

Nebraska College of Technical Agriculture

Assessment of Program Outcomes Summary Report 2022-2023

Part I – General Education

Part II – Ag Production Systems

Part III – Agribusiness Management

Part IV – Veterinary Technology

Part V – Program Outcome Course Matrixes

Part I – General Education Outcomes Assessment

A. General Education Outcomes

Upon completion of the Associate of Applied Science degree students should be able to demonstrate the following skills and abilities (as defined within the Association of American Colleges & Universities VALUE Rubrics):

1. **Written Communication.** Written communication is the development and expression of ideas in writing. Written communication involves learning to work in many genres and styles. It can involve working with many different writing technologies, and mixing texts, data, and images. Written communication abilities develop through iterative experiences across the curriculum.
2. **Critical Thinking.** Critical thinking is a habit of mind characterized by the comprehensive exploration of issues, ideas, artifacts, and events before accepting or formulating an opinion or conclusion.
3. **Oral Communication.** Oral communication is a prepared, purposeful presentation designed to increase knowledge, to foster understanding, or to promote change in the listeners' attitudes, values, beliefs, or behaviors.
4. **Quantitative Literacy.** Quantitative Literacy (QL) – also known as Numeracy or Quantitative Reasoning (QR) – is a "habit of mind," competency, and comfort in working with numerical data. Individuals with strong QL skills possess the ability to reason and solve quantitative problems from a wide array of authentic contexts and everyday life situations. They understand and can create sophisticated arguments supported by quantitative evidence and they can clearly communicate those arguments in a variety of formats (using words, tables, graphs, mathematical equations, etc., as appropriate).
5. **Problem Solving.** Problem solving is the process of designing, evaluating and implementing a strategy to answer an open-ended question or achieve a desired goal.
6. **Civic Engagement.** Civic engagement is "working to make a difference in the civic life of our communities and developing the combination of knowledge, skills, values and motivation to make that difference. It means promoting the quality of life in a community, through both political and non-political processes." (Excerpted from *Civic Responsibility and Higher Education*, edited by Thomas Ehrlich, published by Oryx Press, 2000, Preface, page vi.) In addition, civic engagement encompasses actions wherein individuals participate in activities of personal and public concern that are both individually life enriching and socially beneficial to the community.
7. **Intercultural Knowledge and Competence.** Intercultural Knowledge and Competence is "a set of cognitive, affective, and behavioral skills and characteristics that support effective and appropriate interaction in a variety of cultural contexts." (Bennett, J. M. 2008. Transformative training: Designing programs for culture learning. In *Contemporary leadership and intercultural competence: Understanding and utilizing cultural diversity to build successful organizations*, ed. M. A. Moodian, 95-110. Thousand Oaks, CA: Sage.)

B. Assessment Results

Written Communication and Critical Thinking

| | ENG 1503 Technical Communication I | ENG 1903 Writing & Inquiry |
|--------------------|---|---------------------------------------|
| # of SLOs assessed | 194 | 119 |
| # of SLOs met | 175 | 95 |
| % of SLOs met | 90 | 80 |

Writing and Inquiry feedback from the instructors SLO report was the following: Based on student feedback, I plan to eliminate the SLO related to creating a professional website using a professional website builder. I intend to develop additional items on the Final Exam to help me assess students' ability to properly format letters and emails. Since students seem to be having trouble evaluating source materials for relevance and credibility, I will try to re-arrange the daily schedule to spend more time analyzing and evaluating source material in class. (Another option is to increase the number of points for the assignments to see if students put-forth more effort.)

Oral Communication

| | AED 1023 Interpersonal Skills for Leadership | SPC 1103 Sales Communications | SPC 1113 Public Speaking |
|--------------------|---|--------------------------------------|---------------------------------|
| # of SLOs assessed | 135 | N/A | 174 |
| # of SLOs met | 125 | N/A | 158 |
| % of SLOs met | 93 | N/A | 91 |

Quantitative Literacy

| | ECN 1803 Statistics | MTH 1403 Agricultural Math | VTS 1313 Math for Vet Techs |
|--------------------|----------------------------|-----------------------------------|------------------------------------|
| # of SLOs assessed | 64 | 264 | 238 |
| # of SLOs met | 63 | 240 | 152 |
| % of SLOs met | 98 | 91 | 64 |

The Math for Vet Techs course SLO report included the following comments from the instructor. I would like to continue with my new approach to homework, where there is practice sections on the homework, which contain answers, and then a graded section. Some of my sections have this homework but I would like to make it so each section does. I will be continuing to use the white board over the ELMO in the coming years. I saw much more engagement from the students and was able to have students come up and place answers on the board. I also started making whiteboard videos on my iPad. This allowed me to go through and grade assignments quickly instead of leaving notes on each individual paper. This also allows students to visually see how the problems are done without taking up lecture time to go over these problems. My plan is to invest more time working on these whiteboard videos. I am also hoping whiteboard videos will help students with the more difficult subjects. Something they can go back to anytime as I know students complained about only going over a topic during a single lecture. It may benefit them to have access to the information in video format whenever they need it

Problem Solving

| | ASI 1024 Fundamentals of Animal Biology | BIO 1313/BIO 1321 Plant Science & Lab | CHM 1014 Intro to Chemistry | VTS 1604 Intro to Lab Science |
|--------------------|--|--|------------------------------------|--------------------------------------|
| # of SLOs assessed | 268 | 200 | 16 | 120 |
| # of SLOs met | 260 | 161 | 14 | 116 |
| % of SLOs met | 97 | 81 | 88 | 97 |

The Plant Science instructor noted that four students really struggled with this difficult content. One missed 70% of class time. Others struggled as well due to the complexity of science concepts and terminology. Additional worksheet-based homework will be added to reinforce class time.

