Course Descriptions

This is the course section of the 2007-2009 Crookston Catalog for the University of Minnesota

Accounting (ACCT)

ACCT 1803f, Directed Studies. (1–3 cr; max 6 cr; Stdt Opt. Prereq–Instructor consent) Current topics not covered in regularly offered courses.


ACCT 2102s. Principles of Accounting II. (3 cr; Stdt Opt. Prereq–2101) Modern accounting concepts, including cash flow statement and consolidated statements. Introduction to management accounting topics, including cost-volume-profit relationships, costing methods, and variance analysis.

ACCT 3100f. Introduction to Professional Accounting. (2 cr; Stdt Opt. Prereq–2102; may be taken concurrently with 3201) Emphasizes accounting theory upon which financial accounting is based. Fundamental interrelationships within financial statements.


ACCT 3300f, Government Accounting. (2 cr; Stdt Opt. Prereq–2102) Budget preparation, appropriation, conformity to laws, integrity of special funds, preparation of reports/statements.


ACCT 3302f. Cost Accounting II. (3 cr; Stdt Opt. Prereq–3301) Refinements of cost accounting information systems, including management control systems, cost allocation refinements, capital budgeting, and performance measurement.


ACCT 3804f, Individual Studies. (1–3 cr; max 6 cr; Stdt Opt. Prereq–jr, instructor consent) Topic related to student’s major but not covered in regularly offered courses.


ACCT 4210s, Auditing I. (3 cr; Stdt Opt. Prereq–3202) Duties/responsibilities of auditor, kinds of audits, audit programs. Preparation of audit working papers, compilation of audit data.


ACCT 4310s. Auditing II. (3 cr; Stdt Opt. Prereq–4210) Auditor’s responsibility/liability, ethics, standards of professional conduct, auditing electronic data systems, applying statistical audit techniques.

ACCT 4404f. Income Tax I. (3 cr; Stdt Opt. Prereq–3202 or instructor consent) Income tax laws as they relate to individuals.

ACCT 4405s. Income Tax II. (3 cr; Stdt Opt. Prereq–4404) Income tax as it affects corporations, partnerships, estates, and trusts.

Aerospace Studies (AS)


AS 3210f. Air Force Leadership/Management I (NDSU). (3 cr; A-F or Aud) Introduction to management within USAF. Communication skills (oral/written Air Force formats), interpersonal skills, Quality Air Force concepts.


AS 4100f, Leadership Laboratory (NDSU). (1 cr; max 4 cr; S-N only) Practical development of leadership skills. Students instruct, supervise, lead junior cadets participating in 2100, perform higher-level management functions within cadet organization. Supervised lab.

AS 4410f. Preparation for Active Duty I (NDSU). (3 cr; A-F or Aud) National security process, regional studies, advanced leadership ethics, Air Force doctrine, military as profession, officer/military justice, civilian control of military, current issues. Applying communication skills.


Agricultural Business (AGBU)


Agricultural Economics (AGEC) 


AGEC 2530f,s. Professional Agriselling. (3 cr; A-F or Aud. Use of technical and agricultural knowledge in agricultural sales. Need-satisfaction approach to selling. Planning and conducting informational meetings, exhibiting at farm and trade shows, importance of service and timeliness in agribusiness, and practice in making agrisales presentations.


AGEC 3540f,s. Farm Business Management. (4 cr; A-F or Aud. Prereq–ECON 2101) Principles of farm accounting. Financial statements, income statements, cash flow statements, depreciation methods, farm income tax, enterprise analysis, farm management decision making, budgeting and planning, computer analysis of farm business.

AGEC 3640f,s. Agricultural Finance and Valuation. (4 cr; A-F or Aud. Prereq–(3440 or ACCT 2101), ECON 2101, CA 1010) Analysis of investment strategies and financing policies for farm and agribusiness firms and their effect on liquidity, solvency, and profitability. Financial documents, legal aspects of credit, financial intermediaries serving agriculture, property valuation, estate planning.


AGEC 4760s. Agribusiness Market Plan Development. (3 cr; Stdnt Opt. Prereq–4750) Students work with agribusiness firm to assess current situation, future challenges/opportunities. Student teams conduct research, analyze results, formulate marketing plan. Findings/recommendations are presented to the business. Capstone course.

AGEC 4800. Rural Economic Development Practicum. (3 cr; Stdnt Opt) Students develop strategies/program to promote economic development for a real rural community, including implementation/financing plans.

Agricultural Systems Management (ASM) 

ASM 1021f. Introduction to Agricultural Systems Management. (2 cr; Stdnt Opt) Overview of agricultural mechanization systems (engines, machinery, structures, processes).

ASM 1034f,s. Facility Maintenance and Safety. (4 cr; Stdnt Opt) Safe operation, working environment for power equipment, structures, utilities, metal fabrication.

ASM 1044f,s. Computer-Aided Drafting. (3 cr; Stdnt Opt) Sketching/dimensioning architectural/landscape projects. Use of CAD program to develop plan views, floor plans, elevations, pictorials, mechanical drawings.


ASM 2525a. Electricity, Controls, and Sensors in Agriculture. (3 cr; Stdnt Opt) Theory and practical application of electricity and electrical controls in agriculture. Selection/maintenance of electrical motors, heating/light/control devices, and sensors.

ASM 2250f. Agricultural Machinery Management. (3 cr; Stdnt Opt) Principles of agricultural machinery. Application of field machinery/power units to varying crop, soil, climatic conditions. Farm management decisions. Introduction to precision agriculture.


Course Numbers
0xx ... Courses that do not carry credit toward any University degree.
1xx ... Courses primarily for undergraduate students in their first year of study.
2xx ... Courses primarily for undergraduate students in their second year of study.
3xx ... Courses primarily for undergraduate students in their third year of study.
4xx ... Courses primarily for undergraduate students in their fourth year of study.
5xx ... Courses primarily for graduate students; undergraduate students in their third or fourth year may enroll in such courses.

Course Abbreviations
Letters following course numbers indicate what term(s) the course is taught.
f .......... Fall semester
s .......... Spring semester
m .......... May session
u .......... Summer term

Abbreviations in parentheses following a course name indicate the university that offers the course:
BSU ...... Bemidji State University
NDSU ...... North Dakota State University
UMTC ...... University of Minnesota, Twin Cities
UND ...... University of North Dakota

Other abbreviations
Prereq ............... Course prerequisites
                credit
                equivalent
turer, instructor consent

A prerequisite course listed by number only (e.g., Prereq 3322) is in the same department as the course being described.
In prerequisite listings, comma means “and.”

Courses beginning with 09 cannot be used for credit toward graduation or transfer.

Course Descriptions

AGRO 2640f, Grain and Seed Evaluation. (4 cr; A-F or Aud. Prereq—1063)
Analytical techniques, procedures, and practices used in interpreting official U.S. grain standards. Identifying seeds of crops, weeds, and diseases. Lab practice in grading grain according to the U.S. Standards for Grain. Lab practice in determining grain quality.

AGRO 3130f, Forages. (3 cr; A-F or Aud)
Characteristics, distribution, preservation, and uses of forage crops for pasture, silage, hay, and soil improvement. Cultural practices, disease and insect control, seed production, forage storage. Interrelationships between animals and plants as they relate to selection, production, and utilization of forage crops.

AGRO 3441s, Topics in Specialty Crop Production. (1 cr [max 3 cr]; Stdt. Opt. Prereq—1030)
Lecture/discussion on one economically important or emerging specialty crop such as potato or sugar beet. Specific crop varies. Land selection, soil fertility, pest control, harvest, storage, quality, marketing.

AGRO 3444f, Crop Production. (4 cr; A-F or Aud. Prereq—1183)
Principles, including best cultural practices for crops of particular economic importance to the region. Oilseed, small grain, and specialty crops.

AGRO 3620f, Advanced Identification, Seed Analysis, and Grain Grading. (3 cr; Stdt. Opt. Prereq—[1030, 2840] or instructor consent)
Advanced techniques in identification, seed analysis, and grain grading.

AGRO 3640s, Weed Science. (3 cr; Stdt. Opt. Prereq—[Biol 1009, CHEM 1401, SOIL 1293] or instructor consent)
Mechanical, cultural, biological, and chemical weed control practices. Factors affecting control. Classification and modes of action of herbicides, insecticides, fungicides, and plant growth regulators.

Animal Science (ANSC)

ANSC 1004f, a, Introduction to Animal Science. (4 cr; A-F or Aud)
Survey of the meat animal, dairy, and equine industries. Emphasis on general management principles, health care, breeding, behavior, feeding, and care of dairy cattle, beef cattle, horses, sheep, and swine.


ANSC 1205s, Beef and Dairy Production Techniques. (2 cr; Stdt. Opt) Skills necessary for successful/economical beef and dairy production.

ANSC 1206s, Sheep and Swine Production Techniques. (2 cr; Stdt. Opt) Skills necessary for successful/economical sheep/swine production.

ANSC 1603f, a, su, Directed Studies. (1–3 cr [max 6 cr]; Stdt. Opt. Prereq–instructor consent)
Current topics not covered in regularly offered courses.

ANSC 2104f, Feeds and Feeding. (4 cr; Stdt. Opt. Prereq—1004, high school chem or CHEM 1001)
Identification and use of feed grains, forages, supplemental feeds, and additives. Bushel weights, price, and cost per unit calculations. Moisture content calculations. Factors influencing feed quality, feed value, price, and storage. Digestion, ration formulation, and feed processing methods.

ANSC 3021f. Animal Breeding. (3 cr; Stndt Opt. Prereq—Biol 3022 [may be taken concurrently]) Application of qualitative genetic principles to animal breeding. Introduction to quantitative genetics. Concepts of livestock improvements through breeding/selection systems.


ANSC 3204f. Dairy Production. (4 cr; A-F or Aud. Prereq—1205 or 1206, 2104) Growth/development of dairy cattle. Genetics/breeding, dairy nutrition, growth/development of heifer to first calving. Getting cows into production and their subsequent management, including milking management skills.

ANSC 3205f. Dairy Management Practicum. (3 cr; Stndt Opt. Prereq—Sr or instructor consent) Management and clinical skills, including those unique to large dairy herds.


ANSC 3304s. Reproduction, AI, and Lactation. (4 cr; Stndt Opt. Prereq—3203) Functions of reproductive organs, fertilization, the estrous cycle and its endocrine control, reproductive efficiency and problems, principles of artificial insemination. Anatomy, physiology, and biochemistry of the mammary gland; mammary growth, initiation of and maintenance of lactation. Milk synthesis and factors influencing the lactation curve.

ANSC 3441s. Current Topics in Animal Science. (1 cr; Stndt Opt. Prereq—ANSC 1203, 2104, 3304 or concurrent enrollment in 3304) Focus on one economically important or emerging topic in animal science (e.g., swine, sheep, companion animal). Lecture/discussion.


ANSC 3804s, ss, Individual Studies. (1–3 cr [max 6 cr]; Stndt Opt. Prereq—Ir; instructor consent) Topic related to student’s major not covered in regularly offered courses.

ANSC 4204s. Animal Systems Management. (4 cr; A-F or Aud. Prereq—1205 or 1206, 3004, 3202 or 3303 or instructor consent) Planning, budgeting (cash, feed, machinery, etc.), and implementing programs; facilities, labor force; and other factors required for operation of modern animal operations. Field trips, planning for existing operations.

Applied Business (ABUS)

The following courses are bachelor of applied health (B.A.H.) requirements or offerings. The B.A.H. is a partnership degree with the College of Continuing Education, University of Minnesota Twin Cities campus, which offers these courses via distance delivery.


ABUS 4023s, ss. Communicating for Results (UMTC). (3 cr; Stndt Opt) Aspects of communication that are essential to being persuasive/ influential. Organizing/presenting ideas effectively, strategies for audience analysis, choosing communication methods, appropriately using informal influence, handling dissent.

ABUS 4104s, ss. Management and Human Resource Practices (UMTC). (3 cr; Stndt Opt) Overview of human resource practices in organizations, responsibilities of front-line managers. Emphasizing providing day-to-day leadership: organizing work, motivating employees, delegating, coordinating, achieving results.

Applied Studies (APLS)

APLS 3001s, ss. Individual Program Development. (5 cr; Stndt Opt. Prereq—Acceptance into Applied Studies degree program) Developing degree outcomes relevant to career objectives and designing an individual program of study for the Applied Studies baccalaureate degree.

APLS 3901s, ss. Internship/Field Experience. (1–3 cr [max 3 cr; Stndt Opt. Prereq—APLS 3001, adviser consent) Overview of human resource practices in organizations, responsibilities of front-line managers. Emphasizing providing day-to-day leadership: organizing work, motivating employees, delegating, coordinating, achieving results.

Art (ART)

ART 1152s. Drawing and Design. (1–3 cr [max 3 cr; Stndt Opt) Introduces foundations of drawing/design. Offered as 1-credit art appreciation lecture or as 3-credit studio lab/lecture. Lecture studies concepts/history of drawing/design. Studio work is practical application.

ART 1252s. Color and Design. (1–3 cr [max 3 cr; Stndt Opt) Introduces foundations of color (painting) and design. Offered as 1-credit art appreciation lecture or as 3-credit studio lab/lecture. Lecture studies concepts/history of drawing/design. Studio work is practical application.

ART 1352s. Art Design and Techniques. (1–3 cr [max 3 cr; Stndt Opt) Introduces foundations of art techniques (3-dimensional) and design. Offered as 1-credit art appreciation lecture or as 3-credit studio lab/lecture. Lecture studies concepts/history of drawing/design. Studio work is practical application.

