APS AGRONOMY AND AGRICULTURAL MECHANICS

Division Chair
Brad Ramsdale, Ph.D., Associate Professor

Faculty
Tee Bush, Associate Professor
John Porter, Assistant Professor
Dan Stehlik, Lecturer

Mission
The Agronomy-Agricultural Mechanics Division is dedicated to the development of innovative individuals in the agronomy, horticulture and agricultural equipment disciplines. These degree programs prepare students for lifelong careers in agronomy, horticulture, and ag equipment industries. Graduates gain technical knowledge necessary for success in their chosen career path and obtain skills for lifelong learning and community leadership.

NCTA's campus includes a farm laboratory with over 500 acres of crop and pasture land combined. The farm has three center-pivots including a state-of-the-art Reinke center-pivot irrigation system. Ag mechanics, welding and irrigation technology laboratories are fully equipped. Additionally, the NCTA greenhouse and high tunnel, Nebraska Statewide Arboretum affiliate site and campus ground, and the surrounding community provide living laboratories for horticulture students.

Farm Ownership Advantage Program
This program is designed to assist students in obtaining their own farm or diversified agriculture operation. The outcome of this program is a beginning farmer loan application.

- Enroll in Agronomy Industry Management or Diversified Agriculture option.

Agronomy-Ag Mechanics Core Courses
The following courses are required for all Associate of Applied Science degree options.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGR 2903</td>
<td>INTERNSHIP</td>
<td>3</td>
</tr>
<tr>
<td>ECN 1103</td>
<td>INTRODUCTION TO AG ECONOMICS</td>
<td>3</td>
</tr>
<tr>
<td>ABM 2963</td>
<td>Farm, Ranch, and Small Business Record</td>
<td>3</td>
</tr>
<tr>
<td>or ACT 1103</td>
<td>ACCOUNTING I</td>
<td></td>
</tr>
<tr>
<td>ABM 2854</td>
<td>FARM &amp; RANCH MANAGEMENT</td>
<td>3-4</td>
</tr>
<tr>
<td>or MGT 2103</td>
<td>MGT CONCEPTS</td>
<td></td>
</tr>
<tr>
<td>ABM 2903</td>
<td>ENTREPRENEURSHIP</td>
<td>3</td>
</tr>
<tr>
<td>or AGR 2943</td>
<td>FARM AND RANCH CAPSTONE</td>
<td></td>
</tr>
</tbody>
</table>

Total Credit Hours: 15-16

Agricultural Equipment Management Option-Associate of Applied Science Degree

- Students will be able to safely operate, troubleshoot and maintain agricultural equipment.

Associate of Applied Science Core

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
</table>

Complete requirements: 20
Credit Hours Subtotal: 20

Agronomy-Ag Mechanics Core

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
</table>

Complete requirements: 15-16
Credit Hours Subtotal: 16

Equipment Management Courses

Select 20 credits of the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AEQ 1071</td>
<td>INDUSTRIAL SAFETY</td>
<td></td>
</tr>
<tr>
<td>AEQ 1103</td>
<td>SMALL ENGINES</td>
<td></td>
</tr>
<tr>
<td>AEQ 1153</td>
<td>EQUIPMENT PRINCIPLES</td>
<td></td>
</tr>
<tr>
<td>AEQ 1203</td>
<td>WELDING</td>
<td></td>
</tr>
<tr>
<td>AEQ 1313</td>
<td>INTERMEDIATE WELDING</td>
<td></td>
</tr>
<tr>
<td>AEQ 1503</td>
<td>DC CIRCUIT ANALYSIS</td>
<td></td>
</tr>
<tr>
<td>AEQ 1513</td>
<td>AC CIRCUIT ANALYSIS</td>
<td></td>
</tr>
<tr>
<td>AEQ 2211</td>
<td>HYDRAULICS</td>
<td></td>
</tr>
<tr>
<td>AEQ 2214</td>
<td>ADVANCED WELDING</td>
<td></td>
</tr>
<tr>
<td>AEQ 2303</td>
<td>EQUIP PREVENTATIVE MAINTENANCE</td>
<td></td>
</tr>
<tr>
<td>AEQ 2404</td>
<td>MECHANIZED IRRIGATION SYSTEMS</td>
<td></td>
</tr>
<tr>
<td>AEQ 2413</td>
<td>DIESEL ENGINE</td>
<td></td>
</tr>
</tbody>
</table>

Credit Hours Subtotal: 20

Electives

Advisor Guided Electives: 14-15
Credit Hours Subtotal: 14

Total Credit Hours: 70

Agronomy Industry Management Option-Associate of Applied Science Degree

- Students will be able to apply economically sound and environmentally sustainable agricultural crop production practices in the Great Plains.

