

# AGRICULTURAL TECHNOLOGY

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## Program Options for Students Enrolled in Agricultural Technology at NIACC

### Associate in Applied Science Degree with

#### Agricultural Operations & Management

#### Agricultural Sales & Service

#### Agricultural Marketing & Finance

Students completing the five-term Agricultural Operations & Management degree program or Agricultural Sales & Service degree program may elect to have a livestock production specialist or crop production specialist designation attached to their degree if they have specialized that course of study with 10 hours of approved elective course work in livestock or crop production. Approval granted upon joint ag staff acceptance of the Agricultural Technology Degree curriculum plan.

## Dual Degree Iowa State University Transfer Program:

NIACC's A.A.S. degree programs - Ag Operations & Management, Ag Sales & Service, or Ag Marketing & Finance (modified curriculum articulated to ISU College of Agriculture in):

Ag Studies / Ag Education

Ag Business

## A.G.S. Degree: Associate in General Studies

### Diploma: Agricultural Technology

Students may receive an Agricultural Technology diploma by completing 32 semester hours of approved course work. The diploma may carry an agricultural specialty designation in crop production, animal science, or ag business management. (This is contingent upon completion of 22 hours of ag curriculum core courses and 10 approved elective credits related to the area of specialty.) Approval granted upon joint Ag staff and student acceptance of a curriculum plan.

## NIACC's A.A. or A.S. Degree

Ag Transfer

The Agricultural Technology Division at NIACC recognizes that new and evolving technologies, along with improved agricultural business methods and new farming systems have a significant impact on how agricultural producers, service providers, processors, and manufacturers do business. As we prepare students for the challenges of the twenty-first century, we have developed a comprehensive curriculum that addresses the needs of students entering the agricultural job market regarding technology adoption, profitable production systems, and sound business management. The agricultural curriculum for all three degree programs provides a combination of general and technical education core classes emphasizing science, technology, communications, business, and computer skills. You may select any one of the three specific technology areas—operations & management, sales & service, marketing & finance, and be assured that quality student service continues from recruitment through job placement and lifelong learning.

## Agricultural Demonstration Center (ADC)

North Iowa Area Community College is the site of the regionally recognized Agricultural Demonstration Center (ADC). The ADC's primary mission is to transfer information assimilated from agricultural demonstration projects conducted with industry, institutional partners, and students. The ADC plans and conducts demonstrations and educational programs that exhibit systems which efficiently manage agricultural resources, enhance rural profitability, protect environments, and demonstrate new and promising technologies.

During President Bill Clinton's visit to North Iowa Area Community College, he praised NIACC's agricultural programs "...technology and information...are transforming everything, including agriculture..." "I just came from a demonstration...of a computer program using satellite information that tells farmers the difference in their soil composition, their average yields, and gives them all kinds of information...they never could have gotten before. That is how far we have come..." The President praised NIACC's role as a community college educating students and providing information to the community by saying: "North Iowa Area Community College ...is a symbol for what I think we ought to be doing in America." "NIACC is:...community-based, nonbureaucratic, sensitive to the needs of its customers...a place where everybody can come...changing all the time as the economy changes and as the needs of the community and students change...a community institution that will take not only the student, but the community, into the future."

More than 300 acres of crop land, plus livestock production facilities, are dedicated to the ADC for student education. These resources are being utilized to demonstrate advanced cropping systems, agricultural technologies, and livestock production. The project is made possible through industry partnerships. More than 20 agricultural corporations are partners with NIACC providing opportunities for NIACC's agricultural technology students to be directly involved in the experiments and demonstrations. Agricultural technology students are the beneficiaries of these partnerships which bring cutting edge technology, new information, and job opportunities.

Educational focus areas include: no-till farming systems, GPS/GIS, site specific farming technology, transgenic crop demonstrations, specialty crops utilization, remote sensing technology, manure management, swine reproduction and artificial insemination technology, swine and beef genetic evaluation, livestock nutrition studies, beef cattle embryo transfer, and electronic livestock management technologies.

