

- play a leading supervisory and management role in their workplace.
- 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.
- accurately and efficiently control the movement of materials.
- do a safety audit using a comprehensive approach to safety problems in the workplace, including OSHA standards, developing safety awareness, and hazard analysis.

Bachelor of Manufacturing
Course Requirements (B.M.)

Degree Requirements: A total of 180 credits is required for graduation. Of this total, 54 credits are required in general education, at least 60 credits must be upper division courses in the major, 52 credits are in lower division courses, and 14 credits are open electives.

Program Requirements
Completed at Northwest Technical College
CPTR 1404—Technology (4)
ELCO 2802—Digital Control Systems (4)
MATH 1406—Technical Algebra (4)
PMTC 1802—Engineering Drafting (4)
PMTC 1804—Materials and Processes in Manufacturing (5)
PMTC 1806—Computer-Aided Manufacturing (5)
PMTC 1808—Automation Controls I (3)
PMTC 2810—Electrical Concepts (3)
PMTC 2800—Industrial Health and Safety (4)
PMTC 2806—Electrical Machines (4)
PMTC 2808—Automation Controls II (4)
PMTC 2814—Quality Control (4)
PMTC 2816—Advanced Manufacturing Processes (5)
General education electives (2)
Technical electives (4)
Chem 3000—Basic Chemistry (4)*
Comp 1334—Technical Writing (4)*
Math 1111—College Algebra (4)*
Math 1142—Short Calculus (4)*
Phil 1003—Ethics (4)*
Phys 1001—Elementary Physics (4)*
Psych 1001—Introduction to Psychology (4)*
* UMC course

Program Requirements Completed
at the Work Site or Location
or at Northwest Technical College
ABus 3012—Problem Solving in Complex Organizations (4)**
Acct 1020—Principles of Accounting I (4)
Agro 3060—Research Techniques (3)
BAH 3010—Budget Planning, Development, and Management (4)
BM 3010—Materials Handling and Logistics (4)
BM 3020—Industrial Safety (4)
BM 3703—Individual Studies (4)
BM 3900—Internship (4)
Econ 1101—Microeconomics (4)
MAG 3003—Closed-Circuit Hydraulics (2)
Mgmt 3200—Principles of Management (4)
Mgmt 3210—Supervision and Leadership (4)
Mgmt 3250—Operations Management (4)
MHR 3300—Principles of Marketing (4)
PRT 3010—Engineering Principles I (4)
PRT 3012—Engineering Principles II (4)
PRT 3034—Quality Management (4)
Spch 1101—Speech (4)
Spch 3431—Persuasion (4)
Open electives (14)
** University College, Twin Cities course

Business Management

The business management program prepares students for business management positions. It emphasizes managing resources, identifying and solving problems, working with others, collecting and analyzing data, and evaluating results. The program builds on foundation courses in communications, math, economics, and psychology. In addition to marketing, management, and application coursework, the curriculum offers courses in computer technology, accounting, finance, and business law. Students may choose either the management or marketing emphasis.

Business Management
B.S. Program Outcomes

- develop and demonstrate abilities in accounting, finance, marketing, management, computer information systems, team building, and human relations.
- participate in active learning as they develop technical and human relations skills through activities in courses and field experiences/internships.
• demonstrate the development of ethical values in decision making and in applying general business principles.
• develop and demonstrate skills in analyzing, identifying, and solving business problems, evaluating plans and solutions, and integrating multidiscipline concepts with decision making.
• use computer technology in preparing spreadsheets, written reports, analyzing business problems, and preparing professional presentations. Use computer technology as a tool in focused marketing and securing real-time market information.
• demonstrate a concern for the natural environment by incorporating an environmental perspective in the development of objectives, plans, and strategies for business organizations.
• develop and demonstrate an understanding of the importance of a global perspective in business decision making and strategy development.
• demonstrate the ability to communicate clearly and concisely in written and verbal communications through the development and reporting of business documents such as marketing plans, marketing research reports, management reports, and strategic plans.
• demonstrate career/life adaptability skills in problem solving, decision making, and responding to change.

Business Management Course Requirements (B.S.)

Degree Requirements: A total of 180 credits are required for graduation. Of this total, 72 credits are required in general education, 90 credits in the major, and 18 credits in electives. Sixty credits are required in upper division courses.

General Education Requirements
Biol 1009—General Biology (5)
Comp 1011—Composition I (4)
Comp 1013—Composition II (4)
Comp 3024—Advanced Composition (4) or Comp 3303—Professional Writing (4)
Econ 1101—Macroeconomics (4)
Econ 1102—Microeconomics (4)
Hist 1305—Cultural Pluralism in American History (4)
INM 1010—Introduction to Information Technology (4)
Math 1111—College Algebra and Analytical Geometry (4)
Math 1150—Elementary Statistics (4)
Phil 1003—Ethics (4)
Psy 1001—Introduction to Psychology (4)
Spch 1101—Speech (4)
General education electives (19)

Program Requirements (all emphases)
Acct 1020—Principles of Accounting I (4)
Acct 1030—Principles of Accounting II (4)
Acct 1040—Principles of Accounting III (4)
GBus 3107—Legal Environment in Business (4)
INM 1020—Electronic Spreadsheets (4)
Mgmt 3100—Principles of Management (4)
Mgmt 3210—Supervision and Leadership (4)
Mgmt 3300—Human Resource Management (4)
Mgmt 3420—Total Quality Management Applications (4)
Mgmt 3520—Operations Management (4)
Mgmt 3600—Management Decision Making (4)
Mgmt 3800—Studies in Management Strategies (4)
Mktg 3100—Introduction to Entrepreneurship (4)
Mktg 3300—Global Business (4)
Management electives (22)
Electives (18)

Program Requirements—Marketing Emphasis
Mktg 1100—Introduction to Entrepreneurship (4)
Mktg 3100—Personal Selling (4)
Mktg 3250—Promotional Strategies (4)
Mktg 3310—Buyer Behavior (4)
Mktg 3340—Marketing Research (4)
Mktg 3350—Marketing Management (4)
Mktg 3360—Global Business (4)
Mktg 3800—Studies in Creative Marketing (4)
Management electives (22)
Electives (18)

Marketing and Management
A.A.S. Program Outcomes

Marketing and management prepares students for supervisory or entry-level management positions in business organizations.

Graduates will be able to
• participate in active learning and demonstrate an understanding of basic business principles using case studies, business simulations, and internship experiences.
• use computer technology and demonstrate communication skills in preparing spreadsheets, written reports, analyzing business problems, and preparing professional presentations.
• develop and demonstrate ethical values, a concern for the natural environment, a global perspective, and human relations skills through individual and team activities in class and in business situations.

Marketing and management career options include retail store manager, assistant general manager, physical distribution manager, sales representative, purchasing agent, warehouse manager, consumer service manager and small business owner/proprietor.

Marketing and Management
Course Requirements (A.A.S.)

Degree Requirements: A total of 96 credits are required for graduation.

Management Division Requirements
Acct 1020—Principles of Accounting I (4)
Acct 1030—Principles of Accounting II (4)
Acct 1040—Principles of Accounting III (4)
GBus 3107—Legal Environment in Business (4)
INM 1020—Electronic Spreadsheets (4)
Mgmt 3100—Principles of Management (4)
Mgmt 3210—Supervision and Leadership (4)
Mgmt 3900—Internship (4)
Mktg 1100—Introduction to Entrepreneurship (4)
Mktg 3300—Principles of Marketing (4)
Mktg 3330—Marketing Communications (4)
Electives (1xxx level) (12)

General Education Requirements
Comp 1011—Composition I (4)
Comp 1013—Composition II (4)
Econ 1101—Microeconomics (4)
Econ 1102—Macroeconomics (4)
Hist 1305—Cultural Pluralism in American History (4)
INM 1010—Introduction to Information Technology (4)
Math 1111—College Algebra and Analytical Geometry (4)
Math 1150—Elementary Statistics (4)
Phil 1003—Ethics (4)
Psy 1001—Introduction to Psychology (4)
Spch 1101—Speech (4)
General education arts electives (4)
Liberal arts electives (4)
**Dietetic Technician**

**Dietetic Technician A.A.S. Program Outcomes**

The dietetic technician program prepares students to be registered dietetic technicians. The program is approved by the American Dietetic Association.

Graduates will be able to
- take diet histories.
- screen patients for nutritional status.
- perform diet calculations.
- supervise dietetic assistants, diet clerks, and food service personnel.
- purchase food and keep inventory record.
- use computer systems to calculate payroll, record laboratory data, verify diet orders, and adjust recipes.
- provide diet counseling and education to individuals or groups.
- recommend and write menus for clients.