Associate of Applied Science Core

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
</table>

Complete requirements: 20
Credit Hours Subtotal: 20

Agronomy-Ag Mechanics Core

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
</table>

Complete requirements: 15-16
Credit Hours Subtotal: 16

Agronomy Option Core

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
</table>

Complete requirements: 23
See below:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGR 1091</td>
<td>CROP PRACTICUM I</td>
<td></td>
</tr>
<tr>
<td>AGR 1201</td>
<td>SOILS LAB</td>
<td></td>
</tr>
<tr>
<td>AGR 1203</td>
<td>PRINCIPLES OF SOILS</td>
<td></td>
</tr>
<tr>
<td>MKT 2203</td>
<td>AG MARKETING</td>
<td></td>
</tr>
<tr>
<td>AGR 1591</td>
<td>CROP PRACTICUM II</td>
<td></td>
</tr>
</tbody>
</table>
### Agronomy and Agricultural Mechanics

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGR 2091</td>
<td>CROP PRACTICUM III</td>
</tr>
<tr>
<td>AGR 2304</td>
<td>SOIL FERTILITY</td>
</tr>
<tr>
<td>AGR 2353</td>
<td>PEST MANAGEMENT</td>
</tr>
<tr>
<td>AGR 2383</td>
<td>IRRIGATION MANAGEMENT</td>
</tr>
<tr>
<td>AGR 2403</td>
<td>CROP MANAGEMENT</td>
</tr>
</tbody>
</table>

Credit Hours Subtotal: **23**

**Agronomy Specialization**

Select 6 credits of the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>AEQ 1153</td>
<td>EQUIPMENT PRINCIPLES</td>
</tr>
<tr>
<td>AEQ 1203</td>
<td>WELDING</td>
</tr>
<tr>
<td>AEQ 2303</td>
<td>EQUIP PREVENTATIVE MAINTENANCE</td>
</tr>
<tr>
<td>AEQ 2323</td>
<td>PRECISION FARM TECH</td>
</tr>
<tr>
<td>AEQ 2413</td>
<td>DIESEL ENGINE</td>
</tr>
<tr>
<td>AGR 1213</td>
<td>NATURAL RES MNGT</td>
</tr>
<tr>
<td>AGR 1891</td>
<td>CROPS JUDGING I</td>
</tr>
<tr>
<td>AGR 2892</td>
<td>CROPS JUDGING II</td>
</tr>
</tbody>
</table>

Credit Hours Subtotal: **6**

**Electives**

Advisor Guided Electives: **4-5**

Credit Hours Subtotal: **4**

Total Credit Hours: **69**

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### Diversified Agriculture Management Option

**Associate of Applied Science Degree**

- Students will be able to apply economically sound and environmentally sustainable agricultural crop production practices in the Great Plains.

**Associate of Applied Science Core**

Complete requirements: **20**

Credit Hours Subtotal: **20**

**Agronomy-Ag Mechanics Core**

Complete requirements: **15-16**

Credit Hours Subtotal: **16**

**Diversified Agriculture Core**

See below: **7**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGR 1203</td>
<td>PRINCIPLES OF SOILS</td>
</tr>
<tr>
<td>AGR 1201</td>
<td>SOILS LAB</td>
</tr>
<tr>
<td>ASI 1303</td>
<td>ANIMAL MANAGEMENT</td>
</tr>
</tbody>
</table>

Credit Hours Subtotal: **7**

**Diversified Agriculture Specialization**

Select two of the following: **6-7**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>AEQ 2323</td>
<td>PRECISION FARM TECH</td>
</tr>
<tr>
<td>AGR 2304</td>
<td>SOIL FERTILITY</td>
</tr>
<tr>
<td>AGR 2383</td>
<td>IRRIGATION MANAGEMENT</td>
</tr>
<tr>
<td>AGR 2353</td>
<td>PEST MANAGEMENT</td>
</tr>
<tr>
<td>AGR 2403</td>
<td>CROP MANAGEMENT</td>
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</table>

Select two of the following: **6**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASI 1203</td>
<td>FEEDLOT SYSTEMS</td>
</tr>
<tr>
<td>ASI 1213</td>
<td>LIVESTK &amp; CARC EVAL</td>
</tr>
<tr>
<td>ASI 1253</td>
<td>NUTRITION</td>
</tr>
</tbody>
</table>

**Agronomy Option-Associate of Science Degree (transfer)**

- Students will demonstrate a basic knowledge in the areas of biology, chemistry, mathematics, and oral/written communication along with a basic understanding of agriculture consistent with standards set for baccalaureate degrees.