Civic Engagement, Intercultural Knowledge and Competence

| | PSY 1103 Human Relations | AGR 2823 Intro to Global Ag and Natural Resources |
|--------------------|---------------------------------|--|
| # of SLOs assessed | 158 | 140 |
| # of SLOs met | 146 | 125 |
| % of SLOs met | 92 | 89 |

Other General Education Discussion

- Worked with Academic Council, Academic Leads, and Academic Instruction Fellow to try to achieve greater reporting of faculty Gen Ed SLOs.
- Worked with Academic Council, Academic Leads, and Academic Instruction Fellow to evaluate student achievement in developmental English course.
- Worked with Academic Council, Academic Leads, and Academic Instruction Fellow to approve new Civic Engagement/Intercultural Knowledge & Competence course (AGR 2823).

Part II - Ag Production Systems Degrees and Certificates Assessment

A. Associate of Applied Science (AAS) Program Level Student Learning Outcomes

Students pursuing Associate of Applied Science degrees in Agronomy, Diversified Agriculture, Ag Equipment, Livestock, or Equine Management options are expected to meet the following learning outcomes upon completion of their degrees.

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 agricultural enterprises.
4. Students will be able to exhibit required knowledge and skills consistent with their chosen field of study. (Technical Competence)
 - a. Agronomy - Students will be able to apply economically sound and environmentally sustainable agricultural crop and livestock production practices in the Great Plains.
 - b. Ag Equipment - Students will be able to safely operate, troubleshoot and maintain agricultural equipment.
 - c. Animal Science - Students will be knowledgeable in the areas of modern livestock husbandry and management practices.

B. Assessment Procedures for AAS Degree Outcomes

1. Outcome #1 – effective oral and written communication.
 - a. General Education assessment report presented in Part I.
2. Outcome #2 – gather, assimilate, and process information.
 - a. Assessed by the AGR 2983 Capstone course taken the student’s last semester.
3. Outcome #3 – economic, accounting, marketing, and budgeting principles
 - a. Ag Business assessment report in Part III

4. Outcome #4 - Technical Competence

- a. Each degree option has a group of required courses that contain detailed learning outcomes related to the course. The student learning outcome assessment reports in these courses are utilized to assess this program outcome.
- b. Internship Employer Survey Results

Assessment Rubric

| Attributes | Level of Performance | | | | |
|---|--|---|---|---|---|
| | Unacceptable | Novice | Standard | Practitioner | Expert |
| The ability to gather, assimilate and process information to reach sound logical conclusions | Student makes little or no attempt to utilize resources. | Student acquires a general understanding of resource utilization. | Student carries out the utilization of resources within best practices. | Student demonstrates ability to utilize resources to process and apply information. | Student demonstrates ability to utilize innovative resources; and provide application of resources to complex problems. |
| Demonstrate technical competence in agricultural production. | Student demonstrates little to no technical competence. | Student acquires general technical competence. | Student acquires broad technical competence skills and can demonstrate ability in a variety of applied work settings. | Student's insight and technical competence demonstrates sound knowledge, talent, and ability across disciplines and techniques. | Student's technical and professional competence is superior to peers. |

C. Assessment Results for AAS Degree Outcomes

Outcome #1 – effective oral and written communication.

Data are presented in the General Education report in Part I. Students are meeting the oral and written learning outcomes; however, most are achieving this at a medium level. Almost one third of this cohort of students transferred an equivalent writing course to NCTA (same as in 2022 report), which may impact the data. Many agricultural courses have writing assignments and assessment, thus providing students multiple opportunities for developing these skills. Some also provide oral presentation assessment and others provide “professionalism” communication training as well. These learning experiences ensure that professional based oral and written communication learning occurs.

Outcome #2 - gather, assimilate, analyze, interpret and apply information.

AGR 2983 Capstone

| Achievement Level | 2022 | 2023 |
|---------------------|------|------|
| Expert | 40% | 45% |
| Practitioner | 38% | 27% |
| Standard | 12% | 15% |
| Novice | 10% | 2% |
| Unacceptable | 0 | 11% |
| Total # of Students | 40 | 44 |

A major component of Capstone includes developing and presenting a farm/ranch or other agricultural enterprise business and production plan. As such, detailed financial and technical information must be gathered. For 2022 and previous years, this course was co-taught between one Ag Production Systems faculty and one Agribusiness faculty. APS faculty are discussing restructuring the course as a 2-credit hour course focused primarily on professional development and production plans. The new model would be co-taught with multiple APS faculty so that all APS disciplines are represented: agronomy, ag equipment, livestock, and equine management. This year, 2023, represented a transition year as the course was taught by one APS faculty and the structure of focusing more on preparation for all career paths and less on business plans was initiated. 2024 will be the first year for the new 2 credit hour structure approved for the new 2023-24 catalog.

Outcome #3 – economic, accounting, budgeting, and marketing principles

Assessment of this outcome presented in Part III, Agribusiness Management Systems report.