Dietetic technicians are employed by hospitals; public health nutrition programs; long-term care facilities; child nutrition and school lunch programs; nutrition programs for the elderly; and food service systems management firms.

**Dietetic Technician Course Requirements (A.A.S.)**

**Degree Requirements:** A total of 105 credits are required for graduation.

**Management Division Requirements**

- Acct 1020—Principles of Accounting I (4)
- FScN 1123—Nutrition (3)
- FScN 1273—Diet Therapy I (3)
- FScN 1342—Nutrition Through the Life Cycle I (2)
- FScN 1442—Nutrition Through the Life Cycle II (2)
- FScN 1513—Advanced Nutrition (3)
- FScN 1654—Nutrition Care: Principles and Practices (4)
- FScN 1672—Dietetic Seminar (2)
- FScN 1703—Diet Therapy II (3)
- FScN 1999—Dietetic Practicum (6)
- FScN 3100—Elements of Food Science (4)
- FScN 3432—Institutional Food Service Administration (3)
- HRI 1112—Introduction to Food Preparation (4)
- HRI 1113—Sanitation and Safety (3)
- HRI 1211—Principles of Quantity Food Production (4)
- HRI 3221—Hospitality Selection and Procurement (4)
- Mgmt 3200—Principles of Management (4)
- Mgmt 3900—Internship (1-4)
- Soc 3937—Social Gerontology: Elders in American Society (4)
- Electives (3)

**General Education Requirements**

- Biol 1464—Human Anatomy/Physiology I (4)
- Biol 1474—Human Anatomy/Physiology II (4)
- Chem 1004—General Chemistry I (5)
- Comp 1011—Composition I (4)
- INM 1010—Introduction to Information Technology (4)
- Psy 1001—Introduction to Psychology (4)
- Humanities/fine arts electives (3)
- Electives (8)

**Early Childhood Education**

**Early Childhood Education A.A.S. Program Outcomes**

The early childhood education program prepares students to provide developmentally appropriate educational experiences and guidance to groups of young children from birth to eight years of age. Early childhood career opportunities include being teacher in a private or public child care and education center; Head Start/Home Start assistant teacher, teacher, or home visitor; public school aide or playground supervisor; family day care provider; Developmental Achievement Center staff member; recreational or camp instructor or counselor (resorts, camps, hotels); and after-school program teacher; private or public half-day preschool program teacher.

Graduates will be able to
- establish and maintain a safe, healthy, learning environment.
- advance the physical and intellectual competence of young children.
- support the social and emotional development of children and provide positive and developmentally appropriate guidance to children individually and in groups.
- establish positive and productive relationships with families.
- maintain a commitment to professionalism by taking advantage of opportunities to improve competence.

**Early Childhood Education Course Requirements (A.A.S.)**

**Degree Requirements:** A total of 100 credits are required for graduation.

**Management Division Requirements**

- ECh 1104—Child Growth and Development (4)
- ECh 1304—Introduction to Early Childhood Care and Education (4)
- ECh 1344—Creative Arts and Language Arts in Early Childhood Education (4)
- ECh 1364—Math and the Sciences in Early Childhood Education (4)
- ECh 1404—Children’s Health, Safety, and Nutrition (4)
- ECh 1414—Child Guidance and Discipline (4)
- ECh 1544—Education of Exceptional Children (4)
- ECh 1999—Child Development Practicum (7)
- ECh 3134—Infant and Toddler Programming and Practices (4)
- ECh 3304—Parenting: Fathers, Mothers, and Children (4)
- ECh 3424—Home, School and Community Relations (4)
- ECh 3602—Seminar for Early Childhood Practicum (2)
- Mgmt 3900—Internship (4)
- Electives (15)

**General Education Requirements**

- Comp 1011—Composition I (4)
- INM 1010—Introduction to Information Technology (4)
- Soc 1007—Family Relationships (4)
- Spch 1101—Speech (4)
- HPER 1062—First Aid (2)
- Humanities/fine arts electives (4)
- Science/math electives (1xxx level) (4)
- Social science electives (4)
- Electives (2)
Early Childhood Program Management With Prekindergarten Teacher Licensure

(A shared major and cooperative degree program with Bemidji State University)

The early childhood program management B.S. is a career-oriented program that prepares students to be early childhood teachers and managers. The graduate of this program must be competent to meet developmental needs of children and families in education and human service programs and needs of a small business designed to provide high-quality services. In addition to early childhood education coursework and experiences, this degree program emphasizes five basic managerial processes: planning, organizing, staffing, leading, and monitoring and controlling for quality. Managing resources (human, fiscal, physical) and effectively communicating with parents and the public are the critical hallmark of competent managers in early childhood programs. The career and employment possibilities for teachers, supervisors, managers, and directors are significant.

Early Childhood Program Management B.S. Program Outcomes

Graduates will be able to

- demonstrate understanding of how children differ in their development and approaches to learning and use this knowledge to provide opportunities that support the physical, social, emotional, language, cognitive, and aesthetic development of all young children from birth through age eight.
- plan and implement developmentally appropriate curriculum and teaching practices based on knowledge of individual children, the community, and curriculum goals and content.
- use individual and group guidance and problem-solving techniques to develop positive and supportive relationships with children and develop personal self-control, self-motivation, and positive self-esteem.
- establish and maintain positive, collaborative relationships with families.
- articulate a philosophy and rationale for decisions, continually self-assessing and evaluating the effects of their choices and actions on others as a basis for program planning and modification and continuing professional development.
- serve as an advocate on behalf of young children and their families, improved quality of programs and services for young children, and working conditions for early childhood educators.
- plan and implement administrative systems that effectively carry out the program’s mission, goals, and objectives.
- demonstrate ability to carry out management principles and tasks associated with planning, organizing, staffing, leading, and monitoring and controlling for quality.
- demonstrate competence in managing and spatial resources, food service, and health and safety needs of children and adults.
- promote effective and collaborative community relations and use this knowledge to build networks and coalitions as needed.

Early Childhood Program Management Course Requirements (B.S.)

Degree Requirements: A total of 180 credits are required for graduation. Of this total, 72 credits are required in general education, 90 credits in the major, and 18 credits in electives. Sixty credits are required in upper division courses.

General Education Requirements

- Biol 1009—General Biology (5)
- Comp 1013—Composition I (4)
- Comp 1013—Composition II (4)
- Econ 1101—Microeconomics (4)
- Hist 1305—Cultural Pluralism in American History (4)
- HPER 1062—First Aid (2)
- INM 1010—Introduction to Information Technology (4)
- Math 1111—College Algebra and Analytical Geometry (4)
- Phil 1003—Ethics (4)
- Psy 1001—Introduction to Psychology (4)
- Soc 1007—Family Relationships (4)
- Spch 1101—Speech (4)

General education electives (25)

Program Requirements

- Accr 1020—Principles of Accounting I (4)
- ECh 1104—Child Growth and Development (4)
- ECh 1304—Introduction to Early Childhood Care and Education (4)
- ECh 1404—Children’s Health, Safety and Nutrition (4)
- ECh 3134—Infant and Toddler Programming and Practices (4)
- ECh 3304—Parenting: Fathers, Mothers and Children (4)
- ECh 3334—Child Guidance: Theories and Practices (4)
- ECh 3424—Home, School, and Community Relations (4)
- ECh 3434—Administration of Early Childhood Programs (4)
- ECh 3600—Practicum in Early Childhood Programs (4)
- ECh 3602—Seminar for Early Childhood Practicum (2)
- ECh 3604—Practicum in Early Childhood Management (4)
- Ed 3210—Human Relations (3)*
- Ed 3660—Foundations of Kindergarten and Early Childhood Education (4)*
- Ed 3670—Relations and Management in Early Childhood Education (4)*
- Ed 3680—Child Development and Early Childhood Education (3)*
- Ed 3760—Communications in Early Childhood Education (3)*
- Ed 3810—Teaching Young Children With Special Needs (3)*
- Ed 3880—Prekindergarten Student Teaching (4)*
- Hlth 3910—Health and Drug Education (4)*
- Mgmt 3200—Principles of Management (4)
- Mgmt 3210—Supervision and Leadership (4)
- Mgmt 3220—Human Resource Management (4)
- Mgmt 3300—Principles of Marketing (4)
- Electives (18)

* Bemidji State University (BSU) course. These courses are required for prekindergarten teacher licensure, which is a component of this shared major and cooperative degree program. All BSU education courses require admission into a teacher education program. For information about admission criteria and enrollment, contact the early childhood program faculty.
Environmental and Natural Resource Management

This program provides an integrated approach to soil and water conservation, wildlife and fisheries management, forestry, and recreation. A combination of natural resources and agriculture courses prepare students for land management positions, typically with county, state, or federal natural resource agencies, private conservation organizations, and shooting preserves.