**Associate of Science Core**

Complete requirements: **26**

Credit Hours Subtotal: **26**

**Horticulture Option-Associate of Science Degree (transfer)**

**Associate of Science Core**

Complete requirements: **26**

Credit Hours Subtotal: **26**

**Horticulture Specialization**

Select 24 credits of the following: **24**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABM 2854</td>
<td>FARM &amp; RANCH MANAGEMENT</td>
</tr>
<tr>
<td>ACT 1103</td>
<td>ACCOUNTING I</td>
</tr>
<tr>
<td>AGR 1201</td>
<td>SOILS LAB</td>
</tr>
<tr>
<td>AGR 1203</td>
<td>PRINCIPLES OF SOILS</td>
</tr>
<tr>
<td>AGR 2304</td>
<td>SOIL FERTILITY</td>
</tr>
<tr>
<td>ASI 2303</td>
<td>RANGE MANAGEMENT</td>
</tr>
<tr>
<td>AGR 2403</td>
<td>CROP MANAGEMENT</td>
</tr>
<tr>
<td>ECN 1203</td>
<td>MICROECONOMICS</td>
</tr>
<tr>
<td>ECN 1303</td>
<td>MACROECONOMICS</td>
</tr>
<tr>
<td>MKT 2203</td>
<td>AG MARKETING</td>
</tr>
</tbody>
</table>

Credit Hours Subtotal: **24**

**Electives**

Advisor Guided Electives: **14**

Credit Hours Subtotal: **14**

Total Credit Hours: **64**

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**Horticulture Specialization**

Select 24 credits of the following: **24**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABM 2903</td>
<td>ENTREPRENEURSHIP</td>
</tr>
<tr>
<td>ACT 1103</td>
<td>ACCOUNTING I</td>
</tr>
<tr>
<td>ACT 1203</td>
<td>ACCOUNTING II</td>
</tr>
<tr>
<td>AGR 1201</td>
<td>SOILS LAB</td>
</tr>
<tr>
<td>AGR 1203</td>
<td>PRINCIPLES OF SOILS</td>
</tr>
<tr>
<td>AGR 2304</td>
<td>SOIL FERTILITY</td>
</tr>
<tr>
<td>ECN 1203</td>
<td>MICROECONOMICS</td>
</tr>
<tr>
<td>HSL 1053</td>
<td>LANDSCAPE &amp; ENVIRONMENTAL APPRECIATION</td>
</tr>
</tbody>
</table>
### Mechanized Systems Management Option

**Associate of Science Core**
- Complete requirements: 26

**Mechanized Systems Management Core**
- 29
  - ABM 2854: FARM & RANCH MANAGEMENT
  - AEQ 1503: DC CIRCUIT ANALYSIS
  - AEQ 1513: AC CIRCUIT ANALYSIS
  - AGR 1201: SOILS LAB
  - AGR 1203: PRINCIPLES OF SOILS
  - AGR 2304: SOIL FERTILITY
  - AGR 2403: CROP MANAGEMENT
  - ASI 1303: ANIMAL MANAGEMENT
  - ECN 1203: MICROECONOMICS
  - ECN 1303: MACROECONOMICS

*Credit Hours Subtotal:* 55

**Electives**
- Advisor Guided Electives: 9

*Credit Hours Subtotal:* 64

### Ag Chemical Application Certificate
- Students will be able to mix and apply agricultural chemicals safely and efficiently.
- Students will be able to interact professionally with colleagues and clients.

**Ag Chemical Application, Certificate**
- AEQ 2103: AG CHEMICAL APPLICATION 3
- AEQ 2323: PRECISION FARM TECH 3
- AGR 2353: PEST MANAGEMENT 3
- AGR 2201: COMMERCIAL AG CARRIER 1

*Advisor Guided Electives (AGR or AEQ): 6
*Total Credit Hours: 16

### Irrigation Technician Certificate
- Students will gain a foundational knowledge in electricity and mechanized irrigation systems in order to effectively and safely service, repair, troubleshoot, and install center-pivot systems.
- Students will be able to interact professionally with colleagues and clients.

