

UNIVERSITY of
MINNESOTA
BULLETIN 1975
JUNE 13, 1975
1977

Technical College,
WASECA



Board of Regents

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“THIS PLACE IS FOR STUDENTS”



Technical College, Waseca

UNIVERSITY OF MINNESOTA

To Prospective Students . . .

The University of Minnesota Technical College, Waseca, has a single mission—that of preparing students for semiprofessional, midmanagement positions in the broad fields related to agriculture, as well as in services to rural homes and communities.

Based on student interest in the programs and industry acceptance of the graduates, the technical college concept of postsecondary education is meeting a real need in the agricultural industry.

Agriculture—with its input industries of feed, seed, fertilizer, machinery, and equipment; its output industries of processing, distributing, and marketing; and farming itself—is the most important industry in Minnesota. The needs of this industry for technically trained men and women are great and are expanding. The staff at UMW is committed to help meet this need.

The total instructional program, the facilities, and the staff of the college are directed toward agriculture. The course work includes approximately one-third related education, such as communications, social science, mathematics, and basic sciences, and two-thirds technical education. Examples used in the course work are taken from agriculture. Laboratory and practical experiences are emphasized by utilizing the facilities of the Southern Experiment Station and other agricultural facilities in the area. A 4-quarter, year-round educational system has been adopted in order to make use of outdoor agricultural laboratories during the summer months. The associate in applied science degree is granted upon satisfactory completion of the course of study.

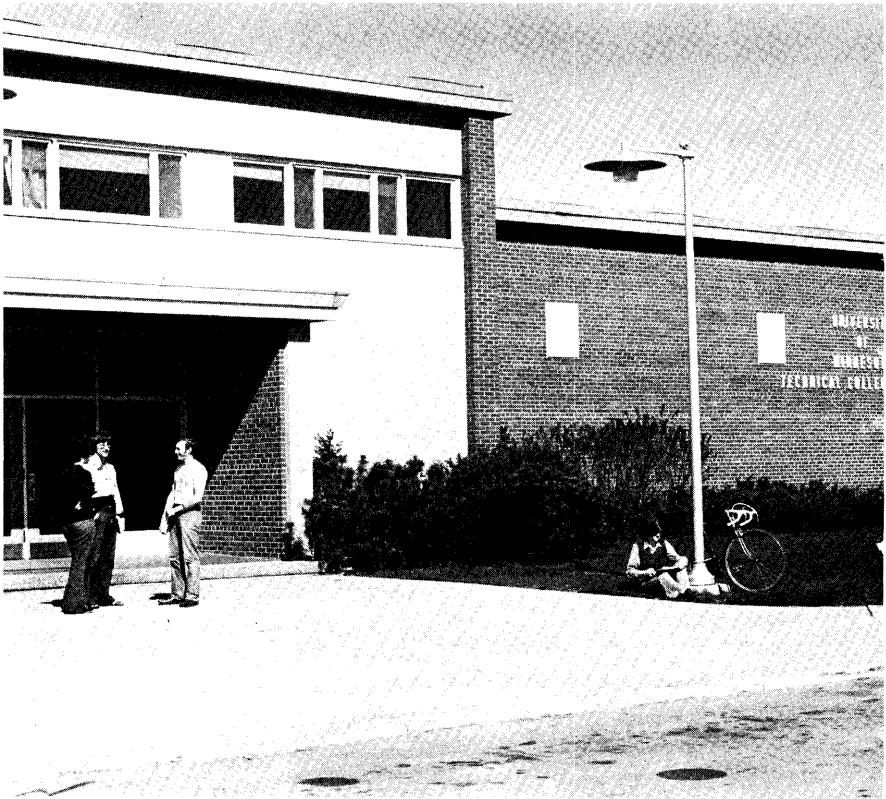
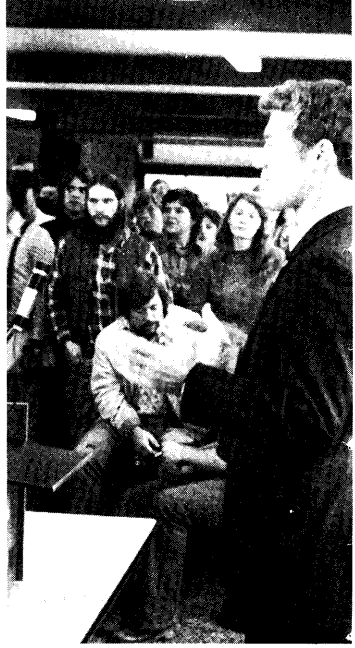
The college operates under the policy that "THIS PLACE IS FOR STUDENTS." The staff is dedicated to helping students achieve at the semiprofessional level.

You are invited to study the programs and become a part of the college if we can help you reach your objectives.

*Edward C. Frederick
Provost*

TABLE OF CONTENTS

	Page
General Information	5
Facilities for Instruction	6
Human Rights	6
Admission Information	6
Orientation	8
Registration	8
Expenses	8
Financial Aids	10
Student Services	10
Student Activities	12
Academic Information	15
Credit Information	15
Student Classification	16
Grading Information	16
Academic Progress	17
Graduation Information	18
Curricular Information	19
Programs of Study	19
Preoccupational Preparation Unit	20
Agricultural Business	21
Agricultural Industries and Services	25
Agricultural Production	33
Animal Health Technology	38
Food Industry and Technology	39
Home and Family Services	42
Horticultural Technology	46
Description of Courses	51
Faculty	69
Index	71



University of Minnesota Technical College, Waseca

I. GENERAL INFORMATION

The University of Minnesota Technical College, Waseca (UMW), represents an exciting approach to postsecondary education in Minnesota—the technical college approach. The college was authorized by the 1969 Minnesota State Legislature to offer coeducational collegiate preparation of 2 or more and less than 4 years' duration in the broad fields related to agriculture.

Technical education gives recognition to the fact that earning a living is a major motivating force in the lives of individuals. However, it is recognized that related education must supplement the technical education in order to broaden and deepen students' bases of understanding so they may live fully, deeply, and usefully. Technical agricultural education, therefore, combines related and technical education at a practical level.

The purpose of the University of Minnesota Technical College, Waseca, is to prepare students to earn a living as semiprofessional or midmanagement personnel in the broad fields related to agriculture. The programs offered at the college are designed to educate the individual, not only for immediate entrance-level positions, but also for the possibility of job changes which may be experienced during a working life. The curriculum includes opportunities for developing knowledge, skills, attitudes, and leadership abilities. It also offers a wide range of cocurricular activities which will contribute to the preparation of students for the roles they will undertake as responsible members of a democratic society.

Agriculture today is a dynamic field, abounding with fascinating new technologies. It offers to young men and women a wide scope of opportunities—from the private enterprise of farm ownership to the field of atomic science. Many people consider agriculture to be solely the enterprise of farming, but actually farming is only one of the many phases of the field. The business of agriculture in farm services and supplies, the science of agriculture in research extension and development, the area of food processing and distribution, the mechanization of agriculture as represented by many agricultural engineering services, the aesthetics of agriculture as represented in the horticultural fields, and home and family services have created the need for highly trained technical and scientific personnel.

The academic divisions of the University of Minnesota Technical College, Waseca, offer seven programs which can lead to an associate in applied science degree: Agricultural Business, Agricultural Industries and Services, Agricultural Production, Animal Health Technology, Food Industry and Technology, Home and Family Services, and Horticultural Technology. Each program requires a total of 108 credits.

The college operates on a 4-quarter, year-round educational system. The quarters are approximately 11 weeks in length. Students may start during any quarter and may attend continuously or intermittently. The associate in applied science degree is awarded to students completing the course requirements as outlined in this bulletin.

While the primary objective of the college is to prepare graduates for employment, it is inevitable that there will be some students who will change their

General Information

objectives and will wish to continue their education beyond the associate program. The college requires work of such quantity and quality that those who seek admission to other institutions of higher learning may reasonably expect to obtain credit for work completed at this college. It should be recognized that the institution to which the transfer is made determines the amount of credits accepted.

Facilities for Instruction

The college is ideally located and equipped to offer excellent programs in agriculture. The main core of college facilities, with its special purpose laboratories, is all located under one roof. In addition, instructional facilities for light horse management, horticulture, and physical education are located in close proximity to this main core of the campus.

The University of Minnesota has 840 acres of land at Waseca. The Southern Experiment Station has over 1,200 head of livestock and 35,000 individual experimental and demonstration plots. The livestock includes dairy and beef cattle, swine, and horses. The crops grown include corn, soybeans, oats, legumes, and specialty crops. Demonstration and research gardens, orchards, turf plots, and the Hodgson Memorial Arboretum are located in the horticultural area. Students have the opportunity to learn from the experimental and demonstration plots and have the opportunity to use the equipment, land, and livestock for study.

The location of the college, in the heart of Minnesota's most productive agricultural area, provides additional opportunities to utilize farms and agribusinesses in the area for instructional purposes.

Human Rights

The Board of Regents has committed itself and the University of Minnesota to the policy that there shall be no discrimination in the treatment of persons because of race, creed, color, sex, or national origin. This is a guiding policy in the admission of students in all colleges and in their academic pursuits. It is also to be a governing principle in University-owned and University-approved housing, in food services, student unions, extracurricular activities, and all other student and staff services. This policy must also be adhered to in the employment of students either by the University or by outsiders through the University and in the employment of faculty and civil service staff.

Admission Information

REQUIREMENTS

Admission to the University of Minnesota Technical College, Waseca, is granted on the basis of high school graduation or equivalent. Each applicant is considered on an individual basis using such criteria as aptitude, interest, and ability of the student to profit from the programs being offered.

Application to the college may be made by obtaining a copy of the Minnesota College Admissions Form from either a high school principal or counselor or from the Office of Admissions and Records, University of Minnesota Technical College, Waseca, Waseca, Minnesota 56093. The completed form should be sent

to the Office of Admissions and Records. Each application submitted must be accompanied by a nonrefundable application fee of \$10, payable by check or money order to the University of Minnesota Technical College, Waseca.

All students are requested to take the American College Test (ACT), the Preliminary Scholastic Aptitude Test (PSAT), or the School and College Ability Test (SCAT). The test scores are used as an aid in program planning and not for setting admission requirements.

Questions concerning admission with advanced standing should be directed to the Office of Admissions and Records.

ADMISSION OF NONRESIDENTS OF THE STATE OF MINNESOTA

Students from outside the state of Minnesota will be considered for admission. Regular application procedures should be followed, including the completion of the American College Test (ACT), the Preliminary Scholastic Aptitude Test (PSAT), or the School and College Ability Test (SCAT).

Nonresident tuition fees will be charged to all students whose permanent homes are outside the state of Minnesota, or who have not established residency in Minnesota for at least a calendar year prior to their first registration at UMW. Residency refers to the establishment of a "permanent" family home in Minnesota for purposes other than attending college. Classification of a nonresident may be changed at any time the student meets Minnesota residency requirements.

ADULT SPECIAL STUDENT

An individual who wishes to enroll for individual courses or groups of courses to meet special needs may be considered for admission as an adult special student. This procedure is followed by those not seeking a degree from the University of Minnesota Technical College, Waseca. Usually these students are 24 years of age or older, are of mature experience, or have a Bachelor's degree.

In the event an adult special student wishes to apply for a degree, information concerning change of status from an adult special to a degree candidate may be obtained from the Office of Admissions and Records.

VETERANS

The courses and programs offered by UMW meet the requirements for veterans eligible for educational benefits under Chapter 34 of the GI Bill. Veterans should contact the Veterans Administration where they may obtain applications, determine eligibility and entitlement, and obtain counseling as necessary.

The VA-sponsored Farm Coop Program is available to veterans at the Technical College, Waseca. Veterans may choose to receive credit for the course work taken in this program, and these credits may be applied toward an associate in applied science degree.

PREADMISSION COUNSELING

A representative from the staff of UMW will establish personal contact with each applicant. An attempt will be made to visit the applicant's home. If this is not possible, the applicant will be asked to visit by phone or on-campus at a pre-arranged time.

General Information

The purpose of this contact will be to discuss the educational objectives of the applicant and how they can be met by the program offerings of the Technical College, Waseca.

Orientation

Orientation days will provide new students with an opportunity to become acquainted with campus activities and with the staff of the college. Meetings and discussion sessions will be conducted in an effort to familiarize the students and their parents with the procedures and operational principles of the Technical College, Waseca. The dates and times for all new students to appear on campus will be established for each quarter. All new students will receive invitations for orientation days.

Registration

Registration will be completed during the orientation days for new students. All new applicants will be advised of the dates and times to appear on campus in order to complete registration.

Preregistration and course selection may be discussed during the preadmission counseling session, but official registration will be at the time the student arrives on campus for such purposes.

Students who are admitted to enroll after the official registration day designated for each quarter, listed in the calendar section of the *General Information Bulletin*, must pay a late registration fee as follows:

Through the first week of classes	\$ 6
Through the second week of classes	10

Expenses

FEES

(All University fees are subject to change by the Board of Regents)

Tuition —Full-time student: 12 credits or more per quarter	
Resident	\$165
Nonresident	447
Credit Hour Fee —Less than 12 credits per quarter	
Resident	13.75
Nonresident	37.25
Student Services Fee —Per quarter	
Resident	30
Nonresident	30

SPECIAL FEES

Lab fees are charged for certain classes:

Clinical Anatomy and Physiology (AnHe 1395) . . .	\$4
Advanced Clinical Laboratory Methods (AnHe 1554) . . .	4
Radiologic Techniques (AnHe 1623)	4

BOARD AND ROOM—Per Quarter

7-day contract, 21 meals	
double room	\$375
single room	395
5-day contract, 15 meals	
double room	355
single room	375
5-day contract, 10 meals	
double room	310
single room	330

Single rooms are available only if space allows.

ESTIMATED EXPENDITURES

The costs for a student living on campus include tuition, board, room, fees, books, and supplies. Other costs would include personal expenses such as clothing, entertainment, and travel.

The estimated quarterly expenses for the average student are illustrated in the following table:

	<i>Resident</i>	<i>Nonresident</i>
Tuition	\$165	\$447
Student Services Fee	30	30
Board and Room	375	375
Books and Supplies	60	60

REFUNDS

If a student cancels registration before 6 weeks of any quarter have passed, the student is entitled to a refund of tuition and incidental and course fees according to the following basis: Students who do not attend classes at all will receive a full refund provided they apply before the end of the first week. Students who have attended classes are granted refunds as follows:

First week	90%
Second week	80%
Third week	70%
Fourth week	60%
Fifth week	50%
Sixth week	40%

After the sixth week, no refund will be granted.

Financial Aids

APPLICATION PROCEDURE

Students who demonstrate a need may apply for financial assistance. Those wishing to apply for aid are asked to complete the Family Financial Statement (FFS) form of the American College Testing Service. The University of Minnesota Financial Aid Application form should be filled out and returned to the Office of Financial Aids, University of Minnesota Technical College, Waseca, Waseca, Minnesota 56093.

School counselors or principals will have copies of both the University of Minnesota Financial Aid Application form and the Family Financial Statement form. The University of Minnesota Technical College, Waseca, should be listed as an agency on the FFS form.

The financial awards made to students will be determined by the Office of Financial Aids, University of Minnesota Technical College, Waseca. Any questions regarding the awards should be directed to this office.

UNIVERSITY AID

Financial aid sources that are available include:

1. All-University Scholarships
2. Educational Opportunity Grants
3. Beginning Educational Opportunity Grants
4. College Work-Study Program
5. Bob Hodgson Student Loan Fund, Inc., of Waseca
6. National Direct Student Loans
7. Student employment on campus or in the Waseca community

OTHER SOURCES

Students are also encouraged to seek financial aid on their own through such sources as local lending agencies through the federal guaranteed loan program; family loans through the Production Credit Association, and similar lending agencies; scholarships through the statewide Minnesota Scholarship Program; veterans' benefits through the GI Bill; and aid through the Social Security plan, if eligible.

Student Services

The Office of Student Affairs exists for the benefit of students. Various services are available to help students achieve a meaningful experience during their attendance at UMW. Several offices are staffed to help meet the individual needs of students. It is recognized that cocurricular experiences are as important as time spent in class. The total education of a student involves both in-class and out-of-class activities. For this reason, the services of the Office of Student Affairs are considered a part of the total educational environment of the college.

HOUSING

Students who desire housing should contact the Office of Student Affairs for assistance. Students wishing to reside on campus should ask for a room reservation form. If off-campus housing is desired, the Office of Student Affairs will assist in locating appropriate housing in the Waseca area.

The residence halls on campus are developed into "Living-Learning Centers." They are a viable part of the total college environment and provide many advantages. Certain academic programs, discussion sessions, and seminars as well as specialized libraries are included in the "Living-Learning Centers." Students are encouraged to consider on-campus housing in order to take advantage of all the activities and organizations available.

Out-of-class activities can be a very important part of a student's collegiate life. Development in leadership and self-confidence can be gained through participation in these activities.

FOOD SERVICE

A room and board package is available for either a 5-day week or a 7-day week contract, with prices averaging about \$365 per quarter, for those students who live in the college residence halls. In addition, a short-order food service is available in the Ram Shack, the student union at the college.

HEALTH SERVICES

College health services and facilities are available to students. A nurse is available to aid students needing medical assistance. The nurse is on call for after-hours emergencies.

The Health Service is equipped with a consultation room, a medical examination room, and an infirmary. Emergencies and illnesses requiring a doctor are coordinated through the health services of the Technical College, Waseca. Extended health care is available through the Waseca Medical Clinic and the Waseca Memorial Hospital.

Students are encouraged to provide adequate hospital insurance. A low-cost group hospitalization plan offered through Blue Cross is available to University students.

All students accepted for enrollment at UMW are required to submit a completed health history form before registration is completed.

LEARNING RESOURCES CENTER

A new Learning Resources Center was dedicated during the fall of 1974. This facility includes the library and audiovisual departments. Books, periodicals, microfilm, pamphlets, filmstrips, audio and video tapes, transparencies, and other materials of a specialized nature relating to the agricultural mission of the college are available for student use. The facility also houses graphic production facilities, a color television production studio, and the study skills-compensatory laboratory.

COLLEGE BOOKSTORE

A college bookstore handles all textbooks, school supplies, and miscellaneous items of concern to students.

General Information

INSTRUCTOR-COUNSELORS

Operating on the principle that “*This Place Is for Students*,” the entire staff of the college is dedicated to be of assistance when needed. To assure a positive contact between faculty and students, an instructor-counselor advising program has been established. Each student is assigned to a faculty member who provides guidance in program planning and course selection and who is concerned with the total progress of the individual student. Students are encouraged to establish a close working relationship with their instructor-counselor shortly after they arrive on campus.

COUNSELING SERVICES

The college recognizes that in the growth and development of its students certain problems arise which are of a very personal and important nature. The Counseling Office is available to assist students when these concerns arise. Individual consultation and evaluation is available to help with social, emotional, educational, and occupational decisions or problems. Group counseling experiences are available when needed. A variety of counseling tests is available to assess learning potential, emotional and social difficulties, and occupational preferences. Students are encouraged to avail themselves of the counseling services whenever a need arises.

PLACEMENT CENTER

Placement services are available to all graduating students and alumni of UMW. The objective of the Placement Center is to assist students in developing career goals and in finding employment situations best suited to the student's interests and abilities. This is accomplished by means of training seminars, occupational counseling, preparing credentials of graduates, and coordinating contacts between students and prospective employers.

Students are encouraged to register with the Placement Office early in their college experience. Materials are available in the Placement Office to provide occupational information for career planning and decisions. Job openings, job information, and appointments for interviews with representatives of private, industrial, and governmental employers are provided to students registered with this office. Additional information may be obtained from the Placement Office, University of Minnesota Technical College, Waseca, Waseca, Minnesota, 56093.

Student Activities

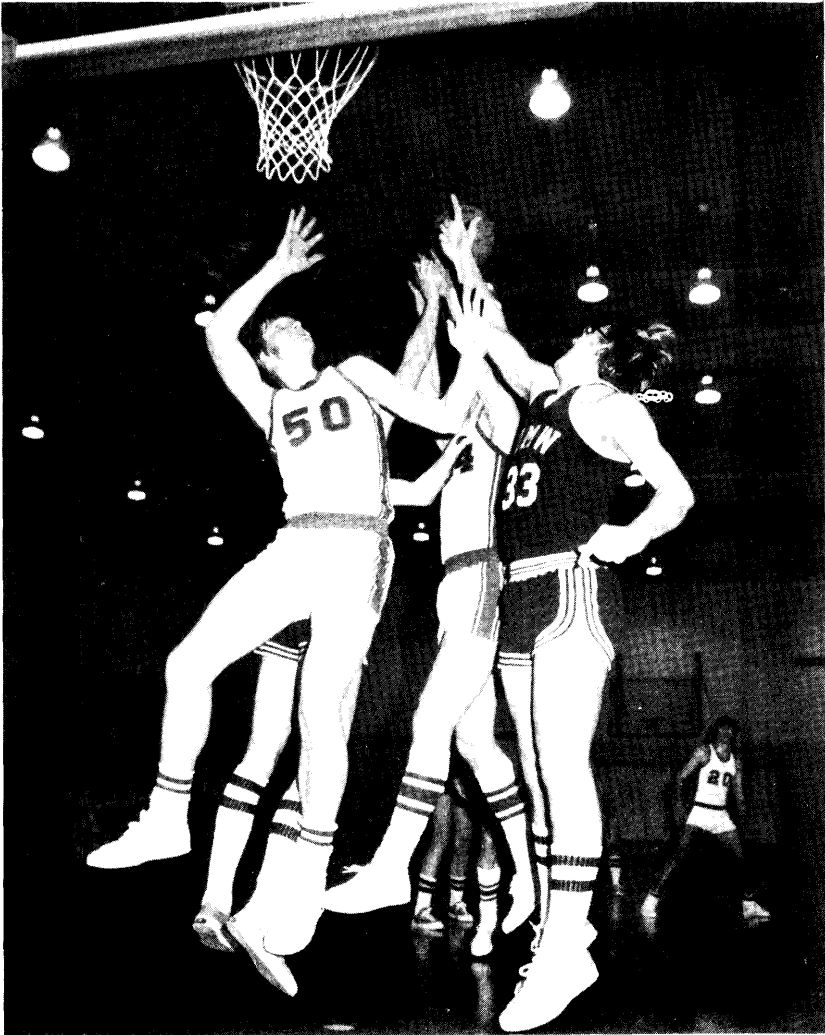
COCURRICULAR ACTIVITIES

Student-conducted cocurricular activities and organizations are available at the Technical College, Waseca. Opportunities exist for participation in student government, religious activities, honor society, clubs, intramurals, music, and various other events. A committee of students and staff plans concerts, lectures, programs, and other special events of interest.

INTERCOLLEGIATE ATHLETICS

The University of Minnesota Technical College, Waseca, is represented in intercollegiate athletic competition in football, basketball, wrestling, cross-country, and track.

The college is a member of the Minnesota Community College Athletic Association and of the National Junior College Athletic Association and participates in Region 13 athletic activities. Region 13 includes 2-year colleges in upper Michigan, Wisconsin, Minnesota, and North Dakota.