Career opportunities for students with baccalaureate degrees in natural resources include soil and water conservation district manager, district conservationist, state or county park manager, natural area manager, and land use planner.

For students with associate degrees, career opportunities in natural resources conservation include conservation technician working with wildlife managers and researchers, fisheries managers, and foresters; private game farm assistant; shooting preserve manager or assistant; and soil and water conservation technician. Career opportunities in park and recreation management include state or federal park aide or assistant; city or county park maintenance technician or supervisor; turf and grounds manager for private estates; and golf course grounds technician or supervisor.

Environmental and Natural Resource Management B.S. Program Outcomes

The program in environmental and natural resource management prepares students to become integrated resource managers by providing an interdisciplinary background in agriculture, natural resource management, and general education. Graduates will work primarily with public resource management agencies, particularly those concerned with soil and water conservation, park management, and wildlife resources.

Graduates of the program will

• demonstrate competencies in integrated resource management,
• document experience in applying resource management principles to case studies, field trips, and individual internships,
• demonstrate group problem-solving and decision-making skills through team projects and capstone courses,
• demonstrate an understanding of experts in the field through guest lectures, field trips to agency field stations and other academic institutions, and attending professional meetings,
• demonstrate an understanding of current workplace technology through lab exercises, guest lectures, field trips, and individual internships,
• demonstrate skills in general education that provide a foundation for the applied curriculum,
• demonstrate a commitment to continuing professional development.

Environmental and Natural Resource Management Course Requirements (B.S.)

Degree Requirements: A total of 180 credits are required for graduation. Of this total, 72 credits are required in general education, 90 credits in the major, and 18 credits in electives. Sixty credits are required in upper division courses.

General Education Requirements

Biol 1009—General Biology (5)
Biol 1103—General Botany (4)

One of the following:

Chem 1001—Introductory Chemistry (4)
Chem 1004—General Principles of Chemistry I (5)

One of the following:

Chem 1005—General Principles of Chemistry II (5)
Chem 1401—Elementary Biochemistry (4)

Comp 1012—Composition I (4)
Comp 1013—Composition II (4)
Comp 3024—Advanced Composition (4)
Econ 1101—Microeconomics (4)
Hist 1305—Cultural Pluralism in American History (4)
INM 1010—Introduction to Information Technology (4)
Math 1111—College Algebra and Analytical Geometry (4)
Phil 1003—Ethics (4)
Pol 1001—American Government and Institutions (4)
Phys 1001—Elementary Physics (4)
Psy 1001—Introduction to Psychology (4)
Spch 1101—Speech (4)

General education elective (1)

Humanities elective (4)

Program Requirements (all emphases)

GnAg 3652—Natural Resource Seminar (2)
GnAg 3900—Internship (4)
Mgmt 2400—Supervision and Leadership (4)
NatR 1203—Introduction to Natural Resources (3)
NatR 1234—Elements of Forestry (4)
NatR 1243—Environmental Issues (3)
NatR 3244—Land Use Planning (4)
NatR 3364—Plant Taxonomy (4)
NatR 3554—Ecology (4)
NatR 3620—Geographic Information Systems (4)
Soil 1294—Soil Science (4)

Program Requirements—Natural Resource Management Emphasis

Agro 1184—Field Crops-Production Principles (4)
Mgmt 3009—Surveying (5)
NatR 1203—Park and Recreational Area Management (3)
NatR 1664—Natural Resource Measurements (4)
NatR 3099—Integrated Resource Management (4)
NatR 3454—Wildlife Ecology and Management (4)
NatR 3463—Prairie Management (3)
Soil 3225—Soil and Water Management and Conservation (4)

Agriculture/natural resources electives (19)

Program Requirements—Park Management Emphasis

Hort 3040—Commercial Landscape Design and Grounds Maintenance (5)
Hort 3072—Turf Management (4)
Mgmt 3200—Principles of Management (4)
NatR 1203—Park and Recreational Area Management (3)
NatR 3099—Integrated Resource Management (4)
Soc 1102—Cultural Anthropology (4)

Agriculture/natural resource electives (22)

Program Requirements—Soil and Water Technology Emphasis

Geol 1001—Introductory Geology (5)
Mgmt 3009—Surveying (5)
Mgmt 3010—Hydrology and Water Quality (4)
Mgmt 3011—Conservation Engineering/Irrigation (4)
NatR 3721—Environmental Law (3)
Soil 3225—Soil and Water Management and Conservation (4)
Soil 3520—Soil Morphology (4)
Soil 3623—Hydrogeology (3)

Agriculture/natural resources electives (18)

Electives (18)

Natural Resources A.A.S. Program Outcomes

The natural resources program introduces students to the broad field of natural resource management,
emphasizing the relatedness of resource uses and practical applications. The role of public agencies and private organizations in natural resource management is emphasized to familiarize students with the necessary technical and communication skills and knowledge needed in the workplace.

Natural resource career positions include soil and water technician; watershed district technician; conservation technician working with wildlife managers, researchers, and foresters; shooting preserve manager; county, state, or federal park aide or assistant; and city or county park maintenance supervisor.

Graduates of the program will • demonstrate appropriate technical skills for an entry-level internship or permanent position in natural resources.
• demonstrate general education skills needed to succeed in advanced courses.
• demonstrate basic writing and oral skills.
• demonstrate effective human relations skills.
• develop and demonstrate an attitude of continued inquiry and lifelong learning.

Natural Resources
Course Requirements (A.A.S.)

Degree Requirements: A total of 100 credits are required for graduation. Of this total, 96 credits must be earned in academic coursework and 4 credits in internship.

Agricultural Management Division Requirements
GnAg 3625—Agriculture/Natural Resource Seminar (2)
GnAg 3900—Internship (4)
NatR 1223—Introduction to Natural Resources (3)
NatR 1234—Elements of Forestry (4)
NatR 1243—Environmental Issues (3)
NatR 3554—Plant Taxonomy (4)

39 credits from the following:

Hort 3101—Introduction to Horticulture (4)
Hort 3102—Woody Plant Materials (5)
Hort 3200—Commercial Landscape Design and Grounds Maintenance (5)
Hort 3301—Turf Management (4)
MAG 1034—Agricultural Facilities Maintenance (4)
MAG 1044—Computer-Aided Drafting and Sketching (4)
MAG 1333—Agricultural Building Construction (4)
MAG 3009—Surveying (5)
MAG 3011—Conservation Engineering/Irrigation (4)
NatR 1203—Park and Recreational Area Management (3)
NatR 1453—Wildlife Identification (3)
NatR 1533—Principles of Fisheries Management (3)
NatR 1573—Introduction to Entomology (3)
NatR 1654—Natural Resources Measurements (4)
NatR 3452—Wildlife Management Techniques (2)
NatR 3454—Wildlife Ecology and Management (4)
NatR 3554—Ecology (4)
Soil 3225—Soil and Water Management and Conservation (4)

General Education Requirements
Biol 1009—General Biology (5)
Chem 1001—Introductory Chemistry (4)
Comp 1011—Composition I (4)
Comp 1012—Composition II (4)
Econ 1101—Microeconomics (4)

One of the following:
Math 1001—Technical Math (4)
Math 1111—College Algebra and Analytical Geometry (4)

One of the following:
Hist 3105—Cultural Pluralism in American History (4)
Phil 1003—Ethics (4)
Spch 1101—Speech (4)

Equine Industries Management

Equine industries management graduates will understand and be able to meet the daily care, nutrition, health care, and exercise/training needs of horses in their care. They will have the knowledge, experience, and skills necessary to succeed in equine or equine-related employment and will have the business and management competencies necessary to operate an equine business.

Equine industries management career positions include being a manager of boarding/breeding/training facilities; trainer/instructor; sales representative for feed, pharmaceutical, tack, or other equine-related support industries; and manager and marketer for breed associations, race tracks, or other equine facilities.

Equine Industries Management
B.S. Program Outcomes

Graduates will be able to
• provide management and marketing skills in equine and related enterprises.
• work well as part of a team and as an individual.
• integrate computer skills into all aspects of organization, problem solving, and decision making in equine management.
• teach various horsemanship skills in a safe, consistent, and confident manner.