Outcome #4 – Technical Competence

Agronomy Technical Competence Assessment

| | AGR 1203 Principles of Soils | AGR 2304 Soil Fertility | AGR 2353 Pest Mgmt. | AGR 2383 Irrigation Mgmt. | AGR 2403 Crop Mgmt. | AEQ 2323 Precision Farming |
|-----------------------------|---|------------------------------------|--------------------------------|--|--------------------------------|---|
| # of Students | 22 | 12 | 8 | 10 | 16 | 11 |
| % of course outcomes met | 86% | 81% | 98% | 94% | 84% | 98% |

Overall, students continue to meet most of the outcomes in these courses that provide the essential knowledge and skill training in Agronomy. Most students are exhibiting a strong grasp of agronomic management principles and outcome achievement was similar to previous years. The first introduction to soils chemistry in the Principles of Soils class continues to be one of the greatest deficiencies. A change in the course schedule will be introducing this topic earlier. The additional lab activity will be continued as well. After one strong year in the Soil Fertility assessment in 2022, the data returned to previous levels. The math component consistently is a challenge. The Ag Math general education course is now available in the Fall semester and many students will now be taking this course prior to Soil Fertility. Crop Management is the last agronomy course taken and is a course some Diversified Ag students take. Much of the deficiency is from Diversified Ag students that have not taken as many agronomy courses. Also, because the class is taught in the spring semester, essentially no complementary field exercises are available due to our growing season. Applied laboratory exercises in all classes are being prepared this summer to increase student engagement.

Students continue to provide feedback that more hands-on learning is desired. The best hands-on agronomy based learning is available during the summer when students are on internship. A new model is being developed that will accomplish this goal. Specific “laboratory” days will be planned in multiple agronomy courses to travel to the West Central Research, Extension, and Education Center to provide hands-on learning in key targeted topics during the fall and spring semesters. Additionally, a combined

Internship and agronomy option will be provided in the summer. The model will be 4 days of internship with regional agronomy industries and 1 day of applied, experiential course education over a 12-week summer session. Two courses will be taught in this structure: Pest Management and Precision Farming. The primary location for instruction will be the Stumpf International Wheat Center

Crop Practicum Courses (AGR 1091, 1591, and 2091)

| Achievement Level* | Crop Practicum I | Crop Practicum II | Crop Practicum III |
|---------------------|------------------|-------------------|--------------------|
| Expert | 15 | 14 | 10 |
| Practitioner | 1 | 2 | 6 |
| Standard | 0 | 0 | 0 |
| Novice | 0 | 0 | 0 |
| Unacceptable | 0 | 0 | 0 |
| Total # of students | 16 | 16 | 16 |

The three course Crop Practicum program is required for agronomy students and is also taken by some Diversified Ag students as an elective. It is a program that provides students the opportunity to make the management decisions on one of the crop fields on the college’s farm laboratory. Each course has a primary project that the students complete, which includes collecting and analyzing crop production and financial information that are critical for producing a crop profitably. This data represents the same cohort of students as they completed all 3 courses over their 2 years. Students achieved learning outcomes at a very high level and as a group were the most engaged of any group thus far.

More detailed structure and guidance is necessary for improved student learning. Particularly apparent is improving the foundational knowledge in the first course and successfully implementing that knowledge in the second course. A new model of having the students directly work with one seed company in developing their crop plans is being considered to improve learning as well as generating data useful for the supporting seed industry.

Livestock Management Technical Competence Assessment

Required Courses

| | ASI 1253 Nutrition | ASI 1303 Animal Management | ASI 1213 Livestock & Carcass Eval. | ASI 2383 Large Animal Diseases | ASI 2753 Beef Production |
|-------------------------------|-----------------------|----------------------------------|--|-----------------------------------|-----------------------------|
| # of Students | 46 | 44 | 33 | 19 | 27 |
| % of Learning Outcomes Met | 94% | 91% | 94% | 91% | 96% |

Elective Courses

| Livestock Industry | ASI 2253 Feeds & Feeding | ASI 2303 Range Management | ASI 2353 Livestock Breeding | ASI 2313 Ration Formulation | ASI 1203 Feedlot Systems |
|-------------------------------|-----------------------------|------------------------------|-----------------------------------|--------------------------------|-----------------------------|
| # of Students | 30 | 17 | 18 | 7 | 26 |
| % of Learning Outcomes Met | 97% | 94% | 94% | 100% | 73% |

Students are meeting livestock management technical outcomes at a very high level, which matches previous years. Faculty continue to increase experiential learning activities across the curriculum that better incorporates student learning with animal production on NCTA's farm laboratory. The new experiential learning coordinator position has greatly improved scheduling the use of animals and facilities across the campus. Animal production capacity was also enhanced through the addition of the Leu Ranch property about 20 miles from campus providing 2000 + acres of rangeland. Practicum and work-study learning has also increased. Partnerships with the West Central Research and Extension Center has also improved student learning through shared uses of animals and resources. A full staffing of animal science faculty is now in place allowing for all essential classes to be available to students.

Equine Management Technical Competence Assessment

| | ASI 2433 Equine Industry Mgmt I | ASI 2443 Equine Industry Mgmt II | ASI 1442 Equine Practicum I | ASI 2442 Equine Practicum II | ASI 2611 Equine Repro I | ASI 2621 Equine Repro II | ASI 2412 Equine Marketing Techn. |
|----------------------------|--|---|--|---|--|---|---|
| # of Students | 13 | 14 | 13 | 14 | 13 | 9 | 15 |
| % of Learning Outcomes Met | 100% | 98% | 98% | 100% | 95% | 100% | 100% |

Students are meeting equine management technical outcomes at a very high level, which matches previous years. Faculty continue to increase experiential learning activities in all courses that better facilitates real-world student learning. Efforts continue to enhance access to animal resources while maintaining a safe learning environment. Active partnerships with local equine industry and care specialists also continues, providing key student learning opportunities.