II. ACADEMIC INFORMATION

Credit Information

CREDIT PLAN

The unit of measure at UMW is the quarter credit hour, representing 1 credit hour per quarter. It is the equivalent of two-thirds of a semester hour. A unit of credit is characteristically awarded for each class hour per week for a quarter; laboratory work requires 2 or more hours of time for each credit.

CREDIT LOAD

The normal load of work for each quarter of registration is 16 credit hours. A credit hour requires an average of 3 hours per week in lecture, laboratory, recitation, and/or preparation. Students who wish to carry more than 19 credit hours per quarter must have their registration forms signed by their instructor-counselor and by the division chairperson before the registration will be recorded. Any appeal from this decision will be heard by the scholastic committee.

COURSE CREDIT THROUGH PROFICIENCY EXAMINATION

When a student wishes to secure full credit for a course for which he/she has adequate training and preparation, regardless of where the background was obtained, the student may apply for permission to take a proficiency examination. Applications for these examinations may be obtained from the Office of Admissions and Records and should be submitted to the appropriate divisional office by the last day of the first week of a new quarter. A fee of \$10 is required for each test attempted.

A student may not attempt a proficiency examination in a particular course until 1 quarter has elapsed after the time the course has first been offered at the college.

Courses for which a proficiency examination grade of C or better is earned are recorded with full credit and with a grade of S (satisfactory) on the student's college record.

Not all courses may be recovered through the proficiency test process. Those that may will be determined by the division chairperson and by the instructor of the course in question.

TRANSFER CREDITS

Students who are admitted with "advanced standing" will have transfer credits evaluated by a committee composed of an admissions officer, the academic program head, and the division chairperson. Credits which substitute for courses in a required program or for prerequisite courses for this college must have received a grade of C or higher to be accepted. Credits which are used for elective purposes may be accepted with an assigned grade of D or higher when approved by the admissions committee.

Student Classification

1. **Full-Time Student**—is a student enrolled for at least three-fourths of a normal load or 12 quarter credit hours.

2. **Part-Time Student**—is a student enrolled for less than three-fourths of a normal load.

3. **Freshman**—is a student who has completed less than 45 quarter credit hours of college credit at the time of registration.

4. **Senior**—is a student who has completed more than 45 quarter credit hours of college credit at the time of registration.

5. **Unclassified**—is a student who is not registered in a program but has fulfilled the requirements for matriculation or is enrolled in college-level courses for audit.

Grading Information

GRADES

Final grades for each course taken are reported to the Office of Admissions and Records at the end of each quarter. The academic achievement of students is recorded by the following system of evaluation:

1. **A**—Excellent achievement
B—Above-average achievement
C—Minimum achievement for occupational competency
S—Satisfactory achievement without grade point
N—No credit granted if performance is below a grade of C

The student will be required to earn 108 credits to qualify for graduation. N grades do not count toward graduation. Students will be allowed to take a course as often as they wish in order to obtain credit for the course. Each time a student takes a course it will be recorded on the official record as an N, A, B, C, S, or W, whichever has been earned. The student will be required to take the courses listed within the area of competency to qualify for graduation.

2. The symbol **X** may be reported in continuation courses for which a grade cannot be determined until the sequence is completed. Upon completion of the sequence the **X** is replaced by a permanent grade.
3. The registration symbol **V** (visitor) indicates registration as an auditor or visitor. A student may not receive University credit for courses taken on audit.
4. The symbol **T** (transferred) indicates credit transferred from another institution or from one college to another within the University. The symbol will be found immediately preceding the transferred grade in a course evaluation.
5. A registration symbol **W** (withdrawal) indicates that the student has been permitted to officially withdraw without a grade. It is assigned when cancellation occurs during the first 6 weeks of the quarter. After 6 weeks, an **N** grade shall be assigned.

GRADE POINTS

Quality of work is indicated by grade points. Grade points are assigned to the permanent course grades. Grades carry the following grade points:

<i>Grade</i>	<i>Grade Points Earned</i>
A	4 times the hours of credit
B	3 times the hours of credit
C	2 times the hours of credit
S	None
N	None

The grades S and N and symbols X, W, and V do not carry grade point value.

GRADE POINT AVERAGE

To obtain a numerical measure of the quality of a student's work, grade points are assigned to the various passing marks as indicated above. A grade point average (GPA) is then computed by dividing the number of grade points earned by the total number of credit hours for which the grades of A, B, or C have been recorded. For example, if a student earned 100 grade points and has completed 40 quarter hours of work for which grades of A, B, or C have been recorded, the grade point average is 100 divided by 40, or 2.50.

Academic Progress

An attempt is made to help each student at UMW make satisfactory progress in the curriculum selected. Since students who seek the associate degree are required to achieve a 2.00 grade point average or above (see graduation requirements), every effort is made to assist those who might experience academic difficulty in reaching this personal goal.

Deficiency reports are mailed to all students whose academic progress is not considered satisfactory at midquarter. Students receiving a "midquarter alert" slip are required to discuss their course difficulties with their instructor-counselor and with the instructor issuing the alert. The instructor-counselor and instructor will sign the slip when they complete their conferences with the student. The signed slip is returned to the chairperson's office of the academic division.

Students are notified of "unsatisfactory progress" at the end of every quarter in which N grades are issued for more than one-fourth of the total credits for which they are registered. Upon receiving this notification, the student must clear the next quarter's registration status before being admitted to class.

Permission to register is issued by the student's instructor-counselor after consultation with the chairperson of the academic division and with a member of the Counseling Center. Action taken may include one of the following:

1. **Registration Unchanged**—The student's registration status will remain unchanged, but only after careful counseling on the negative results of continued academic deficiency.
2. **Registration Altered**—The student may be requested to decrease the number of credit hours taken or to register for more appropriate courses for that quarter.
3. **Registration After Referral to Scholastic Committee**—If unsatisfactory progress continues for more than 2 quarters, the student may be referred to the scholastic committee who will review the student's academic progress and make appropriate recommendations regarding the student's status.

Graduation Information

GRADUATION REQUIREMENTS

To qualify for the associate in applied science degree, a student must complete a minimum of 108 credits in an approved sequence of courses or in a specific curriculum with a minimum grade point average of 2.00 (C average). Of the total credit hours required for graduation, 96 credits must be earned in academic course work and 12 in the Preoccupational Preparation Unit. A minimum of one-half of the credits required for graduation must be earned while registered at the University of Minnesota Technical College, Waseca. A student must be registered at UMW during the quarter in which he/she graduates.

Major field, related education, and elective requirements for graduation are outlined for majors under the programs of study. Please refer to the listings of the suggested major fields of study in the Curricular Information section of this bulletin.

The college reserves the right to change requirements in the various majors. However, the credit hours required for the degree will not exceed the total specified at the time the student first enrolls.

GRADUATION PROCEDURES FOR DEGREE CANDIDATES

1. Application for the associate in applied science degree must be completed and filed with the Office of Admissions and Records by the Friday of the second week of the quarter in which the student expects to receive a degree.

2. The graduation fee is payable no later than 6 weeks prior to the commencement at which the student expects to receive the associate in applied science degree.

GRADUATION WITH HONORS

A student who completes a degree course with a minimum grade point average of not less than 3.25 graduates "with distinction." Each student with a minimum grade point average of not less than 3.75 graduates "with high distinction."

III. CURRICULAR INFORMATION

The purpose of the programs offered at the college is to prepare students for semiprofessional positions in the largest and most important segment of the American economy—agriculture. The curricular programs that are presented below are designed to provide routes toward a wide variety of personal and professional goals in this broad field. Each program has identifying characteristics; yet each has much in common with the others. Students may continue to explore their interests within the broad fields of agriculture and may move from one program to another with little loss of time.

Programs of Study

Seven program areas with 25 majors are offered. They are designed to equip students for immediate employment in selected technical fields. A student pursuing one of these majors will earn the associate in applied science degree by meeting the graduation requirements. The majors are shown below for each program area. Students may pursue an area of emphasis within certain majors. These areas of emphasis are comprised of recommended courses to be chosen as electives in those majors.

Agricultural Business

- Agricultural Business Management
- Management of Cooperatives
- Agricultural Office Management
- Agricultural Sales and Marketing
- Fuels and Lubricants

Agricultural Industries and Services

- Agricultural Communications
- Agricultural Mechanization Technology—Power Machinery
- Agricultural Mechanization Technology—Structures and Equipment
- Agricultural Research Technology—Animal
- Agricultural Research Technology—Crop
- Animal Industry-Related Technology
- Crop Industry-Related Technology
- Soils and Chemicals Technology

Agricultural Production

- Crop Production
- Diversified Agricultural Production
 - Apiary Management
 - Farm Management
- Light Horse Management
- Livestock Production
 - Beef
 - Dairy
 - Poultry
 - Sheep
 - Swine

Curricular Information

Animal Health Technology

- Animal Health
 - Laboratory Animal
 - Large Animal
 - Small Animal
 - Zoo Animal

Food Industry and Technology

- Food Marketing and Distribution
- Food Products and Inspection

Home and Family Services

- Child Care Services
- Family Merchandising
 - Clothing and Textiles
 - Furnishings and Equipment
- Rural Home Services
- Rural Youth and Recreation

Horticultural Technology

- Floriculture and Greenhouse Management
- Landscape Development
- Nursery and Garden Center Management

Students will find a common core of requirements in each of the seven program areas. A second group of competency requirements has been established for each major. In those majors which offer areas of emphasis, the instructor-counselor will work with the student to identify which courses should be taken as electives in order to develop the area of emphasis.

A total of 108 credit hours is required in each of the program areas. Of this total, 96 credits must be earned in academic course work and 12 credits in the Preoccupational Preparation Unit.

Preoccupational Preparation Unit

The Preoccupational Preparation Unit is a program which enables students to obtain additional training as a means of preparing them to become more acceptable to industry within the chosen major. This preparation may be experienced in the classroom, in the college laboratory, or as an on-the-job internship in industry. These units will be designed to fit the individual needs of the student as follows:

1. A faculty committee in each of the major areas, after consultation with the student, will make the final determination of where and how the Preoccupational Preparation Unit may be completed.
2. No students will be enrolled in the Preoccupational Preparation Unit until they have been enrolled for 2 quarters and have satisfactorily completed 30 credits of work in their chosen major.
3. In many cases, students will probably fulfill their on-the-job internship program during the summer quarter between the first and second years of enrollment, but they may complete this requirement during any quarter. Students assigned an internship as a means of completing the Preoccupational Preparation Unit will be under the supervision of the instructional staff in cooperation with the employer. Every effort will be made to find

suitable positions for all who are qualified. At least 12 weeks of employment will be required for satisfactory evaluation of the student's progress. Grades for the Preoccupational Preparation Unit will be determined by:

- a. Visits made by the supervisor to the student work station.
 - b. Reports submitted by the employer.
 - c. Other reports required by the supervising staff member or committee.
4. Students who fail to meet the Preoccupational Preparation Unit requirement may continue their enrollment but will not be granted the associate in applied science degree.

PROGRAMS

AGRICULTURAL BUSINESS

Agricultural business commands a vital role in the technological advancement of agriculture. For each person employed in the production of agricultural commodities, three persons are required to provide the supplies and services that the farmer needs.

The program in Agricultural Business is designed for students who wish to enter one of the business professions related to agriculture. Students may pursue majors in Agricultural Business Management, Agricultural Sales and Marketing, or Agricultural Office Management.

The future for agriculture-related business careers holds high promise for employment. Minnesota's agricultural input industries—those that provide supplies and services to farms—employ more than 56,000 persons. Minnesota's agricultural output industries—those assembling, processing, storing, and distributing farm commodities—provide employment for more than 217,000 persons.

The agricultural businesses allied to production farming need creative thinking and a steady flow of new ideas from innovative young men and women with a background in agriculture.

In addition to the three majors, two areas of emphasis are offered within the curriculum. Those who wish to design a program in one of these areas of emphasis may arrange with their instructor-counselor to do so.

Typical employment opportunities in the Agricultural Business Management, Agricultural Office Management, and the Agricultural Sales and Marketing majors are:

Agricultural Business Proprietor
Agricultural Cooperative Manager
Agricultural Retail Store Manager
Agricultural Sales Manager
Agricultural Credit Manager
Agricultural Bank Representative
Agricultural Personnel Manager
Agricultural Physical Distribution Technician
Agricultural Commodity Storage Manager
Farm Management Consultant
Crop and Livestock Market Reporting Technician
Agricultural Industry Executive Secretary
Agricultural Industry Clerk-Typist
Agricultural Industry Bookkeeper
Agricultural Retail Business Secretary
Agricultural Cooperative Secretary
Livestock Marketing Company Secretary
Feed and Grain Company Secretary
Fertilizer and Farm Chemical Business Secretary
Implement Business Secretary

Curricular Information

Agricultural Communications Secretary
 Agricultural Credit Association Secretary
 Extension Service Secretary
 Agricultural Manufacturer's Representative
 Agricultural Products Representative
 Agricultural Purchasing Agent
 Agricultural Consumer Service Representative
 Agricultural Broker
 Farm Supply Salesman
 Land and Real Estate Salesman
 Livestock Commission Company Representative
 Livestock Marketing Service Representative
 USDA Marketing Consultant
 Feed Company Sales Representative
 Grain Company Sales Representative

GENERAL PROGRAM REQUIREMENTS

To earn the associate in applied science degree in agricultural business, students must satisfactorily complete 108 credit hours. That minimum amount includes a common required core of 55 credit hours in agriculture and related education courses. The remaining credit hours are supplied by major competency courses and electives appropriate for each major.

PROGRAM REQUIREMENTS	Credits
AgAc 1014 Principles of Agricultural Accounting—I	4
AgBM 1363 Agricultural Business Law	3
AgSc 1011 Agricultural Orientation	1
AgSc 1709 Preoccupational Preparation Unit	12
Agro 1153 Principles of Crop Production	3
AnSc 1053 Introduction to Animal Science	3
BiSc 1104 General Biology	4
Chem 1104 Technical Chemistry	4
Comm 1103 Introduction to Communications	3
Comm 1203 Introduction to Technical Reporting	3
Comm 1303 Agribusiness Communications	3
Econ 1013 National Economic Issues	3
Math 1083 Business Mathematics	3
PhEd 1100 Physical Education I	1
PhEd 1200 Physical Education II	1
Soil 1054 Soil Science	4
	<u>55</u>

Agricultural Business Management

MAJOR COMPETENCY REQUIREMENTS	Credits
AgAc 1214 Principles of Agricultural Accounting—II	4
AgBM 1213 Principles of Agricultural Business Management	3
AgBM 1473 Small Business Management	3
AgBM 1513 Agricultural Sales Management	3
AgBM 1553 Office and Personnel Management	3
AgBM 1623 Agricultural Distribution Systems	3
AgBM 1652 Seminar: Agricultural Business	2
AgMk 1053 Principles of Agricultural Marketing	3
AgMk 1333 Advertising and Displaying Merchandise	3
AgMk 1373 Principles of Merchandising	3
Econ 1023 Economic Issues—Firm and Household	3
Psyc 1114 General Psychology	4
	<u>37</u>

Electives—16 credits

SUGGESTED PROGRAM

First Quarter

AgAc 1014 Prin of Ag Acct—I	4
AgSc 1011 Ag Orientation	1
Comm 1103 Intro to Comm	3
Econ 1013 Nat Econ Issues	3
Math 1083 Bus Math	3
PhEd 1100 Phy Ed I	1
	15

Second Quarter

AgAc 1214 Prin Ag Acct—II	4
AgBM 1213 Prin Ag Bus Mgmt	3
AgMk 1053 Prin Ag Mkt	3
Comm 1203 Intro to Tech Rep	3
Econ 1023 Econ Issues—F & H	3
	16

Third Quarter

AgBM 1363 Ag Bus Law	3
AgMk 1333 Adv & Disp Merch	3
AgMk 1373 Prin of Merch	3
Comm 1303 Agribus Comm	3
Psyc 1114 General Psychology	4
	16

Fourth Quarter

AgSc 1709 Proccc Prep Unit	12
	12

Fifth Quarter

AgBM 1473 Small Bus Mgmt	3
AnSc 1053 Intro to An Sci	3
BiSc 1104 General Biology	4
Chem 1104 Tech Chemistry	4
Electives	3
	17

Sixth Quarter

AgBM 1513 Ag Sales Mgmt	3
AgBM 1553 Office & Pers Mgmt	3
Agro 1153 Prin of Crop Prod	3
PhEd 1200 Phy Ed II	1
Electives	6
	16

Seventh Quarter

AgBM 1623 Ag Dist Systems	3
AgBM 1652 Seminar: Ag Bus	2
Soil 1054 Soil Science	4
Electives	7
	16

Agricultural Office Management

MAJOR COMPETENCY REQUIREMENTS

	Credits
AgAc 1052 Office Machine Calculation	2
AgBM 1553 Office and Personnel Management	3
AgOM 1113 Beginning Typewriting	3
AgOM 1172 Machine Duplication	2
AgOM 1213 Intermediate Typewriting	3
AgOM 1252 Records Management	2
AgOM 1273 Beginning Shorthand	3
AgOM 1333 Advanced Typewriting	3
AgOM 1354 Intermediate Shorthand	4
AgOM 1382 Office Machine Transcription	2
AgOM 1454 Advanced Shorthand and Transcription	4
AgOM 1513 Agricultural Technical Typewriting	3
AgOM 1564 Agricultural Terminology in Transcription	4
AgOM 1684 Secretarial Procedures	4
	42

Electives—11 credits

SUGGESTED PROGRAM

First Quarter

AgAc 1014 Prin Ag Acct—I	4
AgAc 1052 Off Mach Cal	2
AgOM 1113 Beg Typewriting	3
AgSc 1011 Ag Orientation	1
Comm 1103 Intro to Comm	3
Econ 1013 Nat Econ Issues	3
	16

Second Quarter

AgOM 1213 Inter Typewriting	3
AgOM 1252 Records Mgmt	2
AgOM 1273 Beg Shorthand	3
Chem 1104 Tech Chemistry	4
Comm 1203 Intro Tech Rep	3
PhEd 1100 Phy Ed I	1
	16

Curricular Information

Third Quarter

AgBM 1363 Ag Bus Law	3
AgOM 1333 Adv Typewriting	3
AgOM 1354 Inter Shorthand	4
AgOM 1382 Off Mach Trans	2
Comm 1303 Agribus Comm	3
PhEd 1200 Phy Ed II	1
	<u>16</u>

Fourth Quarter

AgSc 1709 Preocc Prep Unit	12
	<u>12</u>

Fifth Quarter

AgOM 1172 Mach Duplication	2
AgOM 1454 Adv Shorthand	4
BiSc 1104 General Biology	4
Math 1083 Bus Math	3
Soil 1054 Soil Science	4
	<u>17</u>

Sixth Quarter

AgBM 1553 Off & Pers Mgmt	3
AgOM 1513 Ag Tech Type	3
AgOM 1564 Ag Term in Trans	4
Agro 1153 Prin of Crop Prod	3
Electives	3
	<u>16</u>

Seventh Quarter

AgOM 1684 Sec Procedures	4
AnSc 1053 Intro to An Sci	3
Electives	8
	<u>15</u>

Agricultural Sales and Marketing

MAJOR COMPETENCY REQUIREMENTS

	Credits
AgAc 1214 Principles of Agricultural Accounting—II	4
AgBM 1213 Principles of Agricultural Business Management	3
AgBM 1652 Seminar: Agricultural Business	2
AgMk 1053 Principles of Agricultural Marketing	3
AgMk 1253 Agricultural Salesmanship	3
AgMk 1333 Advertising and Displaying Merchandise	3
AgMk 1353 Advanced Salesmanship	3
AgMk 1373 Principles of Merchandising	3
AgMk 1573 Advanced Agricultural Commodity Marketing	3
Agro 1433 Marketing Grain, Seeds, and Forages	3
AnSc 1484 Dairy and Livestock Products	4
Comm 1603 Speaking Skills	3
Econ 1023 Economic Issues—Firm and Household	3
Psyc 1114 General Psychology	4
	<u>44</u>

Electives—9 credits

SUGGESTED PROGRAM

First Quarter

AgAc 1014 Prin Ag Acct—I	4
AgSc 1011 Ag Orientation	1
Comm 1103 Intro to Comm	3
Econ 1013 Nat Econ Issues	3
Psyc 1114 General Psychology	4
	<u>15</u>

Second Quarter

AgAc 1214 Prin Ag Acct—II	4
AgBM 1213 Prin Ag Bus Mgmt	3
AgMk 1053 Prin Ag Marketing	3
AgMk 1253 Ag Salesmanship	3
Agro 1153 Prin Crop Prod	3
	<u>16</u>

Third Quarter

AgBM 1363 Ag Business Law	3
AgMk 1333 Adver & Displ Merch	3
AgMk 1353 Adv Salesmanship	3
AgMk 1373 Prin of Merch	3
Comm 1203 Intro to Tech Rep	3
PhEd 1100 Phy Ed I	1
	<u>16</u>

Fourth Quarter

AgSc 1709 Preocc Prep Unit	12
	<u>12</u>

Fifth Quarter

Agro 1433 Mkt Grain, Seeds	3
AnSc 1053 Intro to An Sci	3
AnSc 1484 Dairy & Livestock Prod	4
BiSc 1104 General Biology	4
Math 1083 Bus Math	3
	<u>17</u>

Sixth Quarter

AgMk 1573 Adv Ag Comm Mkt	3
Chem 1104 Tech Chemistry	4
Econ 1023 Econ Issues—F & H	3
PhEd 1200 Phy Ed II	1
Electives	5
	<u>16</u>

Seventh Quarter

AgBM 1652 Seminar: Ag Bus	2
Comm 1303 Agribus Comm	3
Comm 1603 Speaking Skills	3
Soil 1054 Soil Science	4
Electives	4
	<u>16</u>

AGRICULTURAL INDUSTRIES AND SERVICES

Agriculture is the hub of Minnesota's agriculture, but agriculture is more than farming. The strength of the agricultural production industry is sustained by large groups of science-related services and technologies which enable farmers to increase their productive capabilities.

The technological changes affecting agriculture have created a need for large numbers of highly specialized technicians who serve the farmer by providing supplies of feed, seed, fertilizer, chemicals, livestock, farm machinery and equipment, and many other services.

The Agricultural Industries and Services program offers broad basic preparation leading to a variety of possible specializations. Students in this curriculum would not expect to become specialists in the area of their choice immediately, but would acquire a sufficient degree of competence to enable prospective employers to complete their preparation with a minimum of effort and expense. The program allows students to select courses in technical agriculture and related education for majors that provide training for entry into a great variety of careers in animal, crop, soils, and mechanized industry-related technologies. The various technologies have suggested programs with a great deal of similarity in a strong core of related education courses which are supplemental to technical courses in agriculture and business, to provide the foundation for successful entry, growth, and development in a variety of satisfying jobs.