NIACC has facilitated learning opportunities for students interested in animal science by establishing the Swine A.I. Center. The center houses ten boars which will be used to collect, process, and market superior boar semen to area swine producers. Students will be trained to use the latest techniques and equipment available to the industry.

Agricultural technology at NIACC begins with one year of general and technical education core classes emphasizing science, communication, and business. You may then select one of the many program and specialty options leading to graduation, transfer, diploma, or work.

Important components to your education are two, eight-week employment experiences built into the curriculum. These experiences allow students to earn and learn; the work experience is invaluable in securing employment following graduation.

## **AN EDUCATION PARTNERSHIP**

NIACC and Iowa State University's Department of Agricultural Education/Ag Studies and Agricultural Business have teamed up to design a unique program in agriculture. The first two years of the program can be taken at NIACC, and the final two years are completed at Iowa State University. Students following the dual degree program should be aware of curriculum modifications outlined in this catalog. Students completing the NIACC program are awarded an associate in applied science degree in Agricultural Operations. Those continuing on to complete the two-year program at ISU will receive a bachelor of science degree in agricultural studies or ag business.

Note: Iowa State University College of Agriculture students must certify English proficient by obtaining a C or better in written and verbal communication courses.

Students completing the prescribed courses will fulfill the College of Agriculture intensive requirements in ethics, problem solving, communication, and environment.

Similar partnerships can be arranged with other colleges or Iowa State University departments as determined by individual needs.

## **Program Requirements**

### **Entrance**

Due to the highly technical nature of these programs and NIACC's commitment to giving students the best possible opportunity for success, you will be scheduled for advisement sessions to discuss your career plans, educational background, transcripts, test scores, life experiences, and motivation which will aid us in designing a positive educational experience for you. Prior to first-time class registration, students desiring unconditional admission to the Agricultural Technology Program will: be assessed for math, science, reading, and writing competency by one or more of the following:

1. ACT
2. NIACC assessment using - (COMPASS) tests for basic education skills
3. or equivalent Ag Division Exam
4. Acceptance into an honors program of study

Students who are unable to demonstrate general education competencies in math, science, reading, or writing areas will be required to develop an educational enhancement plan and may want to consider the option of additional course work in the area of deficiency, prior to graduation.

### **Graduation**

During the semester applying for graduation, students will:

1. Be assessed for minimum general education competency by completing the General Education (college English, math, computer, communications, and science) Proficiency Exam or approved alternative evaluation.
2. Demonstrate agricultural skill proficiencies by completing an Agricultural Technology exit exam consisting of oral and written components.  
OR  
Submit a capstone project.
3. Develop and complete an Agricultural Career Skills Portfolio.

## Agricultural Operations Management

The Agricultural Operations Management curriculum provides for study of agriculture with emphasis on crop, soil, and animal sciences supported with a strong basis of economic, management, and human relations skills. The program is designed to provide future farmers, farm managers, and production career students the basic and technical training necessary for success. The program's graduates receive an associate in applied science degree. Successful graduates can find job opportunities in the following occupational areas:

- \* Crop technology
- \* Livestock
- \* Grain marketing
- \* Crop scouting
- \* Pesticide applications
- \* Livestock marketing
- \* Ag technology
- \* Farm operations
- \* Custom feeding
- \* Custom producing
- \* Farm management
- \* Diversified ag operations

### SUGGESTED SCHEDULE

This is a possible sequence of courses. A list of course corequisites and prerequisites will be prepared to allow the student to determine their own sequence of courses to complete the program.