**Irrigation Technician, Certificate**
- AEQ 1071: INDUSTRIAL SAFETY 1
- AEQ 1501: INTRODUCTION TO ELECTRIC CODE 1
- AEQ 1503: DC CIRCUIT ANALYSIS 3
- AEQ 1513: AC CIRCUIT ANALYSIS 3
- AEQ 2404: MECHANIZED IRRIGATION SYSTEMS 4
- AEQ 2801: REINKE CERTIFICATION 1
- SPC 1103: SALES COMM 3

*Total Credit Hours: 16

### Welding Certificate
- Students will be able to perform welding and fabrication technical skills.
- Students will be able to interact professionally with colleagues and clients.

**Agricultural Welding, Certificate**
- AEQ 1071: INDUSTRIAL SAFETY 1
- AEQ 1203: WELDING 3
- AEQ 1313: INTERMEDIATE WELDING 3
- AEQ 2214: ADVANCED WELDING 4
- AEQ 2604: WELDING APPRENTICESHIP 4

*Total Credit Hours: 15

### Crop Production Certificate
- Students will gain a foundational knowledge in crop production related principles and practices.

**Required General Education Credits**
- Complete requirements: 6

*Credit Hours Subtotal: 6

**Crop Production Emphasis**
- Select 18 credits of the following:
  - AEQ 1153: EQUIPMENT PRINCIPLES
  - AEQ 1203: WELDING
  - AEQ 2303: EQUIP PREVENTATIVE MAINTENANCE
  - AEQ 2323: PRECISION FARM TECH
  - AGR 1201: SOILS LAB
  - AGR 1203: PRINCIPLES OF SOILS
  - AGR 2304: SOIL FERTILITY
  - AGR 2383: IRRIGATION MANAGEMENT
  - AGR 2353: PEST MANAGEMENT

*Credit Hours Subtotal: 18

**Electives**
- Advisor Guided Electives: 6

*Credit Hours Subtotal: 6

*Total Credit Hours: 30

### Diversified Agriculture Certificate
- Students will gain a foundational knowledge in crop and livestock production principles and practices.

**Required General Education Credits**
- Complete requirements: 6

*Credit Hours Subtotal: 6

**Crop Production Emphasis**
- Select 18 credits of the following:
  - AEQ 1153: EQUIPMENT PRINCIPLES
  - AEQ 1203: WELDING
  - AEQ 2303: EQUIP PREVENTATIVE MAINTENANCE
  - AEQ 2323: PRECISION FARM TECH
  - AGR 1201: SOILS LAB
  - AGR 1203: PRINCIPLES OF SOILS
  - AGR 2304: SOIL FERTILITY
  - AGR 2383: IRRIGATION MANAGEMENT
  - AGR 2353: PEST MANAGEMENT

*Credit Hours Subtotal: 18

**Electives**
- Advisor Guided Electives: 6

*Credit Hours Subtotal: 6

*Total Credit Hours: 30
Required General Education Credits
Complete requirements: 6
Credit Hours Subtotal: 6

Diversified Agriculture Emphasis
Select 12 credits from AGR, AEQ, ASI, or HSL courses: 12
Credit Hours Subtotal: 12

Electives
Advisor Guided Electives: 12
Credit Hours Subtotal: 12
Total Credit Hours: 30

AEQ 1071 INDUSTRIAL SAFETY
Description: Designed to acquaint students with standard industry practices and emergency procedures and develop an awareness of job hazards. Students will prepare for a CPR/First Aid exam and receive some bulk handling equipment training (forklift/skid steer).
Credit Hours: 1
Max credits per semester: 1
Max credits per degree: 1
Format: LEC

AEQ 1103 SMALL ENGINES
Description: A complete course in gasoline engine operation. It consists of operational theory and nomenclature including the internal components and its air, fuel, lubrication, and cooling system. This course will emphasize small and multi-cylinder gas and diesel engines.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC

AEQ 1153 EQUIPMENT PRINCIPLES
Description: Students will be exposed to the basic principles of agricultural equipment including power trains, hydraulics, fuel systems and electricity. Alternative devices will be studied.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC

AEQ 1171 FARM EQUIP & SAFETY
Description: An orientation into the safe operation of tractors, combines, balers, skid loaders, and other common farm equipment. Students will be expected to demonstrate their ability to safely operate several types of equipment.
Credit Hours: 1
Max credits per semester: 1
Max credits per degree: 1
Format: LEC