Typical employment opportunities in the Agricultural Communications, Agricultural Mechanization Technology—Power Machinery, Agricultural Mechanization Technology—Structures and Equipment, Agricultural Research Technology—Animal, Agricultural Research Technology—Crop, Animal Industry-Related Technology, Crop Industry-Related Technology, and Soils and Chemicals Technology majors are:

- Farm Reporter
- Farm Broadcaster
- Advertising and Marketing Technician
- Agricultural Public Relations Assistant
- Photographer
- Crop, Livestock, and Marketing Reporter
- Agricultural Communications Technician
- Implement Dealer: Office Manager
- Implement Dealer: Owner-Operator
- Agricultural Machinery Research Aide
- Agricultural Machinery Production Supervisor
- Agricultural Machinery Sales Representative
- Agricultural Machinery Construction Foreman
- Agricultural Machinery Research Technician
- Agricultural Buildings Planning Aide
- Agricultural Buildings Sales Representative
- Agricultural Equipment Sales Representative
- Agricultural Equipment Installment Supervisor
- Agricultural Equipment Production Aide
- Farm Materials Handling Technician
- Agricultural Experimental Farm Research Aide
- Livestock Research Technician
- Feed Research Aide
- Agricultural Experimental Farm Research Aide
- Seed Research Technician
- Feed Research Technician
- Plant Breeding Technician
- Chemical Research Technician
- Soil Research Aide
- Artificial Breeding Technician
- Livestock Fieldman
- Breed Association Fieldman
- Dairy Herd Improvement Association Supervisor

Curricular Information

Commission Firm Buyer
 Livestock Marketing Aide
 Animal Supplies Salesman
 Feed and Seed Store Manager
 Feed Salesman
 Feed Company Representative
 Grain Marketing Aide
 Grain Products Field Representative
 Grain By-Products Sales Representative
 Seed and Grain Inspector
 Elevator Manager
 Food and Drug Administration Inspector
 State Grain Inspector
 Seed Salesman
 Fertilizer Sales Representative
 Fertilizer Plant Supervisor
 Agricultural Chemicals Fieldman
 Agricultural Chemicals Research Aide
 Soil Conservation Aide
 Food and Drug Administration Aide
 Soil Testing Technician
 Irrigation Technician

GENERAL PROGRAM REQUIREMENTS

To earn the associate in applied science degree in Agricultural Industries and Services, students must satisfactorily complete 108 credit hours. That minimum amount includes a common required core of 55 credit hours in agriculture and related education courses. The remaining credit hours are supplied by major competency courses and electives appropriate for each major.

PROGRAM REQUIREMENTS	Credits
AgBM 1213 Principles of Agricultural Business Management	3
AgMk 1053 Principles of Agricultural Marketing	3
Agro 1153 Principles of Crop Production	3
AgSc 1011 Agricultural Orientation	1
AgSc 1709 Preoccupational Preparation Unit	12
AnSc 1053 Introduction to Animal Science	3
BiSc 1104 General Biology	4
Chem 1104 Technical Chemistry	4
Comm 1103 Introduction to Communications	3
Comm 1203 Introduction to Technical Reporting	3
Comm 1473 Technical Report Writing	3
Econ 1013 National Economic Issues	3
Math 1054 Agricultural Technical Mathematics	4
PhEd 1100 Physical Education I	1
PhEd 1200 Physical Education II	1
Soil 1054 Soil Science	4
	55

Agricultural Communications

MAJOR COMPETENCY REQUIREMENTS

AgMk 1253 Agricultural Salesmanship	3
AgMk 1353 Advanced Salesmanship	3
Comm 1223 Introduction to Photography	3
Comm 1312 Audiovisual Techniques	2
Comm 1333 Introduction to Mass Communications	3
Comm 1422 Introduction to Communications Law	2
Comm 1533 Agricultural Reporting	3
Comm 1563 Agricultural Magazine/Journal Writing	3
Comm 1603 Speaking Skills	3

Agricultural Industries and Services

Comm 1663 Introduction to Radio and Television Broadcasting	3
Psyc 1114 General Psychology	4
SocS 1053 Rural Sociology	3
SocS 1273 Principles of Leadership and Public Relations	3
	38

Electives—15 credits

SUGGESTED PROGRAM

<i>First Quarter</i>		<i>Fifth Quarter</i>	
AgSc 1011 Ag Orientation	1	AgMk 1253 Ag Salesmanship	3
AnSc 1053 Intro to An Sci	3	Comm 1223 Intro to Photo	3
BiSc 1104 General Biology	4	Comm 1563 Ag Mag/Jrnl Writ	3
Comm 1103 Intro to Comm	3	PhEd 1200 Phy Ed II	1
Math 1054 Ag Tech Math	4	SocS 1053 Rural Sociology	3
PhEd 1100 Phy Ed I	1	Electives	3
	16		16
<i>Second Quarter</i>		<i>Sixth Quarter</i>	
AgBM 1213 Prin Ag Bus Mgmt	3	AgMk 1353 Adv Salesmanship	3
Agro 1153 Prin Crop Prod	3	Comm 1422 Intro to Comm Law	2
Chem 1104 Tech Chemistry	4	Comm 1533 Ag Reporting	3
Comm 1203 Intro to Tech Rep	3	Comm 1603 Speaking Skills	3
Econ 1013 Nat Econ Issues	3	Electives	4
	16		15
<i>Third Quarter</i>		<i>Seventh Quarter</i>	
AgMk 1053 Prin Ag Mkt	3	Comm 1312 Audiovisual Tech	2
Comm 1333 Intro to Mass Comm	3	Comm 1663 Intro to Radio	3
Comm 1473 Tech Rep Writing	3	SocS 1273 Prin Leadership	3
Psyc 1114 Gen Psychology	4	Electives	8
Soil 1054 Soil Science	4		16
	17		
<i>Fourth Quarter</i>			
AgSc 1709 Procc Prep Unit	12		
	12		

Agricultural Mechanization Technology— Power Machinery

MAJOR COMPETENCY REQUIREMENTS

	Credits
AgAc 1014 Principles of Agricultural Accounting—I	4
AgMk 1253 Agricultural Salesmanship	3
Comm 1603 Speaking Skills	3
MeAg 1024 Technical Drawing	4
MeAg 1043 Agricultural Metals and Welding	3
MeAg 1083 Fundamentals of Power and Air-Cooled Engines	3
MeAg 1333 Agricultural Machinery	3
MeAg 1443 Agricultural Gasoline Power Mechanics and Maintenance	3
MeAg 1453 Agricultural Diesel Power Mechanics and Maintenance	3
MeAg 1523 Basic Hydraulics	3
MeAg 1633 Advanced Agricultural Machinery	3
Phys 1104 Technical Physics	4
	39

Electives—14 credits

SUGGESTED PROGRAM

<i>First Quarter</i>		<i>Second Quarter</i>	
AgSc 1011 Ag Orientation	1	AgBM 1213 Prin Ag Bus Mgmt	3
BiSc 1104 General Biology	4	AgMk 1053 Prin Ag Mkt	3
Chem 1104 Tech Chemistry	4	Math 1054 Ag Tech Math	4
MeAg 1024 Tech Drawing	4	MeAg 1043 Ag Metals & Wel	3
MeAg 1083 Fund Power	3	MeAg 1443 Ag Gas Power	3
PhEd 1100 Phy Ed I	1		16
	17		

Curricular Information

Third Quarter

Comm 1103 Intro to Comm	3
Econ 1013 Nat Econ Issues	3
MeAg 1333 Ag Machinery	3
MeAg 1453 Ag Power Mech	3
Phys 1104 Tech Physics	4
	<u>16</u>

Fourth Quarter

AgSc 1709 Preocc Prep Unit	12
	<u>12</u>

Fifth Quarter

AgAc 1014 Prin Ag Acct	4
Agro 1153 Prin Crop Prod	3
AnSc 1053 Intro to An Sci	3
Comm 1473 Tech Rep Writing	3
Electives	3
	<u>16</u>

Sixth Quarter

Comm 1203 Intro Tech Rep	3
MeAg 1523 Basic Hydraulics	3
MeAg 1633 Adv Ag Machinery	3
PhEd 1200 Phy Ed II	1
Electives	5
	<u>15</u>

Seventh Quarter

AgMk 1253 Ag Salesmanship	3
Comm 1603 Speaking Skills	3
Soil 1054 Soil Science	4
Electives	6
	<u>16</u>

Agricultural Mechanization Technology—Structures and Equipment

MAJOR COMPETENCY REQUIREMENTS

Credits

AgAc 1014 Principles of Agricultural Accounting—I	4
AgMk 1253 Agricultural Salesmanship	3
Comm 1603 Speaking Skills	3
MeAg 1024 Technical Drawing	4
MeAg 1043 Agricultural Metals and Welding	3
MeAg 1083 Fundamentals of Power and Air-Cooled Engines	3
MeAg 1253 Agricultural Electrical Equipment	3
MeAg 1333 Agricultural Machinery	3
MeAg 1374 Agricultural Structures and Environment	4
MeAg 1523 Basic Hydraulics	3
MeAg 1543 Agricultural Equipment	3
MeAg 1633 Agricultural Products Handling	3
Phys 1104 Technical Physics	4
	<u>43</u>

Electives—10 credits

SUGGESTED PROGRAM

First Quarter

AgSc 1011 Ag Orientation	1
BiSc 1104 General Biology	4
Chem 1104 Tech Chemistry	4
MeAg 1024 Tech Drawing	4
MeAg 1083 Fund Power	3
PhEd 1100 Phy Ed I	1
	<u>17</u>

Second Quarter

AgBM 1213 Prin Ag Bus Mgmt	3
AgMk 1053 Prin Ag Mkt	3
Comm 1103 Intro to Comm	3
Math 1054 Ag Tech Math	4
MeAg 1043 Ag Metals & Wel	3
	<u>16</u>

Third Quarter

Comm 1203 Intro Tech Rep	3
Econ 1013 Nat Econ Issues	3
MeAg 1333 Ag Machinery	3
MeAg 1374 Ag Structures	4
Phys 1104 Tech Physics	4
	<u>17</u>

Fourth Quarter

AgSc 1709 Preocc Prep Unit	12
	<u>12</u>

Fifth Quarter

AgAc 1014 Prin Ag Acct	4
Agro 1153 Prin Crop Prod	3
Comm 1473 Tech Report Writing	3
MeAg 1253 Ag Elect Equip	3
Electives	3
	<u>16</u>

Sixth Quarter

AgMk 1253 Ag Salesmanship	3
MeAg 1523 Basic Hydraulics	3
MeAg 1663 Ag Prod Handling	3
PhEd 1200 Phy Ed II	1
Electives	4
	<u>14</u>

Seventh Quarter

AnSc 1053 Intro to An Sci	3
Comm 1603 Speaking Skills	3
MeAg 1543 Ag Equipment	3
Soil 1054 Soil Science	4
Electives	3
	<u>16</u>

Agricultural Research Technology—Animal

MAJOR COMPETENCY REQUIREMENTS	Credits
AgAc 1052 Office Machine Calculation	2
AgAc 1423 Agricultural Data Processing Fundamentals	3
AgSc 1243 Agricultural Genetics	3
AgSc 1343 Economic Entomology	3
AgSc 1383 Principles of Animal Physiology	3
AgSc 1554 Research Techniques	4
AnSc °°°° Selected Livestock Production-Management Elective	3
AnSc 1352 Feeds and Feeding	2
AnSc 1363 Principles of Animal Breeding	3
AnSc 1443 Animal Nutrition	3
AnSc 1523 Introduction to Animal Diseases	3
AnSc 1682 Seminar: Animal Science	2
Chem 1224 Organic and Biochemistry	4
MeAg 1663 Agricultural Products Handling	3
	41

Electives—12 credits

SUGGESTED PROGRAM

First Quarter

Agro 1153 Prin Crop Prod	3
AgSc 1011 Ag Orientation	1
AnSc 1053 Intro An Sci	3
BiSc 1104 General Biology	4
Math 1054 Ag Tech Math	4
PhEd 1100 Phy Ed I	1
	16

Second Quarter

AgAc 1052 Office Mach Calc	2
AgSc 1243 Ag Genetics	3
AnSc °°°° Lv Prod-Mgmt Elec	3
Chem 1104 Tech Chemistry	4
Comm 1103 Intro to Comm	3
	15

Third Quarter

AgMk 1053 Prin of Ag Mkt	3
AgSc 1343 Econ Entomology	3
Chem 1224 Organic	4
Comm 1203 Intro to Tech Rep	3
Soil 1054 Soil Science	4
	17

Fourth Quarter

AgSc 1709 Preocc Prep Unit	12
	12

Fifth Quarter

AgSc 1383 Prin An Phys	3
AgSc 1554 Research Tech	4
AnSc 1352 Feeds & Feeding	2
Comm 1473 Tech Rep Writing	3
Electives	4
	16

Sixth Quarter

AgBM 1213 Prin Ag Bus Mgmt	3
AnSc 1363 Prin An Breeding	3
AnSc 1443 An Nutrition	3
AnSc 1523 Intro to An Diseases	3
MeAg 1663 Ag Prod Handling	3
PhEd 1200 Phy Ed II	1
	16

Seventh Quarter

AgAc 1423 Ag Data Proc Fund	3
AnSc 1682 Seminar	2
Econ 1013 Nat Econ Issues	3
Electives	8
	16

Agricultural Research Technology—Crop

MAJOR COMPETENCY REQUIREMENTS	Credits
AgAc 1052 Office Machine Calculation	2
AgAc 1423 Agricultural Data Processing Fundamentals	3
Agro 1253 Forage, Pasture, and Grassland Production	3
Agro 1362 Weed Identification and Control	2
Agro 1652 Seminar: Agronomy	2
AgSc 1243 Agricultural Genetics	3
AgSc 1343 Economic Entomology	3

°°°°Select one Livestock Production-Management course from the following:
AnSc 1383, 1473, 1513, 1563, 1583.

Curricular Information

AgSc 1373 Principles of Plant Physiology	3
AgSc 1443 Principles of Plant Pathology	3
AgSc 1554 Research Techniques	4
Chem 1224 Organic and Biochemistry	4
MeAg 1663 Agricultural Products Handling	3
Soil 1643 Agricultural Chemicals	3
	<u>38</u>

Electives—15 credits

SUGGESTED PROGRAM

First Quarter

Agro 1153 Prin Crop Prod	3
AgSc 1011 Ag Orientation	1
AnSc 1053 Intro to An Sci	3
BiSc 1104 General Biology	4
Math 1054 Ag Tech Math	4
PhEd 1100 Phy Ed I	1
	<u>16</u>

Second Quarter

AgAc 1052 Office Mach Calc	2
AgSc 1243 Ag Genetics	3
Agro 1253 Forages	3
Agro 1362 Weed Ident	2
Chem 1104 Tech Chemistry	4
Comm 1103 Intro to Comm	3
	<u>17</u>

Third Quarter

AgMk 1053 Prin of Ag Mkt	3
AgSc 1343 Econ Entomology	3
Chem 1224 Organic	4
PhEd 1200 Phy Ed II	1
Soil 1054 Soil Science	4
	<u>15</u>

Fourth Quarter

AgSc 1709 Preocc Prep Unit	12
	<u>12</u>

Fifth Quarter

AgSc 1373 Prin Plant Phys	3
AgSc 1554 Research Tech	4
Comm 1203 Intro to Tech Rep	3
Soil 1643 Ag Chemicals	3
Electives	3
	<u>16</u>

Sixth Quarter

AgBM 1213 Prin Ag Bus Mgmt	3
AgSc 1443 Prin Plant Path	3
Comm 1473 Tech Rep Writing	3
MeAg 1663 Ag Prod Handling	3
Electives	4
	<u>16</u>

Seventh Quarter

AgAc 1423 Ag Data Proc Fund	3
Agro 1652 Seminar	2
Econ 1013 Nat Econ Issues	3
Electives	8
	<u>16</u>

Animal Industry-Related Technology

MAJOR COMPETENCY REQUIREMENTS

	Credits
AgMk 1573 Advanced Agricultural Commodity Marketing	3
Agro 1253 Forage, Pasture, and Grassland Production	3
AgSc 1243 Agricultural Genetics	3
AgSc 1343 Economic Entomology	3
AgSc 1383 Principles of Animal Physiology	3
AnSc **** Selected Livestock Production-Management Electives	6
AnSc 1122 Livestock Evaluation	2
AnSc 1352 Feeds and Feeding	2
AnSc 1443 Animal Nutrition	3
AnSc 1484 Dairy and Livestock Products	4
AnSc 1523 Introduction to Animal Diseases	3
AnSc 1682 Seminar: Animal Science	2
BiSc 1314 General Zoology	4
MeAg 1543 Agricultural Equipment	3
	<u>44</u>

Electives—9 credits

****Select two Livestock Production-Management courses from the following:
AnSc 1383, 1473, 1513, 1563, 1583.

Agricultural Industries and Services

SUGGESTED PROGRAM

First Quarter

Agro 1153 Prin Crop Prod	3
AgSc 1011 Ag Orientation	1
AnSc 1053 Intro to An Sci	3
BiSc 1104 General Biology	4
Comm 1103 Intro to Comm	3
PhEd 1100 Phy Ed I	1
	15

Second Quarter

AgMk 1053 Prin Ag Mkt	3
AgSc 1243 Ag Genetics	3
AnSc 1484 Dairy Lvstk Prod	4
Chem 1104 Tech Chemistry	4
Econ 1013 Nat Econ Issues	3
	17

Third Quarter

AgSc 1383 Prin An Phys	3
AnSc °°° Lv Prod-Mgmt Elec	3
AnSc 1352 Feeds & Feeding	2
BiSc 1314 General Zoology	4
Comm 1203 Intro Tech Rep	3
PhEd 1200 Phy Ed II	1
	16

Fourth Quarter

AgSc 1709 Procc Prep Unit	12
	12

Fifth Quarter

AnSc 1122 Lvstk Eval	2
AnSc 1443 An Nutrition	3
AnSc 1523 Intro An Diseases	3
Comm 1473 Tech Rep Writing	3
MeAg 1543 Ag Equipment	3
Electives	2
	16

Sixth Quarter

AgBM 1213 Prin Ag Bus Mgmt	3
AgMk 1573 Adv Ag Comm Mkt	3
Math 1054 Ag Tech Math	4
Soil 1054 Soil Science	4
Electives	2
	16

Seventh Quarter

Agro 1253 Forages	3
AgSc 1343 Econ Entomology	3
AnSc °°° Lv Prod-Mgmt Elec	3
AnSc 1682 Seminar	2
Electives	2
	16

Crop Industry-Related Technology

MAJOR COMPETENCY REQUIREMENTS

	Credits
AgMk 1573 Advanced Agricultural Commodity Marketing	3
Agro 1253 Forage, Pasture, and Grassland Production	3
Agro 1383 Grain Crop Production	3
Agro 1433 Marketing Grain, Seeds, and Forages	3
Agro 1652 Seminar: Agronomy	2
AgSc 1243 Agricultural Genetics	3
AgSc 1343 Economic Entomology	3
AgSc 1373 Principles of Plant Physiology	3
AgSc 1443 Principles of Plant Pathology	3
BiSc 1214 General Botany	4
MeAg 1374 Agricultural Structures and Environment	4
MeAg 1663 Agricultural Products Handling	3
Soil 1643 Agricultural Chemicals	3
	40

Electives—13 credits

SUGGESTED PROGRAM

First Quarter

Agro 1153 Prin Crop Prod	3
AgSc 1011 Ag Orientation	1
BiSc 1104 General Biology	4
Chem 1104 Tech Chemistry	4
Comm 1103 Intro to Comm	3
PhEd 1100 Phy Ed I	1
	16

Second Quarter

AgBM 1213 Prin Ag Bus Mgmt	3
AgMk 1053 Prin Ag Mkt	3
Agro 1433 Mkt Grain, Seeds	3
AgSc 1243 Ag Genetics	3
BiSc 1214 General Botany	4
PhEd 1200 Phy Ed II	1
	17

°°°Select two Livestock Production-Management courses from the following:
AnSc 1383, 1473, 1513, 1563, 1583

Curricular Information

Third Quarter

Agro 1253 Forages	3
Agro 1383 Grain Crop Prod	3
AgSc 1343 Econ Entomology	3
AgSc 1373 Prin Plant Phys	3
Soil 1054 Soil Science	4
	<u>16</u>

Fourth Quarter

AgSc 1709 Preocc Prep Unit	12
	<u>12</u>

Fifth Quarter

AgSc 1443 Prin Plant Path	3
AnSc 1053 Intro to An Sci	3
Comm 1473 Tech Rep Writing	3
MeAg 1374 Ag Structures	4
Electives	3
	<u>16</u>

Sixth Quarter

AgMk 1573 Adv Ag Comm Mkt	3
Comm 1203 Intro to Tech Rep	3
Econ 1013 Nat Econ Issues	3
Math 1054 Ag Tech Math	4
Electives	3
	<u>16</u>

Seventh Quarter

Agro 1652 Seminar	2
MeAg 1663 Ag Prod Handling	3
Soil 1643 Ag Chemicals	3
Electives	7
	<u>15</u>

Soils and Chemicals Technology

MAJOR COMPETENCY REQUIREMENTS

Credits

AgBM 1312 Agricultural Appraisal	2
Agro 1253 Forage, Pasture, and Grassland Production	3
Agro 1362 Weed Identification and Control	2
Agro 1652 Seminar: Agronomy	2
AgSc 1343 Economic Entomology	3
AgSc 1373 Principles of Plant Physiology	3
AgSc 1443 Principles of Plant Pathology	3
Chem 1374 Methods of Chemical Analysis	4
MeAg 1333 Agricultural Machinery	3
MeAg 1404 Fundamentals of Surveying	4
MeAg 1663 Agricultural Products Handling	3
Soil 1222 Soil and Plant Testing	2
Soil 1331 Fertilizers	1
Soil 1333 Soil Fertility	3
Soil 1553 Soil Conservation and Water Management	3
Soil 1643 Agricultural Chemicals	3
	<u>44</u>

Electives—9 credits

SUGGESTED PROGRAM

First Quarter

Agro 1153 Prin Crop Prod	3
AgSc 1011 Ag Orientation	1
BiSc 1104 General Biology	4
Chem 1104 Tech Chemistry	4
Comm 1103 Intro to Comm	3
PhEd 1100 Phy Ed I	1
	<u>16</u>

Second Quarter

AgMk 1053 Prin Ag Mkt	3
AgSc 1373 Prin Plant Phys	3
Comm 1203 Intro to Tech Rep	3
Math 1054 Ag Tech Math	4
Soil 1054 Soil Science	4
	<u>17</u>

Third Quarter

AgBM 1312 Ag Appraisal	2
Agro 1362 Weed Ident	2
Chem 1374 Meth Chem Anal	4
MeAg 1333 Ag Machinery	3
Soil 1222 Soil & Plant Test	2
Soil 1643 Ag Chemicals	3
	16

Fourth Quarter

AgSc 1709 Preocc Prep Unit	12
	12

Fifth Quarter

AgSc 1443 Prin Plant Path	3
AnSc 1053 Intro An Sci	3
Comm 1473 Tech Rep Writing	3
MeAg 1404 Fund Surveying	4
Soil 1331 Fertilizers	1
Soil 1333 Soil Fertility	3
	17

Sixth Quarter

AgBM 1213 Prin Ag Bus Mgmt	3
Agro 1253 Forages	3
Econ 1013 Nat Econ Issues	3
PhEd 1200 Phy Ed II	1
Soil 1553 Soil Conservation	3
Electives	2
	15

Seventh Quarter

Agro 1652 Seminar	2
AgSc 1343 Econ Entomology	3
MeAg 1663 Ag Prod Handling	3
Electives	7
	15

AGRICULTURAL PRODUCTION

Agricultural production is extremely important in Minnesota, causing it to rank high among the states in total cash income derived from agricultural sales. While the number of employable persons required to perform the tasks of producing crops and livestock has diminished in more recent years, the qualities of education required in these vocations continue to increase at an accelerated rate. The investment in the modern farm enterprise is considerable, and mistakes can be costly. New methods and information resulting from past experiences, modern research, and economic changes have made production agriculture increasingly technical, scientific, and competitive.