#### First Term - Fall

30:101 Communication Skills I .....	4 s.h.
70:112 Animal Science I.....	3 s.h.
90:182 Computer Applications for Ag.....	3 s.h.
90:186 Soil Science.....	3 s.h.
90:264 Intro to Farm Operations .....	3 s.h.
	<b>16 s.h.</b>

#### Second Term - Spring

70:212 Animal Science II.....	3 s.h.
90:160 Crop Science I.....	3 s.h.
90:183 Ag Economics .....	3 s.h.
92:151 Ag Business Accounting.....	3 s.h.
General Ed. Elective.....	3 s.h.
	<b>15 s.h.</b>

#### Third Term - Summer

90:161 Crop Science II.....	3 s.h.
92:260 Advanced Computer Applications .....	2 s.h.
90:267 Precision Ag Technology.....	2 s.h.
	<b>7 s.h.</b>

#### Fourth Term - Fall

89:150 Job-Seeking Skills.....	1 s.h.
89:100 Cooperative Work Experience.....	4 s.h.
90:185 Commodity Marketing .....	2 s.h.
Math Elective .....	minimum of 2 s.h.
Approved Ag Electives .....	6 s.h.
	<b>15 s.h.</b>

#### Fifth Term - Spring

89:101 Cooperative Work Experience.....	4 s.h.
90:285 Ag Finance Management .....	2 s.h.
92:273 Equipment Maintenance and Management .....	2 s.h.
92:272 Employment Relations & Business Decisions.....	2 s.h.
Approved Ag Electives .....	4 s.h.
	<b>14 s.h.</b>
<b>TOTAL</b>	<b>67 s.h.</b>

## Agricultural Sales and Service

The Agricultural Sales and Service curriculum is designed to prepare individuals who seek employment in a business or industry providing supplies and/or services for agriculture. It provides a sound agricultural foundation and develops strengths in the areas of salesmanship, business management, human relations skills, and information management. The program leads to an associate in applied science degree. Successful graduates can find job opportunities in the following occupational areas:

- \* Livestock
- \* IPM crop scouting
- \* Grain marketing
- \* Seed sales
- \* Feed sales
- \* Equipment sales
- \* Fertilizer sales
- \* Site specific specialist
- \* Crop technology application
- \* Grain inspection
- \* Co-op operations
- \* Commission buying
- \* Animal health supply
- \* Meat inspector
- \* Business management
- \* Grain processing
- \* Chemical sales

### SUGGESTED SCHEDULE

This is a possible sequence of courses. A list of course corequisites and prerequisites will be prepared to allow the students to determine their own sequence of courses to complete the program.

#### First Term - Fall

30:101 Communication Skills I.....	4 s.h.
70:112 Animal Science I.....	3 s.h.
90:170 Intro to Ag Business .....	3 s.h.
90:182 Computer Applications for Ag.....	3 s.h.
90:186 Soil Science.....	3 s.h.
	<b>16 s.h.</b>

#### Second Term - Spring

70:212 Animal Science II.....	3 s.h.
90:160 Crop Science I.....	3 s.h.
90:183 Ag Economics .....	3 s.h.
92:151 Ag Business Accounting.....	3 s.h.
General Ed. Electives.....	3 s.h.
	<b>15 s.h.</b>

#### Third Term - Summer

90:161 Crop Science II.....	3 s.h.
90:267 Precision Ag Technologies.....	2 s.h.
92:260 Advanced Computer Applications .....	2 s.h.
	<b>7 s.h.</b>

#### Fourth Term - Fall

89:150 Job-Seeking Skills.....	1 s.h.
90:185 Commodity Marketing .....	2 s.h.
89:100 Cooperative Work Experience.....	4 s.h.
Math Elective .....	minimum of 2 s.h.
Approved Ag Electives .....	6 s.h.
	<b>15 s.h.</b>

#### Fifth Term - Spring

89:101 Cooperative Work Experience.....	4 s.h.
90:189 Salesmanship/Advertising.....	2 s.h.
90:285 Ag Finance Management .....	2 s.h.
92:272 Employment Relations & Business	
Decisions.....	2 s.h.
Approved Ag Electives .....	4 s.h.
	<b>14 s.h.</b>
<b>TOTAL</b>	<b>67 s.h.</b>

## Agricultural Marketing and Finance

The Agricultural Marketing and Finance curriculum provides for study of agriculture with emphasis on business management, agricultural marketing, finance economics, information management, and human relations skills. It is supported with a strong basic agriculture technology core of instruction. Successful graduates will receive an associate in applied science degree and may have the option of continuing their education at a four-year institution or entering the following occupational areas:

- \* Stock market
- \* Marketing management
- \* Finance management
- \* Co-op marketing
- \* Farm management
- \* Real estate
- \* Coop accounting
- \* Commodities marketing
- \* Ag business mgmt
- \* Information management
- \* Food sales
- \* Feed sales
- \* Advertising sales
- \* Inventory control
- \* Distribution
- \* Ag communications
- \* Ag office supervision
- \* Commodity purchasing

### SUGGESTED SCHEDULE

This is a possible sequence of courses. A list of course corequisites and prerequisites will be prepared to allow the student to determine their own sequence of courses to complete the program.