AEQ 1203 WELDING
Description: Develop fundamental skills and procedures for oxy/acetylene, arc, and wire feed welding in flat position. Included will be basic blueprint interpretation and weld symbols, with metal cutting and preparation techniques.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC

AEQ 1313 INTERMEDIATE WELDING
Description: (Pre req: AEQ 1203 or equivalent) Develop skills in vertical, horizontal and overhead position arc and wire feed welding. Plasma Arc Cutting and a small assigned construction project are included. Use of a spool gun and TIG equipment will be introduced.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LLB

AEQ 1501 INTRODUCTION TO ELECTRIC CODE
Description: Introduction to Nebraska state electrical law and the National Electric Code as they pertain to the working electrician.
Credit Hours: 1
Max credits per semester: 1
Max credits per degree: 1
Format: LEC

AEQ 1503 DC CIRCUIT ANALYSIS
Description: Fundamentals of DC electricity as applied to series, parallel, and series-parallel circuits. Diagnosis and troubleshooting of circuits with test equipment.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LLB

AEQ 1513 AC CIRCUIT ANALYSIS
Description: Fundamentals of AC electricity including alternating current theory, waveform quantities and characteristics, and network analysis. Diagnosis and troubleshooting simple circuits with proper test equipment.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LLB

AEQ 1651 HARVEST OPERATIONS
Description: The course will primarily focus on grain harvest operations. Grain combine setup and operation will be emphasized. Students will gain an understanding of factors influencing harvest efficiency including estimating harvest losses. Combine yield monitor operation will also be included.
Credit Hours: 1
Max credits per semester: 1
Max credits per degree: 1
Format: LAB

AEQ 1713 CARPENTRY
Description: Learning basic tools and techniques of carpentry as it would pertain to a farm and ranch, including selection, use and maintenance of hand and power tools; selection of wood construction materials; construction of joints; application of finishes; and using these basic skills to follow a plan in thee construction of a functional project.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LLB
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Description</th>
<th>Credit Hours</th>
<th>Max credits per semester</th>
<th>Max credits per degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>AEQ 2103</td>
<td>AG CHEMICAL APPLICATION</td>
<td>A course to provide career based training for a commercial applicator of pesticides, fertilizers and other agricultural chemicals. A foundation for the safe and effective use of agricultural chemicals will be emphasized. Students will gain experience and knowledge in the calibration, operation and maintenance of agricultural chemical application equipment. Preparation for obtaining a commercial pesticide applicator license will be included.</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>AEQ 2111</td>
<td>HYDRAULICS</td>
<td>Basic study of hydraulic concepts, applications, and operation as applied to power equipment systems. This class also includes study of the diagnosis of power equipment with the emphasis on hydraulic problems.</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>AEQ 2214</td>
<td>ADVANCED WELDING</td>
<td>(Pre req: AEQ 1313 or equivalent) Students will develop skills using a spool gun and TIG welding, and additional arc and wire feed welding on a wide variety of metals. The second eight weeks is devoted toward preparation for American Welding Society certification.</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>AEQ 2303</td>
<td>EQUIP PREVENTATIVE MAINTENANCE</td>
<td>A study of economic principles and principles of operation, adjustments, repair, maintenance, and tune-up of farm vehicles (automotive, tractors, and powered farm equipment vehicles).</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>AEQ 2323</td>
<td>PRECISION FARM TECH</td>
<td>A course designed to acquaint students with the basic skills of farm map creation, GPS hardware components, software choices, decision making skills and application of GPS/GIS in the agriculture industry for improved crop management and protection of the environment.</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>AEQ 2413</td>
<td>DIESEL ENGINE</td>
<td>A study of cost effective maintenance programs for agriculture power equipment. Included is nomenclature, operational theory, adjustment and maintenance of agriculture gasoline and diesel engines. Lab includes the disassembly of a diesel engine.</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>AEQ 2404</td>
<td>MECHANIZED IRRIGATION SYSTEMS</td>
<td>Prerequisites: AEQ 1501, AEQ 1503, AEQ 1513. Fundamentals of mechanized irrigation systems focusing on center-pivot components. Technical service and operation will be emphasized. Application of industrial electrical components and controls.</td>
<td>4</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>AEQ 2604</td>
<td>WELDING APPRENTICESHIP</td>
<td>(Pre req: approval by Division Chair) The apprenticeship provides job experience in your field of study at an approved work location. Official agreements are entered into between the student, employer, and the college. The internship must last a minimum of 8 weeks averaging at least 40 hours per week. A written journal of daily work activities plus a 10 minute PowerPoint presentation are required upon completion. Students must submit a list of learning objectives prior to the apprenticeship and include discussion of these within their presentation. The student and employee will also complete a survey at the conclusion of the apprenticeship.</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>AEQ 2801</td>
<td>REINKEN CERTIFICATION</td>
<td>Prerequisites: AEQ 1501, AEQ 1503, AEQ 1513. Students will complete the Reinke Platinum PLUS Certified Technician training program. The course is an on-line training program developed by Reinke with integrated exams at the end of each training module. Students will be expected to complete the training sessions on their own time; however, faculty assistance will be available. To receive a Pass for the course, students must meet performance standards established by Reinke.</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>AGR 1011</td>
<td>AGRICULTURAL CAREERS</td>
<td>Students will be exposed to the great diversity of careers that support the agricultural industry. Educational requirements to prepare for these agricultural careers will also be explored.</td>
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<td>AGR 1091</td>
<td>CROP PRACTICUM I</td>
<td>This is the first course of a 3-course sequence that integrates students into the crop production on NCTA's farm laboratory. Students will work as a team to develop a crop management plan for one of NCTA's crop fields. The plan will include actual production practices, budgeting and marketing of the harvested crop. Crop planting and harvest will be conducted by the students and possibly some ag chemical applications. Due to farm size limitations, the practicum courses will be limited to just Agronomy majors.</td>
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AGR 1103 CROP SCIENCE
Description: Students will develop a global understanding of the food, feed, and fiber system. Crop production strategies to maximize yield and quality while sustaining resources and the environment will be emphasized. Principles of crop growth and development, pest management and technology for crop production will be covered.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC

AGR 1116 AGRICULTURE APPLICATIONS
Description: This course is designed for students to gain experience in handling conditions on the farm daily. Students will receive hands on experience.
Credit Hours: 6
Max credits per semester: 6
Max credits per degree: 6
Format: LLB

AGR 1201 SOILS LAB
Description: Laboratory activities dealing with physical, biological and chemical properties of soils that support plant growth.
Credit Hours: 1
Max credits per semester: 1
Max credits per degree: 1
Format: LAB

AGR 1203 PRINCIPLES OF SOILS
Description: A study of soil formation, physical, biological and chemical properties of soil with attention given to conditions that affect plant growth. Impacts of crop management on soil quality will be emphasized.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC

AGR 1213 NATURAL RES MNGT
Description: A study of our natural resources with special emphasis on soil and water management including land classification, conservation practices, and protection methods used to conserve our natural resources, plus the role of government agencies in Natural Resource Management.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC

AGR 1591 CROP PRACTICUM II
Description: This course is the second of a three course sequence that will be required for all agronomy majors. The 3-course practicum sequence will provide another direct assessment of the agronomy program learning outcome of "applying economically sound and environmentally sustainable agriculture crop production practices." The practicum courses will also increase student utilization of the college's farm laboratory.
Credit Hours: 1
Max credits per semester: 1
Max credits per degree: 1
Format: LLB

AGR 1603 INTRODUCTION TO URBAN AGRICULTURE
Description: An introduction to the history, definitions, principles, practices, and innovations of agricultural production in urban and peri-urban settings. Topics will include urban farming systems including traditional and emerging systems such as controlled environment and hydroponics, animal systems in urban settings, urban food systems, community gardens, policies regarding urban agriculture, food access and security, urban agriculture's role in community and society, agricultural marketing in urban setting, and sustainable urban agricultural best practices.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC

AGR 1891 CROPS JUDGING I
Description: This course will cover all principles of agronomy to prepare students to compete in crops judging contests that operate under the North American Colleges and Teachers of Agriculture (NACTA) contest guidelines.
Credit Hours: 1
Max credits per semester: 1
Max credits per degree: 1
Format: LEC

AGR 1991 INDEPENDENT STUDY
Description: Individual or group projects in research, literature review, or extension of course work under the supervision and evaluation of a Major faculty member who is willing and available to contract with the student. (Pre req: Approval of project by Instructor, Division Chair, and Advisor)
Credit Hours: 1
Max credits per semester: 1
Max credits per degree: 1
Format: IND