ART 2000f. Elementary Art. (3 cr; Stndt Opt) How art can provide a means for children to develop their inherent creative abilities. Studio experience for putting methods into practice.
Aviation (AVIA)

AVIA 1103f. Introduction to Aviation. (4 cr; Stdnt Opt)
Preparation for FAA private pilot written exam. FAA regulations, weather, radio navigation, flight safety, emergency procedures.

AVIA 1104f,s. Introduction to Aviation Flight Lab. (1 cr; Stdnt Opt.
Prereq–1103 or concurrent enrollment in 1103)
Flight lab lessons leading to private pilot certificate. Flight lessons must be completed or private pilot certificate received before course credit is issued.

AVIA 1221i. Basic Aircraft Instrument Flying. (3 cr; A-F or Aud.
Prereq–1103, 1104 or instructor consent)
Operation, interpretation, and practical use of VOR, ADF, DME, RNAV, RMI, HSI, and GPS systems. Instrument charts required for IFR flight. Students must demonstrate adequate progress on flight lessons.

AVIA 1222s. IFR Regulations and Procedures. (3 cr; A-F or Aud.
Prereq–1221)
Regulations, procedures, publications for operating IFR in national airspace system. Terminal/en route procedures. Students must demonstrate adequate progress on flight lessons.

AVIA 1396f,s. Conventional Aircraft Operations. (1 cr; A-F or Aud.
Prereq–1103, 1104 or instructor consent) Ground school, dual flight instruction for endorsement for operation of tail wheel airplanes on ground, in flight.

AVIA 1803f,s. Directed Studies. (1–3 cr [max 6 cr]; Stdnt Opt.
Prereq–Instructor consent) Current topics not covered in regularly offered courses.

AVIA 3323f. Airplane Aerodynamics. (3 cr; A-F or Aud.
Prereq–1221, 1222) Aerodynamics, performance, stability, control, weight/balance, special flight conditions as appropriate for commercial pilots. Commercial maneuvers, flight computers, commercial regulations. Students must demonstrate adequate progress on flight lessons.

AVIA 3324s. Aircraft Systems and Instruments. (3 cr; A-F or Aud.
Prereq–1103, 1104 or instructor consent) Flight instruments, reciprocating engines, Propeller, electrical, environmental, hydraulic, pneumatic, fuel, ignition, lubrication, and pressurization systems. Commercial regulations, including FARS part 61, 91, 121, and 135.

AVIA 3355f,s. Multiengine Systems and Procedures. (2 cr; A-F or Aud.
Prereq–1103 or instructor consent; offered on-demand) Operating light twin-engine airplanes. Pilot actions for managing normal/abnormal aircraft situations. Multiengine aircraft systems. Students must complete flight lessons.

AVIA 339f,s. Advanced Conventional Aircraft Operations (UND). (1 cr; A-F or Aud. Prereq–1396) Ground school, dual flight instruction for advanced pilot maneuvering, flight applications of tail wheel airplanes. Students must complete flight lessons.

AVIA 3400f,s. Emergency Maneuver Training. (1 cr; Stdnt Opt.
Prereq–1103, 1104, 1396) Introduction/exploration of high-angle of attack flight. Emphasizes recognition/recovery from unusual attitudes, control failures, and in-flight emergencies.

AVIA 3412f,s. CFI Certification. (4 cr; Stdnt Opt. Prereq–3323, 3324, or instructor consent) Preparation for FAA Certified Flight Instructor written tests. Flight instructor responsibilities, teaching concerns, effective teaching methods, learning process, flight training syllabi, effective evaluations. Offered on demand.

AVIA 3413f,s. CFI Certification Flight Lab. (1 cr; Stdnt Opt. Prereq–3412) Flight lab lessons leading to Certified Flight Instructor Certificate. Flight lessons must be completed or certificate received before course credit is issued.

AVIA 3415f,s. Instrument CFI Certification. (4 cr; A-F or Aud.
Prereq–3412, 3413; offered on demand) Instrument flight instructor responsibilities and techniques. Additional study of instrument flight. ATC system, charts, publications, and rules of IFR environment as they pertain to teaching. Practical teaching experience. Students must complete the instrument rating for a flight instructor certificate.

AVIA 3602s. Natural Resources and Enforcement Applications. (2 cr; A-F or Aud) Mission specific knowledge/skills in natural resources and law enforcement aviation. History/purposes, authority, operations, safety, records. Equipment and best practices for natural resources and law enforcement aviators.


AVIA 3804f,s. Individual Studies. (1–3 cr [max 6 cr]; Stdnt Opt.
Prereq–Instructor consent) Topic related to student’s major not covered in regularly offered courses.

Bachelor of Manufacturing (BM)

BM 3005s. Facilities Planning and Selection. (3 cr; Stdnt Opt.) Planning facility design. Selecting materials/equipment used in manufacturing and production operations.

Prereq–MATH 1150) Reliability, predictive techniques, non-destructive testing, equipment effectiveness, operator/employee education, maintenance project management, failure analysis, troubleshooting methods, workplace safety.

BM 3007s. Metrology. (3 cr; Stdnt Opt) Instrument calibration, reading engineering standards, precision measurement, geometric dimensioning/tolerancing, graphical inspection analysis, measuring tools, surface plate inspection methods.


BM 3009. Quality Auditing Certification. (1 cr, Stdnt Opt) Key steps in audit process. Quality system audits, audit teams, conducting an audit, reporting, corrective action.

BM 3011f,s. Manufacturing Operations and Logistics. (3 cr; Stdnt Opt.
Prereq–BIL 1020, MATH 1031, PHYS 1012) Flow/handling of material through storage/production. Focuses on processing lines, equipment characteristics, and design.


BM 3020f,s. Industrial Safety. (3 cr; A-F or Aud. Prereq–PMTC 2800 [Northwest Technical College]) Comprehensive approach to safety problems in the workplace, including OSHA standards, attitude development, safety auditing, and hazard analysis.


BM 3053s. Product Development Management. (3 cr; Stdnt Opt) Quality assurance aspects of development process. Methods to identify opportunities for improvement. Dynamic input from consumers via sales/marketing. Designing/manufacturing a product/service with quality parameters that consumers would purchase.

BM 3084f,s. Individual Studies. (1–3 cr [max 6 cr]; A-F or Aud.
Prereq–Instructor consent) Topic related to student’s major not covered in regularly offered courses.

BM 3090s. Internship. (1–3 cr [max 3 cr]; A-F or Aud. Prereq–Jr) Supervised professional work experience in manufacturing plant situations to help students gain an in-depth understanding of their field of study. Reports and consultations with faculty advisers and employers.
Biology (BIOL)


BIOL 1202f,s. Microbiology. (3 cr; Stdnt Opt. Prereq—High school biology) Morphology, classification, growth requirements, transmission, control, and cultivating of bacteria and other microorganisms of economic importance.


BIOL 3022f. Principles of Genetics. (3 cr; Stdnt Opt. Prereq—BIOL 1009, CHEM 1021 or 1401, MATH 1031 or 1131 or 1150) Basic principles of Mendelian, molecular, and population genetics. Computer simulations/models used to study aberrations and their implications.

BIOL 3027f. Cell Biology. (3 cr; Stdnt Opt. Prereq—1009, [1401 or CHEM 1021]) Structure/function of prokaryotic/eukaryotic cells, including cell surface, membranes, organelles, cytoskeleton, cell growth, cell physiology, experimental methods used in cell studies. Lab includes contemporary cell biology research techniques, hypothesis testing, and communication of results.


BIOL 313f. Plant Physiology. (3 cr; Stdnt Opt. Prereq—2022, CHEM 1401) Plant functions with emphasis on higher plants. Growth and development, mineral nutrition, translocation, water relations, photosynthesis, and nitrogen metabolism.

BIOL 3140f. Histology. (4 cr; Stdnt Opt. Prereq—1474 or 3027 or consent of instructor) Microscopic examination of morphological characteristics of human tissues, organs, and blood cells. Lab.

BIOL 3420su. Aquatic Toxicology. (3 cr; Stdnt Opt. Prereq—1009, CHEM 1401, PHYS 1012, [1131 or 1150 or MATH 1031]) Principles of aquatic toxicology. Focuses on environmental, industrial, and natural chemicals. Fate/interactions of chemicals with organisms and the aquatic environment. Insecticides, endocrine disruptors, biomarkers/bioassays, risk assessment.


BIOL 3466s. Ornithology. (3 cr; Stdnt Opt. Prereq—2012) Classification, reproduction, physiology, behavior, ecological adaptations, zoogeography of birds. Emphasizes techniques used in field/labory studies.


BIOL 3722s. Limnology. (3 cr; Stdnt Opt. Prereq—BIOL 2022, CHEM 1001, PHYS 1012, MATH 1031 or 1131 or 1150) Description/analysis of events in lakes, streams, and ponds, beginning with their origins and progressing through their physics, chemistry, and biology. These parameters interrelated with population of aquatic environment.

BIOL 3822s. Techniques in Molecular Biology. (4 cr; Stdnt Opt. Prereq—2032, 3022. [CHEM 3021 or concurrent registration in CHEM 3021]) Basic recombinant DNA techniques. Methods for growing, isolating, and purifying recombinant DNA and cloning vectors. DNA sequencing, sequence analysis. Gene expression. Polymerase chain reaction (PCR). Other current techniques. Lab.

BIOL 3899f,s. Pre-Internship Seminar. (5 cr; Stdnt Opt) Expectations/responsibilities of internships. Preparing for a job search. Presentations about internship experiences by those who have recently completed 3900. Discussions between students, staff, and invited guests.

BIOL 3900f,s. Internship. (1–3 cr; [max 2 cr]; Stdnt Opt. Prereq—3899, department approval, consent of instructor) Credit given for professional work experience outside an academic department.

BIOL 3901f,s. Post-Internship Seminar. (5 cr; Stdnt Opt. Prereq—3900) Students who have recently completed internships prepare/deliver PowerPoint presentation on experience/knowledge gained. Discussions between post-/pre-internship students, staff, and invited guests.

BIOL 3994s,s. Undergraduate Research. (1–3 cr; [max 3 cr]; Stdnt Opt. Prereq—Instructor consent) Advanced independent work in special fields.


Chemistry (CHEM)

CHEM 992f. Basic Chemistry. (0 cr; A-F or Aud. Prereq—High school algebra) Measurements, metric system. Atomic/molecular structure, nomenclature, balancing chemical equations.

CHEM 1001f,s. Introductory Chemistry. (4 cr; Stdnt Opt. Prereq—High school algebra, high school chem) For students who do not need professional-level general chemistry. Atomic and molecular structure, inorganic nomenclature, chemical equations, quantitative relationships, behavior of gases, phases of matter, solution chemistry, chemical dynamics, acid/base chemistry, oxidation-reduction process, nuclear processes, introduction to organic and biochemistry.


**CHEM 1401F. Elementary Bioorganic Chemistry.** (4 cr; Sdtnt Opt. Prereq–Comp 1010 or 1022)
Organic chemistry as applied to important biochemical molecules.

Important classes of organic compounds, their structures/reactions. Relation between structure, reactivity, and properties. Spectroscopic characterization of organic molecules.

**CHEM 2302s. Organic Chemistry II.** (3 cr; Sdtnt Opt. Prereq–2301)
Reactions, synthesis, and characterization of organic compounds and biologically significant classes of organic compounds (lipids, carbohydrates, amino acids, proteins, nucleic acids).

**CHEM 2310F. Organic Chemistry Laboratory I.** (2 cr; Sdtnt Opt. Prereq–2301 or concurrent registration)
Laboratory techniques in synthesis, purification, and characterization of organic compounds.

**CHEM 2311s. Organic Chemistry Laboratory II.** (2 cr; Sdtnt Opt. Prereq–2310, concurrent enrollment in 2302)
Lab techniques in synthesis, purification, and characterization of organic compounds.

**CHEM 3021s. Biochemistry.** (3 cr; Sdtnt Opt. Prereq–Biol 1009, CHEM 2301)

### Communication (COMM)

**COMM 2002F. Interpersonal and Group Processes.** (3 cr; Sdtnt Opt)
Interpersonal/group dynamics/relationships.

**COMM 2223s,s,su. English Grammar and Usage.** (3 cr; Sdtnt Opt. Prereq–COMP 1013)
Grammar, grammatical concepts. Analysis of processes and structural rules that describe how words combine with each other to form sentences. Practice in sentence diagraming.

**COMM 2334f. Communication Topics.** (3 cr; A-F or Aud. Prereq–COMP 1013)
Applying writing process to professional communication situations. Dissemination products containing text/visuals meeting professional community standards.

**COMM 2443f. Oral Interpretation and Performance Techniques.** (3 cr; Sdtnt Opt)

**COMM 3000s. Communication Theory.** (3 cr; Sdtnt Opt. Prereq–COMP 1013, SPCH 1101)
Identifying, defining, synthesizing, applying, and critiquing communication theories. Focuses on relationship between theory/practice within interpersonal, group, organizational, and societal settings.

**COMM 3001F. Communication in Human Relationships.** (3 cr; Sdtnt Opt)
Anti-relational/relational communication, interpersonal/group processes, conflict management, collaboration, team building, and leadership.