#### First Term - Fall

30:101 Communication Skills I .....	4 s.h.
70:112 Animal Science I .....	3 s.h.
90:170 Intro to Ag Business .....	3 s.h.
90:182 Computer Applications for Ag.....	3 s.h.
90:186 Soil Science.....	3 s.h.
	<b>16 s.h.</b>

#### Second Term - Spring

15:150 Accounting Principles I .....	3 s.h.
30:102 Communication Skills II .....	4 s.h.
70:212 Animal Science II.....	3 s.h.
90:160 Crop Science I.....	3 s.h.
90:183 Ag Economics .....	3 s.h.
	<b>16 s.h.</b>

#### Third Term - Summer

90:161 Crop Science II.....	3 s.h.
90:267 Precision Ag Technologies.....	2 s.h.
92:260 Advanced Computer Applications .....	2 s.h.
	<b>7 s.h.</b>

#### Fourth Term - Fall

15:151 Accounting Principles II .....	3 s.h.
15:120 Business Law I .....	3 s.h.
80:134 Microeconomics .....	3 s.h.
89:150 Job-Seeking Skills .....	1 s.h.
90:185 Commodity Marketing .....	2 s.h.
Ag Electives.....	2 s.h.
	<b>14 s.h.</b>

#### Fifth Term - Spring

89:100 Cooperative Work Experience.....	4 s.h.
90:285 Ag Finance Management .....	2 s.h.
92:263 Ag Futures & Options .....	2 s.h.
92:272 Employment Relations & Business Decisions.....	2 s.h.
Ag Electives.....	4 s.h.
	<b>14 s.h.</b>
<b>TOTAL</b>	<b>67 s.h.</b>

## Agricultural Technology Electives

If electives are required for your ag studies, counselors and ag instructors will help you select courses from the following course listing which will help focus your specialty study:

### AG ELECTIVES

- 15:120 Business Law I
- 15:151 Accounting Principles II
- 90:169 Swine Production
- 90:171 Animal Nutrition
- 90:189 Salesmanship/Advertising and Retailing
- 90:264 Introduction to Farm Operations
- 90:282 Soils/Crop Management
- 90:293 Beef Cattle Production
- 92:166 Animal Health
- 92:168 Crop Production Lab
- 92:189 Ag Real Estate Evaluation
- 92:261 Site-Specific Crop Management
- 92:262 Swine A.I. Center Management
- 92:263 Agriculture Futures and Futures Options
- 92:264 Horse Essentials/Equine Essentials/Horse Care and Management
- 92:270 Livestock Production Lab I
- 92:271 Livestock Production Lab II
- 92:273 Equipment Maintenance and Management

### Course Descriptions -

**15:120 Business Law I (3 s.h.)** Prerequisite: None. Law as applied to business transactions and business relationships. An introduction to jurisprudence and the courts, contracts, commercial paper, sales, and security agreements. (45-0)

**15:150 Accounting Principles I (3 s.h.)** An introductory accounting course: analyzing transactions, matching principle, adjusting and closing entries, financial statements, receivables, inventories, fixed assets and intangible assets, current liabilities, corporations (capital stock transactions, dividends, income and taxes, stockholder's equity, investment in stocks), bonds payable, investment in bonds. (45-0)

**15:151 Accounting Principles II (3 s.h.)** Prerequisite: 15:150, Accounting Principles I, or equivalent. Course covers Statement of Cash Flows, financial statement analysis, job order and process cost systems, cost behavior, budgeting, standard costing, differential analysis and product pricing, capital investment analysis, activity-based costing, and just-in-time manufacturing. Emphasis is on management's use of accounting information. (45-0)