The concentration in this program is on the science and practice of increasing both the quality and quantity of farm production through scientific husbandry and management of crops and livestock.

Students may pursue study in selected majors in Livestock Production, Crop Production, Diversified Agricultural Production, and Light Horse Management, but those interested in designing a program with an area of emphasis in agricultural production may arrange with their instructor-counselor and the division chairperson to do so.

Typical employment opportunities in the Crop Production, Diversified Agricultural Production, Light Horse Management, and Livestock Production majors are:

- Crop Farm Owner
- Crop Farm Manager
- Canning Company Fieldman
- Specialty Crop Supervisor
- Cash Crop Specialist or Foreman
- Diversified Farm Owner-Operator
- Farm Management Adviser
- Commercial Farm Management Service Operator
- Institutional Farm Manager
- Experimental Farm Manager-Operator
- Horse Farm Owner
- Horse Farm Manager-Owner
- Horse Trainer
- Horse Breeding Specialist
- Horse Riding Specialist
- Horse Showman-Groomsman
- Stable Supervisor

Curricular Information

Livestock Farm Owner
 Livestock Herdsman
 Livestock Farm Manager
 Livestock Feedlot Supervisor
 Dairy Herd Supervisor or Foreman

GENERAL PROGRAM REQUIREMENTS

To earn the associate in applied science degree in Agricultural Production, students must satisfactorily complete 108 credit hours. That minimum amount includes a common required core of 49 credit hours in agriculture and related education courses. The remaining credit hours are supplied by major competency courses and electives appropriate for each major.

PROGRAM REQUIREMENTS	Credits
AgAc 1565 Applied Farm Accounting	5
AgBM 1333 Principles of Farm Management	3
AgMk 1053 Principles of Agricultural Marketing	3
Agro 1253 Forage, Pasture, and Grassland Production	3
AgSc 1011 Agricultural Orientation	1
AgSc 1243 Agricultural Genetics	3
AgSc 1709 Preoccupational Preparation Unit	12
BiSc 1104 General Biology	4
Chem 1104 Technical Chemistry	4
Comm 1103 Introduction to Communications	3
Comm 1203 Introduction to Technical Reporting	3
Econ 1013 National Economic Issues	3
PhEd 1100 Physical Education I	1
PhEd 1200 Physical Education II	1
	49

Crop Production

MAJOR COMPETENCY REQUIREMENTS	Credits
AgBM 1312 Agricultural Appraisal	2
AgMk 1573 Advanced Agricultural Commodity Marketing	3
Agro 1153 Principles of Crop Production	3
Agro 1362 Weed Identification and Control	2
Agro 1383 Grain Crop Production	3
Agro 1433 Marketing Grain, Seeds, and Forages	3
Agro 1652 Seminar: Agronomy	2
AgSc 1343 Economic Entomology	3
AgSc 1443 Principles of Plant Pathology	3
AnSc 1053 Introduction to Animal Science	3
Math 1054 Agricultural Technical Mathematics	4
MeAg 1333 Agricultural Machinery	3
MeAg 1443 Agricultural Gasoline Power Mechanics and Maintenance	3
MeAg 1663 Agricultural Products Handling	3
Soil 1054 Soil Science	4
Soil 1333 Soil Fertility	3
Soil 1643 Agricultural Chemicals	3
	50

Electives—9 credits

Agricultural Production

SUGGESTED PROGRAM

First Quarter

Agro 1153 Prin Crop Prod	3
AgSc 1011 Ag Orientation	1
BiSc 1104 General Biology	4
Chem 1104 Tech Chemistry	4
Soil 1054 Soil Science	4
	16

Second Quarter

AgMk 1053 Prin Ag Mkt	3
Agro 1253 Forages	3
AgSc 1243 Ag Genetics	3
AnSc 1053 Intro An Sci	3
Comm 1103 Intro to Comm	3
PhEd 1100 Phy Ed I	1
	16

Third Quarter

AgBM 1312 Ag Appraisal	2
AgBM 1333 Prin Farm Mgmt	3
Agro 1362 Weed Ident	2
Agro 1383 Grain Crop Prod	3
AgSc 1343 Econ Entomology	3
Soil 1333 Soil Fertility	3
	16

Fourth Quarter

AgSc 1709 Procc Prep Unit	12
	12

Fifth Quarter

Agro 1433 Mkt Grain, Seeds	3
AgSc 1443 Prin Plant Path	3
Comm 1203 Intro Tech Rep	3
Econ 1013 Nat Econ Issues	3
MeAg 1443 Ag Gas Power Mech	3
PhEd 1200 Phy Ed II	1
	16

Sixth Quarter

AgAc 1565 App Farm Acct	5
AgMk 1573 Adv Ag Comm	3
Math 1054 Ag Tech Math	4
Electives	4
	16

Seventh Quarter

Agro 1652 Seminar	2
MeAg 1333 Ag Machinery	3
MeAg 1663 Ag Prod Handling	3
Soil 1643 Ag Chemicals	3
Electives	5
	16

Diversified Agricultural Production

MAJOR COMPETENCY REQUIREMENTS

	Credits
AgBM 1312 Agricultural Appraisal	2
AgMk 1573 Advanced Agricultural Commodity Marketing	3
Agro 1153 Principles of Crop Production	3
AgSc 1343 Economic Entomology	3
AnSc 1053 Introduction to Animal Science	3
AnSc 1352 Feeds and Feeding	2
AnSc 1443 Animal Nutrition	3
Math 1054 Agricultural Technical Mathematics	4
MeAg 1333 Agricultural Machinery	3
MeAg 1374 Agricultural Structures and Environment	4
MeAg 1443 Agricultural Gasoline Power Mechanics and Maintenance	3
Soil 1054 Soil Science	4
	37

Electives—22 credits

SUGGESTED PROGRAM

First Quarter

Agro 1153 Prin Crop Prod	3
AgSc 1011 Ag Orientation	1
AnSc 1053 Intro An Sci	3
BiSc 1104 General Biology	4
Chem 1104 Tech Chemistry	4
PhEd 1100 Phy Ed I	1
	16

Second Quarter

Agro 1253 Forages	3
AgSc 1243 Ag Genetics	3
Comm 1103 Intro to Comm	3
Econ 1013 Nat Econ Issues	3
Soil 1054 Soil Science	4
	16

Curricular Information

Third Quarter

AgBM 1312 Ag Appraisal	2
AgBM 1333 Prin Farm Mgmt	3
AgSc 1343 Econ Entomology	3
AnSc 1352 Feeds & Feeding	2
Comm 1203 Intro Tech Rep	3
Electives	3
	<u>16</u>

Fourth Quarter

AgSc 1709 Preocc Prep Unit	12
	<u>12</u>

Fifth Quarter

AgMk 1053 Prin Ag Mkt	3
AnSc 1443 An Nutrition	3
MeAg 1443 Ag Gas Power	3
Electives	7
	<u>16</u>

Sixth Quarter

AgAc 1565 App Farm Acct	5
AgMk 1573 Adv Ag Comm Mkt	3
Electives	8
	<u>16</u>

Seventh Quarter

Math 1054 Ag Tech Math	4
MeAg 1333 Ag Machinery	3
MeAg 1374 Ag Structures	4
PhEd 1200 Phy Ed II	1
Electives	4
	<u>16</u>

Light Horse Management

MAJOR COMPETENCY REQUIREMENTS

	Credits
AnSc 1053 Introduction to Animal Science	3
AnSc 1091 Horse Husbandry Techniques	1
AnSc 1122 Livestock Evaluation	2
AnSc 1192 Fundamental Riding Principles	2
AnSc 1193 Light Horse Management	3
AnSc 1292 Stable Management	2
AnSc 1352 Feeds and Feeding	2
AnSc 1363 Principles of Animal Breeding	3
AnSc 1443 Animal Nutrition	3
AnSc 1491 Horse Evaluation	1
AnSc 1523 Introduction to Animal Diseases	3
AnSc 1591 Advanced Horse Husbandry Techniques	1
AnSc 1592 Western Equitation	2
AnSc 1593 Introduction to Farrier Science	3
AnSc 1682 Seminar: Animal Science	2
AnSc 1693 The Young Horse: Care and Training	3
AnSc 1772 Development of the Riding-Age Horse	2
Math 1083 Business Mathematics	3
	<u>41</u>

Electives—18 credits

SUGGESTED PROGRAM

First Quarter

AgSc 1011 Ag Orientation	1
AnSc 1053 Intro to An Sci	3
AnSc 1091 Horse Husbandry	1
AnSc 1122 Lvstk Eval	2
AnSc 1193 Light Horse Mgmt	3
BiSc 1104 General Biology	4
Comm 1103 Intro to Comm	3
	<u>17</u>

Second Quarter

Agro 1253 Forages	3
AgSc 1243 Ag Genetics	3
AnSc 1292 Stable Mgmt	2
Chem 1104 Tech Chemistry	4
Econ 1013 Nat Econ Issues	3
PhEd 1100 Phy Ed I	1
	<u>16</u>

Third Quarter

AgBM 1333 Prin Farm Mgmt	3
AgMk 1053 Prin Ag Mkt	3
AnSc 1192 Fund Riding Prin	2
AnSc 1352 Feeds & Feeding	2
AnSc 1363 Prin An Breeding	3
Comm 1203 Intro to Tech Rep	3
	<u>16</u>

Fourth Quarter

AgSc 1709 Preocc Prep Unit	12
	<u>12</u>

Fifth Quarter

AnSc 1443 An Nutrition	3
AnSc 1591 Adv Horse Husbandry	1
AnSc 1592 Western Equit	2
AnSc 1593 Intro to Farrier Sci	3
PhEd 1200 Phy Ed II	1
Electives	6
	<u>16</u>

Agricultural Production

Sixth Quarter

AgAc 1565 App Farm Acct	5
AnSc 1491 Horse Eval	1
AnSc 1523 Intro An Diseases	3
AnSc 1693 Young Horse	3
Electives	4
	16

Seventh Quarter

AnSc 1682 Seminar	2
AnSc 1772 Dev Rid Age Horse	2
Math 1083 Bus Math	3
Electives	8
	15

Livestock Production

MAJOR COMPETENCY REQUIREMENTS

	Credits
AgBM 1312 Agricultural Appraisal	2
Agro 1153 Principles of Crop Production	3
AnSc °°° Selected Livestock Production-Management Electives	6
AnSc 1053 Introduction to Animal Science	3
AnSc 1122 Livestock Evaluation	2
AnSc 1352 Feeds and Feeding	2
AnSc 1363 Principles of Animal Breeding	3
AnSc 1443 Animal Nutrition	3
AnSc 1484 Dairy and Livestock Products	4
AnSc 1523 Introduction to Animal Diseases	3
AnSc 1682 Seminar: Animal Science	2
Math 1054 Agricultural Technical Mathematics	4
MeAg 1443 Agricultural Gasoline Power Mechanics and Maintenance	3
MeAg 1543 Agricultural Equipment	3
Soil 1054 Soil Science	4
	47

Electives—12 credits

SUGGESTED PROGRAM

First Quarter

Agro 1153 Prin Crop Prod	3
AgSc 1011 Ag Orientation	1
AnSc 1053 Intro to An Sci	3
AnSc 1122 Lvstock Eval	2
BiSc 1104 General Biology	4
Comm 1103 Intro to Comm	3
	16

Second Quarter

Agro 1253 Forages	3
AgSc 1243 Ag Genetics	3
Chem 1104 Tech Chemistry	4
Comm 1203 Intro to Tech Rep	3
Econ 1013 Nat Econ Issues	3
PhEd 1100 Phy Ed I	1
	17

Third Quarter

AgBM 1312 Ag Appraisal	2
AgBM 1333 Prin Farm Mgmt	3
AnSc 1352 Feeds & Feeding	2
AnSc 1363 Prin An Breeding	3
Math 1054 Ag Tech Math	4
MeAg 1543 Ag Equipment	3
	17

Fourth Quarter

AgSc 1709 Preocc Prep Unit	12
	12

Fifth Quarter

AgMk 1053 Prin Ag Mkt	3
AnSc °°°° Lv Prod-Mgmt Elec	3
AnSc 1443 An Nutrition	3
AnSc 1484 Dairy and Lvst	4
MeAg 1443 Ag Gas Power Mech	3
	16

Sixth Quarter

AgAc 1565 App Farm Acct	5
AnSc °°°° Lv Prod-Mgmt Elec	3
AnSc 1523 Intro An Diseases	3
Electives	4
	15

Seventh Quarter

AnSc 1682 Seminar	2
PhEd 1200 Phy Ed II	1
Soil 1054 Soil Science	4
Electives	8
	15

°°°°Select two Livestock Production-Management courses from the following:
AnSc 1383, 1473, 1513, 1563, 1583.

ANIMAL HEALTH TECHNOLOGY

The American Veterinary Medical Association has recognized an ever-increasing need for personnel qualified by formal training to assist in veterinary procedures, biological laboratories, animal research, and human food inspection services. Veterinary hospital assistants are needed to help with general hospital activities in order to free veterinarians for more time for sophisticated patient practices and less time with nonprofessional tasks. As animal health care systems become larger and more complex, it is becoming obvious that more technicians will be needed to work in animal laboratories or as veterinary hospital assistants. Only a limited number of students can be accepted for the program each year.

The emphasis in this program is placed upon a basic preparation designed to develop the knowledge, understanding, and abilities required by technicians who work under professional supervision.

Typical employment opportunities in the Animal Health major are:

- Laboratory Animal Technician (Junior)
- Experimental Animal Technician
- Clinical Laboratory Animal Assistant
- Laboratory Animal Assistant in Radiology
- Laboratory Animal Research Assistant
- Small Animal Technician (General)
- Small Animal Veterinarian's Assistant
- Small Animal Veterinarian's Receptionist
- Animal Hospital Technician
- Zoo Technician
- Large Animal Technician (General)
- Large Animal Veterinarian's Assistant
- Large Animal Veterinarian's Receptionist
- Large Animal Clinic Assistant
- Meat Animal Inspection Technician

GENERAL PROGRAM REQUIREMENTS

To earn the associate in applied science degree in Animal Health Technology, students must satisfactorily complete 108 credit hours. That minimum amount includes a common required core of 32 credit hours in agriculture and related education courses. The remaining credit hours are supplied by major competency courses and electives appropriate for the major.

PROGRAM REQUIREMENTS	Credits
BiSc 1104 General Biology	4
BiSc 1255 Microbiology	5
BiSc 1314 General Zoology	4
Chem 1104 Technical Chemistry	4
Chem 1224 Organic and Biochemistry	4
Comm 1103 Introduction to Communications	3
Comm 1203 Introduction to Technical Reporting	3
Math 1083 Business Mathematics	3
PhEd 1100 Physical Education I	1
PhEd 1200 Physical Education II	1
	32

Animal Health

MAJOR COMPETENCY REQUIREMENTS	Credits
AgAc 1014 Principles of Agricultural Accounting—I	4
AgSc 1011 Agricultural Orientation	1
AgSc 1243 Agricultural Genetics	3
AgSc 1709 Preoccupational Preparation Unit	12

AnHe 1022 Animal Paramedical Orientation	2
AnHe 1152 Animal Equipment and Instruments	2
AnHe 1352 Animal Diseases and Zoonoses	2
AnHe 1395 Clinical Anatomy and Physiology	5
AnHe 1424 Surgical Nursing and Anesthesiology	4
AnHe 1444 Pathogenic Microbiology and Parasitology	4
AnHe 1454 Clinical Lab Methods	4
AnHe 1554 Advanced Clinical Laboratory Methods	4
AnHe 1573 Animal Grooming	3
AnHe 1593 Medical Nursing and Animal Care	3
AnHe 1623 Radiologic Techniques	3
AnHe 1653 Pharmacology and Toxicology	3
AnHe 1752 Applied Clinical Laboratory	2
AnSc 1352 Feeds and Feeding	2
<hr/>	
63	

Electives—13 credits

SUGGESTED PROGRAM

First Quarter

AgSc 1011 Ag Orientation	1
AnHe 1022 An Paramed Orient	2
AnHe 1152 An Equipment	2
BiSc 1104 General Biology	4
Chem 1104 Tech Chemistry	4
Comm 1103 Intro to Comm	3
<hr/>	
16	

Second Quarter

AnHe 1454 Clin Lab Meth	4
AnHe 1573 An Grooming	3
BiSc 1314 General Zoology	4
Chem 1224 Organic	4
PhEd 1100 Phy Ed I	1
<hr/>	
16	

Third Quarter

AnHe 1395 Clin Anatomy	5
AnHe 1554 Adv Clin Lab	4
AnHe 1593 Med Nursing	3
BiSc 1255 Microbiology	5
<hr/>	
17	

Fourth Quarter

AgSc 1709 Preocc Prep Unit	12
<hr/>	
12	

Fifth Quarter

AgAc 1014 Prin Ag Acct—I	4
AnHe 1352 An Diseases	2
AnHe 1424 Surg Nursing	4
AnHe 1444 Path Microbiology	4
AnHe 1623 Radiologic Tech	3
<hr/>	
17	

Sixth Quarter

AnHe 1653 Pharmacology	3
Math 1083 Bus Math	3
PhEd 1200 Phy Ed II	1
Electives	8
<hr/>	
15	

Seventh Quarter

AgSc 1243 Ag Genetics	3
AnHe 1752 App Clin Lab	2
AnSc 1352 Feeds & Feeding	2
Comm 1203 Intro to Tech Rep	3
Electives	5
<hr/>	
15	

FOOD INDUSTRY AND TECHNOLOGY

The food industry is extremely important in Minnesota. Of the ten largest industrial companies in Minnesota, listed by *Fortune* magazine, six of these were food industry companies. According to 1971 statistics, Minnesota ranks fifth among the states in total cash income derived from agricultural food sales.

As the number of employable persons required to perform the tasks of producing crops and livestock has diminished in recent years, the number of people employed by the food industry in postharvest occupations has increased markedly. These postharvest occupations include many facets of food marketing and food science and technology. There is no aspect of the food journey between harvest and the home (or ultimate consumer) which is not touched by concepts of food marketing and food science and technology.

We live in a technical world, influenced to a large degree by marketing considerations. There is a continuing demand for employees to market and

Curricular Information

distribute raw and prepared foods, as well as to concern themselves with the ever-increasing technical aspects of this world. New methods and information resulting from past experiences, modern research, demands of the marketplace, economic changes, and consumer awareness have made the food industry increasingly technical, competitive, and innovative.

The concentration of this program is on the marketing and distribution of the postharvest raw and processed agricultural products, and the technology related to them.

Students may prepare for work opportunities in the Food Marketing and Distribution major which is concerned with the techniques and operations of food marketing and distribution, or in the Food Products and Inspection major which is more concerned with the laboratory, scientific, and technical aspects of post-harvest food products.

Typical employment opportunities in the Food Marketing and Distribution, and Food Products and Inspection majors are:

- Retail Foodstore Midmanagement Trainee
- Institutional Foods Salesperson
- Industrial Foods Salesperson
- Purchasing Agent or Buyer of Foods and Ingredients
- Advertising Space Salesperson or Buyer
- Transportation Salesperson or Buyer
- Food Store Manager Trainee
- Inventory Control Manager Trainee
- Transportation Manager Trainee
- Market Survey Trainee
- Marketing Research Trainee
- Food Technician Trainee
- Laboratory Assistant Trainee
- New Product Development Trainee
- Home Service Assistant
- Food Plant Foreman Trainee
- Meat Inspector Trainee
- Fruit and Vegetable Inspector Trainee
- Processed Foods Inspector Trainee
- Railway Food Inspector Trainee
- Food Product Demonstrator

GENERAL PROGRAM REQUIREMENTS

To earn the associate in applied science degree in Food and Industry and Technology, students must satisfactorily complete 108 credit hours. That minimum amount includes a common required core of 45 credit hours in agriculture and related education courses. The remaining credit hours are supplied by major competency courses and electives appropriate for each major.

PROGRAM REQUIREMENTS	Credits
AgSc 1011 Agricultural Orientation	1
AgSc 1709 Preoccupational Preparation Unit	12
BiSc 1104 General Biology	4
Comm 1103 Introduction to Communications	3
Comm 1203 Introduction to Technical Reporting	3
Econ 1013 National Economic Issues	3
Food 1113 Introduction to the Food Industry	3
Food 1204 Food Product Evaluation	4
Food 1343 Food Production for the Consumer	3
Math 1083 Business Mathematics	3
PhEd 1100 Physical Education I	1
PhEd 1200 Physical Education II	1
Psyc 1114 General Psychology	4
	<hr/>
	45

Food Marketing and Distribution

MAJOR COMPETENCY REQUIREMENTS	Credits
AgBM 1213 Principles of Agricultural Business Management	3
AgBM 1553 Office and Personnel Management	3
AgBM 1623 Agricultural Distribution Systems	3
AgMk 1253 Agricultural Salesmanship	3
AgMk 1333 Advertising and Displaying Merchandise	3
Comm 1603 Speaking Skills	3
Econ 1023 Economic Issues—Firm and Household	3
Food 1253 Food Products Marketing	3
Food 1322 Food Product Inspection	2
Food 1533 Packaging and Labeling	3
Food 1612 Food Industry Seminar	2
Food 1762 Food Group Project	2
Humn 1313 Introduction to Humanities	3
SocS 1273 Principles of Leadership and Public Relations	3
<hr/>	
39	

Electives—24 credits

SUGGESTED PROGRAM

<i>First Quarter</i>		<i>Fourth Quarter</i>	
AgSc 1011 Ag Orientation	1	AgSc 1709 Procc Prep Unit	12
BiSc 1104 General Biology	4		12
Comm 1103 Intro to Comm	3	<i>Fifth Quarter</i>	
Food 1113 Intro Food Ind	3	AgBM 1553 Off Pers Mgmt	3
Math 1083 Bus Math	3	Econ 1013 Nat Econ Issues	3
PhEd 1100 Phy Ed I	1	Food 1533 Packaging	3
	<hr/>	Electives	7
	15		16
<i>Second Quarter</i>		<i>Sixth Quarter</i>	
AgBM 1213 Prin Ag Bus Mgmt	3	AgBM 1623 Ag Dist Systems	3
AgMk 1253 Ag Salesmanship	3	Comm 1603 Speaking Skills	3
Food 1204 Food Prod Eval	4	Food 1612 Food Ind Seminar	2
Food 1253 Food Prod Mkt	3	SocS 1273 Prin Leadership	3
PhEd 1200 Phy Ed II	1	Electives	5
Electives	3		16
	<hr/>	<i>Seventh Quarter</i>	
	17	Econ 1023 Econ Issues—F & H	3
<i>Third Quarter</i>		Food 1762 Food Group Proj	2
AgMk 1333 Adver Displ Merch	3	Humn 1313 Intro to Humn	3
Comm 1203 Intro to Tech Rep	3	Psyc 1114 General Psychology	4
Food 1322 Food Prod Insp	2	Electives	4
Food 1343 Food Pro for Consumer	3		16
Electives	5		
	<hr/>		
	16		

Food Products and Inspection

MAJOR COMPETENCY REQUIREMENTS	Credits
AgMk 1053 Principles of Agricultural Marketing	3
AgSc 1353 Meat Inspection and Public Health	3
BiSc 1255 Microbiology	5
Chem 1453 Food Chemistry	3
Comm 1603 Speaking Skills	3
Food 1322 Food Product Inspection	2
Food 1523 New Product Development	3
Food 1612 Food Industry Seminar	2
Food 1632 Food Nutrition	2
Food 1644 Advanced Food Product Evaluation	4
Food 1762 Food Group Project	2
Humn 1313 Introduction to Humanities	3
SocS 1273 Principles of Leadership and Public Relations	3
<hr/>	
38	

Electives—25 credits

Curricular Information

SUGGESTED PROGRAM

<i>First Quarter</i>		<i>Fourth Quarter</i>	
AgSc 1011 Ag Orientation	1	AgSc 1709 Proecc Prep Unit	12
BiSc 1104 General Biology	4		12
Comm 1103 Intro to Comm	3	<i>Fifth Quarter</i>	
Food 1113 Intro Food Ind	3	AgMk 1053 Prin Ag Mkt	3
Math 1083 Bus Math	3	Food 1523 New Prod Dev	3
PhEd 1100 Phy Ed I	1	Psyc 1114 General Psychology	4
	15	Electives	6
<i>Second Quarter</i>			16
BiSc 1255 Microbiology	5	<i>Sixth Quarter</i>	
Comm 1203 Intro Tech Rep	3	Food 1612 Food Ind Seminar	2
Food 1204 Food Prod Eval	4	Food 1632 Food Nutrition	2
PhEd 1200 Phy Ed II	1	Food 1644 Adv Food Prod Eval	4
Electives	4	SocS 1273 Prin Leadership	3
	17	Electives	5
<i>Third Quarter</i>			16
AgSc 1353 Meat Insp	3	<i>Seventh Quarter</i>	
Chem 1453 Food Chemistry	3	Comm 1603 Speaking Skills	3
Econ 1013 Nat Econ Issues	3	Food 1762 Food Group Proj	2
Food 1322 Food Prod Insp	2	Humn 1313 Intro to Humn	3
Food 1343 Food Prod for Consumer	3	Electives	8
Electives	2		16
	16		

HOME AND FAMILY SERVICES

The technological changes that have influenced farms and urban areas to become larger, more complex, and more specialized have also placed greater demands for efficiency upon women in households as they serve their families and pursue their careers. Particularly in farm homes and rural communities, women frequently must manage the home (1) as a more highly consumptive unit and (2) as a partner in a productive and highly capitalized business. The number of technicians used by the home and family is increasing at an accelerated pace as we become a service-oriented society.