**COMM 3080s. Business Writing.** (3 cr; Sdtnt Opt. Prereq–COMP 1013, SPCH 1101)

**COMM 3258s. Research Methods in Communication.** (3 cr; Sdtnt Opt. Prereq–COMP 1013, MATH 1150, SPCH 1101)
Elements/methods of communication research. Use of quantitative/qualitative research methodologies, basic research design, and data collection methods to inform decision making within organizations.

**COMM 3303f,s. Writing in Your Profession.** (3 cr; A-F or Aud. Prereq–COMP 1011, 1013)
Writing about subjects related to students’ academic disciplines and future professions. Developing persuasive writing skills for academic, personal, and professional purposes. Effective communication principles, audiences, formats, and technologies.

**COMM 3431F,s,su. Persuasion.** (3 cr; Sdtnt Opt. Prereq–SPCH 1101)
Persuasion in interpersonal, organizational, intra-/inter-cultural relationships. Contemporary persuasion with historical segments. Focuses on argumentative claims and how to analyze and respond coherently to them.

**COMM 3537s. Visual Communication.** (3 cr; Sdtnt Opt. Prereq–CA 1030, 1040, COMP 1013, SPCH 1101)
Visual delivery of end-products in professional communication. Classical/contemporary theories of visual delivery. Designing visual delivery to reflect personal philosophy of communication. Integrating visual delivery system with text to meet professional/client standards.

**COMM 3704s. Business and Professional Speaking.** (3 cr; Sdtnt Opt. Prereq–COMP 1013, SPCH 1101)
Developing proficiency in communication/presentation skills in business contexts. Preparing, selecting, organizing, designing, and delivering oral messages in business situations. Meeting/group facilitation, interviewing, and professional presentations.

**COMM 3804s,s,su. Individual Studies.** (1–3 cr [max 6 cr]; Sdtnt Opt) Prereq–Jr or instructor consent
Topic related to student’s major, not covered in regularly offered courses.

**COMM 3855s,s. Topics in Communication.** (3 cr; Sdtnt Opt. Prereq–Jr)
Current trends/practices in communication. Editing, training, event planning, political communication.

**COMM 3900f,s,su. Internship.** (3 cr [max 6 cr]; A-F only)
Internship sites may include a university, industry, or government agency. Internship proposal, progress report, and final report with letter from internship supervisor are required.

**COMM 4703f. Communication Ethics.** (3 cr; Sdtnt Opt. Prereq–COMP 1013, SPCH 1101)
Literature pertaining to ethics in organizations. Relativism, subjectivism, objectivism, utilitarianism, Kantianism, virtue ethics, existentialism.

**COMM 4704s. Organizational Communication.** (3 cr; Sdtnt Opt. Prereq–3000, COMP 1013, SPCH 1101)
Using communication processes to create/maintain organizations (e.g., meetings, employee assimilation, interpersonal relationships, decision making, leadership, etc.). Recognizing/identifying communication issues in organizations and applying organizational communication concepts, models, tools, and theories to resolve them.

**COMM 4800f. Crisis Communication.** (3 cr; Sdtnt Opt. Prereq–COMP 1013, SPCH 1101)
Organizational crises, disasters, and emergency situations. Existing academic literature, everyday media literature. Focuses on appropriate communication strategies, written composition, and delivery of speeches.

**COMM 4800s, Publication Design and Management.** (3 cr; Sdtnt Opt. Prereq–CA 1030, 1040, COMP 1013, SPCH 1101)
Applying project management principles to manage a publication from concept to final product. Design principles, desktop publishing software, audience analysis, usability testing, production. Using table presentations to communicate process and final product to clients/guests.

**COMM 4900s. Public Relations.** (3 cr; Sdtnt Opt. Prereq–COMP 1013, SPCH 1101)
Overview of theory, practice, roles, and techniques used in public relations within organizations. Writing news releases, conducting news conferences, planning/implementing events, responding to challenging questions from audience members, and conducting public relations audit of an organization.

### Composition (COMP)

**COMP 1000s, College Writing Laboratory.** (1 cr; Sdtnt Opt. Prereq–Concurrent enrollment in 1011)
Supplemental instruction in writing. Small group activities, individual conferencing.

**COMP 1011s,F. Composition I.** (3 cr; A-F or Aud)
Process of clear, concrete, and convincing writing. Generation and discovery of subjects, revisions, editing.

**COMP 1011H. Honors: Composition I.** (3 cr; Sdtnt Opt. Prereq–Admitance in the Honors Program)
Process of clear, concrete and convincing writing. Generation and discovery of subjects, revisions, editing.

COMP 1013Hs. Honors: Composition II. (3 cr; Stdnt Opt. Prereq–[1011 or 101H], admittance to Honors Program) Writing summaries, writing to synthesize material from several sources, evaluating readings and other materials, research writing

Computer Applications (CA)

CA 1010,f. Introduction to Computer Technology. (1 cr; Stdnt Opt) Introduction to computer literacy, care of laptop, policies, e-mail and word processing essentials, PALS and portfolio development.

CA 1011,e. Introduction to Computer Systems Architecture. (2 cr; Stdnt Opt) Foundations of computer hardware, software, telecommunications, systems design/deployment.

CA 1012f. Application Suite Software. (2 cr; Stdnt Opt) Introduction to word processing, spreadsheet, and presentation graphics.

CA 1015,e.s. Word Processing Applications. (2 cr; Stdnt Opt) Creation, generation, and development of advanced/integrated word processing documents/publications.

CA 1020,f.s. Spreadsheet Applications. (2 cr; Stdnt Opt) Personal/presentation use of spreadsheets that include formulas, functions, what-if analysis, and charts.


CA 1040,e.f. Web Site Development. (2 cr; Stdnt Opt) Web site design. HTML/XML, scripting, graphics, Web services, user interface design.

CA 1055,f,s,su. Animation Software Applications With Flash MX. (2 cr; Stdnt Opt) Fundamentals of Flash MX Animation. Students create animated Flash page for Web sites and interactive learning components for E-learning.


CA 1090,f.s. Audio-Visual Production Applications. (2 cr; Stdnt Opt) Using editing/designing software in creating interactive streaming audio-video presentations for courseware, training modules, and marketing/management promotional products.

CA 2190,f,s.s. Topics in Computer Applications. (1–3 cr [max 3 cr]; Stdnt Opt. Prereq–1010, 1012) Topics related to advanced computer application certification in selected topics such as MOS, IC3, COMP TIA, Linux, and Oracle.

Computer Software (CS)

CS 1500s. Discrete Structures I. (3 cr; Stdnt Opt) Foundations of discrete mathematics as they apply to software engineering. Functions, relations, sets, simple proof techniques, boolean algebra, propositional logic, digital logic, elementary number theory, fundamentals of counting.

CS 1600f. Discrete Structures II. (3 cr; Stdnt Opt. Prereq–1500) Predicate logic, recurrence relations, graphs, trees, matrices, computational complexity, elementary compatibility, discrete probability.


CS 2300s. Software Construction. (3 cr; Stdnt Opt. Prereq–2200) Low-level software design issues, including formal approaches.

CS 2400s. Software Engineering Approach to Human Computer Interaction. (3 cr; Stdnt Opt) Topics relating to designing/evaluating user interfaces. Psychological background needed to understand people.


CS 3400s. Software Requirements Analysis. (3 cr; Stdnt Opt. Prereq–2200) Discovering eliciting requirements, languages and models for representing requirements, analysis/validation techniques, specifying/measuring external qualities, requirements in agile processes, requirements change management.

CS 3700,f. Software Project Management. (3 cr; Stdnt Opt. Prereq–2200, MGMT 3200) Procedures, team leadership skills, and resource management using computer software. Application/evaluation involving identifying a project and carrying out all steps necessary to achieve satisfactory completion in a team environment.


CS 3900,f,su. Internship. (3 cr [max 6 cr]; Stdnt Opt) Students identify employment opportunities in the field.

CS 4050f. Senior Project I. (3 cr; Stdnt Opt. Prereq–3500) First of a full year, individual project/research course. Students pursue projects or research (applied in nature), with a faculty adviser, within their area of specialization.

CS 4510f. Senior Project II. (3 cr; Stdnt Opt. Prereq–4500) Second of a full year, individual project/research course. Students pursue projects or research (applied in nature), with a faculty adviser, within their area of specialization.

Continuing Education (CNED)

Continuing Education (CNED) special classes in general, adult, and continuing education offered in response to student and community needs and interests.

CNSD 1000–1099. Selected Topics. (Cr vary)

Criminal Justice (CRJS)

These courses are delivered by the criminal justice department at Bemidji State University. Due to this agreement, the semester each course is offered is subject to change.


Course Descriptions

Course Numbers

Course Numbers

0xxxx Courses that do not carry credit toward any University degree.

1xxxx Courses primarily for undergraduate students in their first year of study.

2xxxx Courses primarily for undergraduate students in their second year of study.

3xxxx Courses primarily for undergraduate students in their third year of study.

4xxxx Courses primarily for undergraduate students in their fourth year of study.

5xxxx Courses primarily for graduate students; undergraduate students in their third or fourth year may enroll in such courses.

Course Abbreviations

Letters following course numbers indicate what term(s) the course is taught:

f ............ Fall semester
s ............ Spring semester
m ............ May session
su ............ Summer term

Abbreviations in parentheses following a course name indicate the university that offers the course:

BSU .......... Bemidji State University
NSDSU ...... North Dakota State University
UMTC .......... University of Minnesota, Twin Cities
UND .......... University of North Dakota

Other abbreviations

Prereq ............ Course prerequisites
cr .................. credit
equiv ............ equivalent
fr, soph, jr, sr ...... freshman, sophomore, junior, senior

A prerequisite course listed by number only (e.g., prereq 3322) is in the same department as the course being described.

In prerequisite listings, comma means “and.”

Courses beginning with 09 cannot be used for credit toward graduation or transfer.
Course Descriptions

Course Numbers
0xx .... Courses that do not carry credit toward any undergraduate degree.
1xx .... Courses primarily for undergraduate students in their first year of study.
2xx .... Courses primarily for undergraduate students in their second year of study.
3xx .... Courses primarily for undergraduate students in their third year of study.
4xx .... Courses primarily for undergraduate students in their fourth year of study.
5xx .... Courses primarily for graduate students; undergraduate students in their third or fourth year may enroll in such courses.

Course Abbreviations
Letters following course numbers indicate what term(s) the course is taught:
f .......... Fall semester
s .......... Spring semester
m .......... May session
u .......... Summer term

Abbreviations in parentheses following a course name indicate the university that offers the course:
BSU ......... Bemidji State University
NDSU ........ North Dakota State University
UMTC ......... University of Minnesota, Twin Cities
UND ........ University of North Dakota

Other abbreviations
Prereq .......... Course prerequisites
cr ............... credit
equiv .......... equivalent
fr, soph, jr, sr .... freshman, sophomore, junior, senior

A prerequisite course listed by number only (e.g., prerequisite 3322) is in the same department as the course being described.

In prerequisite listings, comma means “and.”

Courses beginning with 09 cannot be used for credit toward graduation or transfer.

CRJS 3201f. Criminal Justice Statistics (BSU). (3 cr; Stdnt Opt) Application of analytical techniques to address criminal justice issues. Technical requirements for various statistical techniques, their interpretation.

CRJS 3202a. Criminal Justice Research Methods and Practicum (BSU). (3 cr; Stdnt Opt) Process of social scientific inquiry into criminal justice issues. Students apply their knowledge of statistical analysis while designing/implementing a research project.


CRJS 3320f. Juvenile Delinquency and Justice (BSU). (3 cr; Stdnt Opt) Historical responses to delinquents, definition of delinquency, theories of correction, juvenile justice system.


CRJS 3345s. Criminal Justice Administration (BSU). (3 cr; Stdnt Opt. Prereq–[3304, 3305] or 3306) Principles of organization and management of criminal justice agencies. Line/nonline functions, personnel administration, planning, budgeting, goals, control.

CRJS 3358f. Criminal Law (BSU). (3 cr; Stdnt Opt) Basic concepts of criminal law and of elements of criminal offenses in Minnesota in particular. Crimes against persons, property, against administration of justice. Case method is used to define contours of judicial interpretation of criminal law.


CRJS 3360s. Criminal Procedure (BSU). (3 cr; Stdnt Opt) Rights of criminally accused, primarily those in pre-trial stages of criminal process. Bill of Rights as it pertains to criminally accused.


CRJS 3900f, ss, Internship (BSU). (12 cr; Stdnt Opt. Prereq–Instructor consent) Full-time supervised field instruction in a public or private criminal justice agency. Students apply knowledge/skills to criminal justice practice.

CRJS 4100f. Applied Ethics (BSU). (3 cr; Stdnt Opt. Prereq–1120) Ethical issues in criminal justice. Ethical dilemmas facing practitioners in the field. Emphasizes students’ own ethical questions pertaining to their area of interest in criminal justice and the development of solutions to dilemmas they may encounter.

CRJS 4103f. Criminal Justice Diversity (BSU). (3 cr; Stdnt Opt) Dynamics of class, race, and gender as they intersect with social realities of crime/justice in the U.S. How class, race, and gender operate separately and in combination to influence the criminal justice system. Reforms to reduce bias in crime control.

CRJS 4400s. Policing People (BSU). (3 cr; Stdnt Opt. Prereq–1120, 3304) Addresses several Minnesota Board of Police Officer Standards and Training learning objectives: victimization, dealing with the mentally disturbed, police/minority relations, police/community relations.