**30:101 Communication Skills (4 s.h.)** Improvement of skills in reading, writing, speaking, and listening, with an emphasis on expository methods of development and personal experience as supporting material. Students must meet minimum competency requirements in writing and speaking to receive a grade of C or higher. Students may use word processors and the computer editing system, Writer's Workbench. (60-0)

**30:102 Communication Skills II (4 s.h.)** continuation of 30:101 with emphasis on argumentative and persuasive writing and speaking, research methods, and language. Students must meet minimum competency requirements in writing and speaking to receive a grade of C or higher. Students may use the computer editing system, Writer's Workbench. (60-0)

**40:121 Mathematics for Decision Making (3 s.h.)** Prerequisite: Basic Arithmetic and Algebra skills as shown by one of the following: 1. A score of 16 or higher on the ACT Math Test or the ASSET Numerical Math Skills Test, or a score of 51 or higher on the Pre-Algebra part of the COMPASS Test AND a grade of C or better in 40:060, Beginning Algebra (at NIACC) or equivalent; 2. A score of 20 or higher on the ACT Math Test or the ASSET Numerical Math Skills Test or 51-75 on the Algebra section of the COMPASS test. Mathematics for Decision Making provides a survey of mathematics topics that includes sets, logic, probability, statistics, sets of numbers, algebra, geometry, and consumer math. This course will fulfill 3 hours of Natural Sciences requirement for the A.A. Degree. (45-0)

**70:101 Biological Principles (3 s.h.)** Study of organismic biology including organization, metabolism, and reproduction of living systems. Includes evolutionary patterns, inheritance, growth, development, ecosystems, and structure-function relationships among organisms. (45-0)

**70:112 Animal Science I (3 s.h.)** This course is designed to provide a general overview of the livestock industry. The student will develop an understanding of and will be able to apply the basic principles of animal selection, breeding, genetics, feeding, health, and husbandry practices. Students will have the opportunity to practice husbandry skills at the NIACC Teaching Farm. (45-15)

**70:212 Animal Science II (3 s.h.)** Advanced principles of animal management, livestock facilities, feed and nutrition fundamentals, handling systems, breeding systems, and current production trends with emphasis in swine and beef production. (45-0)

**89:100 D Cooperative Work Experience (4 s.h.)** Practical training on the job under the cooperative supervision of the College and work supervisor. (15-435)

**89:101 D Cooperative Work Experience (4 s.h.)** Practical training on the job under the cooperative supervision of the College and work supervisor. (15-435)

**89:150 Job-Seeking Skills (1 s.h.)** Develop skills necessary to find, obtain, and keep a job. Students learn to understand and appreciate the world of work as they examine personal job readiness and skills to make job-entry successful. (10-5)

**90:160 Crop Science I (3 s.h.)** Crop plant anatomy, physiology, classification, and ID. Principles of plant protection technology in crop production. Pest classification and ID. Integrated pest management basics. Agricultural chemicals and supplies—their properties and adaptation to agriculture. Pesticide application equipment and procedures. (38-15)

**90:161 Crop Science II (3 s.h.)** Basic concepts and principles of plant-soil-climate relationships. Management principles necessary for successful crop production with major emphasis on corn, soybeans, small grains, and legume crops common to North Iowa agriculture. (38-15)

**90:168 Ag Math (2 s.h.)** A review of basic arithmetic, with a brief introduction to algebra. Problems use current and realistic agricultural situations which could be encountered by those engaged in production agriculture or employed in agriculturally related occupations and industries. (30-0)

**90:169 Swine Production (2 s.h.)** Advanced principles of swine production and management. Students will have the opportunity to apply skills learned in the classroom to the swine operation at the NIACC Teaching Farm. Areas of instructional emphasis include reproduction, nutrition, health, and facilities. (30-0)