The dual role of homemaker and career woman has created a great demand for trained people to fill supervisory, advisory, and working positions in the home and family services area.

The Home and Family Services program will be of major value to persons of all ages as they function as consumers, homemakers, and wage earners. The emphasis in this program is placed on methods of training aides and technicians who can provide the services that are needed by or for the rural family.

Typical employment opportunities in the Child Care Services, Family Merchandising, Rural Home Services, and Rural Youth and Recreation majors are:

- Assistant Teacher in Day Care
- Assistant Teacher in Nursery School
- Assistant Teacher in Prekindergarten
- Head Start Aide
- Family Day Care Home Operator
 - Department Buyer
 - Assistant Buyer
 - Sales Supervisor
 - Promotions Planner
 - Fashion Planner
 - Home Furnishings Assistant
 - Product Demonstrator
 - Consumer Consultant

- Home Health Aide
- Expanded Food and Nutrition Program Aide
- Outreach Worker
- Homemaker
 - Home Extension Assistant
 - Recreation Leader
 - Assistant 4-H Club Agent

GENERAL PROGRAM REQUIREMENTS

To earn the associate in applied science degree in Home and Family Services, students must satisfactorily complete 108 credit hours. That minimum amount includes a common required core of 53 credit hours in agriculture and related education courses. The remaining credit hours are supplied by major competency courses and electives appropriate for each major.

PROGRAM REQUIREMENTS	Credits
AgMk 1053 Principles of Agricultural Marketing	3
AgSc 1011 Agricultural Orientation	1
AgSc 1709 Preoccupational Preparation Unit	12
BiSc 1104 General Biology	4
Comm 1103 Introduction to Communications	3
Comm 1203 Introduction to Technical Reporting	3
HfSc 1052 Orientation to Family Environment	2
HfSc 1283 Family Nutrition	3
HfSc 1453 Home Management	3
HfSc 1603 Rural Family Economics	3
PhEd 1100 Physical Education I	1
PhEd 1200 Physical Education II	1
Psyc 1114 General Psychology	4
	43

Child Care Services

MAJOR COMPETENCY REQUIREMENTS	Credits
AgBM 1213 Principles of Agricultural Business Management	3
Comm 1603 Speaking Skills	3
HfSc 1125 Development of the Preschool Child	5
HfSc 1244 Equipment in the Home	4
HfSc 1263 Creative Crafts and Art Materials	3
HfSc 1273 Creative Activities for Children	3
HfSc 1303 First Aid and Emergency Care	3
HfSc 1334 Development of the Preschool Child—Practicum	4
HfSc 1353 Home Design and Furnishings	3
HfSc 1373 Cognitive Activities for Children	3
HfSc 1634 Family Food Management	4
HfSc 1653 The Exceptional Individual	3
HfSc 1672 Seminar: Home and Family Services	2
Hort 1312 Home Horticulture	2
Humn 1423 Humanities—Special Problems	3
SocS 1053 Rural Sociology	3
SocS 1273 Principles of Leadership and Public Relations	3
	54

Electives—11 credits

Curricular Information

SUGGESTED PROGRAM

First Quarter

AgSc 1011 Ag Orientation	1
Comm 1103 Intro to Comm	3
HFSc 1052 Orient Fam Environ	2
HFSc 1125 Dev of Preschool Child	5
Psyc 1114 General Psychology	4
	<u>15</u>

Second Quarter

AgMk 1053 Prin Ag Mkt	3
BiSc 1104 General Biology	4
HFSc 1244 Equipment in Home	4
HFSc 1273 Creative Activities	3
HFSc 1283 Fam Nutrition	3
	<u>17</u>

Third Quarter

Comm 1203 Intro Tech Rep	3
HFSc 1303 First Aid	3
HFSc 1353 Home Design	3
HFSc 1373 Cognitive Activities	3
Hort 1312 Home Horticulture	2
Electives	3
	<u>17</u>

Fourth Quarter

AgSc 1709 Preoce Prep Unit	<u>12</u>
	12

Fifth Quarter

HFSc 1453 Home Mgmt	3
HFSc 1653 Exceptional Indiv	3
Humn 1423 Humn—Spec Prob	3
PhEd 1100 Phy Ed I	1
Electives	6
	<u>16</u>

Sixth Quarter

AgBM 1213 Prin Ag Bus Mgmt	3
HFSc 1263 Creative Crafts	3
HFSc 1334 Dev—Practicum	4
PhEd 1200 Phy Ed II	1
SocS 1273 Prin Leadership	3
Electives	2
	<u>16</u>

Seventh Quarter

Comm 1603 Speaking Skills	3
HFSc 1603 Rural Fam Econ	3
HFSc 1634 Fam Food Mgmt	4
HFSc 1672 Seminar	2
SocS 1053 Rural Sociology	3
	<u>15</u>

Family Merchandising

MAJOR COMPETENCY REQUIREMENTS

Credits

AgAc 1014 Principles of Agricultural Accounting—I	4
AgBM 1213 Principles of Agricultural Business Management	3
AgMk 1253 Agricultural Salesmanship	3
AgMk 1333 Advertising and Displaying Merchandise	3
AgMk 1373 Principles of Merchandising	3
Comm 1603 Speaking Skills	3
Econ 1023 Economic Issues—Firm and Household	3
HFSc 1183 Family Housing	3
HFSc 1244 Equipment in the Home	4
HFSc 1313 Textiles	3
HFSc 1353 Home Design and Furnishings	3
HFSc 1493 Apparel Merchandising	3
HFSc 1524 Purchasing Home Furnishings	4
HFSc 1553 Family Clothing Construction	3
HFSc 1623 Merchandise Selection	3
HFSc 1672 Seminar: Home and Family Services	2
Math 1083 Business Mathematics	3
SocS 1273 Principles of Leadership and Public Relations	3
	<u>56</u>

Electives—9 credits

SUGGESTED PROGRAM

First Quarter

AgMk 1053 Prin Ag Mkt	3
AgSc 1011 Ag Orientation	1
BiSc 1104 General Biology	4
Comm 1103 Intro to Comm	3
HFSc 1052 Orient Fam Environ	2
HFSc 1183 Fam Housing	3
	<u>16</u>

Second Quarter

AgBM 1213 Prin Ag Bus Mgmt	3
AgMk 1253 Ag Salesmanship	3
HFSc 1244 Equipment in Home	4
HFSc 1283 Fam Nutrition	3
HFSc 1553 Fam Clothing Const	3
PhEd 1100 Phy Ed I	1
	<u>17</u>

Home and Family Services

Third Quarter

AgMk 1333 Adver Displ Merch	3
AgMk 1373 Prin Merch	3
Comm 1203 Intro Tech Rep	3
HFSc 1313 Textiles	3
HFSc 1603 Rural Fam Econ	3
	<u>15</u>

Fourth Quarter

AgSc 1709 Prooccp Prep Unit	12
	<u>12</u>

Fifth Quarter

HFSc 1453 Home Mgmt	3
HFSc 1493 Apparel Merch	3
Math 1083 Bus Math	3
Psyc 1114 General Psychology	4
Electives	3
	<u>16</u>

Sixth Quarter

AgAc 1014 Prin Ag Acct—I	4
Econ 1023 Econ Issues	3
HFSc 1524 Purch Home Furn	4
HFSc 1623 Merch Selection	3
SocS 1273 Prin Leadership	3
	<u>17</u>

Seventh Quarter

Comm 1603 Speaking Skills	3
HFSc 1353 Home Design	3
HFSc 1672 Seminar	2
PhEd 1200 Phy Ed II	1
Electives	6
	<u>15</u>

Rural Home Services

MAJOR COMPETENCY REQUIREMENTS

	Credits
AgAc 1565 Applied Farm Accounting	5
AgBM 1333 Principles of Farm Management	3
Agro 1153 Principles of Crop Production	3
AnSc 1053 Introduction to Animal Science	3
Econ 1013 National Economic Issues	3
HFSc 1183 Family Housing	3
HFSc 1303 First Aid and Emergency Care	3
HFSc 1634 Family Food Management	4
HFSc 1672 Seminar: Home and Family Services	2
Hort 1312 Home Horticulture	2
SocS 1273 Principles of Leadership and Public Relations	3
	<u>34</u>
Electives—31 credits	

SUGGESTED PROGRAM

First Quarter

AgSc 1011 Ag Orientation	1
AnSc 1053 Intro to An Sci	3
Comm 1103 Intro to Comm	3
HFSc 1052 Orient Fam Environ	2
HFSc 1183 Fam Housing	3
Psyc 1114 General Psychology	4
	<u>16</u>

Second Quarter

AgMk 1053 Prin Ag Mkt	3
Agro 1153 Prin Crop Prod	3
Econ 1013 Nat Econ Issues	3
HFSc 1283 Fam Nutrition	3
Electives	4
	<u>16</u>

Third Quarter

BiSc 1104 General Biology	4
HFSc 1303 First Aid & Emerg Care	3
HFSc 1603 Rural Fam Econ	3
PhEd 1100 Phy Ed I	1
Electives	5
	<u>16</u>

Fourth Quarter

AgSc 1709 Prooccp Prep Unit	12
	<u>12</u>

Fifth Quarter

AgBM 1333 Prin Farm Mgmt	3
HFSc 1453 Home Mgmt	3
Hort 1312 Home Horticulture	2
SocS 1273 Prin Leadership	3
Electives	5
	<u>16</u>

Sixth Quarter

AgAc 1565 App Farm Acct	5
Comm 1203 Intro Tech Rep	3
PhEd 1200 Phy Ed II	1
Electives	7
	<u>16</u>

Seventh Quarter

HFSc 1634 Fam Food Mgmt	4
HFSc 1672 Seminar	2
Electives	10
	<u>16</u>

Rural Youth and Recreation

MAJOR COMPETENCY REQUIREMENTS	Credits
AgMk 1333 Advertising and Displaying Merchandise	3
Comm 1312 Audiovisual Techniques	2
Comm 1473 Technical Report Writing	3
Comm 1603 Speaking Skills	3
Econ 1013 National Economic Issues	3
HFSc 1183 Family Housing	3
HFSc 1244 Equipment in the Home	4
HFSc 1303 First Aid and Emergency Care	3
HFSc 1313 Textiles	3
HFSc 1353 Home Design and Furnishings	3
HFSc 1424 Food Preparation	4
HFSc 1553 Family Clothing Construction	3
HFSc 1623 Merchandise Selection	3
HFSc 1634 Family Food Management	4
HFSc 1672 Seminar: Home and Family Services	2
Hort 1312 Home Horticulture	2
PhEd 1012 Personal Health	2
SocS 1053 Rural Sociology	3
SocS 1273 Principles of Leadership and Public Relations	3
	<u>56</u>

Electives—9 credits

SUGGESTED PROGRAM

<i>First Quarter</i>		<i>Fourth Quarter</i>	
AgSc 1011 Ag Orientation	1	AgSc 1709 Preocc Prep Unit	12
BiSc 1104 General Biology	4		12
Comm 1103 Intro to Comm	3	<i>Fifth Quarter</i>	
HFSc 1052 Orient to Fam Env	2	Comm 1473 Tech Rep Writing	3
HFSc 1183 Fam Housing	3	HFSc 1424 Food Prep	4
Psyc 1114 General Psychology	4	HFSc 1453 Home Mgmt	3
	<u>17</u>	Hort 1312 Home Horticulture	2
<i>Second Quarter</i>		Electives	3
AgMk 1053 Prin Ag Mkt	3		<u>15</u>
HFSc 1244 Equip in the Home	4	<i>Sixth Quarter</i>	
HFSc 1283 Fam Nutrition	3	Econ 1013 Nat Econ Issues	3
PhEd 1100 Phy Ed I	1	HFSc 1553 Fam Clothing Const	3
SocS 1273 Prin Leadership	3	HFSc 1623 Merch Selection	3
Electives	3	PhEd 1012 Personal Health	2
	<u>17</u>	PhEd 1200 Phy Ed II	1
<i>Third Quarter</i>		Electives	3
AgMk 1333 Advert and Display	3		<u>15</u>
Comm 1203 Intro to Tech Rep	3	<i>Seventh Quarter</i>	
Comm 1312 Audiovisual Tech	2	Comm 1603 Speaking Skills	3
HFSc 1303 First Aid & Emerg Care	3	HFSc 1603 Rural Fam Econ	3
HFSc 1313 Textiles	3	HFSc 1634 Fam Food Mgmt	4
HFSc 1353 Home Design	3	HFSc 1672 Seminar	2
	<u>17</u>	SocS 1053 Rural Sociology	3
			<u>15</u>

HORTICULTURAL TECHNOLOGY

Horticulture has enjoyed accelerated development in recent years. It is presently the fastest growing segment of the American agricultural economy on a percentage dollar-volume basis. The postwar home building boom has created an unprecedented demand for shrubs and flowers for home beautification. Also, there is now a greater aesthetic appreciation by the general public than ever before for decorative plant materials, both indoor and outdoor.

The need for personnel formally prepared in horticultural skills is increasing as a result of a change in the structure of horticultural businesses from small family operations to larger structured organizations. This change has created a need for employees with midmanagement or supervisory skills for all types of horticultural businesses. Many new garden centers are becoming established throughout the state and nation under franchise arrangements. These centers will need supervisors or foremen who can grow, manage, and retail horticultural products. More aggressive young men and women, with specialized training, are needed to take positions of responsibility in horticultural businesses.

Typical employment opportunities in the Floriculture and Greenhouse Management, Landscape Development, and Nursery and Garden Center Management majors are:

- Wholesale Florist
- Retail Florist
- Floral Shop Manager
- Floral Designer
- Flower Grower
- Flower Propagator
- Flower Grader
- Wholesale Florist Foreman
- Garden Center Floral Technician
- Floral Supply Salesman
- Greenhouse Owner-Operator
- Greenhouse Section Technician

- Landscape Maintenance Nursery Business Owner-Operator
- Landscape Contractor
- Landscape Planner
- Landscape Planting Technician
- Landscape Construction Foreman
- Landscape Materials Salesman
- Landscape Equipment Salesman
- Turf and Sod Retailer
- Turf Grower
- Turf and Grounds Manager for Private Estates
- Golf Course Grounds Manager
- Arboretum Superintendent
- Estate Grounds Keeper
- Park and Playground Planner
- Public Recreation Grounds Supervisor
- Cemetery Superintendent

- Nursery Owner-Operator
- Garden Center Owner-Operator
- Nursery Stock Section Foreman
- Nursery Field Technician
- Nursery Stock Propagator
- Garden Center Salesman
- Horticultural Equipment Salesman
- Nursery, Garden Center Plant Buyer
- Nursery, Garden Center Wholesale Supplier
- Nursery Stock Inspector

GENERAL PROGRAM REQUIREMENTS

To earn the associate in applied science degree in Horticultural Technology, students must satisfactorily complete 108 credit hours. That minimum amount includes a common required core of 63 credit hours in agriculture and related education courses. The remaining credit hours are supplied by major competency courses and electives appropriate for each major.

Curricular Information

PROGRAM REQUIREMENTS	Credits
Agro 1362 Weed Identification and Control	2
AgSc 1011 Agricultural Orientation	1
AgSc 1243 Agricultural Genetics	3
AgSc 1343 Economic Entomology	3
AgSc 1373 Principles of Plant Physiology	3
AgSc 1443 Principles of Plant Pathology	3
AgSc 1709 Preoccupational Preparation Unit	12
BiSc 1104 General Biology	4
BiSc 1214 General Botany	4
Chem 1104 Technical Chemistry	4
Comm 1103 Introduction to Communications	3
Comm 1203 Introduction to Technical Reporting	3
Hort 1113 Introductory Horticulture	3
Hort 1343 Plant Propagation	3
Hort 1651 Horticultural Seminar (2 quarters)	2
PhEd 1100 Physical Education I	1
PhEd 1200 Physical Education II	1
Psyc 1114 General Psychology	4
Soil 1054 Soil Science	4
	<u>63</u>

Floriculture and Greenhouse Management

MAJOR COMPETENCY REQUIREMENTS	Credits
AgAc 1014 Principles of Agricultural Accounting	4
AgMk 1253 Agricultural Salesmanship	3
AgMk 1333 Advertising and Displaying Merchandise	3
Hort 1232 Basic Flower Arrangement and Floral Design	2
Hort 1253 Greenhouse Operations	3
Hort 1333 Herbaceous Plant Materials	3
Hort 1413 Floral Design	3
Hort 1513 Commercial Floriculture	3
Hort 1523 Flower Shop Management	3
Math 1083 Business Mathematics	3
	<u>30</u>

Electives—15 credits

SUGGESTED PROGRAM

<i>First Quarter</i>		<i>Fifth Quarter</i>	
AgSc 1011 Ag Orientation	1	AgMk 1253 Ag Salesmanship	3
BiSc 1104 General Biology	4	AgMk 1333 Adver Displ Merch	3
Comm 1103 Intro to Comm	3	Hort 1513 Comm Floriculture	3
Hort 1113 Intro to Hort	3	Hort 1651 Seminar	1
Hort 1232 Basic Flow Arr	2	Electives	7
Math 1083 Bus Math	3		<u>17</u>
	16	<i>Sixth Quarter</i>	
<i>Second Quarter</i>		AgSc 1243 Ag Genetics	3
BiSc 1214 General Botany	4	AgSc 1373 Prin Plant Phys	3
Chem 1104 Tech Chemistry	4	AgSc 1443 Prin Plant Path	3
Comm 1203 Intro to Tech Rep	3	Hort 1523 Flower Shop Mgmt	3
Hort 1343 Plant Propagation	3	Psyc 1114 General Psychology	4
Hort 1413 Floral Design	3		<u>16</u>
	17	<i>Seventh Quarter</i>	
<i>Third Quarter</i>		Agro 1362 Weed Ident & Control	2
AgAc 1014 Prin Ag Acct	4	AgSc 1343 Econ Entomology	3
Hort 1253 Greenhouse Oper	3	Hort 1651 Seminar	1
Hort 1333 Herbaceous Plant Mat	3	PhEd 1200 Phy Ed II	1
PhEd 1100 Phy Ed I	1	Electives	8
Soil 1054 Soil Science	4		<u>15</u>
	15		
<i>Fourth Quarter</i>			
AgSc 1709 Proocc Prep Unit	12		
	<u>12</u>		

Landscape Development

MAJOR COMPETENCY REQUIREMENTS	Credits
Hort 1272 Landscape Practices	2
Hort 1323 Woody Plant Materials	3
Hort 1333 Herbaceous Plant Materials	3
Hort 1372 Arboriculture	2
Hort 1442 Landscape Maintenance	2
Hort 1473 Nursery Operations	3
Hort 1553 Landscape Planning	3
Hort 1634 Landscape Construction	4
Hort 1643 Turf Management	3
MeAg 1024 Technical Drawing	4
MeAg 1404 Fundamentals of Surveying	4
	33

Electives—12 credits

SUGGESTED PROGRAM

<i>First Quarter</i>		<i>Fifth Quarter</i>	
AgSc 1011 Ag Orientation	1	Hort 1272 Land Pract	2
BiSc 1104 General Biology	4	Hort 1372 Arboriculture	2
Comm 1103 Intro to Comm	3	Hort 1651 Hort Semmar (2 sections)	2
Hort 1113 Intro to Hort	3	MeAg 1404 Fund Surveying	4
MeAg 1024 Tech Drawing	4	PhEd 1200 Phy Ed II	1
PhEd 1100 Phy Ed I	1	Electives	5
	16		16
<i>Second Quarter</i>		<i>Sixth Quarter</i>	
BiSc 1214 General Botany	4	AgSc 1243 Ag Genetics	3
Chem 1104 Tech Chemistry	4	AgSc 1373 Prin Plant Phys	3
Comm 1203 Intro Tech Rep	3	AgSc 1443 Prin Plant Path	3
Hort 1323 Woody Plant Mat	3	Hort 1553 Land Planning	3
Hort 1343 Plant Prop	3	Psyc 1114 General Psychology	4
	17		16
<i>Third Quarter</i>		<i>Seventh Quarter</i>	
Hort 1333 Herbaceous Plant Mat	3	Agro 1362 Weed Ident	2
Hort 1442 Land Maint	2	AgSc 1343 Econ Entomology	3
Hort 1473 Nursery Oper	3	Hort 1634 Landscape Const	4
Hort 1643 Turf Mgmt	3	Electives	7
Soil 1054 Soil Science	4		16
	15		
<i>Fourth Quarter</i>			
AgSc 1709 Proocp Prep Unit	12		
	12		