Diversified Ag Technical Competence Assessment

Students that are pursuing the Diversified Ag Option combine courses in agronomy with courses in animal science. Animal Management and Principles of Soils are required and then students take a minimum of 2 agronomy and 2 animal science electives. These data are included with the previous agronomy and livestock management technical knowledge assessment sections.

Ag Equipment Management Technical Competence Assessment

Currently, the core of the curriculum in ag equipment management is welding and irrigation technology.

Irrigation Technician Certificate Technical Competence

| | AEQ 1501 Intro to Electric Code | AEQ 1503 DC Circuits | AEQ 1513 AC Circuits | AEQ 1171 Industrial Safety | AEQ 2404 Mechanized Irrigation |
|-------------------|--|-------------------------------------|-------------------------------------|---|---|
| # of Students | 7 | 7 | 6 | 6 | 4 |
| % of outcomes met | 100% | 100% | 97% | 97% | 100% |

Most of the students pursuing this certificate are also pursuing an associate's degree. One Reinke dealership sponsored student was in this class. Course enrollment is below sustainable numbers, which has been a growing concern. The NCTA-Reinke Agreement is being updated and includes additional

discussions of combined recruiting efforts. Student achievement of SLO's was at a very high level, emphasizing that applied, hand's-on teaching greatly assists with student learning. Upgrades in lighting and electrical power in the Irrigation Technology Laboratory has enhanced student learning.

Welding Certificate Technical Competence

| | AEQ 1203 Welding | AEQ 1313 Intermediate Welding | AEQ 2213 Advanced Welding | AEQ 1171 Industrial Safety |
|-------------------|-----------------------------|--|--------------------------------------|---------------------------------------|
| # of Students | 10 | 7 | 2 | 6 |
| % of outcomes met | 100% | 94% | 100% | 97% |

Since the welding certificate requires at least 3 semesters to complete the required courses, students are also working on completing APS associate degrees. Students are meeting course outcomes at a very high level. Three students took the AWS D.1. exam, and 2 of the 3 passed (67%). A new robotic welder has been obtained and a new metal fabrication course has been added to extend the learning opportunities and possible AWS certifications. Not being able to complete the certification over 1 academic year has prohibited some interested students in pursuing the program. Course schedule modifications are being considered.

D. Internship Employer Survey Results for Agricultural Production Systems Students

Scale: 5 = excellent, 4 = Above average, 3 = Average, 2 = Below Average, 1 = Very Poor

| | 2016 to 2020 Average | 2021 Average | 2022 Average |
|--------------------------------|-----------------------------|---------------------|---------------------|
| Appearance | 4.1 | 4.4 | 4.2 |
| Dependability/Supervision | 4.0 | 4.2 | 3.7 |
| Cooperation/Attitude | 4.2 | 4.5 | 4.0 |
| Respect/Personality | 4.3 | 4.6 | 4.2 |
| Communication | 3.7 | 3.9 | 3.6 |
| Attendance/Punctuality | 4.3 | 4.4 | 4.4 |
| Quality of Work/Safety | 4.2 | 4.5 | 4.0 |
| Supervisory Ability/Leadership | 3.6 | 3.9 | 3.5 |
| Technical Knowledge | 4.0 | 4.0 | 4.0 |
| Overall Employability Rating | 4.1 | 4.5 | 4.1 |
| Number of Students Evaluated | | 24 students | 23 Students |

Overall employability of our students is rated at above average to excellent. Communication skills have continued to be the biggest deficiency, which reflect comments made frequently by employers. This characteristic has also been frequently observed by faculty and staff regarding the students. It is a consistent characteristic of this generation of students. Supervisory ability and leadership will always likely be a lower rating considering the age and experience of our students.

Since our programs are career driven, employer feedback is an important part of evaluating our students. Most employers acknowledge that they would hire the student permanently if available. Efforts will be continued in all classes to relate instructor-student communication to necessary career-based communication. Continued efforts to reinforce the importance of being a professional,

maintaining integrity and a strong work ethic will be addressed in coursework through more industry and alumni interactions.

E. Assessment of Associate of Science (Transfer) degree options of Agronomy, Mechanized Systems Management, Animal Science and Ag Education.

- Students will demonstrate the knowledge required to effectively transition to a bachelor’s degree in their chosen field of study.

Specific technical knowledge is included in the agricultural course assessments provided previously. Achievement of the learning outcome above is assessed by completion of their B.S. degree. Students are completely their B.S. degrees at a 93% graduation rate. The 3 non-completers would be students that were affected by COVID restructuring of course offerings.

| NCTA Graduation Year | Total # of Students | # of Students to UNL | Successful B.S. Degree Completion |
|-----------------------------|----------------------------|-----------------------------|--|
| 2016 | 4 | 3 | 4 |
| 2017 | 7 | 5 | 7 |
| 2018 | 10 | 10 | 10 |
| 2019 | 8 | 7 | 6 |
| 2020 | 8 | 7 | 7 |
| 2021 | 4 | 4 | 4 |
| 2022 | 3 | 2 | Degrees in Progress |
| 2023 | 9 | 8 | Degrees in Progress |

Summary – Assessment Driven Changes in Ag Production Systems

Curriculum Revisions

APS achieved two major goals for curriculum changes during this past year that will officially begin in the 2023-24 catalog year.