AGR 2002 WILDLIFE HABITAT MGT
Description: A course that studies the most common Nebraska Wildlife species that are managed for harvest throughout the state. The habitat requirements and management techniques for each wildlife species will be covered. Current wildlife habitat support programs will be reviewed.
Credit Hours: 2
Max credits per semester: 2
Max credits per degree: 2
Format: LEC

AGR 2091 CROP PRACTICUM III
Prerequisites: AGR 1591 Crop Practicum II
Description: This is the third of a 3-course sequence that integrates students into the crop production of NCTA's farm laboratory. Students will work as a team to develop a crop management plan for one of NCTA's irrigated crop fields. The plan will include actual production practices, budgeting and marketing of the harvested crop. Crop planting and harvest will be conducted by the students and possibly some ag chemical applications. Due to farm size limitations, the practicum courses will be limited to just Agronomy majors.
Credit Hours: 1
Max credits per semester: 1
Max credits per degree: 1
Format: LEC
AGR 2103 BUILDING CONSTRUCTION
Description: A study of materials, techniques, and design used for farm and ranch facilities. Lab time will include the construction of Ag building, fences, and facilities on the NCTA campus.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC

AGR 2153 ORGANIC FOOD PRODUCTION
Description: An introduction to the history, definitions, principles, and practices of organic food production. Topics include soil husbandry, integrated pest management, farming systems including diversified vegetables, perennial fruit, agronomic field crops, meat, egg, and milk production, organic certification, and marketing.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC

AGR 2201 COMMERCIAL AG CARRIER
Description: A course of study designed to enable students to successfully obtain their CDL with all necessary endorsements. This course of study targets agricultural employees and producers. It is not intended for those seeking fulltime employment as commercial truck drivers. (Pre req: Must be a full time NCTA student)
Credit Hours: 1
Max credits per semester: 1
Max credits per degree: 1
Format: LEC

AGR 2304 SOIL FERTILITY
Description: Dynamics of essential plant nutrients in the soil environment. Sustainable and profitable fertility management of agronomic and horticultural crops will be emphasized. Characteristics of the fertilizer materials, fertilizer application methods and fertilizer rate calculations will be covered.
Credit Hours: 4
Max credits per semester: 4
Max credits per degree: 4
Format: LEC

AGR 2353 PEST MANAGEMENT
Description: Identification of plant pests, including morphology and life cycles of selected insects, weeds and diseases. Pest control methods will include chemical, physical, mechanical, cultural and biological techniques. Application of integrated pest management will be stressed.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC

AGR 2383 IRRIGATION MANAGEMENT
Description: Efficient irrigation management strategies of agronomic crops. Irrigation techniques, irrigation scheduling, equipment selection, and water use regulations will be covered. Sustainable utilization of our water resources will be emphasized.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC

AGR 2383 CROP MANAGEMENT
Description: Integration of principles of crop and soil science, plant breeding, climatology and integrated pest management in the development and evaluation of crop management practices. Students will be able to apply economically sound and environmentally sustainable crop production strategies in the Great Plains.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC

AGR 2714 FARM BEGINNINGS
Description: The Farm Beginnings Program consists of a series of sessions offered throughout the year by Nebraska Extension with cooperation from NCTA. The sessions focus on alternative agriculture and cover a variety of topics, including building networks, goal setting, whole farm planning, building your business plan, marketing, business and farm management and financials management. In addition to learning first-hand from successful farmers, participants will develop their own business plan as they progress through the course.
Credit Hours: 4
Max credits per semester: 4
Max credits per degree: 4
Format: LEC

AGR 2892 CROPS JUDGING II
Description: This course will cover all principles of agronomy to prepare students to compete in crops judging contests that operate under the North American College and Teachers of Agriculture (NACTA) contest guidelines.
Credit Hours: 2
Max credits per semester: 2
Max credits per degree: 6
Format: LEC

AGR 2903 INTERNSHIP
Description: (Pre req: approval by Division Chair) The internship provides job experience in your field of study at an approved work location. Official agreements are entered into between the student, employer, and the college. The internship must last a minimum of 8 weeks averaging at least 40 hours per week (NOTE: students must honor length agreed upon by employer). A written journal of daily work activities plus a 10 minute PowerPoint presentation are required upon returning form internship. Students must submit a list of learning objectives prior to the internship and include discussion of these withing their presentation. The student and employer will also complete a survey at the conclusion of the internship.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: FLD