Nursery and Garden Center Management

MAJOR COMPETENCY REQUIREMENTS	Credits
AgAc 1014 Principles of Agricultural Accounting—1	4
AgMk 1253 Agricultural Salesmanship	3
AgMk 1333 Advertising and Displaying Merchandise	3
Hort 1253 Greenhouse Operations	3
Hort 1323 Woody Plant Materials	3
Hort 1333 Herbaceous Plant Materials	3
Hort 1473 Nursery Operations	3
Hort 1583 Nursery and Garden Center Management	3
	25

Electives—20 credits

Curricular Information

SUGGESTED PROGRAM

First Quarter

AgSc 1011 Ag Orientation	1
BiSc 1104 General Biology	4
Comm 1103 Intro to Comm	3
Hort 1113 Intro to Hort	3
PhEd 1100 Phy Ed I	1
Electives	3
	<u>15</u>

Second Quarter

BiSc 1214 General Botany	4
Chem 1104 Tech Chemistry	4
Comm 1203 Intro Tech Rep	3
Hort 1323 Woody Plant Mat	3
Hort 1343 Plant Prop	3
	<u>17</u>

Third Quarter

AgAc 1014 Prin Ag Acct—1	4
Hort 1253 Greenhouse Oper	3
Hort 1333 Herbaceous Plant Mat	3
PhEd 1200 Phy Ed II	1
Soil 1054 Soil Science	4
	<u>15</u>

Fourth Quarter

AgSc 1709 Prooccc Prep Unit	<u>12</u>
	12

Fifth Quarter

AgMk 1253 Ag Salesmanship	3
AgMk 1333 Adver Displ Merch	3
Hort 1583 Nursery G C Mgmt	3
Hort 1651 Hort Seminar (2 sections)	2
Electives	6
	<u>17</u>

Sixth Quarter

AgSc 1243 Ag Genetics	3
AgSc 1373 Prin Plant Phys	3
AgSc 1443 Prin Plant Path	3
Psyc 1114 General Psychology	4
Electives	3
	<u>16</u>

Seventh Quarter

Agro 1362 Weed Ident	2
AgSc 1343 Econ Entomology	3
Hort 1473 Nursery Oper	3
Electives	8
	<u>16</u>



IV. DESCRIPTION OF COURSES

Courses are listed by data processing call numbers and by descriptive titles. The two center figures of the call numbers represent the course number and range from 01-79 (e.g., 1253=25). The numbers tend to identify the quarter of attendance when the course should most appropriately be scheduled by each student, as follows:

COURSE NUMBERS

- 01-10 = First-quarter core courses generally required by most students
- 11-19 = First-quarter courses in most majors
- 20-29 = Recommended second-quarter courses in most majors
- 30-39 = Recommended third-quarter courses in most majors
- 40-49 = Recommended fourth-quarter courses in most majors
- 50-59 = Recommended fifth-quarter courses in most majors
- 60-69 = Recommended sixth-quarter courses in most majors
- 70 = Preoccupational Preparation Unit course
- 71-79 = Recommended seventh-quarter courses in most majors

PREFIX ABBREVIATIONS

AgAc—Agricultural Accounting	Food—Food Industry and Technology
AgBM—Agricultural Business Management	HFSc—Home and Family Services
AgMk—Agricultural Marketing	Hort—Horticultural Science
AgOM—Agricultural Office Management	Humn—Humanities
AgSc—Agricultural Science	Math—Mathematics
Agro—Agronomy	McAg—Mechanized Agriculture
AnHc—Animal Health Technology	PhEd—Physical Education
AnSc—Animal Science	Phys—Physics
BiSc—Biological Science	Psyc—Psychology
Chem—Chemistry	SocS—Social Science
Comm—Communications	Soil—Soil Science
Econ—Economics	

Agricultural Accounting (AgAc)

- 1014. PRINCIPLES OF AGRICULTURAL ACCOUNTING—I.** (4 cr; 5 hrs per wk)
Basic principles of accounting with emphasis on business transactions involving the complete accounting cycle. Applications of techniques in solving practice problems which relate to an agribusiness environment.
- 1052. OFFICE MACHINE CALCULATION.** (2 cr; 4 hrs per wk)
Operation and application of modern business office machines, such as the 10-key and electronic calculators; key punch operation; emphasizing techniques, speed, and accuracy.
- 1211. FARM MANAGEMENT SPECIAL PROBLEMS—I.** (1 cr; 1 hr per wk)
Designed to start the student on a home farm record keeping system. Beginning inventories and daily entry of farm receipts and expenses are combined with the cash flow concept. Sample problems, field trips, and farm visits are used to implement instruction.
- 1214. PRINCIPLES OF AGRICULTURAL ACCOUNTING—II.** (4 cr; prereq 1014; 5 hrs per wk)
Expansion of accounting fundamentals and principles acquired in AgAc 1014, with special emphasis on accounting procedures for assets and liabilities commonly found in agricultural businesses.

Description of Courses

- 1313. PRINCIPLES OF AGRICULTURAL ACCOUNTING—III.** (3 cr; prereq 1214; 4 hrs per wk)
Analysis of financial statements, departmental accounting, accounting for the manufacturing operation, and management control and planning through budgeting.
- 1321. FARM MANAGEMENT SPECIAL PROBLEMS—II.** (1 cr; prereq 1211; 1 hr per wk)
Continuation of home farm records. Financial and enterprise analyses introduced by comparing high, low, and average incomes from farm operations.
- 1423. AGRICULTURAL DATA PROCESSING FUNDAMENTALS.** (3 cr; 4 hrs per wk)
An introductory course in computers which includes a general familiarization with computers, flow charting, and programming related to agriculture.
- 1431. FARM MANAGEMENT SPECIAL PROBLEMS—III.** (1 cr; prereq 1321; 1 hr per wk)
Procedure for closing out the home farm account book for submission to the computer analysis center.
- 1543. FARM MANAGEMENT ANALYSIS.** (3 cr; prereq 1431; 4 hrs per wk)
A detailed analysis of the farm operation will be made based on interpretations of record data obtained from the computer analysis center.
- 1565. APPLIED FARM ACCOUNTING.** (5 cr; prereq consent; 7 hrs per wk)
Kinds and uses of farm records. Calculating measures of farm earnings through cash flow method of farm accounting. Budgeting and using farm records as a tool in the decision-making process on the farm.

Agricultural Business Management (AgBM)

- 1213. PRINCIPLES OF AGRICULTURAL BUSINESS MANAGEMENT.** (3 cr; 4 hrs per wk)
Principal functional areas of management as applied to agricultural nonfarm businesses; planning, organizing, staffing, directing, and controlling.
- 1312. AGRICULTURAL APPRAISAL.** (2 cr; 4 hrs per wk)
Methods of real and personal property appraisal applied to agricultural real estate. Will stress practical application to agriculture using systems approach in determining value.
- 1333. PRINCIPLES OF FARM MANAGEMENT.** (3 cr; prereq consent; 4 hrs per wk)
Fundamentals of organization and operation of different types of farms. Decision-making processes involved in establishing and operating a farm.
- 1343. COOPERATIVE BUSINESS ORGANIZATION.** (3 cr; 4 hrs per wk)
Organization of the cooperative type of business enterprise, including history of the cooperative movement, philosophy of the cooperative business, and organizational structure of a cooperative.
- 1363. AGRICULTURAL BUSINESS LAW.** (3 cr; 4 hrs per wk)
Basic legal principles in contracts, negotiable instruments, bailments, insurance, partnerships, corporations, real property, wills, and rural community relationships particularly applicable to farm and agribusinesses.
- 1443. CREDIT AND COLLECTIONS.** (3 cr; 4 hrs per wk)
Nature of credit instruments, consumer credit, mercantile credit, credit agency reports, collection policies, bankruptcy and collection procedures. Emphasis on agricultural aspects of credit—corporate and individual.
- 1473. SMALL BUSINESS MANAGEMENT.** (3 cr; 4 hrs per wk)
Management principles uniquely important to small business enterprise with special emphasis on agricultural businesses related to student's interest. Focus on economic and social environment affecting the small firm; financing, marketing, business location, legal, and governmental influences will be studied from a practical viewpoint.
- 1513. AGRICULTURAL SALES MANAGEMENT.** (3 cr; prereq 1213; 4 hrs per wk)
Product planning; sales organization; sales programs; selection, training, and supervision of sales and service personnel.
- 1553. OFFICE AND PERSONNEL MANAGEMENT.** (3 cr; prereq consent; 4 hrs per wk)
Techniques and procedures of dealing with people in business organizations through effective personnel management, stressing philosophy, approach, point of view, and fundamental methods of personnel administration. Applications agriculturally oriented.

- 1623. AGRICULTURAL DISTRIBUTION SYSTEMS.** (3 cr; 4 hrs per wk)
Retail store traffic management; shipping routes of merchandise, freight handling, rates and billings claims, and organizations of management of retail traffic departments. Applications agriculturally oriented.
- 1652. SEMINAR: AGRICULTURAL BUSINESS.** (2 cr; prereq sr plus major in AgBM; 3 hrs per wk)
Agricultural business management techniques researched and discussed by students. Designed to establish depth of understanding. Topics presented and evaluated by class members.

Agricultural Marketing (AgMk)

- 1053. PRINCIPLES OF AGRICULTURAL MARKETING.** (3 cr; 4 hrs per wk)
Introductory course in the fundamentals of market organization, operation, techniques, problems, and policies within various channels for agricultural products, including practices in futures trading.
- 1253. AGRICULTURAL SALESMANSHIP.** (3 cr; 4 hrs per wk)
The art of creative selling, utilizing the principles of human relations in creating values for a buyer. Fundamentals and techniques of successful selling; developing sales personality, and the selling cycle.
- 1333. ADVERTISING AND DISPLAYING MERCHANDISE.** (3 cr; 4 hrs per wk)
Planning, creation, and use of advertising related to the agricultural economy and marketing of agricultural products. Purposes of advertising, methods of appeal, copy problems, layout, and selection of media. Practical applications will be demonstrated.
- 1353. ADVANCED SALESMANSHIP.** (3 cr; prereq 1253; 4 hrs per wk)
Practical application through sales presentation of the principles of salesmanship using the facilities of videotape as a self-evaluation device.
- 1373. PRINCIPLES OF MERCHANDISING.** (3 cr; prereq 1053; 4 hrs per wk)
Careers and opportunities in agricultural marketing, retail operations, purchasing procedures, discounts and ordering policies, inventory control, budgeting, receiving, checking and marking merchandise.
- 1513. PRINCIPLES OF INSURANCE.** (3 cr; 4 hrs per wk)
Developing and understanding insurance principles and practices; risks involved in retailing; buying insurance and handling insurance claims. Special applications to agricultural businesses.
- 1573. ADVANCED AGRICULTURAL COMMODITY MARKETING.** (3 cr; prereq 1053, Econ 1013 or consent; 4 hrs per wk)
Application of principles of marketing to agricommodities at farm and retail levels. Detailed examination of individual market channels and techniques.
- 1634. AGRICULTURAL FINANCE.** (4 cr; 5 hrs per wk)
Credit, insurance, legislation, income tax and social security problems applied to the production of agricultural products; description and analysis of agricultural credit institutions and agencies.

Agricultural Office Management (AgOM)

- 1113. BEGINNING TYPEWRITING.** (3 cr; 5 hrs per wk)
Introductory study of keyboard, centering, simple tabulation, construction of business letters, and other fundamentals with emphasis on mastery of typewriting by the touch system.
- 1172. MACHINE DUPLICATION.** (2 cr; prereq 1113 or equiv; 3 hrs per wk)
Instruction and practice in use and operation of duplicating and photocopy equipment.
- 1213. INTERMEDIATE TYPEWRITING.** (3 cr; prereq 1113 or equiv; 5 hrs per wk)
Development of basic typing skills and knowledge with emphasis of facility in producing letters, business reports, tabulations, business and legal forms; oriented to agricultural topics.

Description of Courses

- 1252. RECORDS MANAGEMENT.** (2 cr; 3 hrs per wk)
Records, filing systems, records equipment and procedures used in filing and records keeping with special applications on agricultural topics and businesses. Extensive practice in indexing and filing.
- 1273. BEGINNING SHORTHAND.** (3 cr; prereq 1113 or consent; 4 hrs per wk)
Principles of Gregg shorthand theory, stressing reading and writing ability; applying types of agribusiness correspondence with special emphasis on transcription.
- 1333. ADVANCED TYPEWRITING.** (3 cr; prereq 1213; 5 hrs per wk)
Refinement of typing skills, with continued emphasis on speed, in the production of various types of office typewriting oriented to agricultural types and forms.
- 1354. INTERMEDIATE SHORTHAND.** (4 cr; prereq 1273; 6 hrs per wk)
Continuation of 1273 with emphasis on development of speed in accurate reading and writing of Gregg shorthand.
- 1382. OFFICE MACHINE TRANSCRIPTION.** (2 cr; prereq 1213; 4 hrs per wk)
Operation and practice in use of transcription machines with emphasis on development of speed and facility in transcribing agribusiness correspondence relating to a variety of areas; letters, interoffice memos, and telegrams.
- 1454. ADVANCED SHORTHAND AND TRANSCRIPTION.** (4 cr; prereq 1354; 6 hrs per wk)
Dictation and transcription in office style in simulated work situations. Emphasis on transcribing agricultural material for mailability.
- 1513. AGRICULTURAL TECHNICAL TYPEWRITING.** (3 cr; prereq 1333; 5 hrs per wk)
Final course for proficiency in typewriting with a high degree of speed and accuracy. Composition of correspondence from agricultural case problems typed in simulated office situation.
- 1564. AGRICULTURAL TERMINOLOGY IN TRANSCRIPTION.** (4 cr; prereq 1382, 1454; 6 hrs per wk)
Agricultural terminology in correspondence and its use in shorthand and office machine transcription in building further competency in these skills.
- 1684. SECRETARIAL PROCEDURES.** (4 cr; prereq 1333; 5 hrs per wk)
Duties, responsibilities, and qualities of secretary in a modern agricultural office. Instruction in telephone techniques, receptionist duties, communication services, and human relations.

Agricultural Science (AgSc)

- 1011. AGRICULTURAL ORIENTATION.** (1 cr; 2 hrs per wk)
The agricultural industries, their common bonds and individual differences; designed to acquaint students with agricultural opportunities; will also serve to reinforce students with vital knowledge about college programs and academic procedures.
- 1059. SPECIAL PROBLEMS IN AGRICULTURE.** (1-3 cr; hrs as per wk)
Individual study in some field of agriculture, directed and adapted to any program area by appropriate members of the faculty.
- 1081. INTRODUCTION TO AGRICULTURAL EDUCATION.** (1 cr; 2 hrs per wk)
Orientation to employment and service opportunities in agricultural education. An overview of agricultural education programs in Minnesota and the nation.
- 1243. AGRICULTURAL GENETICS.** (3 cr; prereq BiSc 1104; 4 hrs per wk)
Basic laws of heredity applicable to plants and animals; simple cases of inheritance, gene action and interaction; inheritance of quantitative characters and determination of sex.
- 1343. ECONOMIC ENTOMOLOGY.** (3 cr; prereq BiSc 1104; 4 hrs per wk)
Principles involved in controlling insects; relation of insects to man, man's crops, live-stock, and products; habits, biology, identification and classification.
- 1353. MEAT INSPECTION AND PUBLIC HEALTH.** (3 cr; 4 hrs per wk)
Basic principles of meat inspection; government and state regulations. Epidemiology.
- 1373. PRINCIPLES OF PLANT PHYSIOLOGY.** (3 cr; prereq BiSc 1104 or consent; 5 hrs per wk)
Photosynthesis, respiration, nutrition, absorption, germination, flowering, and growth in plants; emphasis on the influence of environment and hormones in controlling plant metabolism.

- 1383. PRINCIPLES OF ANIMAL PHYSIOLOGY.** (3 cr; prereq BiSc 1104; 4 hrs per wk)
Functions of body systems of small animals, horses, cattle, swine and sheep. Digestion, respiration, circulation, muscle activity, and reproduction emphasized.
- 1443. PRINCIPLES OF PLANT PATHOLOGY.** (3 cr; prereq BiSc 1104; 4 hrs per wk)
Principles involved in controlling plant diseases; disease agents, means of propagation, life cycles and economic implications.
- 1554. RESEARCH TECHNIQUES.** (4 cr; 12 cr in competency courses; 5 hrs per wk)
Principles and techniques of improving crop plants and animals; practices in designing animal trials, field experimental plots with statistical measurement applied to experimentation; laboratory adapted to preparation of students for agricultural research.
- 1709. PREOCCUPATIONAL PREPARATION UNIT.** (12 cr; work equivalent to 1 quarter's time)
On-the-job internship experience or additional college laboratory or classroom experience designed to make the student more acceptable to industry within his chosen program or occupational emphasis.

Agronomy (Agro)

- 1153. PRINCIPLES OF CROP PRODUCTION.** (3 cr; 4 hrs per wk)
General principles and cultural practices used in the production and harvesting of farm crops and forages; emphasis on methods of increasing productivity and improving quality through recommended techniques of breeding, seeding, tillage, fertilization, harvesting and storing. Laboratory practices and crop identification.
- 1253. FORAGE, PASTURE, AND GRASSLAND PRODUCTION.** (3 cr; 4 hrs per wk)
Economical management and cultural practices used in forage, silage, pasture, and grassland crop production; theory and practices relating to land management, pasture renovation systems of grazing, harvest timing, and handling methods and adaptations of grasses and legumes to soil types.
- 1362. WEED IDENTIFICATION AND CONTROL.** (2 cr; prereq consent; 3 hrs per wk)
Identification of the most common cropland, garden, and turf weeds at all stages of growth; laboratory practice in identifying weed seeds and dormancy characteristics.
- 1383. GRAIN CROP PRODUCTION.** (3 cr; prereq consent; 4 hrs per wk)
Production and management of the principal cereal or grain crops grown in Minnesota; emphasis on planting, growing, managing, harvesting, and storing cereal grains, corn, and soybeans.
- 1433. MARKETING GRAIN, SEEDS, AND FORAGES.** (3 cr; prereq 1362 or consent; 5 hrs per wk)
Techniques and practices used in marketing grain, seeds, and forage crops; analytical techniques and practices used in grading grain and forages; cash and futures markets; laboratory practices in seed analysis and grain grading.
- 1453. CANNING CROP PRODUCTION.** (3 cr; prereq 1153; 4 hrs per wk)
Principles and cultural practices used in production and harvest of crops grown for canning, freezing, drying, and packaging, including such crops as sweet corn, field peas, snap beans, squash, cucumbers, and other canning vegetables; planting, growing, tillage, fertilization, and harvesting of these crops.
- 1652. SEMINAR: AGRONOMY.** (2 cr; prereq sr, 6 cr agronomy or soils; 3 hrs per wk)
Research preparation in and seminar discussions of current topics in agronomy and soil sciences. Students design and develop course content.

Animal Health Technology (AnHe)

- 1022. ANIMAL PARAMEDICAL ORIENTATION.** (2 cr; 4 hrs per wk)
Study of the veterinary medical profession and the professional relationship between veterinarians and animal technicians. Opportunities, duties, and ethics of animal technicians. Public and client relations.
- 1152. ANIMAL EQUIPMENT AND INSTRUMENTS.** (2 cr; 3 hrs per wk)
Introduction to the identification, care, maintenance, and adjustment of equipment and instruments used in the animal medical fields.

Description of Courses

- 1253. LABORATORY ANIMAL CARE.** (3 cr; 4 hrs per wk)
Principles and practices of laboratory animal care in clinics, hospitals, and research laboratories. Animal house design, equipment, management, and legal regulations.
- 1352. ANIMAL DISEASES AND ZOOSES.** (2 cr; 3 hrs per wk)
The more common and important disease conditions found in large and small animals. Detailed study of zoonoses.
- 1395. CLINICAL ANATOMY AND PHYSIOLOGY.** (5 cr; prereq BiSc 1314, Chem 1224; 8 hrs per wk)
Comparative veterinary anatomy and physiology. Body systems and functions examined in their relationship to clinical medicine and surgery.
- 1424. SURGICAL NURSING AND ANESTHESIOLOGY.** (4 cr; 6 hrs per wk)
Presurgical preparation and postsurgical care of animals. Techniques involved in animal surgery, anesthesiology, euthanasia, dentistry, and equipment sterilization.
- 1444. PATHOGENIC MICROBIOLOGY AND PARASITOLOGY.** (4 cr; prereq BiSc 1255, 1314; 6 hrs per wk)
Laboratory procedures and techniques used to isolate and identify pathogenic microorganisms from tissues, body fluids and milk. Laboratory procedures used to identify internal and external parasites of animals. Life cycles of the common animal parasites.
- 1454. CLINICAL LAB METHODS.** (4 cr; 6 hrs per wk)
Fundamentals of blood morphology and laboratory techniques concerned with the solid components of the blood.
- 1492. ADVANCED LABORATORY ANIMAL TECHNIQUES.** (2 cr; prereq 1253; 4 hrs per wk)
The study of gnotobiology and laboratory animal surgery.
- 1554. ADVANCED CLINICAL LABORATORY METHODS.** (4 cr; prereq 1454; 6 hrs per wk)
Advanced laboratory techniques, including detailed study of urinalysis, blood analysis, blood chemistry with emphasis on colorimetric methods, and basic immunological techniques. Techniques of kidney, liver, and other organ function tests. Record keeping, preparation of laboratory specimens, and pregnancy and estrus determination.
- 1573. ANIMAL GROOMING.** (3 cr; 5 hrs per wk)
Grooming methods as they pertain to small animals. Identification of breeds of dogs and cats. Techniques of fitting and showing small animals for dog and cat shows or exhibitions.
- 1593. MEDICAL NURSING AND ANIMAL CARE.** (3 cr; 4 hrs per wk)
Assisting in medical examination and treatment of animals. Clinical symptoms of disease, vaccination procedures, drug administration, and preventive medicine. Care of medical cases and hospital record keeping.
- 1623. RADIOLOGIC TECHNIQUES.** (3 cr; 5 hrs per wk)
Physical principles of the X-ray. Identification of equipment including X-ray machine, film holders, cassettes, etc. Methods of developing, fixing, and drying radiographs. Positioning of the patient. Methods of film storage. Record keeping. Safety methods when using X-ray equipment.
- 1653. PHARMACOLOGY AND TOXICOLOGY.** (3 cr; 4 hrs per wk)
Study of selected drugs, their functions and effect on animal systems. An introduction to pharmacology including the study of selected drugs, toxic effect of drugs on the animal, sources of drugs, compounding drugs, and drug dosages.
- 1723. LARGE ANIMAL ASSISTING.** (3 cr; 5 hrs per wk)
Restraint methods for large animals. Techniques involved in assisting the large animal veterinarian with vaccination procedures, surgery, X-ray, and medical treatment. Record keeping in large animal practice.
- 1742. ZOO ANIMAL TECHNIQUES.** (2 cr; 3 hrs per wk)
Zoo construction, management of zoo animals, and new concepts of zoo animal care. Restraint and diseases of zoo animals.
- 1752. APPLIED CLINICAL LABORATORY.** (2 cr; prereq must be taken the last qtr on campus; 4 hrs per wk)
Review of all techniques used in the clinical laboratory and conducting tests as they will be performed in a clinical veterinary practice.
- 1772. RADIOGRAPHIC ANATOMY.** (2 cr; prereq 1395, 1623; 4 hrs per wk)
Study of the anatomy of large and small animals radiographically. Detailed study of skeletal and soft tissue.