Curriculum and Instruction (CI)
CI 5452f. Reading in the Content Areas for Initial Licensure Candidates. (1 cr; A-F only. Prereq–Concurrent enrollment in AFEE 5111) Designed to meet requirements of Minnesota statute requiring teachers receiving an initial license to have preparation in “scientifically-based reading instruction.”

Early Childhood Education (ECE)
All 3xxx and 4xxx courses are restricted to students who have been admitted to and retained in the teacher education licensure program in the early childhood education degree program. In this collaborative degree and licensure program with Bemidji State University (BSU), the courses are offered by UMC faculty and may be delivered through ITV for BSU students.

ECE 2100f, s. Child Development and Learning. (3 cr; A-F only) Child development/learning from prenatal through eight years of age. Emphasizes major developmental domains/learning physical (including health practice), cognitive, language, emotional, social (including cultural), and creative. Assessment of development/learning. Field experiences in child observation/assessment.

ECE 3410s. Learning Environments for Infants and Toddlers. (4 cr; A-F only. Prereq–2100, ED 3110, minimum GPA of 2.50) Designing, organizing, and maintaining learning environment. Arrangement of physical setting, provision of materials, construction of curriculum, implementation of learning experiences. Assessment of child’s learning and of teaching/learning environment. Field Experiences.


ECE 3672s. Promoting Children’s Physical Health. (2 cr; A-F only) Establishing healthy and safe learning environments. Procedures/practices for optimum health, safety and nutrition. Introduction to curriculum resources.


ECE 3901f, s. The Professional Teacher I. (5 cr; A-F only. Prereq–GPA of at least 2.50) Role of student teacher in planning for full-time teaching. Orientation to student teaching handbook with related assignments. Development of standards based student teaching notebook.

ECE 3902f, s. The Professional Teacher II. (5 cr; A-F only. Prereq–3901) Completion/evaluation of professional standards-based portfolio, teacher licensure application. Taken concurrently with last student teaching experience.

ECE 4440f, ss. Infant and Toddler Student Teaching. (6 cr; A-F only. Prereq–3410, 4700, 3901, minimum GPA of 2.50) Students integrate theory/practice as member of teaching team with placement in infant or toddler classroom. Portfolio-based student-teaching experience. Focuses on selected INTASC/BOI indicators. University approved placement.

ECE 4500f. Young Children With Special Needs. (3 cr; A-F only. Prereq–3410, 4700, ED 3201, minimum GPA of 2.50) Introduction to teaching young children with special needs. Important aspects of teaching in special-education/inclusive settings. Students interrelate experiences working with children with developing an educational philosophy.
ECE 4700f. Developmentally Appropriate Preliminary Education I. (3 cr; A-F only. Prereq=2100, ED 3110 or concurrent enrollment, ED 3670, minimum GPA of 2.50)

Students integrate theory/practice related to preprimary (preschool, kindergarten) education. Development related to learning environment, curriculum, and teaching methods. Developmentally appropriate approaches to subject matter in language arts, literacy, and expressive arts. Field experiences.

ECE 4702s. Developmentally Appropriate Preliminary Education II. (3 cr; A-F only. Prereq=4700)

Students integrate theory/practice related to preprimary education (preschool, kindergarten). Development related to learning environment, curriculum, and teaching methods. Developmentally appropriate approaches to subject matter in mathematics and in physical/social sciences.

ECE 4730f. Understanding and Supporting Parenting. (3 cr; A-F only. Prereq=3420, ED 3677, ED 3110, minimum GPA of 2.50)

Parent-child relationships, adult development, family systems theory, parental authority, child compliance, developmental interaction during child rearing years. Parenting in diverse family configurations, in diverse cultures/lifestyles, and in high-risk families. Emphasizes knowledge of research for application.

ECE 4750s. Family, School, and Community Relations. (3 cr; A-F only. Prereq=4730, minimum GPA of 2.50)

Emphasizes family involvement as essential to successful education. Patterns in family-school relations, trends, problems that inhibit family involvement, strategies for productive family involvement. Community/cultural considerations.

ECE 4811s, su. Preliminary Student Teaching I. (4 cr; A-F only. Prereq=3901, 4702, 4750, ED 3110, minimum GPA of 2.50)

Students integrate theory/practice as member of teaching team. Portfolio-based student-teaching experience. Focuses on selected BOT competencies and indicators. University approved classroom placement in preschool-aged setting.

ECE 4812s. Preliminary Student Teaching II. (4 cr; A-F only. Prereq=3901, 4702, 4750, ED 3110, minimum GPA of 2.50)

Students integrate theory/practice as member of teaching team. Portfolio-based student-teaching experience. Focuses on selected BOT competencies and indicators. University approved classroom placement in a kindergarten classroom.

ECE 4880f. Administration of Early Childhood Programs. (3 cr; A-F only. Prereq=3410, 4700, 4750, minimum GPA of 2.50)

Application of developmental theory, human ecological systems framework, management theory. Survey of management processes, principles, tasks. Emphasizes government regulations, community relations, staff development, advocacy, financial resource management.

Economics (ECON)

ECON 2101s. Microeconomics. (3 cr; Stdnt Opt. Prereq=MATH 0991 or 2 yrs high school algebra or equivalent)

Basic economic principles of pricing, resource allocation, and consumption. Supply/demand, cost of production, consumer behavior. Competition and influences of market structure.

ECON 2102s. Macroeconomics. (3 cr; Stdnt Opt. Prereq=ECON 2101)


Education (ED)

The following courses are restricted to students who have been admitted to and retained in the teacher education licensure program in the early childhood education degree program. Most courses are offered by Bemidji State University (BSU) faculty in this collaborative degree and licensure program and typically are delivered through ITV for UMC students.

ED 3100f. Introduction to the Foundations of Education. (3 cr; A-F only. Prereq=Completion of Pre-Professional Skills Test [PPST]; Minimum GPA of 2.50)


ED 3110f. Educational Psychology. (3 cr; A-F only. Prereq=3100, ECE 2100, minimum GPA of 2.50)

Teaching/learning process: (1) planning/effective instruction; (2) behavioral/cognitive views. Emphasizes how learning is affected by development, individual differences, motivation.

ED 3201s. Language Arts in the Primary Grades. (4 cr; A-F only. Prereq=3110, ECE 4700, GPA of at least 2.50)

Various approaches and multiplicty of tasks involved in teaching primary language arts. At least 15 hours of observing and assisting in primary classroom.

ED 3301f. Creative Expression in Elementary Education (BSU). (3 cr; A-F only. Prereq=3760, ART 2000, concurrent enrollment in ED 3110, MUS 3604, minimum GPA of 2.50)

Children’s literature as vehicle for teaching primary-grade learners confidence/competence in expressive arts. Emphasizes theme-oriented literature-extension approach. Listening, speaking, reading/writing. Aesthetical expression in visual art, music, movement, creative drama. Field experiences.

ED 3670f. Foundations of Early Childhood Education (BSU). (3 cr; A-F only. Prereq=Completion of Pre-Professional Skills Test [PPST]; Minimum GPA of 2.50)

Philosophical, historical, pedagogical, societal, institutional foundations of infant/toddler, preprimary, primary grade education. Efforts of modern programs to adapt instruction to developmental levels and experience backgrounds of young children and to work in partnership with parents. Field experiences.

ED 3677s. Relations and Management in Early Childhood Education (BSU). (3 cr; A-F only. Prereq=Completion of Pre-Professional Skills Test [PPST]; ED 3670; Minimum GPA of 2.50)

Students study, gain skills in relations with young children, parents, coworkers. Guidance, group management techniques for working effectively with prekindergarten and young school-age children. Experience in early childhood classrooms.

ED 3870s. Mathematics in the Primary Grades (BSU). (3 cr; A-F only. Prereq=3110, 3670, concurrent enrollment in MATH 1011, minimum GPA of 2.50)

Mathematical background including teaching aids, games, projects, activities that relate to K-3 level. Set theory, numeration, systems of whole/rational numbers. Basic mathematical operations presented from concrete standpoint.

ED 3877s. Social Studies and Sciences in the Primary Grades (BSU). (4 cr; A-F only. Prereq=3670, concurrent enrollment in ED 3110, minimum GPA of 2.50)


ED 4820s. Primary Student Teaching. (8 cr; A-F only. Prereq=3110, 3201, 3301, 3870, 3877, ECE 3901, 4750, minimum GPA of 2.50)

Students teach in public school classroom with guidance/supervision by University supervisors/assigned school personnel. Classroom placement in first, second, or third grades. Portfolio-based student teaching experience. Focuses on selected INTASC/BOT indicators.

ED 5001s. Learning, Cognition, and Assessment in the Schools (UMTC). (3 cr; A-F only. Prereq=Completion of Pre-Professional Skills Test [PPST]; Minimum GPA of 2.50)


ED 5005s. Human Development and Aging (IZI). (3 cr; A-F only. Prereq=3300, 3340, 3670, 3800, 3870, 3877, ECE 3901, 4750, minimum GPA of 2.50)

In prerequisite listings, comma indicates the same department as the course number.

Course Descriptions

Course Numbers

0xxx .... Courses that do not carry credit toward any University degree.

1xxx .... Courses primarily for undergraduate students in their first year of study.

2xxx .... Courses primarily for undergraduate students in their second year of study.

3xxx .... Courses primarily for undergraduate students in their third year of study.

4xxx .... Courses primarily for undergraduate students in their fourth year of study.

5xxx .... Courses primarily for graduate students; undergraduate students in their third or fourth year may enroll in such courses.

Course Abbreviations

Letters following course numbers indicate what term the course is taught:

<cr> ...... Fall semester
<cr> ...... Spring semester
<cr> ...... Session
<cr> ...... Summer term

Abbreviations in parentheses following a course name indicate the university that offers the course:

BSU ...... Bemidji State University
NDSU ...... North Dakota State University
UMTC ...... University of Minnesota, Twin Cities
UND ...... University of North Dakota

Other abbreviations

Prereq ......... Course prerequisites
cr=.......... credit
equiv=......... equivalent
soph, jr, sr=..... sophomore, junior, senior

A prerequisite course listed by number only (e.g., prereq 3320) is in the same department as the course being described.

In prerequisite listings, comma means “and.”

Courses beginning with 09 cannot be used for credit toward graduation or transfer.
Course Numbers

0xx ....... Courses that do not carry any credit.
1xx ....... Courses primarily for undergraduate students in their first year of study.
2xx ....... Courses primarily for undergraduate students in their second year of study.
3xx ....... Courses primarily for undergraduate students in their third year of study.
4xx ....... Courses primarily for undergraduate students in their fourth year of study.
5xx...... Courses primarily for graduate students; undergraduate students in their third or fourth year may enroll in such courses.

Course Abbreviations

Letters following course numbers indicate what term(s) the course is taught:
f .......... Fall semester
s.......... Spring semester
m......... May session
su......... Summer term

Abbreviations in parentheses following a course name indicate the university that offers the course:
BSU....... Bemidji State University
NDSU....... North Dakota State University
UMTC ...... University of Minnesota, Twin Cities
UND....... University of North Dakota

Other abbreviations

Prereq ........ Course prerequisites
cr.............. credit
equiv .......... equivalent
fr, soph, jr, sr ...... freshman, sophomore, junior, senior

A prerequisite course listed by number only (e.g., prereq 3322) is in the same department as the course being described.

In prerequisite listings, comma means “and.”

Courses beginning with 09 cannot be used for credit toward graduation or transfer.

---

Entrepreneurship (ENTR)

ENTR 2200f,s. Introduction to Entrepreneurship and Small Business. (2 cr; Stdnt Opt)
Entrepreneurship and the economy. Traits/skills of entrepreneurs, opportunities in entrepreneurship, legal forms of business establishment, self-analysis/fitness for entrepreneurship.


ENTR 4200f. Field Studies in Entrepreneurship and Small Business. (3 cr; Stdnt Opt. Prereq–3200, 3400) Students, in tandem with faculty adviser, consult with local small business or entrepreneurs to solve problems or capitalize on new opportunities. Guest speakers provide insight on philosophical/practices.


---

Equine Science (EQSC)

EQSC 1000f. Light Horse Driving. (2 cr; Stdnt Opt) Types of driving vehicles and harness, including fine harness, heavy harness, and competitive driving. Hitching/driving the fine harness horse. Techniques for training the fine harness horse to drive. Negotiating obstacles while driving.

EQSC 1100f,s. Western Equitation. (3 cr; Stdnt Opt) Grooming, handling, safety, identification of equipment, saddling, mounting, correct body position (equitation), cues and their proper use, various riding techniques. Focus on developing proper equitation skills and techniques for riding and showing.

EQSC 1200f,s. Hunt Seat & Dressage Equitation. (3 cr; Stdnt Opt) Developing hunt seat skills and techniques, including how to ride a course of jumps. “Centered riding” techniques. Basic dressage maneuvers and riding lower-level dressage tests.


EQSC 1300f. Saddle Seat Equitation. (3 cr; Stdnt Opt) Saddling, mounting, seat and leg position (equitation), cues and their proper use, various riding techniques. Developing equitation skills for saddle seat riding/showing.

EQSC 1800f,s. Directed Studies. (1–3 cr [max 6 cr]; Stdnt Opt. Prereq–1100 or 1200 or instructor consent) Conformation, breed characteristics, and type and their importance in evaluation. Performance evaluation, criteria, and scoring methods. Preparation and delivery of oral reasons.