Equine Industries Management
Course Requirements (B.S.)

Degree Requirements: A total of 180 credits are required for graduation. Of this total, 72 credits are required in general education and 72 credits in the major. Sixty credits are required in upper division courses.

General Education Requirements
Biol 1009—General Biology (5)
Biol 1106—General Zoology (4)
Biol 3022—Principles of Genetics (4)
Chem 1001—Introductory Chemistry (4)
Chem 1401—Elementary Biochemistry (4)
Comp 1011—Composition I (4)
Comp 1013—Composition II (4)
Comp 3024—Advanced Composition (4)
Econ 1101—Microeconomics (4)
Hist 1305—Cultural Pluralism in American History (4)
INM 1010—Introduction to Information Technology (4)
Math 1111—College Algebra and Analytical Geometry (4)
Phil 1003—Ethics (4)
Psy 1001—Introduction to Psychology (4)
Spch 1101—Speech (4)

General education electives (3)
Humanities elective (4)
Social science elective (4)

Program Requirements
Acct 1020—Principles of Accounting I (4)
Acct 1030—Principles of Accounting II (4)
AnSc 1204—Feeds and Feeding (4)
AnSc 3322—Reproduction of Farm Animals (4)
AnSc 3454—Animal Anatomy and Physiology (4)
AnSc 3654—Animal Health and Disease (4)
EqSc 1103—Introduction to Equine Science (3)
EqSc 1141—Equine Evaluation (1)
EqSc 1514—Stable Management (4)

Two of the following:
EqSc 1113—Saddle Seat Equitation (3)
EqSc 1213—Hunt Seat Equitation (3)
EqSc 1313—Saddle Seat Equitation (3)
EqSc 3413—Training and Showing (3)
Equine Science
A.A.S. Program Outcomes

The equine science major provides students with a well-rounded equine education, preparing them for a wide range of occupational opportunities. The major covers all the riding seats, driving, horse training, nutrition, physiology, management, and breeding.

Graduates in the equine science A.A.S. program will
• be competent in basic horsemanship.
• have knowledge of horse health practices.
• have skills in basic riding in the various seats.
• demonstrate knowledge of the major breeds and their importance to the equine industry.
• demonstrate knowledge of the equine industry as a whole and its impact on the regional/national economy.
• gain practical experience through an internship.
• demonstrate knowledge of reproduction techniques required for breeding quality horses.
• demonstrate knowledge of equine feeding and its importance to the various developmental and working classes of horses.
• demonstrate an understanding of financial aspects pertinent to management decisions.

Typical career opportunities in this field include equipment or feed salesperson, horse breeder, horse trainer, pharmaceutical salesperson, riding instructor, riding stable manager, or trail ride guide.

Equine Science
Course Requirements (A.A.S)

Degree Requirements: A total of 100 credits are required for graduation. Of this total, 96 credits are required in academic coursework and 4 credits in internship.

Agricultural Management Division Requirements
AnSc 1014—Introduction to Animal Science (4)
AnSc 1204—Feeds and Feeding (4)
AnSc 1404—Animal Nutrition (4)
AnSc 3454—Animal Anatomy and Physiology (4)
AnSc 3654—Animal Health and Disease (4)
EqSc 1103—Introduction to Equine Science (3)
EqSc 1141—Equine Evaluation (1)
EqSc 1514—Stable Management (4)
Two of the following:
EqSc 1113—Stock Seat Equitation (3)
EqSc 1213—Hunt Seat Equitation (3)
EqSc 1303—Saddle Seat Equitation (3)
EqSc 3413—Training and Showing (3)
EqSc 3624—Horse Production (4)
EqSc 3900—Internship (4)
GnAg 3652—Agriculture/Natural Resources Seminar (2)
One of the following:
Acct 1020—Principles of Accounting I (4)
AgEc 1374—Farm Records and Analysis (4)
Agriculture/management electives (12)

General Education Requirements
Biol 1009—General Biology (5)
Biol 1103—General Zoology (4)
Comp 1011—Composition I (4)
Comp 1013—Composition II (4)
Econ 1101—Microeconomics (4)

Food Processing Management

Food Processing Management
B.S. Program Outcomes

The food processing management program prepares graduates for careers in food production management. Skilled technologists supervise processing and production line work, develop and test products, maintain quality and ISO 9000 programs, buy and inventory materials, and design and maintain production lines. The program combines a solid foundation of applied science courses with practical mechanical and technical expertise, a strong business operation and management background, and interpersonal communications skills.

Food processing management graduates will be able to
• manage a production line or process.
• design and manage a quality control/assurance program.
• set specifications for and assess quality of raw materials, ingredients, packaging, and supplies.
• set/oversee procedures and standards for materials handling, storage, and shelf life studies.
• identify product, plant, and personnel hazards and set up hazard analysis critical control points for all three.
• help maintain ISO 9000 programs.
• optimize resource use and profits.
• use scientific knowledge in technical sales/customer service roles.
• work with plant engineers to identify and solve equipment and plant efficiency problems.
• develop, improve, and expand product lines and services.
• add valuable experience/knowledge to management teams.
• use interpersonal communication skills.

**Food Processing Management Course Requirements (B.S.)**

**Degree Requirements:** A total of 180 credits are required for graduation. Of this total, 72 credits are required in general education, 90 credits in the major, and 18 credits in electives. Sixty credits are required in upper division courses.

**General Education Requirements**

- Biol 1009—General Biology (5)
- Biol 1065—Microbiology (4)
- One of the following:
  - Chem 1001—Introductory Chemistry (4)
  - Chem 1004—General Principles of Chemistry I (5)
- One of the following:
  - Chem 1005—General Principles of Chemistry II (5)
- Phys 1001—Elementary Physics (4)
- Chem 1401—Elementary Biochemistry (4)
- Comp 1011—Composition I (4)
- Comp 1013—Composition II (4)
- Econ 1101—Microeconomics (4)
- Hist 1305—Cultural Pluralism in American History (4)
- INM 1010—Introduction to Information Technology (4)
- Math 1111—College Algebra and Analytical Geometry (4)
- Phil 1003—Ethics (4)
- Psy 1001—Introduction to Psychology (4)
- Spch 1101—Speech (4)
- General education electives (13-15)

**Program Requirements**

- Acct 1020—Principles of Accounting I (4)
- GnAg 3900—Internship (4)
- MAg 1034—Agricultural Facility Maintenance (4)
- Math 1150—Elementary Statistics (4)
- Mgmt 3200—Principles of Management (4)
- Mgmt 3210—Supervision and Leadership (4)
- Mgmt 3220—Operations Management (4)
- Mgmt 3300—Small Business Computer Application (4)
- Mgmt 3310—Small Business Decision Making (4)
- Mktg 3300—Principles of Marketing (4)
- PrTe 1001—Introduction to Food Technology (4)
- PrTe 1005—Global Food Systems (3)
- PrTe 1010—Processing and Manufacturing Practices (4)
- PrTe 3010—Engineering Principles I (4)
- PrTe 3012—Engineering Principles II (4)
- PrTe 3020—Food Manufacturing Operations (4)
- PrTe 3030—Critical Control I (4)
- PrTe 3032—Critical Control II (4)
- PrTe 3034—Quality Management (4)
- PrTe 3040—Food Chemistry (3)
- PrTe 3050—Food Manufacturing Processes (4)
- PrTe 3052—Food Processing II (4)
- PrTe 3054—Food Processing III (4)
- Electives (18)

**Health Management**

The health management program provides career-entry opportunities for high school graduates and professional advancement opportunities for health care personnel who have an associate degree or diploma in an allied health field. 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 literacy 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 administrators. Most other states accept this program’s graduates for licensure on an individual basis.

**Health Management B.S. Program Outcomes**

The health management program combines discipline-specific health care core courses, including an internship, with supporting general education and business management courses.

- Graduates of the program will
  - use technology to provide timely, accurate, and relevant information for goal setting, program planning, and evaluation.
  - differentiate the changing roles of physicians, nurses, and other allied health care providers and demonstrate ethical values and conduct in management.
  - demonstrate clear and concise communication skills through verbal interaction, written documentation, and quantitative and qualitative analysis.
  - validate career-life adaptability and decision-making skills by completing an internship demonstrating leadership in achieving the organization’s objectives.
  - establish department objectives that respond to changing economic, regulatory, cultural, and social conditions.
  - integrate environmental perspectives in developing functional clinical areas and redesigning facilities.
  - use collaborative leadership strategies and telecommunications technology to respond to ever-changing global health care issues.