AGR 2943 FARM AND RANCH CAPSTONE
Description: (Pre req: Second year students only in their last semester before graduation.) This is a Capstone course for students intending to own and operate their own farm or ranch. A business plan will be completed including: facility design, management plan, marketing plan, and complete financial package for the proposed operation including a cash flow, net worth, and budget.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC
AGR 2992 INDEPENDENT STUDY
Description: Individual or group projects in research, literature review or extension of course work under the supervision and evaluation of a Major faculty member who is willing and available to contract with the student. The student will present his/her independent study proposal to the Major Division Chair and faculty for their approval. (Pre req: Approval of project by Instructor, Advisor, and Division Chair)
Credit Hours: 2
Max credits per semester: 2
Max credits per degree: 2
Format: IND

HSL 1053 LANDSCAPE & ENVIRONMENTAL APPRECIATION
Description: An appreciation for the landscape from large to small will be discussed. Large players in landscape perceptions world-wide will be explored as well as the ways in which people historically have interacted with the landscape.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC

HSL 1073 LANDSCAPE PLANTS I
Description: Identification, characteristics and uses of woody ornamentals, including deciduous and evergreen trees and shrubs, as well as ground covers and vines. Selection of plant materials for selected sites included.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC

HSL 1103 PLANT PROPAGATION
Description: Hands-on introductory course covering the scientific principles of the various types of plant propagation. Activities involve practical application of scientific principles and all students will be required to complete projects.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC

HSL 1173 LANDSCAPE PLANTS II
Description: Identification, characteristics and cultural requirements of greenhouse foliage plants, flowering plants, annuals, perennials, bulbs, ornamental grasses, and outdoor ferns. Flowerbed design principles and interior plantscaping concepts discussed and practiced.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC

HSL 2003 INTERNSHIP
Description: (Pre req: approval by Division Chair) The internship provides job experience in your field of study at and approved work location. Official agreements are entered into between the student, employer, and the college. The internship must last a minimum of 8 weeks averaging at least 40 hours per week (NOTE: students must honor length agreed upon by employer). A written journal of daily work activities plus a 10 minute PowerPoint presentation are required upon returning from internship. Students must submit a list of learning objectives prior to the internship and include discussion of these within their presentation. The student and employee will also complete a survey at the conclusion of the internship.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC

HSL 2283 LANDSCAPE MANAGEMENT
Description: A detailed discussion and practice of the maintenance tasks of trees, shrubs, ground covers, turf, roses, annual and perennial flowers as well as other seasonal management practices.
Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: FL D

HSL 2314 NURSERY & GREENHOUSE PRODUCTION
Description: Covers principles of both greenhouse and nursery production and management as well as industry standards. Includes types of greenhouse structures, glazing materials, heating, cooling, and watering systems, cropping systems, soil media, fertilization, greenhouse environmental control systems, pest control, production schedules, crop handling, nursery stock care, garden center management, marketing, and laws. The commercial production of major bedding plant crops and nursery stock shall be promoted.
Credit Hours: 4
Max credits per semester: 4
Max credits per degree: 4
Format: LEC

HSL 2322 ORGANIC HORTICULTURE
Description: An advanced production class focused on new and innovative ways to produce traditional horticulture crops. This course will look at existing methods of creative production and the challenges each of these may encounter. A focus will also be made on understanding how production demand follows cultural needs. The combination of the high tunnel, traditional field production, and many case studies will be used.
Credit Hours: 2
Max credits per semester: 2
Max credits per degree: 2
Format: LEC

HSL 2324 FARMER’S MARKET
Description: An advanced course displaying production from farm to market. Business and entrepreneurial skills as well as production and marketing techniques will be learned. A Farmer’s Market will be an active portion of this course and actual products will be sold.
Credit Hours: 4
Max credits per semester: 4
Max credits per degree: 4
Format: LEC
HST 2353 PEST MANAGEMENT

Description: Identification of plant pests, including morphology and life cycles of selected insects, weeds, and diseases. Pest control methods include chemical, physical, mechanical, cultural, and biological techniques. Issues such as pesticide laws and regulations, record keeping, labels, storage, and safety are discussed. Application of integrated pest management will be stressed.

Credit Hours: 3
Max credits per semester: 3
Max credits per degree: 3
Format: LEC

1. Students will be able to effectively communicate in oral and written form.
2. Students will be able to gather, assimilate, and process information to reach sound logical conclusions in their chosen career pathway.
3. Students will be able to apply economic principles of accounting, marketing and budgeting to agronomy or agricultural mechanics enterprises.
4. Students will be able to exhibit required knowledge and skills consistent with their chosen field of study. (Technical Competence)