- 1) Develop a uniform number of total credit hours for all options within each degree.
 - a. 60 credit hours for Associate of Science (transfer) degree options.
 - b. 67 credit hours for the Associate of Applied Science degree options.
- 2) Develop a uniform APS core of business and internship courses.

The 67 credit hours was a reduction of 3 to 8 credit hours, depending on the option. Students in all options moving forward will have an average of 16 credit hours to complete over 4 semesters (64 + 3 summer internship). The new APS core set of courses includes the following:

| APS Core | 15 credits |
|---|-------------------|
| ECN 1103 Intro to Ag Econ or ECN 1203 Microeconomics | 3 |
| ACT 1103 Accounting I or ABM 2963 Farm Records | 3 |
| ABM 2854 Farm & Ranch Mgmt | 4 |
| AGR 2942 APS Capstone | 2 |
| ASI 2903/AGR 2903 Internship | 3 |

APS faculty also agreed on a new structure for our respective freshman orientation courses (Agronomy Orientation and Success in Animal Science). Computer software learning experiences will be added to include: key functions for utilizing MS Word for writing reports; developing basic mathematical functions and graphs utilizing MS Excel; and developing professional structure in emails with essential functions. These are both General Education courses and a restructuring of the Gen Ed learning outcomes facilitated the room for this addition.

The Beef Production Certificate was reduced to 20 credit hours to match previous changes in other APS certificates. The revision ensures learning that is focused on the certificate’s outcome of livestock production practices, while also allowing some flexibility to include complementary courses in production agriculture. The APS division will continue to discuss possible changes to the business courses of the APS core to provide curriculum that best facilitates student success in their future careers in agriculture.

Part III – Agribusiness Management Systems Assessment

A. Agribusiness Management Systems Program Learning Outcomes

Students majoring in Agribusiness Management Systems are expected to meet the following learning outcomes upon completion of their degrees.

- 1) Demonstrate computer skills
- 2) Apply economic information to real world situations
- 3) Think critically and demonstrate problem-solving skills
- 4) Read, comprehend, and analyze basic financial statements and demonstrate basic accounting skills
- 5) Effectively communicate in both an oral and written format
- 6) Demonstrate skills enabling them to work effectively as individuals and in groups

B. Assessment Procedures for Degree Outcomes

- 1) Course Competency: Expected learning outcomes are measured in several prominent courses within the program
- 2) Capstone Course: ABM 2903: Entrepreneurship is required of all the students in the AMS Management program. In this course students develop a portfolio of a business plan for an entrepreneurial venture and present their proposed venture to judges from both industry and academics.
- 3) Internship Employer Surveys: Students receiving a degree with a management option is required to obtain an experiential learning experience through an internship.

C. Course Competency Assessment Results

| | ECN 1103 Intro to Ag Econ | ECN 1203 Microeconomics | ACT 1103 Accounting |
|----------------|----------------------------------|--------------------------------|----------------------------|
| Students | 52 | 20 | 55 |
| % outcomes met | 86% | 96% | 93% |

| | ABM 2403 Ag Finance | ABM 2603 Ag Law | ABM 2854 Farm/Ranch MGT | ABM 2004 Internship | MKT 2203 Ag Marketing |
|----------------|--------------------------------|----------------------------|------------------------------------|--------------------------------|----------------------------------|
| Students | 9 | 9 | 43 | 4 | 29 |
| % outcomes met | 100% | 100% | 97% | 100% | 100% |

Analysis: AMS students are successfully meeting these outcomes as illustrated by the completions during the 2022-2023 academic year of the above core AMS Required courses. It was noted on the individual faculty SLO reports that those students who did not, or had difficulties, meeting these outcomes were typically due to absences or not completing assignments. Lack of confidence in math skills and aversion to speaking in public were also cited for students failing course competency.

D. Capstone Course ABM 2903 Entrepreneurship

| Course: ABM 2903: Entrepreneurship | | | |
|---|---------------------------------------|------------------------|-----------------|
| Student Learning Outcome | Assessment Tool | Current Results | |
| | | # tested | # passed |
| Acquire a foundational understanding of entrepreneurship to understand its nature and scope. | Current Event Presentation, Portfolio | 5 | 5 |
| Develop personal traits/behaviors to foster successful entrepreneurial performance. | Current Event Presentation, Portfolio | 5 | 5 |
| Acquire knowledge of business ownership to establish and continue business operations. | Portfolio Sections | 5 | 5 |
| Demonstrate a customer-service mindset. | Portfolio | 5 | 5 |
| Reinforce service orientation through communication. | Portfolio, Exam | 5 | 5 |
| Identify the impact of small business/entrepreneurship on market economies. | Current Event Presentation, Portfolio | 5 | 5 |
| Analyze cost/profit relationships to guide business decision making. | Portfolio Sections | 5 | 5 |
| Employ entrepreneurial discovery strategies to generate feasible ideas for business ventures. | Current Event Assignment | 5 | 5 |
| Understand marketing's role and function in entrepreneurial undertakings. | Portfolio Sections | 5 | 5 |
| Acquire a foundational knowledge of promotion to understand its nature and scope. | Portfolio Sections | 5 | 5 |

The Entrepreneurship course was redesigned in 2023 with a new structure and set of course learning outcomes. The five students enrolled were very successful in meeting the learning outcomes.