**Health Management Course Requirements (B.S.)**

**Degree Requirements:** A total of 180 credits are required for graduation. Of this total, 72 credits are required in general education and 72 credits in the major. Sixty credits are required in upper division courses.

**General Education Requirements**

- Biol 1009—General Biology (5)
- Comp 1011—Composition I (4)
- Comp 1013—Composition II (4)
- Econ 1101—Microeconomics (4)
- Econ 1102—Macroeconomics (4)
- Hist 1305—Cultural Pluralism in American History (4)
- INM 1010—Introduction to Information Technology (4)
Math 1111—College Algebra and Analytical Geometry (4)
Phil 1003—Ethics (4)
Psy 1001—Introduction to Psychology (4)
Spc 1101—Speech (4)

General education electives (27)

**Program Requirements**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tr>
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<tr>
<td>Acct 1030</td>
<td>Principles of Accounting II (4)</td>
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<td>Acct 1040</td>
<td>Principles of Accounting III (4)</td>
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<td>HSM 1010</td>
<td>Medical Terminology (3)</td>
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<td>HSM 1020</td>
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<td>Disease Conditions (3)</td>
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<td>Essentials of Managed Care (4)</td>
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<td>HSM 3200</td>
<td>Mgmt, Leadership and Health Planning (4)</td>
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<td>HSM 3210</td>
<td>Health Law and Biomedical Ethics (4)</td>
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<td>HSM 3230</td>
<td>Management and Administration of Continuum/Extended Care Facilities (4)</td>
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<td>HSM 3300</td>
<td>Comparative Systems, Global Issues and Trends in Health Care Management (4)</td>
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<td>Finance and Regulatory Compliance in Health Care Management (4)</td>
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<td>Internship (4)</td>
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<td>INM 1020</td>
<td>Electronic Spreadsheets (4)</td>
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<td>Mgmt 3240</td>
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<td>Mktg 3300</td>
<td>Principles of Marketing (4)</td>
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<tr>
<td>Electives (8 credits must be 3xxx) (27) *</td>
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</table>

**Hotel, Restaurant, and Institutional Management**

The hotel, restaurant, and institutional management program prepares students to be managers in hotels, restaurants, resorts, and selected hospitality businesses.

In addition to the hotel, restaurant, and institutional management and application coursework, the curriculum provides a solid foundation in marketing, management, computer technology, accounting, finance, business law, economics, ethics, and communication. As part of the program requirements, students participate in a national hospitality conference, which provides an excellent learning opportunity and a chance to meet potential employers. The Hospitality Association Club subsidizes conference attendance.

**Hotel, Restaurant, and Institutional Management B.S. Program Outcomes**

The hotel, restaurant, and institutional management program prepares students to be managers in hotels, restaurants, resorts, and selected hospitality businesses.

Graduates will be able to

- purchase food and beverage products, formulate specifications, keep inventories, and implement appropriate cost control procedures.
- operate various types of industrial equipment commonly found in the industry.
- supervise and direct staff.
- manage the preparation and production of small- and large-quantity meals.
- use American and other styles of dining room service techniques, including basic queridon service.
- design and evaluate menus.
- use computer applications such as word processing, spreadsheets, recipe development and adjustment, costing, and front office procedures.
- manage hotel reservation systems and front desk, guest check-in and check-out, and night audit functions.
- identify food-borne sanitation dangers and implement appropriate programs.
- organize and provide catered events and create culinary art displays.
- analyze and design the layout of various hospitality facilities for efficiency and effectiveness.
- identify and discuss liability and other legal pitfalls and recommend appropriate action.
- organize resources for planning and developing a marketing strategy for hospitality organizations.
- manage the selection and purchase of wines, beers, and liquors, including mixology, merchandising, sales, and serving alcoholic beverages.
- analyze the impact of travel and tourism on local, national, and global economics, and relationships with the hospitality industry.
- apply nutritional principles to recipe and menu development.

**Hotel, Restaurant, and Institutional Management Course Requirements (B.S.)**

**Degree Requirements:** A total of 180 credits are required for graduation. Of this total, 72 credits are required in general education and 72 credits in the major.

**Sixty credits are required in upper division courses.**

**General Education Requirements**

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<tr>
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<th>Credits</th>
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<td>or Comp 3303</td>
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<td>Econ 1101</td>
<td>Microeconomics (4)</td>
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<td>Econ 1302</td>
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<td>Hist 1305</td>
<td>Cultural Pluralism in American History (4)</td>
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<td>INM 1010</td>
<td>Introduction to Information Technology (4)</td>
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<tr>
<td>Math 1111</td>
<td>College Algebra and Analytical Geometry (4)</td>
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<td>Phil 1003</td>
<td>Ethics (4)</td>
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<td>Introduction to Psychology (4)</td>
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<td>Spc 1101</td>
<td>Speech (4)</td>
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<td>Electives (23) *</td>
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**Program Requirements**

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<th>Credits</th>
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<td>GBus 3107</td>
<td>Legal Environment in Business (4)</td>
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<td>HRI 1112</td>
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<td>Menu Planning (3)</td>
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<td>HRI 3431</td>
<td>Hospitality Law (3)</td>
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<td>HRI 3441</td>
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<td>HRI 3451</td>
<td>Facility Layout and Design (3)</td>
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<td>HRI 3461</td>
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<tr>
<td>Mgmt 3210</td>
<td>Supervision and Leadership (4)</td>
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<tr>
<td>Mgmt 3900</td>
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<tr>
<td>Mktg 3300</td>
<td>Principles of Marketing (4)</td>
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<tr>
<td>Electives (lower division) (20) *</td>
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</tbody>
</table>

**Hotel, Restaurant, and Institutional Management A.A.S. Program Outcomes**

Students completing the A.A.S. degree in hotel, restaurant, and institutional management will be prepared to assume supervisory or entry-level management positions in the hospitality industry.
Graduates will be able to
• purchase food and beverage products, formulate specifications, keep inventories, and implement appropriate cost control procedures.
• operate various types of industrial equipment commonly found in the industry.
• supervise and direct staff.
• manage the preparation and production of small- and large-quantity meals.
• use American and other styles of dining room service techniques, including basic queridon service.
• design and evaluate menus.
• use computer applications such as word processing, spreadsheets, recipe development and adjustment, costing, and front office procedures.
• manage hotel reservation systems and front desk, guest check-in and check-out, and night audit functions.
• identify food-borne sanitation dangers and implement appropriate programs.

Hotel, restaurant, and institutional management career positions include front desk supervisor or assistant manager; assistant restaurant manager; assistant banquet manager; housekeeping floor supervisor; assistant manager in university food service cafeteria; food service supervisor in hospital food service; beverage controller; and assistant purchasing steward.

Hotel, Restaurant, and Institutional Management Course Requirements (A.A.S.)

Degree Requirements: A total of 101 credits are required for graduation.

Management Division Requirements
Acct 1020—Principles of Accounting I (4)
GBus 3107—Legal Environment in Business (4)
HRI 1112—Introduction to Food Preparation (4)
HRI 1113—Sanitation and Safety (3)
HRI 1211—Principles of Quantity Food Production (4)
HRI 1221—Front Office Practices and Procedures (4)
HRI 1231—Housekeeping Management and Techniques (3)
HRI 1251—Menu Planning (3)
HRI 3321—Hospitality Selection and Procurement (4)
HRI 3331—Restaurant Operational Management (3)
HRI 3421—Restaurant Practicum (2)
HRI 3441—Food, Beverage, and Labor Control (4)
Mgmt 3200—Principles of Management (4)
Mgmt 3900—Internship (4)
Mtg 3300—Principles of Marketing (4)
Electives (15)

General Education Requirements
Comp 1011—Composition I (4)
INM 1010—Introduction to Information Technology (4)
General education electives (12)
Humanities/fine arts electives (4)
Science elective (4)
Social science electives (4)

Information Networking Management

The information networking management program prepares students for positions such as information manager, network administrator, systems engineer, computer applications support specialist, and other information management positions in business, industry, and education. Graduates will have the knowledge, experience, and skills to succeed in technology-related careers and the business and management competencies for mid-management positions such as information network specialists, network and intranet administrators, web masters, technology project managers, and information systems managers.

In addition to traditional classroom experiences, students may take various courses to prepare for Microsoft certification.