EQSC 2112f,s. Riding Instructor Training. (2 cr; Stdnt Opt. Prereq–Any two of the following: EQSC 1100, EQSC 1200, EQSC 1300) Formulating lesson plans. Teaching methods for individuals or group. Safety, insurance, liability, management. Student’s teaching methods are evaluated.


---

EDHD 5050s. School and Society (UMTC). (2 cr; Stdnt Opt)
Readings in history, philosophy, social sciences, law that reveal diverse educational values in a pluralistic society. Multiple expectations of schools. Civil liberties, rights, community. Varying cultural backgrounds of students, family circumstances, exceptional needs.

EDHD 5060f. Technology for Teaching and Learning (UMTC). (1.5 cr; Stdnt Opt)
Diverse educational technology in K–12 classrooms. Effective use of technology. Computer technologies to stimulate personal productivity/communication, enhance teaching/learning processes.

EDHD 5090s. Human Relations: Applied Skills for School and Society (UMTC). (1 cr; Stdnt Opt)
Issues of prejudice/discrimination in terms of history, power, social perception. Knowledge/skills acquisition in cooperative learning, multicultural education, group dynamics, social influence, leadership, judgment/decision making, prejudice reduction, conflict resolution, teaching in diverse educational settings.

Educational Policy and Administration (EDPA)

The following course is required for the undergraduate agricultural education major. This major is a collaborative agreement with the University of Minnesota, Twin Cities, which offers this course via ITV:


English as a Second Language (ESL)

ESL 100f,s,su. English Reading and Vocabulary I. (0 cr; Stdnt Opt. Prereq–ESL test score of 50–100)

ESL 120f,s,su. English Writing. (0 cr; Stdnt Opt. Prereq–ESL test score of 50–100)
Elements of academic writing process. Unified/coherent writing, paragraph structure, short essays, journal writing, proofreading, editing.

ESL 130f,s,su. English Grammar and Vocabulary. (0 cr; Stdnt Opt. Prereq–ESL test score of 50–100)

ESL 210f,s,su. English Reading and Vocabulary II. (0 cr; Stdnt Opt. Prereq–ESL test score of 100–130)

ESL 220f,s,su. English Writing and Research. (0 cr; Stdnt Opt. Prereq–ESL test score of 100–130)
Introduction to research writing. Summarizing/paraphrasing, short essays. Research project.

ESL 230f,s,su. English Grammar and Speaking. (0 cr; Stdnt Opt. Prereq–ESL test score of 100–130)
English grammar through written/oral practice. Use of correct grammar in conversation.

ESL 310f,s,su. Oral Communication. (0 cr; Stdnt Opt. Prereq–ESL test score of 130–165)
Conversation, listening comprehension, pronunciation, presentation skills.

ESL 320f,s,su. Research Writing and Presentation. (0 cr; Stdnt Opt. Prereq–ESL test score of 130–165)
Introduction to college-level research writing/presentation. Research topics in a variety of disciplines. Argumentative and critical thinking abilities. Oral communication/presentation. Final research paper and oral presentation.
Course Descriptions

EGSC 3305s. Equine Reproductive Techniques. (3 cr; Stdnt Opt. Prereq–ANSC 3203, 3304 or instructor consent) Breeding management practices/techniques. Gestation, fetal development, endocrinology, estrus manipulation, artificial insemination, embryo transfer, cooled and cryopreservation of semen, teasing, and foaling. Lab emphasizes skills required in equine industry. Lecture emphasizes reproductive theory.

EGSC 3403s. Equine Exercise Physiology. (3 cr; Stdnt Opt. Prereq–ANSC 3203, EGSC 2102) Skeletal, muscular, cardiovascular, and regulatory systems of the horse. Effect of work-related stress (mental and physical) using physiological measures and how the systems relate to one another; how various types of conditioning can affect the systems separately and as a whole.

EGSC 3413s,s. Horse Training and Showing. (3 cr [max 6 cr]; Stdnt Opt. Prereq–6 crs of equitation courses [from 1100, 1200, 1300, 3441, 3442, 3443], 3412 or concurrent enrollment in 3412] Work with untrained young horse or older show horse to correct problems or maintain the horse.

EGSC 3441f. Topics in Advanced Western Equitation. (1.5 cr; Stdnt Opt. Prereq–Instructor consent) Experience in rein maneuvers. Students refine skills.

EGSC 3443s. Topics in Advanced Equitation Over Fences. (1.5 cr; Stdnt Opt. Prereq–Instructor consent) Experience in riding more challenging course of jumps.


EGSC 4102s. Equine Management. (3 cr; Stdnt Opt. Prereq–ECON 1101) Fundamentals of horse management. Record keeping (traditional, computer based). Marketing, sales techniques. Legal aspects (e.g., contracts, zoning, liability, insurance). Management project that involves establishing, maintaining, improving an equine business.

Food Science and Nutrition (FSCN)
FSCN 1123f,s,su. Fundamentals of Nutrition. (3 cr; Stdnt Opt) Fundamentals of nutrition and metabolism, including the nutrients: carbohydrates, proteins, fats, minerals, vitamins, and water. Assessment of health risks, health promotion, and disease prevention.


FSCN 1313s,s,su. Life Cycle Nutrition. (3 cr; Stdnt Opt. Prereq–FSCN 1123) Influence of age, growth, and normal development on nutritional requirements.

FSCN 1654s. Nutritional Care: Practices and Procedures. (3 cr; Stdnt Opt) Application of nutritional practices and procedures in health care facilities, including medical terminology, medical charting, and diet histories. State and federal guidelines and regulations.


FSCN 1999s,s. Dietetic Practicum. (1–3 cr [max 6 cr]; Stdnt Opt) Supervised experience in various health care and nutrition settings. Application of classroom theories to actual operations.

FSCN 2303f,s. Community Nutrition. (3 cr; Stdnt Opt. Prereq–FSCN 1123) Nutrition programs in the community, including those serving infants, children, and the elderly. Sociocultural and ethnic food consumption issues. Instructional methods for individuals and groups.

FSCN 3211s. Professional Issues in Dietetics. (1 cr; Stdnt Opt) Food nutrition laws and policies and current issues in health care legislation. Students review research in dietetics and make presentations to groups.

FSCN 3310s. Elements of Food Science. (3 cr; Stdnt Opt) Food properties and changes caused by heat, cold, and mechanical and chemical processes used in food preparation. Composition of food and effects of cooking on food. Functions of specific ingredients in recipes.


FSCN 3900f,s,su. Internship. (1–3 cr [max 6 cr]; Stdnt Opt. Prereq–Instructor consent) Supervised professional work experience at selected sites. Reports/consultation with faculty advisor/employer.

General Agriculture (GNAG)
GNAG 1012f. Introduction to Applied Agricultural Chemistry. (2 cr; Stdnt Opt. Prereq–CHEM 1001 or [concurrent enrollment in CHEM 1001, instructor consent]) Common chemical processes, their application to production agriculture. Application of pH in soil/seed systems. Dilution principles, units of weights/measure. Basic applied theories used in agriculture.


GNAG 2999f. Pre-Internship Seminar. (1.5 cr; A-F or Aud) Expectations/responsibilities of internships. Preparing for a job search. Presentations about internship experiences by those who have recently completed 3900. Discussions between students, staff, and invited guests.

GNAG 3203s,su. AG Products and Processing. (3 cr; S-N or Aud. Prereq–Jr) Survey of raw agricultural products produced in the Upper Midwest, transport, processing, packaging, wholesale and retail distribution and sales. Quality factors, food laws and regulations, sanitation, food safety, and environmental concerns.


GNAG 3899f. Pre-Internship Seminar. (1.5 cr; A-F or Aud) Expectations/responsibilities of internships. Preparing for a job search. Presentations about internship experiences by those who have recently completed 3900. Discussions between students, staff, and invited guests.

GNAG 3900f,s,su. Internship. (1–4 cr [max 4 cr]; A-F or Aud. Prereq–GNAG 2899 or 3899, soph or sr) Supervised professional work experience in agricultural business, governmental agency. Report/consultation with faculty advisor/employer.

GNAG 3901f. Post Internship Seminar. (1.5 cr; A-F or Aud. Prereq–GNAG 3900) Student who have recently completed internships prepare/deliver a PowerPoint presentation of experience/knowledge gained. Discussions between post/pre-internship students, staff, and invited guests.

GNAG 4652f,s. Senior Seminar. (1 cr; A-F only. Prereq–Sr or instructor consent) Survey of current literature. Preparation/delivery of special topics. Preparation of abstracts, papers, and visual aids. Evaluation of seminars. Use of library and other resources, including computer information search. Use of new technology.

General Business (GBUS)
GBUS 1005f,s. Orientation to Online Programs. (1 cr; Stdnt Opt) Introduction to UMC policies, e-mail, virtual private network, online library resources, writing scholarly reports, APA referencing, netiquette, networking in an online environment, group work in an online environment.

GBUS 1010f. Global Trade. (3 cr; Stdnt Opt) Overview of ecological/demographic factors influencing current agricultural, industrial, and environmental development issues in every world region.


Course Numbers

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>0xxx</td>
<td>Courses that do not carry credit toward any University degree.</td>
<td></td>
</tr>
<tr>
<td>1xxx</td>
<td>Courses primarily for undergraduate students in their first year of study.</td>
<td></td>
</tr>
<tr>
<td>2xxx</td>
<td>Courses primarily for undergraduate students in their second year of study.</td>
<td></td>
</tr>
<tr>
<td>3xxx</td>
<td>Courses primarily for undergraduate students in their third year of study.</td>
<td></td>
</tr>
<tr>
<td>4xxx</td>
<td>Courses primarily for undergraduate students in their fourth year of study.</td>
<td></td>
</tr>
<tr>
<td>5xxx</td>
<td>Courses primarily for graduate students; undergraduate students in their third or fourth year may enroll in such courses.</td>
<td></td>
</tr>
</tbody>
</table>

Course Abbreviations

Letters following course numbers indicate what term(s) the course is taught:

- f .......... Fall semester
- s .......... Spring semester
- m .......... May session
- su .......... Summer term

Abbreviations in parentheses following a course name indicate the university that offers the course:

- BSU ......... Bemidji State University
- NDSU ...... North Dakota State University
- UMTC ...... University of Minnesota, Twin Cities
- UND .......... University of North Dakota

Other abbreviations

- Prereq ............... Course prerequisites
- cr ................. credit
- equiv ............... equivalent
- fr, soph, jr, sr .......... freshman, sophomore, junior, senior

A prerequisite course listed by number only (e.g., prereq 3322) is in the same department as the course being described.

In prerequisite listings, comma means “and.”

Courses beginning with 09 cannot be used for credit toward graduation or transfer.
Course Descriptions

Course Numbers

<table>
<thead>
<tr>
<th>0xx</th>
<th>Courses that do not carry credit toward any university degree.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1xx</td>
<td>Courses primarily for undergraduate students in their first year of study.</td>
</tr>
<tr>
<td>2xx</td>
<td>Courses primarily for undergraduate students in their second year of study.</td>
</tr>
<tr>
<td>3xx</td>
<td>Courses primarily for undergraduate students in their third year of study.</td>
</tr>
<tr>
<td>4xx</td>
<td>Courses primarily for undergraduate students in their fourth year of study.</td>
</tr>
<tr>
<td>5xx.....</td>
<td>Courses primarily for graduate students; undergraduate students in their third or fourth year may enroll in such courses.</td>
</tr>
</tbody>
</table>

Course Abbreviations

Letters following course numbers indicate what term(s) the course is taught.
- f = Fall semester
- s = Spring semester
- m = May session
- su = Summer term

Abbreviations in parentheses following a course name indicate the university that offers the course:
- BSU = Bemidji State University
- NDSU = North Dakota State University
- UMTC = University of Minnesota, Twin Cities
- UND = University of North Dakota

Other abbreviations

Prereq = Prerequisite
Prep = Preparation
credit = Credit
equiv = Equivalent
fr, soph, jr, sr = Freshman, Sophomore, Junior, Senior

A prerequisite course listed by number only (e.g., prereq 3322) is in the same department as the course being described.

In prerequisite listings, comma means “and.”

Courses beginning with 09 cannot be used for credit toward graduation or transfer.

GBUS 1603s, Principles of Insurance. (3 cr; Stdnt Opt.)
Principles and fundamentals of insurance of various types, risk of retaining, managing retail risks, buying insurance, handling claims.

GBUS 1803f,s,u. Directed Studies. (1–3 cr [max 6 cr]; Stdnt Opt. Prereq-Instructor consent)
Current topics not covered in regularly offered courses.

GBUS 1981s. Internship Seminar. (1 cr; Stdnt Opt.)
Planning for securing and successfully completing an internship. Internship policies and objectives; samples of forms.

GBUS 3107f,s. Legal Environment in Business. (3 cr; A-F or Aud)
Fundamental concepts of business law, with emphasis on the legal system, contracts, bailments, agency, business organizations, and the fundamentals of commercial law.

GBUS 3190f,s,u. Topics in Business. (1–3 cr [max 6 cr]; Stdnt Opt.)
May include varied emerging topics in business.

GBUS 3804f,s,u. Individual Studies. (1–3 cr [max 6 cr]; Stdnt Opt. Prereq-Jr, instructor consent)
Topic related to student’s major not covered in regularly offered courses.

Health Science (HSCI)

GBUS 3804f,s,su. Individual Studies. (1–3 cr [max 3 cr]; Stdnt Opt)
Individualized study, related to student’s interest, in health care topic not covered in regular courses.