E. Agri-Business Internship Employer Surveys

Scale: 5 = excellent, 4 = Above average, 3 = Average, 2 = Below Average, 1 = Very Poor

| | 2019-20 | 2020-21 | 2021-22 | 2022-23 |
|--------------------------------|---------|---------|---------|---------|
| Intern's Appearance | 5 | 5 | 5 | 4.5 |
| Dependability | 5 | 5 | 5 | 4.5 |
| Ability to work with others | 5 | 5 | 5 | 4.8 |
| Communication Ability | 4 | 4 | 4 | 4 |
| Critical Thinking Skills | 4 | 4.5 | 4 | 4.2 |
| Cooperation/Attitude | 4.5 | 4.5 | 4 | 4.6 |
| Creativity | 4.5 | 4.5 | 4 | 4.2 |
| Attendance and Punctuality | 5 | 5 | 5 | 4.4 |
| Quality of Work and Safety | 4 | 4.5 | 4 | 4.6 |
| Supervisory Ability/Leadership | 5 | 5 | 5 | 3.9 |
| Overall Rating | 4.3 | 4.5 | 4.5 | 4.6 |
| | | | | |
| Number of Students | 7 | 3 | 1 | 4 |

Analysis: The results of the survey for this student reflected positive assessments of the NCTA student at the internship position. Internships allow students to apply the knowledge and theory they have learned in the classroom to a professional workplace. Internships also allow students to make connections in the professional fields they may be considering as career paths. A primary benefit to the student is that it provides “relevant” work experience.

Part IV – Veterinary Technology Assessment

A. Veterinary Technology Systems Program Learning Outcomes

Upon successful completion of the Veterinary Assistant Option, students will be able to demonstrate proficiency in motor skills, critical thinking, entrepreneurship, and clinical application skills at the veterinary assistant entry level in the following areas

- A. Office and Hospital Procedures
- B. Pharmacy and Pharmacology
- C. Nursing Skills
- D. Anesthesia
- E. Radiology
- F. Surgical Prep and Nursing
- G. Parasitology, Hematology and Clinical Pathology
- H. Animal Husbandry, Handling, Behavior and Restraint
- I. Anatomy and Physiology

B. Assessment Procedures for Degree Outcomes

1. Technical Knowledge Competency
 - a. Technical knowledge is directly measured in several key courses and tracked in the AVMA approved Thesalthouse electronic software tracking system.
 - b. Final Assessment is measured with the administration of a written and practical test done at the end of the student's last spring semester (Exit Exam).
2. Internship Employer Surveys

- a. The results from these surveys provide feedback on the student’s technical knowledge and skills from the employer’s perspective.
- 3. Technician Option: Passing Rate for new graduate, first time test takers for the Veterinary Technician National Exam
 - a. The results from this national test indicate competency level of the NCTA Veterinary Technician Program compared to other Vet Tech Programs. AVMA requirement for Program accreditation is a pass rate above 50%.

C. Assessment Results

AVMA Essential Skills

The tracking of individual student completion of all AVMA skills and tasks is a high priority item for maintaining AVMA accreditation of the Veterinary Technician Option. These skills have been tracked by the division since 2014 through the use of the AVMA Essential Skill Check off Book. It was updated each semester as classes were completed and LOA were analyzed. The book was then reprinted and provided to all incoming students fall semester. Beginning with the 2021 summer session the AVMA essential skills has been tracked using TheSaltHouse software system. Our goal is that the technician and assistant option students successfully complete at least 70% of the essential skills.

AVMA Essential Skill Check off (TheSaltHouse)

| Cohort | Random Sample Size | Result |
|---------------|---------------------------|---------------|
| 2014-2016 | 5 | 70% |
| 2015-2017 | 5 | 80% |
| 2016-2018 | 5 | 70% |
| 2017-2019 | 10 | 60% |
| 2018-2020 | 10 | 70% |
| 2019 - 2021 | 8 | 78% |
| 2020 – 2022 | 15 | 72% |

Veterinary Technician Exit Exam Pass Rate – Final Assessment

| Graduating year | Number taking | Number Passing | % passing |
|------------------------|----------------------|-----------------------|------------------|
| 2017 | 29 | 24 | 83 |
| 2018 | 23 | 14 | 61 |
| 2019 | 21 | 21 | 100 |
| 2020 | 28 | 23 | 82 |
| 2021 | 18 | 15 | 83 |
| 2022 | 20 | 19 | 95 |
| 2023 | 22 | 19 | 86 |

Internship

Students complete an internship as part of every Veterinary Technology Option. Most complete the internship after completing all academic classes. The student must prepare goals and objectives for internship, track progress with essential skills and complete weekly progress notes.