Information Networking Management B.S. Program Outcomes

Graduates will
• demonstrate abilities in computer information networking, database management, programming, accounting, and general management.
• demonstrate active learning and career/life adaptability through an internship experience.
• demonstrate human relations and career/life adaptability skills in problem solving, decision making, and responding to change.
• demonstrate skills in decision making through business networking and solving information systems problems.
• use computer technology in preparing programs, presentations, written reports, and spreadsheets.
• use computer technology to manage local area networks and access the Internet for a variety of information resource/business purposes.
• demonstrate an environmental perspective in the development of solutions for business networking problem solving.
• demonstrate global and ethical perspectives in information networking decision making.
• demonstrate the ability to communicate clearly and concisely in written and oral communications through technical reports, solutions to information networking problems, and feasibility studies.

Information Networking Management Systems Course Requirements (B.S.)

Degree Requirements: A total of 180 credits are required for graduation. Of this total, 72 credits are required in general education and 76 credits in the major. Sixty credits are required in upper division courses.

General Education Requirements
Biol 1009—General Biology (5)
Comp 1011—Composition I (4)
Comp 1013—Composition II (4)
Comp 1034—Technical Writing (4)
Comp 3024—Advanced Composition (4)
Econ 1101—Microeconomics (4)
Econ 1102—Macroeconomics (4)
Hist 1305—Cultural Pluralism in American History (4)
INM 1010—Introduction to Information Technology (4)
Math 1111—College Algebra and Analytical Geometry (4)
Math 1150—Elementary Statistics (4)
Phil 1003—Ethics (4)
Psy 1001—Introduction to Psychology (4)
Spch 1101—Speech (4)
General education electives (19)

Program Requirements
Acct 1020—Principles of Accounting I (4)
Acct 1030—Principles of Accounting II (4)
Acct 1040—Principles of Accounting III (4)
Information Management

**A.A.S. Program Outcomes**

The two-year information management program offers courses in microcomputers, networking basics, and general education and other business-related topics. It prepares graduates for employment as network technicians, web site developers, and other business positions requiring technology, network, and computer skills.

Graduates will

- use computer technology for word processing, data management, electronic spreadsheets, and web site development.
- use computer technology to communicate globally and access the Internet for a variety of information and business purposes.
- demonstrate clear and concise written and oral communication skills.
- demonstrate interpersonal communication skills.
- develop and demonstrate an attitude of continuing inquiry and lifelong learning.

Information Management

**Course Requirements (A.A.S.)**

**Degree Requirements:** A total of 96 credits are required for graduation.

**Management Division Requirements**

- Acct 1020—Principles of Accounting I (4)
- Acct 1030—Principles of Accounting II (4)
- Acct 1040—Principles of Accounting III (4)
- GBus 3107—Legal Environment in Business (4)
- INM 1020—Electronic Spreadsheets (4)
- INM 1060—Introduction to Database Management Software (4)
- INM 1200—Programming and Publishing to the Internet (4)
- INM 3080—Microcomputer Operating Systems (4)
- INM 3110—Principles of Object-Oriented Programming (4)
- INM 3120—Advanced Object-Oriented Programming (4)
- INM 3130—Managing Local Area Networks (4)
- INM 3140—Wide Area Networking With TCP/IP (4)
- INM 3150—Graphic and Interface Design (4)
- INM 3260—Management of Microcomputer Information Systems (4)
- INM 3300—Internship in Information Networking Management (4)
- Mgmt 3100—Principles of Finance (4)
- Mgmt 3200—Principles of Management (4)
- Mktg 3300—Principles of Marketing (4)
- Electives (32)

**General Education Requirements**

- Comp 1011—Composition I (4)
- Comp 1013—Composition II (4)
- Econ 1101—Microeconomics (4)
- Econ 1102—Macroeconomics (4)

One of the following:

- Hist 1305—Cultural Pluralism in American History (4)
- Phil 1003—Ethics (4)
- INM 1010—Introduction to Information Technology (4)
- Math 1111—College Algebra and Analytical Geometry (4)
- Math 1130—Elementary Statistics (4)
- Psy 1001—Introduction to Psychology (4)
- Spch 1101—Speech (4)

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**Plant Industries Management**

**B.S. Program Outcomes**

The program in plant industries management combines science-based agricultural training and education with a strong liberal arts background to produce graduates skilled in the highly technical fields of agronomy, soils, and horticulture.

**Agronomy Emphasis**—This emphasis is flexible so students can build a thorough understanding of crop science with a concentration in areas such as crop production, diversified agriculture, agricultural chemicals, fertilizers, integrated pest management, seed conditioning and technology, or other areas related to production and quality in the food and fiber industry.

**Horticulture Emphasis**—This emphasis exposes students to various disciplines within horticulture such as plant propagation, woody and herbaceous plant materials, turf, residential and commercial landscaping, greenhouse and nursery production, and floral design/flower shop management. Faculty work with students to develop an appropriate plan of study tailored to the individual.

Career opportunities in agronomy include agricultural chemicals salesperson, crop product salesperson, crop research technician, elevator manager, fertilizer salesperson, laboratory technician, seed and grain inspector, soil testing technician, seed analyst, seed company field representative, crop consultant, seed conditioning plant manager, crop improvement field representative, and crop production.

Career opportunities in horticulture include floral designer, garden center manager, greenhouse operator, horticulture supplies salesperson, nursery manager, golf course grounds manager, landscape contractor, landscape designer, and public grounds supervisor.

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**Plant Industries Management**

**Degree Requirements:** A total of 96 credits are required for graduation.

**Management Division Requirements**

- Acct 1020—Principles of Accounting I (4)
- Acct 1030—Principles of Accounting II (4)
- Acct 1040—Principles of Accounting III (4)
- GBus 3107—Legal Environment in Business (4)
- INM 1020—Electronic Spreadsheets (4)
- INM 1060—Introduction to Database Management Software (4)
- INM 1200—Programming and Publishing to the Internet (4)
- INM 3080—Microcomputer Operating Systems (4)
- INM 3110—Principles of Object-Oriented Programming (4)
- INM 3120—Advanced Object-Oriented Programming (4)
- INM 3130—Managing Local Area Networks (4)
- INM 3140—Wide Area Networking With TCP/IP (4)
- INM 3150—Graphic and Interface Design (4)
- INM 3260—Management of Microcomputer Information Systems (4)
- INM 3300—Internship in Information Networking Management (4)
- Mgmt 3100—Principles of Finance (4)
- Mgmt 3200—Principles of Management (4)
- Mktg 3300—Principles of Marketing (4)
- Electives (32)

**General Education Requirements**

- Comp 1011—Composition I (4)
- Comp 1013—Composition II (4)
- Econ 1101—Microeconomics (4)
- Econ 1102—Macroeconomics (4)

One of the following:

- Hist 1305—Cultural Pluralism in American History (4)
- Phil 1003—Ethics (4)
- INM 1010—Introduction to Information Technology (4)
- Math 1111—College Algebra and Analytical Geometry (4)
- Math 1130—Elementary Statistics (4)
- Psy 1001—Introduction to Psychology (4)
- Spch 1101—Speech (4)
Plant Industries Management Course Requirements (B.S.)

Degree Requirements: A total of 180 credits are required for graduation. Of this total, 72 credits are required in general education, 90 credits in the major, and 18 credits in electives. Sixty credits are required in upper division courses.

General Education Requirements
Biol 1009—General Biology (5)
Biol 1103—General Botany (4)
Biol 3022—Principles of Genetics (4)
Chem 1001—Introductory Chemistry (4)
Chem 1401—Elementary Biochemistry (4)
Comp 1011—Composition I (4)
Comp 1013—Composition II (4)
Comp 3024—Advanced Composition (4)
Econ 1101—Microeconomics (4)
Econ 1102—Macroeconomics (4)
Hist 1305—Cultural Pluralism in American History (4)
INM 1010—Introduction to Information Technology (4)
Math 1112—College Algebra and Analytical Geometry (4)
Phil 1003—Ethics (4)
Psy 1001—Introduction to Psychology (4)
Spch 1101—Speech (4)
General education elective (3)

Humanities elective (4)

Program Requirements (all emphases)
Agro 1644—Agricultural Chemicals (4)
Agro 3024—Plant Breeding (4)
Agro 3034—Weed Science (4)
Agro 3060—Research Techniques in Agronomy (3)
Agro 3164—Plant Pathology (4)
Agro 3562—Plant Industries Seminar (capstone) (4)
MAg 3900—Internship (4)
Math 1573—Introduction to Entomology (3)
Soil 1294—Soil Science (4)
Soil 3416—Soil Fertility and Plant Nutrition (4)
Agricultural economics elective (4)
Mechanized agriculture elective (4)

Program Requirements—Agronomy Emphasis
Agro 1184—Field Crops-Production Principles (4)
Required electives (40)
(From agricultural economics, agronomy, animal science, horticulture, mechanized agriculture, natural resources, processing technology, soil science, or chemistry; at least 20 credits must be agronomy courses.)