HSCI 3899f,s,su. Pre-Internship Seminar. (5 cr; Stdnt Opt)
Expectations/responsibilities of internship. Preparing for a job search. Presentations about internship experiences by those who have recently completed 3900 (internship). Discussions between students, staff, and invited guests.

HSCI 3901f,s,su. Internship. (1–2 cr [max 2 cr]; Stdnt Opt. Prereq–3899)
Supervised professional work experience in health care facility. Report/consultation with faculty adviser/employer.

HSCI 3911f,s,su. Post-Internship Seminar. (5 cr; Stdnt Opt. Prereq–3900)
Students who have recently completed internships prepare/deliver a PowerPoint presentation of experience/knowledge gained. Discussions between post/pre-internship students, staff, and invited guests.

General Education (GNED)

GNED 1000f,s. Seminar for New Students. (1 cr; Stdnt Opt)
Skills for adjusting to college-level academics.

GNED 1001f,s. Effective Listening and Speaking. (2 cr; Stdnt Opt)
Developing comprehension/study strategies for reading college texts and related materials.

GNED 1603f,s,u. Directed Studies. (1–3 cr [max 6 cr]; Stdnt Opt. Prereq-Instructor consent)
Current topics not covered in regularly offered courses.

GNED 1900f,s. Chancellor’s Academic Success Seminar. (1 cr; Stdnt Opt. Prereq–Student must be on academic contract)
Comprehensive study program to help strengthen learning skills. Includes some monitoring of contract requirements.

GNED 3000su. Global Seminar. (1–3 cr [max 6 cr]; Stdnt Opt)
Interdisciplinary approach to a specific culture and its current local/global issues. In-depth experiences in a discipline area of student’s choice. Required international travel for one to three weeks, led by a faculty member.

GBUS 3804f,s,su. Individual Studies. (1–3 cr [max 6 cr]; Stdnt Opt. Prereq-Jr, instructor consent)
Topic related to student’s major not covered in regularly offered courses.

GBUS 3809f,s,su. Directed Studies. (1–3 cr [max 6 cr]; Stdnt Opt. Prereq-Instructor consent)
Current topics not covered in regularly offered courses.

HSCI 3804f,s,su. Individual Studies. (1–3 cr [max 6 cr]; Stdnt Opt. Prereq–Jr, instructor consent)
Topic related to student’s major not covered in regularly offered courses.

HSCI 3899f,s,su. Pre-Internship Seminar. (1–3 cr [max 6 cr]; Stdnt Opt. Prereq–Instructor consent)
Current topics not covered in regularly offered courses.

HSCI 3901f,s,su. Internship. (1–2 cr [max 2 cr]; Stdnt Opt. Prereq–3899)
Supervised professional work experience in health care facility. Report/consultation with faculty adviser/employer.

HSCI 3911f,s,su. Post-Internship Seminar. (5 cr; Stdnt Opt. Prereq–3900)
Students who have recently completed internships prepare/deliver a PowerPoint presentation of experience/knowledge gained. Discussions between post/pre-internship students, staff, and invited guests.

Health Systems Management (HSM)

HSM 1010s. Medical Terminology. (2 cr; Stdnt Opt)
Prefixes, suffixes, and roots used to compose medical terms. Pronouncing and defining terminology related to body structure, disease, diagnosis, and treatment.

HSM 1803f,s,u. Directed Studies. (1–3 cr [max 6 cr]; Stdnt Opt. Prereq–Instructor consent)
Current topics not covered in regularly offered courses.

HSM 2010f. Introduction to Health Services Organizations. (2 cr; A-F or Aud)

Quality assessment activities in health care facilities. Emphasizes case management, utilization review, patient care evaluation, risk management activities. Methodologies/strategies, including quantitative/qualitative analysis of data. Students generate or update a quality assurance plan.

HSM 3030s,s. Health Care and Medical Needs. (2 cr; Stdnt Opt. Prereq–HSM 1010; BIOL 1464)
Common health conditions, diseases, disabilities. Intervention/treatment issues. Health care and medical needs across age continuum. Medical/Pharmacologic terminology.

HSM 3100f,s. Essentials of Managed Care. (3 cr; Stdnt Opt. Prereq–HSM 3030)
Major economic forces affecting U.S. health care delivery system. Methods for addressing access, cost, and quality. Types of managed care organizations, management control and governance structures, closed and open panels, contracting and reimbursement, carve outs, special market segments; Medicaid, Medicare; rural, urban populations.

HSM 3130s,su. Health Management Information Systems. (3 cr; Stdnt Opt. Prereq–ITM 1010)
Data accumulation, storage, integration, manipulation, and presentation. Strategic uses of data. Information access/privacy, their relation to patient confidentiality.

Organizational management characteristics for modern health care settings. Management process/roles addressing resource allocation, delivery of clinical services, governance, patient satisfaction, and outcome evaluation.

HSM 3230f,s. Administration of Continuum Care Facilities. (3 cr; Stdnt Opt)
Programs/services to meet the needs of an aging population. Physical, social, and psychological aspects of aging. Role, organization, function, and management characteristics of long-term health care facilities. Administrative structures, staffing, and changing work force. Governance, operations oversight.
HSM 3240,f,s. Health Care Policy and Comparative Systems. (3 cr; Stdnt Opt) Analysis/comparison of world health problems and delivery systems. Geographic, political, and economic relationships affecting health care system.


HSM 3000,f,s. Internship. (1–3 cr [max 3 cr]; Stdnt Opt. Prereq–3200, 3230, 4210, 4212, instructor consent) Ten-week field experience under direction of a faculty member in a health care organization or agency. Internship plan must be coordinated with and approved in advance by HSM program director. Students complete agency/organization assessment and major project. May be repeated in different health care setting.


History (HIST)

HIST 1021,f,s. World Civilization I. (3 cr; Stdnt Opt) Ancient Near East, Greece, Egypt, Rome, and Medieval Europe.

HIST 1022,f,s. World Civilization II. (3 cr; Stdnt Opt) Renaissance and Modern Europe from Reformaion to present.


HIST 1302,f,s. American History II. (3 cr; Stdnt Opt) Gilded Age to present with emphasis on foreign involvements and wars, New Deal, civil rights, and economic developments.

HIST 3054,f,s. Topics in History. (3 cr [max 6 cr]; Stdnt Opt) Topics of regional, national, or international importance, such as Minnesota history, U.S. Civil War, Japanese history.

Horticulture (HORT)

HORT 1010,f,s. Introduction to Horticulture. (3 cr; Stdnt Opt) Environmental considerations, planting, propagation, pruning, and protection of horticultural crops. Greenhouse/field experience.

HORT 1021,f. Woody Plant Materials. (4 cr; A-F or Aud. Prereq–1010 or instructor consent) Identification, ecology, and use of deciduous and evergreen trees, shrubs, and vines.

HORT 1091,f. Indoor Flowering and Foliage Plants. (2 cr; Stdnt Opt) Identification, culture, and propagation of foliage plants used in interior decoration.

HORT 1092,s. Floral Design. (2 cr; Stdnt Opt) Principles for design related to floral arrangement, identification, use, and care of cut flowers common to florist industry.

HORT 1803,f,s. Directed Studies. (1–3 cr [max 6 cr]; Stdnt Opt) Topics not covered in regularly offered courses.

HORT 3030,s. Landscape Design. (4 cr; A-F only, Prereq–1021) Application of aesthetic, environmental, and functional design principles to creative planning/development of residential/commercial landscapes. Emphasizes low impact and sustainability.

HORT 3031,f. Herbaceous Perennial Plant Materials. (2 cr; Stdnt Opt) Identification, classification, ecology, and landscape uses of perennial flowers, bulbs, ground covers, and wildflowers.


HORT 3034,s. Commercial Floriculture Crops-Spring. (4 cr; Stdnt Opt. Prereq–1010) Fundamentals of greenhouse structure and management. Heating and cooling requirements, lighting photoperiod control, soil sterilization, production of winter grown greenhouse crops such as mums, azaleas, cineraria. Identification and culture of annual bedding plants. Wholesale production, use of annual flowers in residential and commercial landscape design.


HORT 3094,f,s. Individual Studies. (1–3 cr [max 6 cr]; Stdnt Opt) Topics related to student’s major not covered in regularly offered courses.

Hotel, Restaurant, and Institutional Management (HRI)


HRI 1111,s,u. Introduction to Food Preparation. (3 cr; Stdnt Opt) Fundamentals of food preparation and equipment use. Culinary vocabulary, cooking methods, and recipe development. Stocks, soups, sauces, seafood, poultry, meats, vegetables, salads, baking, and desserts.

HRI 1112,s. Sanitation and Safety. (2 cr; Stdnt Opt) Introduction to sanitation and safety concerns in a food service establishment and to Hazard Analysis Critical Control Points (HACCP). Can lead to Serve Safe certification from the National Restaurant Association.


HRI 2211,f. Rooms Division Operational Management. (3 cr; Stdnt Opt) Operational procedures/principles pertaining to Rooms Division. Emphasizes issues related to management of front office and housekeeping operations.


Course Descriptions

Course Numbers

80

Course Abbreviations

Letters following course numbers indicate what term(s) the course is taught:
f ........ Fall semester
s ........ Spring semester
m ........ May session
su .......... Summer term

Abbreviations in parentheses following a course name indicate the university that offers the course:
BSU ...... Bemidji State University
NDSU ...... North Dakota State University
UMTC ...... University of Minnesota, Twin Cities
UND ...... University of North Dakota

Other abbreviations

Prereq ........ Course prerequisites
            cr............. credit
equiv .............. equivalent
fr, soph, jr, sr .... freshman, sophomore, junior, senior

A prerequisite course listed by number only (e.g., prrereq 3322) is in the same department as the course being described.
In prerequisite listings, comma means "and."

Courses beginning with 09 cannot be used for credit toward graduation or transfer.

HRI 3311f,s. Restaurant Operational Management. (3 cr; Stdnt Opt. Prereq–1111f) Students compare/contrast types of service (e.g., modified American, French, Russian) and develop/apply menu planning
techniques, cost controls, and personnel organization. Gouridon preparation/service with product merchandising.


HRI 3804f,s,su. Individual Studies. (1–3 cr [max 6 cr]; Stdnt Opt. Prereq–jr, instructor consent) Topic related to student’s major not covered in regularly offered courses.

HRI 3900f,s,su. Internship. (1–3 cr [max 6 cr]; Stdnt Opt. Prereq–instructor consent) Supervised professional work experience at selected sites. Reports/consultation with faculty adviser/employer.

HRI 4321s. Food, Beverage, and Labor Control. (3 cr; Stdnt Opt. Prereq–ACC 2101; HRI 3241) Food service operations cost calculations. Relationship between cost volume and profit. Management processes used in food service to keep costs at realistic levels and achieve desired goals. Implementing electronic spreadsheets to track profit/loss.

HRI 4421f,s,su. Hospitality Law. (3 cr, Stdnt Opt. Prereq–Sr) Laws/cases applicable to operation of hotels, restaurants, motels, and other hospitality establishments.


HRI 4441s. Catering On and Off Premise. (3 cr; Stdnt Opt. Prereq–1111, 2231, 3311) Theory/application of operational/managerial principles for off- and on-premise catering for banquets, buffets, weddings, ceremonies, teas, and other special events. Working with tallow and other selected products.


HRI 4455f,s. Hospitality Operations. (3 cr; Stdnt Opt. Prereq–Sr) Issues in the hospitality business, operations, and management.

HRI 4456f,s. Hotel Operational Management. (3 cr; Stdnt Opt. Prereq–Sr) Issues in the hospitality business, operations, and management.

HRI 4457f,s. Hotel Operational Management. (3 cr; Stdnt Opt. Prereq–Sr) Issues in the hospitality business, operations, and management.

Hum 1301f,s. Introduction to Humanities. (3 cr; Stdnt Opt) The arts as a reflection of our search for understanding of the human condition. Beliefs and attitudes presented through relevant historical contexts and social movements.

Hum 3310f,s. Culture and Technology. (3 cr; Stdnt Opt) Analysis of historical and cultural factors shaping technology. Synthesis of integrated relationships among technology, the arts, societal practices, and values.

Information Technology Management (ITM)


ITM 2050f,s. Introduction to Programming I. (3 cr; Stdnt Opt. Prereq–4121A 1031 or equiv of 2 yrs high school algebra or ACT score of 20) Structured and object oriented programming with current industry accepted languages. Basic data, selection, and iteration structures. Input/output operations, class definitions, interfaces, exception handling, inheritance, composition, polymorphism.

ITM 2060f,s. Database Management Systems. (3 cr; A-F or Aud) Introduction to database design management/implementation. Data modeling, normalization, DML, DDL. Use of common DBMSs and modeling tools.

ITM 2070f,s. Introduction to Programming II. (3 cr; Stdnt Opt. Prereq–2050) Java programming language and development process. Objects, classes, packages, applets.

ITM 3110f,s. Microcomputer Operating Systems. (3 cr; A-F or Aud) Introduction to DOS, Windows 3.1, Windows 95, Windows NT, and UNIX operating systems. Single-user vs. multi-user systems, control operations, utilities, hardware, application software specifications.

ITM 3120f,s. Networking and Telecommunications. (3 cr; A-F or Aud. Prereq–ITM 3110) Design, implementation, and management of an enterprise network. Introductory building blocks of network design such as servers, routers, bridges, gateways, transmission media, communications protocols, network security, and performance tuning.