Internship Employer Survey Results

Revised Survey initiated in 2023

Scale: 0 = unacceptable, 1 = below expectations, 2 = average, 3 = above average, 4 = outstanding.

| Work Ethic-Professionalism | 2023 |
|---|-------------|
| Attendance | 3.8 |
| Displays a positive attitude | 3.7 |
| Listens attentively and follows directions. | 3.7 |
| Uses time effectively-keeps busy-sees things that need done | 3.3 |
| Honest | 3.9 |
| Completes work carefully, pays attention to details | 3.6 |
| Works independently self-motivated | 3.1 |
| Uses problem solving skills | 3.1 |
| Speaks clearly to clients and co-workers | 3.2 |
| Shares in group discussions & initiates questions | 3.2 |
| Courtesy, kindness, respectful, appropriate sense of humor | 3.7 |
| Adjusts to new situations | 3.3 |
| Professional appearance | 3.8 |
| Seeks input from others | 2.7 |
| Communication of ideas | 2.6 |
| Team player | 3.4 |
| Catches on quickly/desire to learn | 3.0 |
| Overall average in the work ethic area | 3.4 |
| | |
| Technical Skills | |
| Technical Knowledge and Skills | 3.3 |
| Hand-On Skills | 3.2 |
| Past Interns | 3.1 |
| Adaptability | 3.4 |
| Pharmacy and Pharmacology | 2.9 |
| History taking Examinations | 3.3 |
| Laboratory Procedures | 3.2 |
| Radiology and Ultrasound Imaging | 3.1 |
| Animal Handling and Restraint | 3.0 |
| Practice Management (computer skills) | 3.1 |
| Anatomy | 3.4 |
| Anesthesiology | 2.9 |
| Surgery | 3.3 |
| Nursing Skills | 3.1 |
| Overall average in technical skills | 3.2 |
| Number of students evaluated | 23 |

Employer comments on skills students most prepared for on internship

- Triage, communicated well with owners. Adapted well in emergency department
- Nursing, Pharmacology, Anesthesia, Surgery
- Routine dentals, intubating patients

- Nursing, Large Animal
- Nursing, animal care, radiology, anesthesia, phlebotomy, restraint
- Anesthesia, Clin Path, Clinics, Nursing
- Taking blood, performing lab tests (fecals, UA, blood smears, etc.)
- Anesthesiology, Pharmacology
- Nursing
- Animal Care, Surgery, Parasitology, Radiology, Anesthesia, Clin Path, Large Animal
- Hematology
- Equine Handling and small animal venipuncture and IV catheter placement
- Animal Restraint. Nursing, Clinical Pathology
- Nursing, Radiology, All of J-Bows classes are super important, Anesthesia & Surgery
- Nursing, Surgery Prep, Anesthesia, Animal Care, Radiology, Facilities, All of Judy's classes
- Anesthesia, nursing, surgery
- Anesthesia, surgery
- surgical prep, surgical instruments, client compassion
- Surgery, clinical pathology, parasitology, hematology, nursing, radiology
- Processing cattle, restraining animals
- Nursing, anesthesia, hematology, parasitology, surgery, radiology
- Patient care,
- Organizing, cleanliness

Employer comments on skills students least prepared for on internship

- Complications with anesthesia patients, more complicated treatments (blood transfusions, etc.)
- Knowing different drugs and what they are used for
- Blood draws, pounds, grams, ounces conversions, horse handling skills
- Calculating medication and dosages for anesthesia, radiographic positioning, in house blood and urine machine
- Pharmacology
- End of life care, talking with clients. Radiography, lab, cytology, urinalysis, confidence
- Anesthesia and Pharmacology
- Lab animal surgery
- Cattle vaccines and protocols, explaining at home care to clients after their pet has been diagnosed with a life altering
- problem. (this can be fixed with experience)
- Pharmacology, venipuncture, cat restraint
- Everything on the equine side, we didn't get a lot of experience at school with them
- Pharmacology. More knowledge on medications & drugs would be useful.
- Client communication. Talking with clients more readily would be beneficial
- Needs to be more assertive and very timid at times.
- Pharmacology
- Anesthesia, pharmacology, radiology, ultrasound, large animal
- Restraint, client communication, medication knowledge, parasiticide knowledge

- Pharmacology, math, diseases, nutrition
- Knowing veterinary terminology and proper names of instruments. Having the confidence to communicate with clients
- Client communication, Drive to learn, restraint, intubation, willingness to learn and practice
- Interacting with clients
- Hematology and Parasitology
- Working with others and understanding her role

Previous Internship Employer Survey Results

Scale: 0 = unacceptable, 1 = below expectations, 2 = average, 3 = above average, 4 = outstanding.