Animal Science (AnSc)

- 1053. INTRODUCTION TO ANIMAL SCIENCE.** (3 cr; 4 hrs per wk)
Introduction to the animal industry with emphasis on consumption and production patterns; characteristics of livestock; breeds of livestock; and fundamental concepts of animal nutrition, animal breeding, and livestock management.
- 1091. HORSE HUSBANDRY TECHNIQUES.** (1 cr; hrs ar)
Students perform actual feeding and care of college's light horses under a practical management situation.
- 1122. LIVESTOCK EVALUATION.** (2 cr; prereq 1053; 4 hrs per wk)
Comparative judging, grading, and selection of market and breeding classes of beef, sheep, and swine. Type and performance testing stressed.
- 1192. FUNDAMENTAL RIDING PRINCIPLES.** (2 cr; 4 hrs per wk)
Instruction in developing horses and riders using English tack. Basic dressage and the balance seat stressed. Complete understanding of rider's role in horse control and movement.
- 1193. LIGHT HORSE MANAGEMENT.** (3 cr; prereq consent; 4 hrs per wk)
The horse industry as a United States and worldwide business. Breeds of horses and ponies for work and pleasure. Anatomy and physiology of the horse and their relation to selection, breeding, feeding, and management practices.
- 1292. STABLE MANAGEMENT.** (2 cr; prereq consent; 3 hrs per wk)
Development of management calendars for various stable types. Daily application of selection, judging, breeding, feeding, care, and management principles. Design and workability of stabling and arena facilities.
- 1333. ARTIFICIAL INSEMINATION.** (3 cr; hrs ar)
Theory and practice of artificial breeding. Includes management, nutritional, physiological, and genetic information necessary for success.
- 1352. FEEDS AND FEEDING.** (2 cr; 4 hrs per wk)
Identification, classification, and simple use of feed nutrients; methods of preparing feed; relative values of common feeds and by-product feeds for various classes of livestock.
- 1363. PRINCIPLES OF ANIMAL BREEDING.** (3 cr; 4 hrs per wk)
Application of genetic principles to animal improvement. Selection and systems of mating farm and laboratory animals. Use and value of performance testing and management of the breeding program.
- 1383. SWINE PRODUCTION AND MANAGEMENT.** (3 cr; prereq 1053 or consent; 4 hrs per wk)
Production fundamentals and skills essential in the organization, operation, and management of swine enterprises. Principles of breeding, reproduction, feeding, marketing, and building and equipment requirements stressed.
- 1443. ANIMAL NUTRITION.** (3 cr; prereq 1352; 4 hrs per wk)
Digestion, absorption, and metabolism of nutrients as related to maintenance, growth, reproduction, and production. Nutrient requirements of livestock and nutrient composition of feed ingredients. Feeding standards, ration formulation, and economy in feeding and purchasing feeds.
- 1471. DAIRY CATTLE EVALUATION.** (1 cr; prereq 1122; 2 hrs per wk)
Advanced techniques in selecting and evaluating dairy cattle; practical applications and integration of evaluative techniques with economical dairy management.
- 1473. BEEF PRODUCTION AND MANAGEMENT.** (3 cr; prereq 1053 or consent; 4 hrs per wk)
Production fundamentals and skills essential in the organization, operation, and management of beef enterprises. Principles of breeding, reproduction, feeding, marketing, and building and equipment requirements stressed.
- 1484. DAIRY AND LIVESTOCK PRODUCTS.** (4 cr; prereq Chem 1104; 6 hrs per wk)
Processes in evaluating quality of dairy and livestock products. Factors affecting grade, yield, and price. Principles and practices in the efficient manufacture of dairy and livestock products.
- 1491. HORSE EVALUATION.** (1 cr; prereq 1193; 3 hrs per wk)
Evaluation of common breeds of horses based on conformation and performance. Students learn proper form in presentation of reasons for evaluation.

Description of Courses

- 1513. DAIRY CATTLE PRODUCTION AND MANAGEMENT.** (3 cr; prereq 1053 or consent; 4 hrs per wk)
Production fundamentals and skills essential in the organization, operation, and management of dairy enterprises. Principles of breeding, reproduction, feeding, marketing, and building and equipment requirements stressed.
- 1523. INTRODUCTION TO ANIMAL DISEASES.** (3 cr; 4 hrs per wk)
Causes of animal diseases; their prevention and control. The relationship of animal health to human health, and the role of regulating agencies.
- 1532. HERD HEALTH MANAGEMENT.** (2 cr; consent of instructor; 3 hrs per wk)
The integration of management, husbandry, nutrition, agricultural engineering, and veterinary medicine in livestock production to prevent disease conditions on a herd basis.
- 1563. POULTRY PRODUCTION AND MANAGEMENT.** (3 cr; prereq 1053 or consent; 4 hrs per wk)
Production fundamentals and skills essential in the organization, operation, and management of poultry enterprises. Principles of breeding, reproduction, feeding, marketing, and building and equipment requirements stressed.
- 1583. SHEEP PRODUCTION AND MANAGEMENT.** (3 cr; prereq 1053 or consent; 4 hrs per wk)
Production fundamentals and skills essential in the organization, operation, and management of sheep enterprises. Principles of breeding, reproduction, feeding, marketing, and building and equipment requirements stressed.
- 1591. ADVANCED HORSE HUSBANDRY TECHNIQUES.** (1 cr; prereq 1091, 1292, 1443; hrs ar)
Experience in directing work of other students in care of college horses. Students determine nutritional programs of horses and cost of operating a horse facility.
- 1592. WESTERN EQUITATION.** (2 cr; prereq 1192 or consent; 4 hrs per wk)
Instruction in developing the Western rider and Western pleasure horse. Balanced-seat approach stressed. Rider's role in controlling movement and action of the horse.
- 1593. INTRODUCTION TO FARRIER SCIENCE.** (3 cr; prereq 1192, 1193 or consent; hrs ar)
Basic concepts of correct preparation and shoeing of a horse. Foot unsoundness, leg problems, and methods of correction by proper trimming and/or shoeing. Types of corrective shoes and how they function.
- 1623. LIVESTOCK MANAGEMENT TECHNIQUES.** (3 cr; prereq 1053 or consent; 5 hrs per wk or hrs ar)
Special management skills in handling dairy and beef cattle, sheep, and swine. Techniques include dehorning, docking, clipping, back fat probing, milk testing, and treatment injection, which will be demonstrated and practiced.
- 1682. SEMINAR: ANIMAL SCIENCE.** (2 cr; prereq sr; 3 hrs per wk)
Current topics or problems vital to animal production which have special interest to senior students. Oral reports and discussions by students with staff contributions.
- 1692. ADVANCED ENGLISH EQUITATION.** (2 cr; 4 hrs per wk)
Use of the double bridle and its effect in advanced schooling of the horse; introduction to jumping.
- 1693. THE YOUNG HORSE: CARE AND TRAINING.** (3 cr; prereq consent; 5 hrs per wk)
Principles and practices in the care and training of the horse less than 2 years of age; handling skills, training, grooming, fitting, and showing; problems in horse husbandry.
- 1772. DEVELOPMENT OF THE RIDING-AGE HORSE.** (2 cr; prereq 1693; 4 hrs per wk)
Principles and practices in the care and training of the riding-age horse. Further development of horse handling and training skills; grooming, fitting, showing. Proper methodology for introducing various bits, saddles, and rigging to the horse.
- 1792. ADVANCED TRAINING OF THE YOUNG HORSE.** (2 cr; prereq 1693; 4 hrs per wk)
Advanced techniques in training young horses. Students assigned young horses to train at longeing, long lining, and driving.

Biological Sciences (BiSc)

- 1011. BASIC PRINCIPLES OF BIOLOGY.** (1 cr [cr not applicable to AA degree]; prereq concurrent enrollment in 1104; 1 hr per wk)

A compensatory course to be taken concurrently with BiSc 1104, General Biology, to aid students who have an inadequate background in general biology, including those who have previously received an N in General Biology.

- 1052. MAN, AGRICULTURE, AND ENVIRONMENT.** (2 cr; 3 hrs per wk)
Fundamentals of human and occupational ecology as they relate to environmental quality, with emphasis on natural resources, agricultural pollution, and population problems.
- 1104. GENERAL BIOLOGY.** (4 cr; prereq proficiency in high school biology or concurrent enrollment in 1101; 6 hrs per wk)
Basic biological concepts common to all organisms with emphasis on cells and cellular processes, genetics, and ecology.
- 1214. GENERAL BOTANY.** (4 cr; prereq 1104; 6 hrs per wk)
Fundamental principles of plant biology with emphasis on morphology, ecology, taxonomy, and functional applications of cellular structure in roots, stems, leaves, and flowers.
- 1255. MICROBIOLOGY.** (5 cr; prereq 1104; 7 hrs per wk)
The basic structure and function of microorganisms, including physiology, reproduction, classification, and control. Laboratory work includes staining, culturing, and identification procedures.
- 1314. GENERAL ZOOLOGY.** (4 cr; prereq 1104; 6 hrs per wk)
Fundamentals of animal biology with emphasis on identification, morphology, taxonomy, ecological requirements; physiology and anatomy of mammals stressed.
- 1411. MICROSCOPY.** (1 cr; prereq 1104; 2 hrs per wk)
Principles of technical microscopy including dark field, phase-contrast, fluorescence, and photomicrography, which are often used in laboratories for diagnostic purposes
- 1552. MICROTÉCHNIQUE.** (2 cr; prereq 1104; 4 hrs per wk)
Preparation of microscope slides of animal tissue including whole mounts, with emphasis on fixation, tissue embedding, microtomy, and staining.

Chemistry (Chem)

- 1015. GENERAL AND TECHNICAL CHEMISTRY.** (4 cr applied toward graduation [1 cr, not applicable to AA degree]; 7 hrs per wk)
Introductory concepts of chemistry; basic information, principles, laws, and measurements of chemistry including an introduction to organic and biochemistry. Laboratory work is designed to develop manipulative techniques with equipment and instruments. *For students with no previous background or with deficient preparation in chemistry.*
- 1104. TECHNICAL CHEMISTRY.** (4 cr; prereq proficiency in high school chemistry; 6 hrs per wk)
Principles, laws, concepts, and measurements of chemistry including atomic and molecular structure, solutions and reactions in solutions, and an introduction to organic and biochemistry. Laboratory work is designed to develop manipulative techniques with equipment and instruments.
- 1224. ORGANIC AND BIOCHEMISTRY.** (4 cr; prereq 1104 or equiv; 6 hrs per wk)
Study of common classes of carbon compounds and the role of proteins, carbohydrates, enzymes, lipids, nucleic acids, and vitamins in living systems.
- 1374. METHODS OF CHEMICAL ANALYSIS.** (4 cr; prereq 1104 or equiv; 6 hrs per wk)
Fundamental principles involved in sampling techniques, qualitative analysis, quantitative analysis, and instrumental methods of analysis. Determinations in the laboratory are those commonly performed in agricultural, biological, and food laboratories.
- 1453. FOOD CHEMISTRY.** (3 cr; prereq Food 1113; 4 hrs per wk)
Chemical processes involved in food products and food processing including additives, contamination and preservation; laboratory work including analysis of food stuffs (This course offered primarily for Food Industry and Technology majors).

Communications (Comm)

- 1011. READING IMPROVEMENT.** (1 cr [cr not applicable to AA degree]; 2 hrs per wk)
Improvement of reading speed and comprehension; correction of faulty reading habits; application of reading skills to textbook materials.

Description of Courses

- 1021. VOCABULARY IMPROVEMENT.** (1 cr [cr not applicable to AA degree]; 2 hrs per wk)
Improvement of skills in using general vocabulary and the technical vocabularies of agriculture; prefix and root methods of understanding terms; spelling correction.
- 1031. WRITING IMPROVEMENT.** (1 cr [cr not applicable to AA degree]; 2 hrs per wk)
Improvement in the fundamentals of written composition; grammatical structure, punctuation, and word usage.
- 1041. STUDY SKILLS.** (1 cr [cr not applicable to AA degree]; 2 hrs per wk)
Improvement of skills essential to college success—note-taking, listening, reading the textbook, and preparing for and taking examinations.
- 1103. INTRODUCTION TO COMMUNICATIONS.** (3 cr; 4 hrs per wk)
Practical applications of four communication skills: reading, writing, speaking, and listening.
- 1203. INTRODUCTION TO TECHNICAL REPORTING.** (3 cr; prereq 1103 or consent; 4 hrs per wk)
Technical reporting skills applicable to agriculture, emphasizing clear, concise written and oral reports.
- 1223. INTRODUCTION TO PHOTOGRAPHY.** (3 cr; 4 hrs per wk)
Practice photography for visual communication. Fundamentals of photography, development, and layout for agricultural publications.
- 1303. AGRIBUSINESS COMMUNICATIONS.** (3 cr; prereq 1103, 1203; 4 hrs per wk)
Application of reading, writing, speaking, and listening skills to agribusiness midmanagement and entrepreneur situations. Emphasis on practical business writing skills.
- 1312. AUDIOVISUAL TECHNIQUES.** (2 cr; 3 hrs per wk)
Lecture and laboratory work in the use of audiovisual equipment; production of materials and visuals, principles involved in effective presentations.
- 1333. INTRODUCTION TO MASS COMMUNICATIONS.** (3 cr; 4 hrs per wk)
An investigation of the functions and responsibilities, especially as they relate to the agriculturally oriented producer and consumer, of the mass media; newspapers, magazines, books, broadcasting, films, advertising, and public relations.
- 1422. INTRODUCTION TO COMMUNICATIONS LAW.** (2 cr; 3 hrs per wk)
Contemporary legal problems for the agriculturally oriented journalist; libel and privacy laws; copyright and obscenity statutes; advertising and broadcast regulations.
- 1473. TECHNICAL REPORT WRITING.** (3 cr; prereq 1103, 1203; 4 hrs per wk)
Introduction to objective, informative writing designed to develop effective written communication skills for agriculture and agriculturally related industries.
- 1533. AGRICULTURAL REPORTING.** (3 cr; prereq 1103, 1203; 4 hrs per wk)
Practice in gathering and writing agricultural information appropriate for company news releases or for news stories in agricultural news sections of newspapers and bulletins.
- 1563. AGRICULTURAL MAGAZINE/JOURNAL WRITING.** (3 cr; prereq 1103, 1203; 4 hrs per wk)
Practice in researching, writing, and layout for periodical articles. At least one article will be submitted to an agricultural periodical for publication.
- 1603. SPEAKING SKILLS.** (3 cr; 4 hrs per wk)
For students in any major. Through emphasis on fundamental principles of public speaking and basic on-the-job speaking roles, students can gain confidence and effectiveness in personal and in job-related speaking situations.
- 1663. INTRODUCTION TO RADIO AND TELEVISION BROADCASTING.** (3 cr; prereq 1603; 4 hrs per wk)
Principles of radio and television broadcasting techniques for the agriculturally oriented journalist. Exercises in production, scriptwriting, and performance, with practical experiences in UMW communication laboratories.

Economics (Econ)

- 1013. NATIONAL ECONOMIC ISSUES.** (3 cr; 4 hrs per wk)
Determinants of national income, employment, and price levels with particular attention to aggregate consumption, investment, and government.

- 1023. ECONOMIC ISSUES—FIRM AND HOUSEHOLD.** (3 cr; prereq consent; 4 hrs per wk)
Economics of the firm and household; supply and demand analysis; theory of production, consumption, and distribution.
- 1103. CONSUMER ECONOMICS.** (3 cr; prereq 1013; 4 hrs per wk)
Designed for students who desire practical applications of the principles of economics; economics relating to tasks of personal money management in areas of credit, shopping, insurance, income tax, and consumer protection.

Food Industry and Technology (Food)

- 1113. INTRODUCTION TO THE FOOD INDUSTRY.** (3 cr; 4 hrs per wk)
The history of food; the changing nature of food; new food concepts; development of the food industry; local, national, international foods; ethnic foods. Utilization of Minnesota farm products in the food industry.
- 1204. FOOD PRODUCT EVALUATION.** (4 cr; 6 hrs per wk)
Ways to evaluate food products from today's marketplace: nutritionally, economically, aesthetically, and traditionally. Taste testing and instruments used in the food industry involving several common measuring systems (metric, avoirdupois, centigrade, and others). Evaluation as related to the control and determination of quality and quantity.
- 1253. FOOD PRODUCTS MARKETING.** (3 cr; 4 hrs per wk)
Principles and practices employed in the distribution and marketing of raw and processed food products through retail outlets to the homemaker as well as through the institutional and industrial outlets.
- 1322. FOOD PRODUCT INSPECTION.** (2 cr; 3 hrs per wk)
The identification of food quality attributes and the importance of different degrees of quality in the marketplace. Relevant standards and grades of processed food products.
- 1343. FOOD PRODUCTION FOR THE CONSUMER.** (3 cr; 4 hrs per wk)
Relationship of postharvest food production (canning, freezing, etc.) to the consumer, via the marketing and distribution aspects. Parameters of food preservation; spoilage organisms; beneficial organisms; economic factors.
- 1413. FOOD INDUSTRY OPERATIONS.** (3 cr; 4 hrs per wk)
Weekly visits to food markets, food inspection laboratories, food processors, research institutions, hospitals, nursing homes, restaurants, and other food-related enterprises, to enable the student to be acquainted with as many of the aspects of the food industry as possible. Special lab fee of \$20 per student.
- 1523. NEW PRODUCT DEVELOPMENT.** (3 cr; 4 hrs per wk)
How new food products are developed. Comparison of new food products presently on the market. Actual development of new food products, using common and uncommon ingredients, spices, additives. Costs of material, labor and overhead, packaging, shelf life, and other factors considered.
- 1533. PACKAGING AND LABELING.** (3 cr; 4 hrs per wk)
The role of packaging and labeling as related to the food industry including rules and regulations, especially Food and Drug Administration factors. Types of packaging materials and economic factors.
- 1612. FOOD INDUSTRY SEMINAR.** (2 cr; 4 hrs per wk)
A weekly meeting to discuss aspects of the food industry, generally with off-campus industry leaders.
- 1632. FOOD NUTRITION.** (2 cr; 3 hrs per wk)
An elementary study of the factors involved in human nutrition as related to foods presently available to the American consumer. Protein and other food nutrients. Advertising claims and food products examined and evaluated. National and international food problems.
- 1644. ADVANCED FOOD PRODUCT EVALUATION.** (4 cr; prereq 1204; 6 hrs per wk)
An advanced course continuing study of food product evaluation concepts. Use of statistics and informational data, including food marketing surveys.
- 1762. FOOD GROUP PROJECT.** (2 cr; 4 hrs per wk)
A directed study of present-day food products, practices, and situations. Students may conduct studies in groups according to interest. Results of studies will be offered by students in seminar and may be critiqued by representatives from the food industry.

Home and Family Services (HFSc)

- 1052. ORIENTATION TO FAMILY ENVIRONMENT.** (2 cr; 4 hrs per wk)
Social, economic, physical, and aesthetic dimensions of family environment; discussions and assigned readings on opportunities and employment potential for students in family science fields.
- 1125. DEVELOPMENT OF THE PRESCHOOL CHILD.** (5 cr; 7 hrs per wk)
The social, emotional, physical, and cultural development of the preschool child with emphasis on individual differences in development.
- 1183. FAMILY HOUSING.** (3 cr; 4 hrs per wk)
Criteria for evaluating aspects of family housing; factors related to differences in housing needs; programs for housing improvement.
- 1244. EQUIPMENT IN THE HOME.** (4 cr; 5 hrs per wk)
Selection, operation, use, and care of materials, equipment, and appliances in the home; utilization of water, gas, electricity, heat, and light for doing work and maintaining health and comfort in the home.
- 1263. CREATIVE CRAFTS AND ART MATERIALS.** (3 cr; 4 hrs per wk)
Theory and practice in the use of art media, including paint, clay, and collage, suitable for the development of creative potential.
- 1273. CREATIVE ACTIVITIES FOR CHILDREN.** (3 cr; prereq 1125 or consent; 4 hrs per wk)
Planning and carrying out creative activities appropriate for young children in an early childhood program. Creative activities to be explored will be art, music, drama, dramatic play, and woodworking.
- 1283. FAMILY NUTRITION.** (3 cr; 4 hrs per wk)
Functions and interrelationships of various nutrients in the body; nutritional requirements during the life cycle; analysis of dietary intakes; individual and family food habits.
- 1303. FIRST AID AND EMERGENCY CARE.** (3 cr; 5 hrs per wk)
An extensive 55-hour first aid course designed to teach the why and how of emergency care. Includes cardiopulmonary resuscitation, emergency childbirth, extrication from vehicles and farm machinery, and management of drug abuse problems.
- 1313. TEXTILES.** (3 cr; 4 hrs per wk)
Characteristics, use, and care of fibers, yarns, fabrics, and finishes; consumer problems and legislation related to textiles.
- 1334. DEVELOPMENT OF THE PRESCHOOL CHILD-PRACTICUM.** (4 cr; 5 hrs per wk)
Emphasis on child guidance, behavior problems, and language development. Practicum in observation and interpretation of behavior.
- 1353. HOME DESIGN AND FURNISHINGS.** (3 cr; prereq 1183; 4 hrs per wk)
Design principles as applied to interiors. Consideration of individual and family needs in use of furnishings.
- 1373. COGNITIVE ACTIVITIES FOR CHILDREN.** (3 cr; prereq 1125 or consent; 4 hrs per wk)
Planning and carrying out cognitive activities appropriate for young children in an early childhood program. Cognitive activities to be explored will be language development, literature, manipulative toys, science, mathematics, and outdoor activities.
- 1424. FOOD PREPARATION.** (4 cr; prereq 1283; 5 hrs per wk)
Development of techniques for and applications of basic scientific principles of food preparation and preservation; standards of evaluation for food products.
- 1453. HOME MANAGEMENT.** (3 cr; prereq 1052; 4 hrs per wk)
Study of individual and family needs, values, and goals; analysis of resources; home management principles in relation to social, economic, and institutional forces; problem solving and decision making.
- 1493. APPAREL MERCHANDISING.** (3 cr; 4 hrs per wk)
The fashion industry and its operation, sales analysis, buying plans, stock control, store organization, and promotional procedures.
- 1524. PURCHASING HOME FURNISHINGS.** (4 cr; prereq 1353; 5 hrs per wk)
Selection of home furnishings in terms of use, cost, and appearance, with emphasis on furniture, dinnerware, floor and wall coverings, fabrics, and accessories.
- 1553. FAMILY CLOTHING CONSTRUCTION.** (3 cr; prereq 1314 or consent; 4 hrs per wk)
Principles, techniques, and skills in pattern design and family clothing construction.