ITM 3130f,s. Messaging Systems. (3 cr; Stdnt Opt. Prereq–ITM 3110, 3120) Unified messaging types such as electronic mail, fax, and voice. Server software such as Microsoft Exchange, Lotus Notes, and Novell Groupwise. Internet standards for messaging.

ITM 3145f,s. HTML/XML. (3 cr; Stdnt Opt. Prereq–ITM 2060, 2070) Students create well-formed XML documents, enforce rules through document type definitions/schemas, and manipulate XML documents through document object model and simple API for XML. Complementary technologies, including XSL, CSS, XML, XPath, XLink, HTML, and CSS.

ITM 3190f,s. Topics in Information Technology Management. (3 cr [max 9 cr]; Stdnt Opt. Prereq–2050, 2060) Topics may include cold fusion, asp, net, and other emerging platforms.

ITM 3200f,s. Internet Standards and Protocols–TCP/IP. (3 cr; Stdnt Opt. Prereq–3110) Overview of computer connectivity through the Internet. Interminetworking hardware/software, system design considerations, protocols, security, management.


ITM 3804f,s. Individual Studies. (1–3 cr [max 6 cr]; A-F or Aud. Prereq–jr, instructor consent) Topic related to student’s major, not covered in regularly offered courses.

ITM 3900f,s. Internship. (1–3 cr [max 6 cr]; Stdnt Opt. Prereq–Sr or instructor consent) Supervised experience in an information or networking entity within a business firm or agency. Reports/consultations with faculty advisers and employers.


ITM 4900s. Senior Project in Information Technology Management. (3 cr; Stdnt Opt. Prereq–Sr) Students complete an extensive IT design/development project under guidance of faculty member and present the project to ITM faculty and senior peers.

Literature (LIT)

LIT 1005f,s. Introduction to Literature. (3 cr; A-F or Aud) Major forms of literature from various cultures and historical periods. Developing an informed, personal response to literature and interpretive skills required for an appreciation of literature.

LIT 1016f,s. Readings in American Life. (3 cr; A-F or Aud) American literature from Puritans to present. Developing an informed, personal response to that literature. Major concerns of American writers in different eras. Introduction to interpretive skills required for an appreciation of literature.

LIT 3001s. World Literature. (3 cr; A-F or Aud) Representative works from various cultures from around the globe. Relevant historical contexts and social movements. Intensified interpretive skills for the appreciation of diverse genres.
Management (MGMT)

MGMT 1803.f,s. Directed Studies. (1–3 cr [max 6 cr]; Stdnt Opt. Prereq–Instructor consent)
Current topics not covered in regularly offered courses.

MGMT 3100.f,a. Managerial Finance. (3 cr; A-F or Aud. Prereq–ACCT 2102, ECON 2102, MATH 1150, or instructor consent)

MGMT 3200.f,a. Principles of Management. (3 cr; A-F or Aud. Prereq–PSY 1001 or instructor consent) Theories, concepts, skills relevant to professional manager role. Basic functions of a manager: planning, organizing, leading, controlling. Decision making, motivation, staffing, international management, basic ethics, social responsibility, change. Integrates theory and applications.

MGMT 3210.f,su. Supervision and Leadership. (3 cr; A-F or Aud) Emphasis on organizational environment and human behavior. Human resource systems, motivating employees, leadership, changing change, job satisfaction, communication, group processes, interpersonal and group dynamics within an organization. Participative learning approach complements traditional teaching methods with role playing and case studies.

MGMT 3220f. Human Resource Management. (3 cr; A-F or Aud. Prereq–MGMT 3200) Focuses on management of people at work with emphasis on recruitment, selection, training, compensation, and evaluation. Changing nature of the world of work, labor market, labor relations, ethics, and legal issues, discrimination in pay and employment, and effects of technological change on jobs and employment performance.

MGMT 3250.f,a,su. Operations Management. (3 cr; A-F or Aud. Prereq–MGMT 3200, MATH 1150 or instructor consent) Concepts, procedures, and technologies used by managers, administrators, and employees in an organization and planning, organizing, employing, and controlling. Levels of planning, material/inventory management, improving products/systems, project management.


MGMT 3600f,su. Management Case Studies. (3 cr; Stdnt Opt. Prereq–MGMT 3100, MGMT 3200, MGMT 3310 or instructor consent) Specialized cases/studies covering management situations faced by businesses. Facilitates student research, analysis, and decision-making in different business situations. Students work individually and a as a management team member in making decisions.

MGMT 3804.f,a,su. Individual Studies. (1–3 cr [max 6 cr]; A-F or Aud. Prereq–IR, instructor consent) Topic related to student’s major not covered in regularly offered courses.

Marketing (MKTG)

MKTG 1803.f,s. Directed Studies. (1–3 cr [max 6 cr]; Stdnt Opt. Prereq–Instructor consent)
Current topics not covered in regularly offered courses.

MKTG 3200.f,s. Personal Selling. (3 cr; A-F or Aud) Introduction to selling principles and processes, industrial vs. ultimate consumer selling, persuasive communication, selling vs. buying process, and time management of the sales professional. Emphasis on developing long-term buying and selling relationships.

MKTG 3250.f,s. Promotional Strategies. (3 cr; A-F or Aud. Prereq–MKTG 3200, MGMT 3300) Principles involved in developing and managing advertising, personal selling, public relations, and sales promotion programs. Introduction to promotional strategies through studying the promotional mix, marketing communications, theory, research, and marketing management. Students develop and present a promotional campaign for an actual company.

MKTG 3300.f,s. Principles of Marketing. (3 cr; A-F or Aud. Prereq–ECON 2101 or 2102, PSY 1001 or instructor consent) Introduction to marketing and strategic marketing process. Team development of marketing plan that implements product, pricing, distribution, and promotional strategies.

MKTG 3310.f,s. Buyer Behavior. (3 cr; A-F or Aud. Prereq–MKTG 3300) Fundamentals of buyer behavior. Behavior of individuals and groups; social and environmental factors that influence a buyer’s purchase decision. Group projects outside the classroom.

MKTG 3360.f,s. Global Business. (3 cr; A-F or Aud. Prereq–MGMT 3200, MGMT 3300) Factors affecting marketing of goods and services and managing the organization in the international environment. Students complete a team marketing plan for a product being marketed internationally.


MKTG 4200f. Marketing Research. (3 cr; A-F or Aud. Prereq–MATH 1150, MGMT 3300) Research process from marketing perspective. Problem formulation, scientific research methods, analysis/interpretation of marketing data, research report writing, decision-making process derived from market research.

MKTG 4800s. Marketing Strategies. (3 cr; A-F or Aud. Prereq–[3250, final sem sr] or instructor consent) Analysis of marketing decisions, creative problem-solving exercises, presentation of case analyses and marketing plans. Individual/group projects. Students critique current marketing articles. Case studies, readings.

Mathematics (MATH)

MATH 891f,s. Basic Math. (0 cr; Stdnt Opt) Operations on whole numbers, fractions, mixed numbers, decimals, order of operations, problem solving, calculator use, formulas, real numbers, exponents, scientific notation, linear equations, applications, introduction to geometry.

MATH 991f,s. Elementary and Intermediate Algebra. (0 cr; Stdnt Opt. Prereq–0981 or equiv) Signed numbers, first-degree equations/inequalities, fractional equations, exponents, polynomials, factoring, rational expressions, radical expressions, graphing, systems of equations, functions.

MATH 992f,s. Intermediate Algebra. (0 cr; Stdnt Opt) Review of elementary algebra, polynomials, factoring, rational expressions, graphing, systems of equations. Introduction to functions.

MATH 1001f,s. Technical Math. (3 cr; Stdnt Opt. Prereq–MATH 0981 or equiv; Will not satisfy math/sci distribution requirements for baccalaureate degrees; no credit granted if taken after 1031 or 1150) Signed numbers, calculator use, percentage problems, graphing, exponents, formulas, area/volume, solving linear equations, unit conversions, agriculture/business examples.
MATH 1011f.s. Mathematics for Elementary School Teachers (BSU). (3 cr; Stdnt Opt. Prereq–Education major or instructor consent)
Background for education majors before enrollment in Ed 3770. Emphasizes use of mathematics manipulatives for modeling basic operations. Set theory, numeration. Systems of whole numbers, integers, rational numbers, real numbers.

MATH 1031f.s. College Algebra. (3 cr; Stdnt Opt. Prereq–0991 or 0992)

MATH 1142f.s. Survey of Calculus. (3 cr; Stdnt Opt. Prereq–MATH 0991, 0992 or 2 yrs high school algebra)
Descriptive statistics, elementary probability, normal distribution, binomial distribution, confidence intervals, tests of hypotheses, correlation, regression, chi-square; ANOVA.

MATH 1250f,s,su. Precalculus. (4 cr; Stdnt Opt. Prereq–MATH 1031 or placement exam)
Review of algebra, functions, polynomial, rational, exponential, logarithmic, and trigonometric functions, trigonometric identities/equations, systems of equations, determinants/matrices, sequences/series, topics from analytic geometry.

MATH 1271f. Calculus I. (4 cr; Stdnt Opt. Prereq–MATH 1250 or placement exam)
Limits, differential calculus of functions of a single variable, applications. Introduction to integral calculus of a single variable.

MATH 1272s. Calculus II. (4 cr; Stdnt Opt. Prereq–MATH 1271)
Techniques of integration, calculus involving transcendental functions, polar coordinates, Taylor polynomials, vectors/carves in space, cylindrical/spherical coordinates.

Music (MUS)

MUS 1011f,s. University Singers. (1 cr [max 6 cr]; Stdnt Opt)
Providing group performance opportunities in many areas of choral music.

MUS 1021f. Introduction to Music. (3 cr; Stdnt Opt)
Music from Renaissance to present. Styles, forms, expressions. Some examples of music from various cultures compared with western art music.

MUS 1041f,s. Private Music Instruction. (1 cr [max 6 cr]; Stdnt Opt)
Individual music lessons in voice or instruments. One half-hour lesson per week.

MUS 1042s. Private Instruction: Class Piano. (1 cr [max 6 cr]; Stdnt Opt)
Study of piano technique/musicianship in classroom setting using multiple electronic keyboards. Musical concepts, including melody, harmony, rhythm, repertoire.

MUS 1051s. Band/Pep Band. (1 cr [max 6 cr]; Stdnt Opt)
Ensemble of musicians play brass, woodwind, percussion instruments at concerts on/off campus and at selected UMC athletic events.

MUS 1071s. Musical Theater. (1 cr [max 6 cr]; Stdnt Opt)
Involvement in a musical theatre presentation. May include musical accompaniment, acting, singing, technical support.

MUS 1111f. Music Theory I: Foundations of Tonal Music. (3 cr; Stdnt Opt)
Theory and notation, two-part counterpoint; consonance and dissonance; melodic contours; music fundamentals (key signatures, scales, rhythms, chordal construction). Writing and analyzing basic diatonic tonal structures.

MUS 1121s. Music Theory II: Diatonic Tonality, Harmony and Voice Leading. (3 cr; Stdnt Opt. Prereq–MUS 1111)
Basic harmonic and contrapuntal relationships. Sonata, rondo, variation, minuet, and other standard categories of tonal composition. Chromatic tonal practices; expanded chord vocabulary, voice leading analysis. Basic theories of 20th-century music.

NATR 3297f, s. Spec Topics in Water Resources. (1–3 cr. [max 6 cr.]; Stdt Op. Prereq–3203 or instructor consent) Offered on demand. Focused studies on water-related topics offered on demand. Seminars by students and guest speakers, field trips, global studies trips abroad.

NATR 3344s. Land Use Planning. (3 cr; Stdt Op. Prereq–3203 or instructor consent) Ecological, economic, and legal principles applied to land use planning in relation to agricultural, industrial, residential, wild land, forestry, recreational, and transportation needs. Legislative, agency, and citizen involvement in environmental law formulation and enforcement. Case studies.

NATR 3364s. Plant Taxonomy. (3 cr; A–F or Aud. Prereq–Biol 2022 or instructor consent) Principles of plant taxonomy with emphasis on higher vascular plants of the Upper Midwest: family characteristics, floral structure, ecology, evolutionary relationships, values to human life, and importance as wildlife food and cover. Methods of field study and collection.


NATR 3374f. Ecology. (4 cr; A–F or Aud. Prereq–BIOL 1009, SOIL 1293) Interactions among plants, animals, and the physical environment; structure and function of ecosystems; population dynamics, biotic communities; principles of biotic succession and ecosystem management.


NATR 3464f. Mammalogy. (3 cr; Stdt Op.) Classification, reproduction, physiology, behavior, ecological adaptations, zoogeography of mammals. Emphasizes techniques used in field/laboratory studies.

NATR 3466s. Ornithology. (3 cr; Stdt Op.) Classification, reproduction, physiology, behavior, ecological adaptations, zoogeography of birds. Emphasizes techniques used in field/laboratory studies.


NATR 3495s. Special Topics in Wilderness Management. (1–3 cr. [max 12 cr.] A–F or Aud. Prereq–NATR 3203) Directed study offered once a year, with the following topics covered on a rotating basis: wilderness philosophy and ethic development, management of the wilderness resource, management of recreation resources, and wilderness management planning. Involves significant use of new communications technologies.


NATR 3660s. Prairie Ecosystem Management. (2 cr; A–F or Aud. Prereq–NATR 3374) Description of prairie biome of North America, ecological relationships. Uses by native American, European peoples as setting for art/literature and as habitat for wildlife/livestock, management, restoration. Identification of prairie plants.