Program Requirements—Horticulture Emphasis
Hort 1010—Introduction to Horticulture (4)
Required electives (40)
(From agricultural economics, agronomy, animal science, horticulture, mechanized agriculture, natural resources, processing technology, soil science, or chemistry; at least 20 credits must be horticulture courses.)
Electives (18)

Agronomy/Soils

A.A.S. Program Outcomes

The agronomy/soils program offers a variety of specializations in crops, soils, and seed technology. The program prepares students to manage a farm in today’s competitive environment, work in industry, or transfer to a baccalaureate degree program.

The A.A.S. degree program graduate will
• demonstrate skills, knowledge, and problem-solving abilities commensurate with mid-management responsibilities.
• demonstrate communication skills necessary to assimilate information, concepts, and proposals.
• demonstrate appropriate library and research skills for organizing and applying information to problem solving and making informed judgments.
• demonstrate interpersonal skills needed to function in mid-management leadership roles and team settings.
• demonstrate integration of skills learned in general education and the major.
• demonstrate appropriate agronomy/soils technical skills.
• develop and demonstrate an attitude of continued inquiry and lifelong learning.

Typical career opportunities include agricultural chemicals salesperson, crop farm operator/manager, crop products salesperson, crop research aide, elevator manager, fertilizer salesperson, field plot technician, grain inspector, seed company field representative, and seed conditioner and/or plant manager.

Agronomy/Soils

Course Requirements (A.A.S.)

Degree Requirements: A total of 100 credits are required for graduation. Of this total, 96 credits must be earned in academic coursework and 4 credits in internship.

Agricultural Management Division Requirements
AgEc 3404—Agricultural Marketing (4)
Agro 1063—Crop and Weed Identification (3)
Agro 1184—Field Crops-Production Principles (4)
Agro 1644—Agricultural Chemicals (4)
Agro 3120—Grain and Seed Evaluation (3)
Agro 3164—Plant Pathology (4)
MAg 3652—Agriculture/Natural Resource Seminar (2)
MAg 3900—Internship (4)
Two of the following:
Agro 1565—Seed Conditioning and Technology (5)
Agro 3110—Forages (4)
Agro 3484—Specialty Crop Production (4)
Agro 3060—Research Techniques in Agronomy (3)
One of the following:
MAg 1554—Electricity and Electronics in Agriculture (4)
MAg 3006—Post-Harvest Crop Technology and Handling (4)
MAg 3250 Agricultural Machinery Management (4)
NatR 1573—Introduction to Entomology (3)
Soil 1294—Soil Science (4)
Soil 3416—Soil Fertility and Plant Nutrition (4)
Agriculture electives (11-13)

General Education Requirements
Biol 1009—General Biology (5)
Biol 1103—General Botany (4)
Chem 1001—Introductory Chemistry (4)
Comp 1011—Composition I (4)
Comp 1013—Composition II (4)
Econ 1101—Microeconomics (4)
One of the following:
Math 1001—Technical Mathematics (4)
Math 1111—College Algebra and Analytical Geometry (4)
One of the following:
Hist 1305—Cultural Pluralism in American History (4)
Phil 1003—Ethics (4)
INM 1010—Introduction to Information Technology (4)

Horticulture

A.A.S. Program Outcomes

The horticulture program prepares students to work in landscape, turf and grounds, and floriculture-greenhouse management. It prepares students to work in the industry or transfer to a baccalaureate program.

The horticulture graduate will
• demonstrate communication skills for functioning in leadership roles and team settings.
• demonstrate the ability to apply principles learned in coursework during the internship experience.
• demonstrate appropriate library and research skills for organizing and applying information to problem solving and making informed judgments.
• demonstrate appropriate horticulture technical skills.
# Horticulture Course Requirements (A.A.S)

**Degree Requirements:** A total of 100 credits are required for graduation. Of this total, 96 credits must be earned in academic coursework and 4 credits in internship.

**Agricultural Management Division Requirements**
- Agro 3164—Plant Pathology (4)
- GnAg 3652—Agriculture/Natural Resource Seminar (2)
- GnAg 3900—Internship (4)
- Hort 1010—Introduction to Horticulture (4)
- Hort 1021—Woody Plant Materials (5)
- Hort 3036—Plant Propagation (5)
- NatR 1573—Introduction to Entomology (3)
- Soil 1294—Soil Science (4)
- Soil 3416—Soil Fertility and Plant Nutrition (4)
- Agriculture electives (28)

**General Education Requirements**
- Biol 1009—General Biology (5)
- Biol 1103—General Botany (4)
- Chem 1001—Introductory Chemistry (4)
- Comp 1011—Composition I (4)
- Econ 1101—Microeconomics (4)
- Hist 1305—Cultural Pluralism in American History (4)
- Phil 1003—Ethics (4)
- NatR 1243—Introduction to Information Technology (4)
- Spch 1101—Speech (4)

# Scientific and Technical Communication

(A joint degree program with the University of Minnesota, Twin Cities)

Scientific and technical communication is one of the most rapidly changing and growing fields in education and industry. Technical communicators take technology documentation and make the information understandable and useful for users. Technical communicators work in areas in which complex technology must be explained to people who do not know it as well as the experts, such as laboratories, software and hardware companies, public relations offices, television stations, hospitals, pharmaceutical companies, law firms, government agencies, bioengineering firms, agribusinesses, telephone companies, hospitals, banks, and insurance companies.

## Scientific and Technical Communication

### B.S. Program Outcomes

Graduates will demonstrate the ability to
- use a range of communication technologies, including print, graphics, and multimedia.
- continue as active learners in their communities, staying abreast of changes in their field and understanding how those changes interact with changes in the broader culture.
- understand the ethical implications of their work plus its impact on local and global communities and the environment.
- work collaboratively both as leaders and team participants.

### Scientific and Technical Communication Program Requirements (B.S.)

**Degree Requirements:** A total of 180 credits is required for graduation. Of this total, 77 credits are required in general education, 82 credits in the major, and 21 credits with a science and technology emphasis. Sixty credits are required in upper division courses.

**General Education Requirements**
- Biol 1009—General Biology (5)
- Comp 1011—Composition I (4)
- Comp 1013—Composition II (4)
- Comp 1334—Technical Writing (4)
- Econ 1101—Microeconomics (4)
- Hist 1305—Cultural Pluralism in American History (4)
- Hum 3130—Culture and Technology (4)
- INM 1010—Introduction to Information Technology (4)
- Lit 1591—Ethnic and Minority Literature (4)
- Math 1111—College Algebra and Analytical Geometry (4)
- Phil 1003—Ethics (4)
- Pol 1054—Comparative Government (4)
- Psy 1001—Introduction to Psychology (4)
- Soc 3937—Social Gerontology: Elders in American Society (4)
- Spch 1101—Speech (4)
- Natural science electives (16), except Chem 1000 or Chem 1001

**Program Requirements**
- Comp 3024—Advanced Composition (4)
- Comp 3303—Professional Writing (4)
- Comp 3313—Advanced Technical Writing (4)
- One of the following:
  - INM 3080—Microcomputer Operating Systems (4)
  - INM 3110—Principles of Object-oriented Programming (4)
  - INM 3450—Computer Graphic and Interface Design (4)
  - Mgmt 3200—Principles of Management (4)
  - Mgmt 3210—Supervision and Leadership (4)
  - NatR 1243—Environmental Issues (3)
  - Spch 3001—Communication in Human Relationships (4)
  - Spch 3431—Persuasion (4)

**Courses Delivered by University of Minnesota, Twin Cities (via ITV and Internet)**
- Rhet 3257—Scientific and Technical Presentations (4)
- Rhet 3400—Managing Information on the Internet (3)
- Rhet 3574—Publications Management (4)
- Rhet 3575—Newsletter (3)
- Rhet 5560—Editing for Technical Communication (4)
- Rhet 5573—Grant Proposal (3)
- Rhet 5581—Document Design (4)

**Courses Taught at UMC**
- Rhet 3300—Internship in Scientific and Technical Communication (4)
- Rhet 3358—Interviewing: Dynamics of Face-to-Face Communication (4)
- Rhet 3582—Senior Seminar (3)
- Rhet 3700—Rhetorical Theory: Persuasion and the Literature of Science (3)

**Science and Technology Emphasis (21 credits minimum)**

At least 8 credits must be 3xxx or higher. Possible emphasis areas include:
- Agricultural aviation
- Agronomy
- Animal science
- Applied science
- Biology
- Chemistry
- Equine science
- Food science and nutrition
- Health management
- Horticulture
- Hotel, restaurant, and institutional management
- Information networking management
- Mechanized agriculture
- Natural resources
- Soil science
- Sports science (in collaboration with University of Minnesota, Duluth)

Students may also design their own emphasis area. Emphasis area courses may be taken from a variety of departments.
Sport and Recreation Management

The sport and recreation management program provides students with 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, technology-driven, and focused on communication and human relations.