**90:170 Introduction to Agricultural Business (3 s.h.)** Basic economic concepts, principles, and practices reflected in agriculture. An overview of the major components of an agricultural business organization and the economic fundamentals involved in organizing, operating, and managing an agricultural business. (45-0)

**90:171 Animal Nutrition (2 s.h.)** Fundamentals of nutrition that deal with monogastric and ruminant animals. Essential nutrient requirements. Sources, composition, and function of feedstuffs. Ration formulation and feeding recommendations. (30-0)

**90:182 Computer Applications for Agriculture (3 s.h.)** Computerized record keeping with spreadsheet applications for cost accounting and business analysis. Review of operating areas of business, profits and losses, efficiency evaluation, decision making, and data base utilization. Use of computer program simulators for ag businesses. (30-30)

**90:183 Agricultural Economics (3 s.h.)** The role of agriculture in the American economy. Basic economic concepts, the composition and pricing of the national product, government and monetary policy, international trade, and marketing policy will be discussed. A study of this country's ag economics policy. The economic decision making process will be taught built upon the management functions of planning, organizing, controlling, and directing. (45-0)

**90:185 Commodity Marketing (2 s.h.)** Elements of producer marketing of major Midwest crops with emphasis on formulating marketing goals and plans. Use of market information in forecasting commodity prices. Commodity futures and options markets, speculation, hedging, and risk management. (30-0)

**90:186 Soil Science (3 s.h.)** Introduction to the physical, chemical, and biological properties of soils with an emphasis on the functions of the soil as a medium to support plant life. A review of the sources and functions of major and minor plant elements, fertilizers and their

properties, soil acidity, liming materials, and soil conservation. (38-15)

**90:189 Salesmanship/Advertising and Retailing (2 s.h.)** Technique of selling and advertising of agricultural goods and services. Sales presentations and advertising setups of agricultural goods and services will serve as a basis for this course. (30-0)

**90:264 Introduction to Farm Operations (3 s.h.)** The course is a unique experience in class work at NIACC. As a class, you will be required to make decisions and carry out the decisions concerning the management of the NIACC Teaching Farm. Emphasis is placed upon sound production management, effective decision making, work responsibility, and development of working relations. Students will complete tasks and projects determined by the group. (10-90)

**90:267 Precision Ag Technology Systems (2 s.h.)** Prerequisite: Intro to Computers or Ag Computer Applications or demonstrated proficiency with computers. Microcomputer technology applications in agriculture with global positioning systems, geological information systems, mapping systems, graphics interface, field sensing, and equipment control related to site specific farming applications. Electronics/computers applied to practical problems in modern agricultural systems to sense, monitor and control various processes in agronomic and animal environments. Utilization of GPS and GIS systems to analyze, manipulate, and manage ag resources and related problems. Evaluating and using information systems and electronic communications for business profit. (15-30)

**90:282 Soil and Crop Management (2 s.h.)** course integrating soil and crop fundamentals into profitable crop production systems. (30-0)

**90:285 Agricultural Finance Management (2 s.h.)** Financial requirements of individual farms and farm cooperative organizations. The administration and policies of lending institutions and farm credit. (30-0)

**90:293 Beef Cattle Production (2 s.h.)** This course is designed to help students identify the primary biological principles that contribute to raising productive beef cattle, to integrate biological and economic principles that comprise effective management decisions needed to produce profitable cattle, and to enhance the understanding and communication between all segments of the beef industry. The course material identifies the primary management principles and practices needed by commercial and seed stock producers to raise productive and profitable cattle that can meet the specifications needed by the beef industry. (30-0)

**92:151 Ag Business Accounting I (3 s.h.)** Principles of debit, credit, the recording of data in various types of journals, posting of the ledgers, the worksheet, financial statements and their interpretation, analysis, adjusting, and closing the books at the end of the fiscal period. (45-0)

**92:166 Animal Health (2 s.h.)** A basic overview of animal health principles and practices. This course should enable students to identify major diseases of livestock and prescribe care and treatment. The course includes a review of animal insects and parasites. The course allows students to develop strategies for disease prevention. (30-0)