NATR 3699s. Integrated Resource Management. (3 cr; A–F or Aud. Prereq–3203 or instructor consent) Team study exploring synthesis of environmental, technical, economic, political, and administrative principles as applied to case studies and current management situations. Emphasis on decision-making process.


NATR 3899f. Pre-Internship Seminar. (5 cr; Stdt Op) Expectations/responsibilities of internship. Preparing for a job search. Presentations about internship experiences by those who have recently completed internship. Discussion between students, staff, and invited guests.


NATR 3901f. Post-Internship Seminar. (5 cr; Stdt Op. Prereq–3900) Students who have recently completed internships, prepare/deliver a PowerPoint presentation of experience/knowledge gained. Discussions between post/pre-internship students, staff, and invited guests.

NATR 4652f, s. Seminar. (1 cr; A–F only. Prereq–3203 or status) Survey of current literature in horticulture, aviation, golf and turf, and natural resources. Preparation/delivery of special topics. Preparation of abstracts. Evaluation of seminars. Use of library and other resources, including computer information searches.

Occupational Therapy (OT) OT 100f. Orientation to Occupational Therapy. (1 cr; S-N or Aud) Survey of profession. Films, demonstrations, tours.

Philosophy (PHIL) PHIL 1001f, s, su. Introduction to Philosophy. (3 cr; A–F or Aud) Critical introduction to three fundamental questions of philosophy: What can I know? What can I believe? What ought I to do? Emphasis on developing ability to think, speak, and write critically.

PHIL 3003f, s. Applied Ethics. (3 cr; A–F or Aud. Prereq–PHIL 1001) Interdisciplinary examination of four primary areas of contemporary ethical concern: research ethics, agricultural ethics, business ethics, and biomedical ethics.

Physical Education and Recreation (PER) PER 1151f. Golf. (1 cr; Stdt Op) Introduction to and practice of the fundamentals of golf.

PER 1201f. Dance (Folk, Social, Modern, Western). (1 cr; Stdt Op) An alternative for aerobic activity. Acquaints students with dance and dance variety. Recreational dance course.

PER 1321f. Net Activities (Volleyball, Earthball, Cageball, Walleyball). (1 cr; Stdt Op) Introduces the fundamental skills, rules, and strategies of volleyball, earthball, cageball, and walleyball through class participation. Offers on-line research into each of these activities.

PER 1331f, f. Racquet Activities (Tennis, Badminton, Racquetball, Pickleball). (1 cr; Stdt Op) Introduces tennis, pickleball, racquetball, and badminton. Rules, fundamentals, and skills, helps students progress toward their optimum abilities.

PER 1451f, s. Fitness for Better Health. (1 cr. [max 2 cr]; Stdt Op) Individualized approach to designing and following through with a personalized fitness program. Exercise programs and activities in the fitness area. A form of wellness program, with emphasis on fitness.

PER 1461f, s. Physical Training and Conditioning. (1 cr; Stdt Op) Promotion and development of lifetime fitness through weight training and conditioning.

Course Descriptions

**Course Numbers**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0xx</td>
<td>Courses that do not carry credit toward any University degree.</td>
</tr>
<tr>
<td>1xx</td>
<td>Courses primarily for undergraduate students in their first year of study.</td>
</tr>
<tr>
<td>2xx</td>
<td>Courses primarily for undergraduate students in their second year of study.</td>
</tr>
<tr>
<td>3xx</td>
<td>Courses primarily for undergraduate students in their third year of study.</td>
</tr>
<tr>
<td>4xx</td>
<td>Courses primarily for undergraduate students in their fourth year of study.</td>
</tr>
<tr>
<td>5xx</td>
<td>Courses primarily for graduate students; undergraduate students in their third or fourth year may enroll in such courses.</td>
</tr>
</tbody>
</table>

**Course Abbreviations**

Letters following course numbers indicate what term(s) the course is taught:

- f = Fall semester
- s = Spring semester
- m = May session
- su = Summer term

Abbreviations in parentheses following a course name indicate the university that offers the course:

- BSU = Bemidji State University
- NDSU = North Dakota State University
- UMTC = University of Minnesota, Twin Cities
- UND = University of North Dakota

**Other abbreviations**

Prereq = Prerequisite course

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>cr</td>
<td>Credit</td>
</tr>
<tr>
<td>equiv</td>
<td>Equivalent</td>
</tr>
<tr>
<td>fr, soph, jr, sr</td>
<td>Freshman, Sophomore, Junior, Senior</td>
</tr>
</tbody>
</table>

A prerequisite course listed by number only (e.g., prereq 3322) is in the same department as the course being described.

In prerequisite listings, comma means “and.”

Courses beginning with 09 cannot be used for credit toward graduation or transfer.

---

**Physics (PHYS)**

PHYS 1001f,s,su. Elementary Physics. (3 cr; A-F or Aud. Prereq–MATH 1031)

Fundamental laws of mechanics, fluids, temperature, gas laws, electricity, wave motion, origins of modern physics, radioactivity.

PHYS 1012f,s,su. Introductory Physics. (4 cr; Stdnt Opt. Prereq–MATH 1031)

Motion, forces, torque, energy, heat, sound, light, electricity, magnetism. Emphasizes applications.


First of two-semester sequence. Algebra-based introduction to physics and physics problem solving. Motion, forces, torque, momentum, energy, thermal energy/heat. Topics presented in applied context.

PHYS 1102s. Introductory College Physics II. (4 cr; Stdnt Opt. Prereq–MATH 1031, PHYS 1101)

Second of two-semester sequence. Algebra-based introduction to physics and physics problem solving. Vibrations, light, sound, electricity, magnetism. Selected modern physics topics (e.g., radiation). Topics presented in applied context.

---

**Plant Industries Management (PIM)**

PIM 1803f,s. Directed Studies. (1–3 cr [max 6 cr]; Stdnt Opt. Prereq–instructor consent)

Current topics not covered in regularly offered courses.

PIM 2573f. Entomology. (3 cr; A-F or Aud. Prereq–AGRO 1183 or HORT 1010)

Insect taxonomy, anatomy, and physiology. Emphasis on insects of economic importance, especially in the Upper Midwest. Control methods, including integrated pest management.

PIM 3023f. Plant Breeding and Genetics. (4 cr; A-F or Aud. Prereq–BIOL 1099)


PIM 3030s. Research Techniques. (3 cr; A-F or Aud. Prereq–Jr or sr)

Experimental design and methodology in plant science research. Basic philosophy, data interpretation and analysis, and application of research information to practical management situations.

PIM 3323f. Introduction to Plant Pathology. (3 cr; A-F or Aud. Prereq–AGRO 1183 or HORT 1010, BIOL 1099)

Nature, diagnosis, and management of plant diseases. Identification, control, and life cycles of representative diseases significant in the Upper Midwest that illustrate plant pathology principles.

PIM 3630s. Integrated Crop Management (Capstone). (3 cr; A-F or Aud. Prereq–PIM 1350, 1350, 2640, 2620, 3030, 3230, 508, SBL 3414)

Capstone course. Students investigate, research, and study problems of agronomic crops and make recommendations. Students individually and in teams solve problems using scientific methods.

PIM 3804f,s. Individual Studies. (1–3 cr [max 6 cr]; Stdnt Opt. Prereq–instructor consent)

Topic related to student’s major not covered in regularly offered courses.

---

**Political Science (POL)**

POL 1001f,s. American Government. (4 cr; Stdnt Opt)


POL 1054f,s. Comparative Government. (3 cr; Stdnt Opt)

Government systems of the United States, Soviet Union, Great Britain, Japan, and France. Third World and Middle Eastern countries’ political and social impacts studied through current events.

---

**Psychology (PSY)**

PSY 1001f,s,su. General Psychology. (3 cr; Stdnt Opt)

Overview of psychology as scientific study of human/animal behavior. Emphasizes goals of psychology: to describe, understand, predict, and control behavior. Biological, cognitive, affective, and social perspectives.

PSY 1093f,s,su. Lifespan Development. (3 cr; Stdnt Opt)

Human life span perspective. Integrates developmental principles through research of social issues. Theories of major developmental theorists, recent challenges from changes in society/family interrelationships. Total environmental issues. Progress in genetics/midwifery toward a better understanding of human development.

PSY 3604f. Abnormal Psychology. (3 cr; Stdnt Opt. Prereq–PSY 1001)

Comprehensive study of abnormal behavior. Focuses on causal factors, treatment, and outcome of maladaptive behavior. Systematic study of biological, behavioral, and psychosocial therapies as modes of treatment and prevention of disorders. Lectures, case studies, videos, group discussions, oral presentations, term paper.

---

**Public Health (PUBH)**

PUBH 3005 is required for the undergraduate early childhood education major and the agricultural education major. This major is a collaborative agreement with the University of Minnesota, Twin Cities, which offers this course via ITV.

PUBH 1003f,s. Alcohol and College Life (UMTC). (1 cr; Stdnt Opt. Prereq–Fr or soph or pseo)

Spanish (SPAN)

SPAN 1104f,s. Beginning Spanish I. (4 cr; Stdnt Opt)
Conversational Spanish centered on day-to-day experiences. Emphasis on verb conjugation, rules of grammar, and vocabulary. Cultural awareness and appreciation.

SPAN 1204f,s. Beginning Spanish II. (4 cr; Stdnt Opt. Prereq–SPAN 1104 or 2 years high school Spanish) Emphasis on verb conjugation with the addition of compound tenses, indicative and subjunctive moods. Vocabulary building; dialogue concerning sports, travel, service information. Cultural and political dimensions of Spanish-speaking countries.

Speech (SPCH)

SPCH 1101f,s. Public Speaking. (3 cr; A-F or Aud) Topic selection, research, organization, rehearsal, and extemporaneous delivery of informative and persuasive speeches.

Sport and Recreation Management (SRM)

SRM 1803f,s. Directed Studies. (1-3 cr; max 6 cr; Stdnt Opt. Prereq–Instructor consent) Current topics not covered in regularly offered courses.


SRM 3000s. Foundations of Sport and Recreation Management. (3 cr; Stdnt Opt) Scope of sport/recreation management. Accounting, career opportunities, composition, computer applications, facility/equipment management, fundraising, grant writing, health/wellness, human communication, law, multilevel scheduling, management principles, marketing, promotions.

SRM 3001s. Sports Nutrition. (3 cr; Stdnt Opt. Prereq–Biol 1009 or Chem 1001 or FSCN 1123) Nutrition principles applied to fitness and sport. The six nutrients, body composition, training and conditioning, weight maintenance, nutrition in competitive sports.

SRM 3002s. Sport and Recreation Law. (3 cr; Stdnt Opt. Prereq–GBUS 1307) Legal principles affecting managers, sponsors, and users of sport and recreation programs, including the vocabulary of contract negotiation and civil rights in planning, developing, maintaining, and managing sport and recreation organizations.


SRM 3006s. Sports Information and Newsletters. (3 cr; Stdnt Opt. Prereq–MKTG 3300) Media relations, public relations, data gathering/analysis, presenting information to public/media.

SRM 3007s. Facilities Management. (3 cr; Stdnt Opt. Prereq–MTK 3300) Applying theories/principles of marketing to sport industry. How marketing is used in various SRM settings, from local sporting and amateur events to professional leagues.

SRM 3010s. Topics in Coaching. (2 cr [max 6 cr; Stdnt Opt) Philosophies, theories, methods, and techniques of coaching different sports.

SRM 3020s, s,s. Coaching Practicum. (1 cr; Stdnt Opt. Prereq–3010) Students apply coaching technique in clinical setting.

SRM 3804s,s,su. Individual Studies. (1–3 cr [max 6 cr]; Stdnt Opt. Prereq–Jr, instructor consent) Topic related to student’s major not covered in regularly offered courses.


SRM 4099s. Seminar in Sport and Recreation Management. (1 cr; Stdnt Opt. Prereq–Sr, instructor consent) Capstone course emphasizing design, implementation, and evaluation of an entire sport or recreation program in terms of a virtual portfolio.

Theatre (TH)
TH 1121f,s. Theatre Production. (1 cr [max 6 cr]; Stdnt Opt) Involvement in one or more of the following: acting, directing, costuming, set construction, makeup, publicity, coaching, lighting, sound.

Turf (TURF)

TURF 1803f,s. Directed Studies. (1–3 cr [max 6 cr]; Stdnt Opt) Topics not offered in regularly scheduled courses.


TURF 3077s. Turf and Landscape Irrigation Design and Installation. (2 cr; A-F or Aud) Basic irrigation design, including pipe sizing/selection, pressure loss, sprinkler types/selection. Installation equipment, techniques. Lab.

TURF 3804f,s,su. Individual Studies. (1–3 cr [max 6 cr]; Stdnt Opt) Topics not included in regularly scheduled courses.

Work and Human Resource Education (WHRE)
The following courses are required for the undergraduate agricultural education major. This major is a collaborative agreement with the University of Minnesota, Twin Cities, which offers these courses via ITV.

WHRE 5697f. Teaching Internship: School and Classroom Settings (UMTC). (2 cr; Stdnt Opt) Part-time supervised teaching experience in a school. Seminars on managing students’ learning in work/community/family education programs in contemporary schools and on becoming a reflective educator.

WHRE 5698s. Teaching Internship (UMTC). (6 cr; Stdnt Opt) Teaching experience in school system that provides programs for grades 5-12.