Program graduates are qualified to work in professional sport franchises, commercial sport and recreation facilities, college and university athletic departments, community sport and recreation programs, park and tourist attraction sites, community centers, senior centers, halfway houses, health clubs, churches and synagogues, and sport and recreation camps, clinics, and seminars.

Sport and Recreation Management B.S. Program Outcomes

Graduates of this program will be able to demonstrate:

- skills in general education that provide the foundation for a baccalaureate degree.
- competencies in management, marketing, and promotions.
- skills in composition, communication, and computer applications.
- competencies in sport and recreation principles, including wellness and ethics.

Sport and Recreation Management Course Requirements (B.S.)

Degree Requirements: A total of 180 credits is required for graduation. Of this total, 72 credits are required in general education, 90 credits in the major, and 18 credits in electives.

General Education Requirements

- Biol 1009—General Biology (5)
- Comp 1011—Composition I (4)
- Comp 1013—Composition II (4)
- One of the following:
  - Comp 3024—Advanced Composition (4)
  - Comp 3303—Professional Writing (4)
- Econ 1101—Microeconomics (4)
- Hist 1305—Cultural Pluralism in American History (4)
- Math 1111—College Algebra and Analytical Geometry (4)
- Math 1150—Elementary Statistics (4)
- Phil 1003—Ethics (4)
- Psy 1001—Introduction to Psychology (4)
- Soc 3937—Social Gerontology: Elders in American Society (4)
- Spch 1101—Speech (4)
- Spch 3001—Communication in Human Relationships (4)
- General education electives (2-3)
- Humanities elective (4)
- Natural science electives (must include one laboratory science) (8-9)

Program Requirements

- Acct 1020—Principles of Accounting I (4)
- Acct 1030—Principles of Accounting II (4)
- Acct 1040—Principles of Accounting III (4)
- GBus 3107—Legal Environment in Business (4)
- Hth 3910—Health and Drug Education (4)
- HPER 1062—First Aid (2)
- HPER 1072—Wellness (2)
- HPER 1151 to 1791—Physical Education Activities (7)
- One of the following:
  - INM 1020—Electronic Spreadsheets (4)
  - INM 1050—Introduction to Database Management Software (4)
  - INM 1200—Programming and Publishing to the Internet (4)
  - Mgmt 3100—Principles of Finance (4)
  - Mgmt 3200—Principles of Management (4)
  - Mgmt 3220—Human Resource Management (4)
  - One of the following:
    - Mgmt 3210—Management Decision Making (4)
    - Mgmt 3300—Principles of Marketing (4)
    - Mktg 3340—Marketing Research (4)
    - Mktg 3350—Marketing Strategies (4)
  - Mktg 3300—Principles of Marketing (4)
  - Mktg 3340—Marketing Research (4)
  - Mktg 3350—Marketing Strategies (4)
  - NatR 1203—Park and Recreational Area Management (3)
- SRM 3000—Foundations of Sport and Recreation Management (4)
- SRM 3001—Sports Nutrition (3)
- SRM 3002—Sports and Recreation Law (3)
- SRM 3003—Facility and Equipment Management (4)
- SRM 3004—Electronic and Virtual Organizations (4)
- SRM 3005—Sports Information and Newsletters (4)
- SRM 4011—Internship in Sport and Recreation Management (4)
- SRM 4099—Seminar in Sport and Recreation Management (2)

Electives (18)

Technical Communications Minor

Technical Communication Minor Program Outcomes

The technical communication minor program prepares students to communicate on multiple levels through writing, through speech, and within and between organizations. The minor complements all UMC major degree programs.

The technical communication minor provides:

- the opportunity to demonstrate, in writing samples, the latest theory and practice in technical writing, including the ability to use word processing/desktop publishing/graphics software and industry standards of style and documentation.
- an understanding of how to organize and present written material clearly, coherently, and concisely.
- the processes used to write and produce final documents following a logical methodology.
- critical thinking processes used to analyze documentation design, processes, and communication technology to facilitate communication and collaboration within and between organizations for growth and efficiency.
- processes used to adapt, direct, write, edit, and produce information for particular audiences.
- experience, through internships, of interacting with clients and other writers to design, write, and produce documents according to client specifications and needs.
- professional development opportunities for businesses, organizations, and institutions in the region.

Technical Communication Minor Course Requirements

Technical Communication Minor Program Requirements

- Comp 1134—Technical Writing (4)
- Comp 3313—Advanced Technical Writing (4)
- Comp 3381—Document Design (4)*
- GBus 1354—Desktop Publishing (4)
- Mgmt 3200—Principles of Applied Management (4)
- Mgmt 3210—Supervision and Leadership (4)
- Mktg 3300—Applied Marketing Concepts (4)
- Spch 3431—Persuasion (4)

* Proposed offering by Department of Rhetoric, College of Agricultural, Food, and Environmental Sciences, Twin Cities.


**Associate In Science Degree—Agriculture**

**Agriculture A.S. Program Outcomes**

The A.S. degree in agriculture prepares students to transfer to baccalaureate programs in agricultural sales and management, agronomy, animal science, environmental and natural resources, equine science, and horticultural science.

A.S. program graduates will:
- complete general education and subject area courses comparable to the first two years of a program at a baccalaureate institution.
- gain exposure to career opportunities through introductory courses that survey agriculture and natural resources and identify job possibilities for each.
- be prepared to transfer into a baccalaureate program of study.

**Agriculture Course Requirements (A.S.)**

A minimum of 96 credits are required for graduation, at least half of which must be in general education courses.

**Agricultural Management Division Requirements**

- GnAg 3652—Agriculture/Natural Resources Seminar (2)
- GnAg 3900—Internship (4)
- Soil 1294—Soil Science (4)
- Agriculture/natural resource electives (37)

**General Education Requirements**

- Biol 1009—General Biology (5)
- One of the following:
  - Chem 1001—Introductory Chemistry (4)
  - Chem 1004—Principles of Chemistry I (4)
- Comp 1011—Composition I (4)
- Comp 1013—Composition II (4)
- Econ 1101—Microeconomics (4)
- Econ 1102—Macroeconomics (4)
- Hist 1305—Cultural Pluralism in American History (4)
- INM 1010—Introduction to Information Technology (4)
- Math 1111—College Algebra and Analytical Geometry (4)
- Phil 1003—Ethics (4)
- Psy 1001—Introduction to Psychology (4)
- Spch 1101—Speech (4)

**Associate in Science Degree—Business**

**Business A.S. Program Outcomes**

The A.S. degree in business prepares students for transfer to an upper division baccalaureate program. A.S. program graduates will:
- complete general education and subject area courses comparable to the first two years of a program at a baccalaureate institution.
- gain exposure to career opportunities through introductory courses that survey business and identify job possibilities.
- identify their level of academic preparation for college work and take developmental courses, where appropriate, to remedy any deficiencies needed for their degree goals.

**Business Course Requirements (A.S.)**

A minimum of 96 credits are required for graduation, at least half of which must be in general education courses.

**Management Division Requirements**

- Acct 1020—Principles of Accounting I (4)
- Acct 1030—Principles of Accounting II (4)
- Acct 1040—Principles of Accounting III (4)
- GBus 3107—Legal Environment in Business (4)
- Mgmt 3200—Principles of Management (4)
- Mktg 3300—Principles of Marketing (4)
- Electives (20)

**General Education Requirements**

- Comp 1011—Composition I (4)
- Comp 1013—Composition II (4)
- Econ 1101—Microeconomics (4)
- Econ 1102—Macroeconomics (4)
- INM 1010—Introduction to Information Technology (4)
- Humanities/fine arts electives (8)
- Math/Science electives (8)
- Technical studies electives (16)