**92:168 A or B Crop Production & Lab (1 or 2 s.h.)** (30 or 0-60) Problem-solving approach to crop management. Principles and practices of agricultural science are used in the discussion of management problems and operations related to crop production at the NIACC Teaching Farm. Students will participate in the management and operations of the NIACC Teaching Farm. Field trips and guest speakers. (0-30) or (0-60)

**92:189 Ag Real Estate Evaluation (2 s.h.)** Concepts of appraisal and pricing of real estate, along with development, growth, and value of real estate. Methods of acquiring and financing real estate and estate planning. (30-0)

**92:260 Advanced Computer Applications (2 s.h.)** Prerequisite: 90:182, Computer Applications for Agriculture; 90:186, Soil Science; and 70:112, Animal Science I; or with instructor approval. An advanced course that allows the student to apply the fundamentals of computers, accounting, crops, and livestock. Intended to enhance the foundations of early knowledge, in each area, with the ability to make more efficient, effective decisions. (30-0)

**92:261 Site-Specific Crop Management (2 s.h.)** The use of advanced technologies for crop production. (30-0)

**92:262 Swine A.I. Center Management (1-3 s.h.)** Students will be responsible for the operation and management of the Swine A.I. Center. During the period of instruction students will develop skills associated with the artificial insemination of swine. This hands-on experience utilizes the NIACC's industry-leading swine lab facility which includes housing of gilts, sows and boars; bright and easily accessible training areas, a fully equipped laboratory for semen processing, evaluation, extension, packaging, and storage. The course emphasizes boar management, training, reproductive physiology, semen collection, handling and processing; sow reproductive physiology, semen evaluation and packaging, artificial insemination techniques, semen marketing, and business management.

**92:263 Agriculture Futures and Futures Options (2 s.h.)** Prerequisite/Corequisite: Commodity Marketing. Advanced commodity marketing concepts, principles, and terminology. (30-0)

**92:264 Horse Essentials/Equine Essentials/Horse Care and Management (2 s.h.)** General concepts of breed type and identification; the selection process; nutrition requirements; the reproduction cycle; the importance of genetics; general health; and management requirements will build a strong background for those interested in owning a horse of their own or pursuing a career in equine management. (30-0)

**92:270 Livestock Production Lab I (1 or 2 s.h.)** Students will develop livestock husbandry skills associated with profitable beef and swine production. This hands-on experience emphasizes production practices that increase reproductive efficiency, insure herd health, increase pounds of market production, provide proper nutrition, and assure high market value. Students will assist in the selection, breeding, parturition, processing, feeding, fitting, and marketing of hogs and cattle. Students will evaluate, modify, and manage livestock facilities for maximum production efficiency. (0-30 or 60)

**92:271 Livestock Production Lab II (1 or 2 s.h.)** Students will develop livestock husbandry skills associated with profitable beef and swine production. This hands-on experience emphasizes production practices that increase reproductive efficiency, insure herd health, increase pounds of market production, provide proper nutrition, and assure high market value. Students will assist in the selection, breeding, parturition, processing, feeding, fitting, and marketing of hogs and cattle. Students will evaluate, modify, and manage livestock facilities for maximum production efficiency. (0-30 or 60)

**92:272 Employment Relations and Business Decisions (2 s.h.)** Provides students with an opportunity to explore management through a subordinate and a supervisory learning experience. The course emphasizes the role of management in today's agribusiness environment and the role management plays in effective and productive work situations. Principles of managerial control, coordination, communication, motivation, organization, and the role of management supervision and its influence on employee productivity, satisfaction, and organizational effectiveness. (30-0)

**92:273 Equipment Maintenance and Management (2 s.h.)** Maintenance and management of agricultural machinery and power units. (23-45)

**Are you considering transferring  
to a four-year college or university?**

Students who earn associate degrees in the Agricultural Technology programs at NIACC may wish to apply their studies toward a bachelor's degree in agriculture or agriculture-related fields at a four-year college or university. For further information on options in agricultural studies at Iowa State University, please see pages 117-138 in the catalog or speak with a NIACC advisor.