- 1603. RURAL FAMILY ECONOMICS.** (3 cr; prereq 1454; 4 hrs per wk)
Management of rural family resources considering variations in family income, savings, spending, and other decision-making factors; wise use of resources, time, and natural environment.
- 1623. MERCHANDISE SELECTION.** (3 cr; prereq 1343; 4 hrs per wk)
Interrelationships of art, design, and function of merchandise. Identification, evaluation, and selection of merchandise for consumer use. Roles and responsibilities of manufacturers, retailers, and consumers.
- 1634. FAMILY FOOD MANAGEMENT.** (4 cr; prereq 1424; 5 hrs per wk)
Fundamentals of menu planning, food purchasing, preparation, and meal service with emphasis on nutritional adequacy, aesthetics, sanitation, and management of resources.
- 1653. THE EXCEPTIONAL INDIVIDUAL.** (3 cr; 4 hrs per wk)
A study of the handicapped and/or gifted individual with emphasis on relating to and planning appropriate activities and tasks for them.
- 1672. SEMINAR: HOME AND FAMILY SERVICES.** (2 cr; prereq sr, 10 cr in HFSc; 3 hrs per wk)
Contemporary topics in home and family services, of special interest to senior students; oral reports and discussions by students with contributions by staff.

Horticulture (Hort)

- 1113. INTRODUCTORY HORTICULTURE.** (3 cr; 4 hrs per wk)
Survey of field of horticulture: environmental considerations, types of operations, planting, propagation, cultivation, pruning, protection, harvesting, and selection of plant materials; development and maintenance of horticultural grounds.
- 1232. BASIC FLOWER ARRANGEMENT AND FLORAL DESIGN.** (2 cr; prereq consent; 4 hrs per wk)
Principles of flower arrangement and design.
- 1243. VEGETABLE AND FRUIT PRODUCTION.** (3 cr; prereq consent; 4 hrs per wk)
Identification, culture, and management of major vegetable and fruit crops grown in North Central states.
- 1253. GREENHOUSE OPERATIONS.** (3 cr; 5 hrs per wk)
Fundamentals of greenhouse construction and management; theory and laboratory operations in light control, heat, soil preparation, potting, transplanting, preparing seed flats, watering, pinching, and other greenhouse techniques.
- 1272. LANDSCAPE PRACTICES.** (2 cr; prereq 1113; 4 hrs per wk)
Principles and cultural practices involved in establishment and maintenance of landscape plantings, including techniques of planting, pruning, fertilizing, digging, and handling of landscape materials.
- 1312. HOME HORTICULTURE.** (2 cr; 3 hrs per wk)
Horticulture as related to the home or consumer point of view. Purchase, growth, maintenance, and care of plants. How plants respond in various environmental conditions.
- 1323. WOODY PLANT MATERIALS.** (3 cr; prereq consent; 4 hrs per wk)
Identification, adaptation, cultural characteristics, and use of trees, shrubs, vines, and common landscape plants suitable for Minnesota.
- 1333. HERBACEOUS PLANT MATERIALS.** (3 cr; prereq consent; 4 hrs per wk)
Identification, adaptation, and cultural characteristics of annuals, perennials. Interior use of plant materials.
- 1343. PLANT PROPAGATION.** (3 cr; prereq 1113 or consent; 5 hrs per wk)
Principles and practices involved in propagation of plants by seeds, cuttings, grafts, layers, and divisions.
- 1372. ARBORICULTURE.** (2 cr; prereq 1113; 4 hrs per wk)
Care and maintenance of trees and shrubs. Emphasis on theory and practice of wind and cavity treatment, branching and cabling, diagnosing tree and shrub problems.
- 1413. ADVANCED FLORAL DESIGN.** (3 cr; prereq 1232; 5 hrs per wk)
Theory and practice of designing and constructing wreaths, sprays, corsages, bouquets, and other arrangements for special functions.

Description of Courses

- 1442. LANDSCAPE MAINTENANCE.** (2 cr; prereq 1272 or consent; 4 hrs per wk)
Principles and practices in landscape maintenance, including edging, watering, turf maintenance, mulching, winter protection, fertilizing, and insect, weed, and disease control.
- 1473. NURSERY OPERATIONS.** (3 cr; prereq 1113 or consent; 5 hrs per wk)
Techniques and practices employed in planning, planting, culture, and management of nursery crops. Seeding, lining out, cultivating, root pruning, shearing, developing planting media, container management, and hauling wholesale nursery stock emphasized. Field trips to nurseries.
- 1513. COMMERCIAL FLORICULTURE.** (3 cr; prereq consent; 4 hrs per wk)
Identification, culture, and management of major cut flower bedding and pot plants utilized in a florist business, including foliage plants, bulbs, and house plants.
- 1523. FLOWER SHOP MANAGEMENT.** (3 cr; prereq consent; 4 hrs per wk)
Major management problems and decisions in retail floriculture. Planning and operating the shop with emphasis on integrating growing and retailing practices.
- 1553. LANDSCAPE PLANNING.** (3 cr; prereq 1323; 4 hrs per wk)
Fundamentals of landscape theory including organization of space, complementary shapes and forms, site analysis, and the relationship of structure, texture, and colors in the landscape; includes study of ornamentals and their environmental requirements.
- 1583. NURSERY AND GARDEN CENTER MANAGEMENT.** (3 cr; prereq 1113 or consent; 4 hrs per wk)
Nursery and garden center organization. Crop production schedules, economics of nursery operation, sales promotion, customer relations, planting management, and layout of nursery and display areas.
- 1612. COMMERCIAL FLORICULTURE MANAGEMENT.** (2 cr; prereq 1513; 3 hrs per wk)
Emphasis on management of floriculture crops in order to produce a profit. Additional coverage of cultural requirements of other major flower crops. Completion of growing crops initiated in Commercial Floriculture.
- 1634. LANDSCAPE CONSTRUCTION.** (4 cr; prereq 1553; 6 hrs per wk)
Practical assignments in planning and developing landscape sites. Drawing, sketching, introductory techniques of surveying, and ground preparation; construction of formal and informal landscape carrels.
- 1643. TURF MANAGEMENT.** (3 cr; prereq 1442; 5 hrs per wk)
Theory and practical application of principles in care and maintenance of turf; grass types, irrigation, fertilizers, diseases, insects, weed control, and turf equipment.
- 1651. HORTICULTURAL SEMINAR.** (1 cr; 2 hrs per wk)
Research presentation and seminar discussion of current horticultural topics by students, faculty, and guest lecturers. Students will help faculty design and develop course content.
- 1673. GROUNDS DEVELOPMENT AND MAINTENANCE.** (3 cr; prereq 1553; 4 hrs per wk)
Planting and maintenance of ornamental crops with emphasis on basic principles inherent to park, golf course, institutional, and estate grounds maintenance.

Humanities (Humn)

- 1313. INTRODUCTION TO HUMANITIES.** (3 cr; 4 hrs per wk)
Introduction to the study of man's values and aspirations as revealed in literature, philosophy, history, and the arts. Fundamental concepts common to the arts through personal involvement with art forms and art experiences.
- 1423. HUMANITIES—SPECIAL PROBLEMS.** (3 cr; prereq 1313 or consent; 4 hrs per wk)
Examination of cultural and ethical values, adapted to student interests or, where appropriate, agricultural concepts.
- 1533. HUMANITIES OF THE MODERN ERA.** (3 cr; prereq 1423 or consent; 4 hrs per wk)
Comprehensive study of literature, philosophy, music, and the arts beginning with Impressionism in art and music to the present.

Mathematics (Math)

- 1013. ELEMENTARY ALGEBRA.** (3 cr; 4 hrs per wk)
Basic algebraic processes for students without a background in algebra; signed numbers, linear equations, operations with polynomials, literal equations and inequalities; problem solving; introduction to exponents, factoring, radicals, and roots; scientific notations.

- 1054. AGRICULTURAL TECHNICAL MATHEMATICS.** (4 cr; 5 hrs per wk)
Review of basic arithmetic; systems of measurement, ratio and proportion, applied geometry and algebraic notations; application of math to agricultural laboratory procedures and techniques.
- 1083. BUSINESS MATHEMATICS.** (3 cr; 4 hrs per wk)
Fundamental mathematical processes, fractions, percentage in business; interest and bank discount, compound interest, payroll and taxes; financial statements.
- 1254. COLLEGE ALGEBRA.** (4 cr; prereq 1013 or equiv; 5 hrs per wk)
Advanced algebra which includes polynomial functions and their graphs; quadratic equations; probability; complex numbers; systems of equations; inequalities, ratio, proportion and variation; exponential and logarithmic functions.
- 1374. COLLEGE TRIGONOMETRY.** (4 cr; prereq 1254 or equiv; 5 hrs per wk)
Trigonometric functions, their graphs; right angles; oblique triangles, identities; logarithms, trigonometric equations, and angular measure.
- 1503. STATISTICS.** (3 cr; prereq 1254 or consent; 4 hrs per wk)
Statistical concepts; use, presentation, and interpretation of data; elementary probability; and application of statistical methods.

Mechanized Agriculture (MeAg)

- 1012. BASIC ARC WELDING.** (2 cr; 3 hrs per wk)
Selection and care of arc welding supplies and equipment. Basic arc welding techniques including the operation of wire feed welders. Identification and characteristics of metals and electrodes.
- 1022. BASIC OXYACETYLENE WELDING.** (2 cr; 3 hrs per wk)
Selection and care of oxyacetylene supplies and equipment. Theory and practices in welding with various types of oxyacetylene equipment including heli-arc.
- 1024. TECHNICAL DRAWING.** (4 cr; 6 hrs per wk)
Drafting instruments and their use; lettering, drafting symbols, sketching, tracing, and reproductions, beginning drafting and orthographic projection, isometric and perspective drawings, planning and interpretation of drawings.
- 1043. AGRICULTURAL METALS AND WELDING.** (3 cr; 5 hrs per wk)
Identification and characteristics of metals used in farm machinery; practical arts and skills of metal fabrication, including arc, acetylene, TIG and wire feed welding; applications of heat treatment, and testing.
- 1083. FUNDAMENTALS OF POWER AND AIR-COOLED ENGINES.** (3 cr; 5 hrs per wk)
Principles and theory of internal combustion engines. Practical applications of disassembly, overhaul, and assembly of major types of small air-cooled engines.
- 1234. AGRICULTURAL MECHANICS.** (4 cr; 6 hrs per wk)
Fundamental principles and basic skills in agricultural mechanics, including electricity, bench metals, wood construction, concrete, power tools, numbering and plan reading.
- 1253. AGRICULTURAL ELECTRICAL EQUIPMENT.** (3 cr; 4 hrs per wk)
Elementary theory of electricity, power transmission circuits and instruments. Electric motors, heating and controls; selection and maintenance of electrical equipment.
- 1333. AGRICULTURAL MACHINERY.** (3 cr; 5 hrs per wk)
Principles of machinery selection, components, setup, maintenance, and servicing of field machinery used in animal and crop production.
- 1374. AGRICULTURAL STRUCTURES AND ENVIRONMENT.** (4 cr; 6 hrs per wk)
Design of farm service buildings, farmstead layouts, building sizes, and construction details; analysis of materials used, heating, ventilation, and light control as related to environmental control in livestock buildings, product storage, and plant production.
- 1404. FUNDAMENTALS OF SURVEYING.** (4 cr; 6 hrs per wk)
Principles and theory of surveying; care and use of surveying equipment; measurement of distances, elevations, angles, and directions; contours, field notes, and calculation methods.
- 1412. AGRICULTURAL FUELS AND LUBRICANTS.** (2 cr; 3 hrs per wk)
Refining, production, transportation, and storage of petroleum products used in agriculture. Emphasis on gasoline, liquid petroleum, diesel fuel, and oil production and their application to agricultural power units.

Description of Courses

- 1443. AGRICULTURAL GASOLINE POWER MECHANICS AND MAINTENANCE.** (3 cr; 5 hrs per wk)
Operation, design, and selection of farm power units for modern agricultural production; preventive maintenance, adjusting, diagnostic, and servicing techniques for various tractor power units, power train and chassis.
- 1453. AGRICULTURAL DIESEL POWER MECHANICS AND MAINTENANCE.** (3 cr; pre-req 1443 or consent; 5 hrs per wk)
Operation, design, and selection of diesel farm power units for modern agricultural production; preventive maintenance, adjusting.
- 1523. BASIC HYDRAULICS.** (3 cr; 4 hrs per wk)
Fundamental principles of hydraulics, fluid power components and their design, application, operation, and maintenance; use of hydraulic systems in controlling agricultural and light industrial equipment.
- 1543. AGRICULTURAL EQUIPMENT.** (3 cr; prereq consent; 5 hrs per wk)
Principles of design, selection, operation, installation, and care of equipment in modern agricultural operations; milking and milk parlor equipment; bulk feeders, barn cleaners, silo unloaders; ventilation equipment; irrigation equipment; and others.
- 1633. ADVANCED AGRICULTURAL MACHINERY.** (3 cr; 5 hrs per wk)
Fundamental principles of applied mathematics and physics in agricultural machinery industries; design, testing, fabrication, and quality control techniques. Establishment and operation of parts inventory systems and their management by hand and computer.
- 1663. AGRICULTURAL PRODUCTS HANDLING.** (3 cr; 5 hrs per wk)
Principles of design and operation of machinery and equipment used in farm materials handling systems. Planning and layout involved in grain drying systems and handling of cash grain, bulk feed, and fertilizer products.

Physical Education (PhEd)

Physical education provides a platform of skills and knowledge which will allow the student to live a physically sound life and enjoy leisure time recreation. It attempts to allow the student to become better adjusted to his or her immediate and future needs. Through physical education, an individual has the opportunity to learn to perform efficiently the motor skills he or she needs in everyday living and in recreational activities.

Physical education is the study and practice of the science and art of human movement. It is concerned with why men and women move; how they move; and with the physiological, sociological, and psychological consequences of their movement.

- 1012. PERSONAL HEALTH.** (2 cr; 3 hrs per wk)
Personal hygiene, emotional balance, public and community health including health regulations and problems.
- 1100 through 1200. PHYSICAL EDUCATION ACTIVITIES.** (½ cr; each course offered for one-half of the qtr)
- 1101. ARCHERY—BEGINNING**
 - 1111. BADMINTON**
 - 1121. BOWLING**
 - 1131. CANOEING**
 - 1141. DANCE**
 - 1151. EXERCISE FOR LIFE**
 - 1161. GOLF—BEGINNING**
 - 1171. RACQUET SPORTS**
 - 1181. SWIMMING—BEGINNING**
 - 1191. SWIMMING—INTERMEDIATE**

- 1201. SWIMMING—ADVANCED
- 1211. SOFTBALL
- 1221. TENNIS—BEGINNING
- 1231. TENNIS—INTERMEDIATE
- 1241. VOLLEYBALL
- 1251. INTERMEDIATE ARCHERY
- 1261. PADDLE BALL
- 1271. INTERMEDIATE GOLF
- 1281. SENIOR LIFESAVING
- 1291. CROSS-COUNTRY SKING

Physics (Phys)

1104. **TECHNICAL PHYSICS.** (4 cr; prereq consent; 6 hrs per wk)
Basic principles of physics dealing with measurement, mechanics of solids and fluids, heat and electricity. Laboratory work deals with these principles as they are directly used in various technologies.

Psychology (Psyc)

1114. **GENERAL PSYCHOLOGY.** (4 cr; 5 hrs per wk)
Basic methods and points of view involved in the scientific study of psychology; child and personality development, learning, perception, motivation, emotion, and social behavior; emphasis on practical application of theory.

Social Science (SocS)

1013. **AMERICAN INSTITUTIONS.** (3 cr; 4 hrs per wk)
Survey of cultural, social, political, and economic institutions and their impact on development of our nation.
1053. **RURAL SOCIOLOGY.** (3 cr; 4 hrs per wk)
Structure, function, and change in rural areas with emphasis on value orientations, institutions, political groups, and their function in rural communities.
1173. **AMERICAN GOVERNMENT.** (3 cr; 4 hrs per wk)
Processes and concepts within the broad scope of America's national government.
1273. **PRINCIPLES OF LEADERSHIP AND PUBLIC RELATIONS.** (3 cr; 4 hrs per wk)
The organization and structure of leadership, parliamentary procedure, and public relations.
1303. **MAJOR CURRENTS IN AMERICAN HISTORY.** (3 cr; 4 hrs per wk)
Major issues and events which have shaped our nation with special emphasis on their effect on modern American society and on the history of agriculture.

Soil Science (Soil)

1054. **SOIL SCIENCE.** (4 cr; prereq Chem 1104; 5 hrs per wk)
Introduction to the physical and chemical properties of the soil system. Emphasis on functions of the soil as a medium to support plant life under varying biological, chemical, and physical conditions.

Description of Courses

- 1222. SOIL AND PLANT TESTING.** (2 cr; 3 hrs per wk)
Sampling and preparation of soil and plant material, analysis of soil and plant material in order to generate data for making recommendations, and understanding the basic research needed in making recommendations.
- 1251. SOIL AND LAND EVALUATION.** (1 cr; prereq 1054; 2 hrs per wk)
Field instruction in important properties of soil and land which lead to "land capability ratings" and management practices needed. Soil genesis and classifications.
- 1331. FERTILIZERS.** (1 cr; prereq 1054 or consent; 2 hrs per wk)
Understanding differences in the chemical and physical properties of solid, liquid, and gaseous fertilizers and other soil amendments as related to handling, formulation, and usage.
- 1333. SOIL FERTILITY.** (3 cr; prereq 1054; 4 hrs per wk)
Principles involved in supplying essential elements for growing plants; effects of other growth factors; nutrient requirements of plants; deficiency symptoms; methods of application and economics of fertilizers, amendments and organic materials.
- 1553. SOIL CONSERVATION AND WATER MANAGEMENT.** (3 cr; prereq 1054; 4 hrs per wk)
Principles in conservation of soil resources; relation of soil physical properties and land morphology in erosion and water problems; elementary surveying, open and tile drainage systems; contouring, farm ponds, and conservation planning as applied to soil and water.
- 1643. AGRICULTURAL CHEMICALS.** (3 cr; prereq Chem 1104 or consent; 4 hrs per wk)
Types, properties, production, use practices, and safeguards of agricultural chemicals used as herbicides, insecticides, fungicides, and plant regulators.



V. FACULTY

Professor

Robert Collins, Ph.D.
E. C. Frederick, Ph.D.

Associate Professor

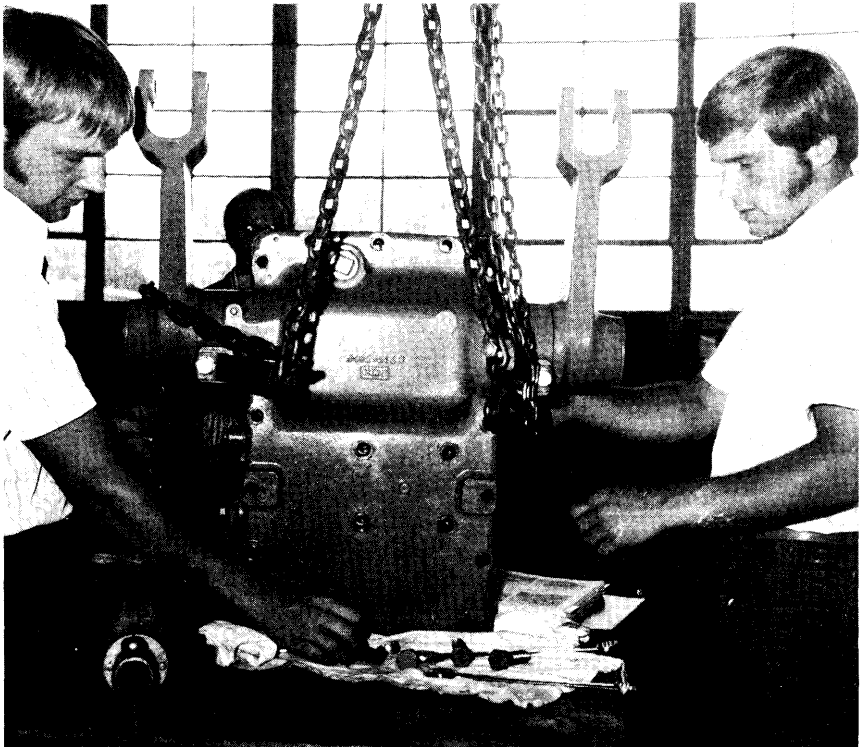
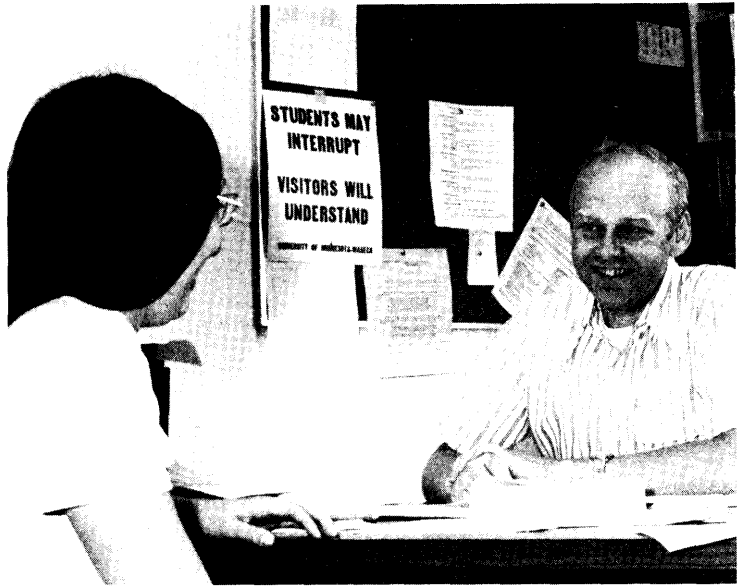
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Harold Matson, M.A.

Assistant Professor

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Duane Berglund, Ph.D.
Charles Biggar, Ph.D.
Donald Collins, M.S.
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Jerome Nechville, M.S.
Ward Nefstead, M.S.
Stanley Nelson, M.S.
George Newell, M.S.
Robert Pickert, M.S.
Stephen Ross, B.S.
John Stoddard, M.S.
Jacqueline Storby, B.S.
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Lloyd Wilson, M.S.
Thomas Yuzer, M.A.



INDEX

Academic Information	15	Financial Aids	10
Academic Progress	17	Food Industry and Technology	39, 61
Administrative Staff	Inside Front Cover	Food Service	11
Admission Information	6	General Information	5
Adult Special	7	Grading Information	16
Nonresident Admission	7	Graduation Information	18
Preadmission Counseling	7	Health Services	11
Requirements	6	Home and Family Services	42, 62
Veterans	7	Horticultural Technology	46
Agricultural Accounting	51	Horticulture	63
Agricultural Business	21	Housing	11
Agricultural Business Management	52	Humanities	64
Agricultural Industries		Human Rights	6
and Services	25	Instructor-Counselors	12
Agricultural Marketing	53	Learning Resources Center	11
Agricultural Office Management	53	Mathematics	64
Agricultural Production	33	Mechanized Agriculture	65
Agricultural Science	54	Orientation	8
Agronomy	55	Physical Education	66
Animal Health Technology	38, 55	Physics	67
Animal Science	57	Placement Center	12
Biological Sciences	58	Preoccupational Preparation Unit	20
Board of Regents	Inside Front Cover	Programs of Study	19
Chemistry	59	Psychology	67
College Bookstore	11	Registration	8
Communications	59	Social Science	67
Counseling Services	12	Soil Science	67
Credit Information	15	Student Activities	12
Credit Through Proficiency		Student Classification	16
Examination	15	Transfer Credits	15
Curricular Information	19		
Economics	60		
Expenses	8		
Board and Room	9		
Fees	8		
Special Fees	9		
Facilities for Instruction	6		
Faculty	69		