| Category – Work Ethic-Professionalism | 2022 | 2021 | 2020 | 2019 |
|---|-------------|-------------|-------------|-------------|
| Attendance | 3.9 | 4.0 | 3.8 | 4 |
| Displays a positive attitude | 3.6 | 4.0 | 3.7 | 4 |
| Listens attentively and follows directions. | 3.6 | 3.8 | 3.5 | 4 |
| Uses time effectively-keeps busy-sees things that need done | 3.6 | 3.6 | 3.2 | 4 |
| Honest | 3.8 | 3.9 | 3.7 | 4 |
| Completes work carefully, pays attention to details | 3.5 | 3.8 | 3.6 | 4 |
| Works independently self-motivated | 3.4 | 3.3 | 3.1 | 3 |
| Uses problem solving skills | 3.3 | 3.6 | 3.3 | 4 |
| Speaks clearly to clients and co-workers | 3.2 | 3.3 | 3.2 | 3 |
| Shares in group discussions & initiates questions | 3.5 | 3.8 | 3.2 | 4 |
| Communication of ideas, team player, seeks input | | 3.8 | 3.5 | |
| Courtesy, kindness, respectful, appropriate sense of humor | 3.8 | 3.9 | 3.7 | 4 |
| Adjusts to new situations | 3.5 | 4 | 3.4 | 3 |
| Professional appearance | 3.8 | 3.9 | 3.8 | 4 |
| Overall average in the work ethic area | 3.4 | 3.7 | 3.7 | 3.6 |
| | | | | |
| Overall all ability with Technical skills | 3 | 3.3 | 3.1 | 3 |
| Adaptability to clinic's way | 3.7 | 3.5 | 3.1 | 4 |
| Pharmacology | 3.3 | 3.6 | 3.1 | 3 |
| History taking and physical examinations | 2.5 | 3.5 | 3.1 | 4 |
| Lab skills: parasitology, hematology, clinical pathology | 3 | 3.6 | 2.9 | 3 |
| Radiology & Ultrasound | 3.3 | 3.8 | 3.3 | 3 |
| Animal handling and restraint | 3.3 | 3.5 | 3.6 | 3 |
| Practice Management | 2.7 | 3.0 | 3.2 | 3 |
| Anatomy | 3.3 | 3.5 | 2.9 | 4 |
| Anesthesiology | 3.5 | 3.6 | 3.1 | 3 |
| Surgery Prep | 4 | 3.6 | 3.2 | 4 |
| Nursing skills | 3.3 | 3.6 | 3.0 | 4 |
| Overall average in technical skills | 3.2 | 3.6 | 3.3 | 3.3 |
| | | | | |
| Number of students evaluated | 23 | 20 | 22 | 13 |

NATIONAL VETERINARY TECHNICIAN EXAM

| Year | % Pass Rate |
|-----------------|--------------------|
| 2017 | 93 |
| 2018 | 87 |
| 2019 | 91 |
| 2020 | 95 |
| 2021 | 50 |
| 2022 (Jan-July) | 50 |
| 2023 | 38 |

Part V – Program Outcome Course Matrixes

Associate of Applied Science – Agronomy Industry Management Option Course and Program Experience and Outcomes Matrix

Student Learning Outcomes

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 enterprises.
4. Students will be able to exhibit required knowledge and skills consistent with their chosen field of study. (Technical Competence)
 - a. Students will be able to apply economically sound and environmentally sustainable agricultural crop production practices in the Great Plains.

| Course Number | Course Name | SLO1 | SLO2 | SLO3 | SLO4 |
|---------------|-------------------------|------|------|------|------|
| AGR 1091 | Crop Practicum I | | X | X | A |
| AGR 1591 | Crop Practicum II | | X | X | A |
| AGR 2091 | Crop Practicum III | | X | X | A |
| AGR 1103 | Crop Science | X | X | | X |
| AGR 1204 | Principles of Soils | | X | | A |
| AGR 1213 | Natural Resource Mgmt | X | X | | X |
| AGR 1891 | Crops Judging I | | | | X |
| AGR 2892 | Crops Judging II | | | | X |
| AGR 2304 | Soil Fertility | | X | | A |
| AGR 2353 | Pest Management | | X | | A |
| AGR 2393 | Irrigation Management | | X | | A |
| AGR 2403 | Crop Management | X | X | X | A |
| AEQ 2103 | Ag Chemical Application | | X | | A |
| AEQ 2323 | Precision Farming | | X | | A |
| | | | | | |
| AGR 2903 | Internship | A | | | A |
| AGR 2983 | Capstone | X | A | X | |
| ENG 1503 | Tech Communications I | A | | | |
| SPC 1103 | Sales Communications | A | | | |
| ECN 1103 | Intro to Ag Economics | | | A | |
| ACT 1103 | Accounting I | | | A | |
| ABM 2854 | Farm/Ranch Management | | | A | |

“X” for courses or experiences in which students have the opportunity to learn the outcome.

“A” for courses or experiences in which student performance is used for program level assessment of the outcome.

**Associate of Applied Science – Diversified Agriculture Management Option:
Course and Program Experience and Outcomes Matrix**

Student Learning Outcomes

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 enterprises.
4. Students will be able to exhibit required knowledge and skills consistent with their chosen field of study. (Technical Competence)
 - a. Students will be able to apply economically sound and environmentally sustainable agricultural crop and livestock production practices in the Great Plains.

| Course Number | Course Name | SLO1 | SLO2 | SLO3 | SLO4 |
|---------------|---------------------------|------|------|------|------|
| AGR 1103 | Crop Science | X | X | | X |
| AGR 1204 | Principles of Soils | | X | | A |
| AGR 1213 | Natural Resource Mgmt | X | X | | X |
| AGR 2304 | Soil Fertility | | X | | A |
| AGR 2353 | Pest Management | | X | | A |
| AGR 2393 | Irrigation Management | | X | | A |
| AGR 2403 | Crop Management | X | A | X | A |
| AEQ 2103 | Ag Chemical Application | | X | | A |
| AEQ 2323 | Precision Farming | | X | | A |
| ASI 1304 | Animal Management | | X | | A |
| ASI 1253 | Nutrition | | X | | A |
| ASI 1213 | Livestock & Carcass Eval. | | X | | A |
| ASI 1203 | Feedlot Operations | | X | | A |
| ASI 2203 | Feeds and Feeding | | X | | A |
| ASI 2353 | Livestock Breeding | | X | | A |
| ASI 2773 | Beef Production | | X | | A |
| | | | | | |
| AGR 2903 | Internship | A | | | A |
| AGR 2983 | Capstone | X | A | X | |
| ENG 1503 | Tech Communications I | A | | | |
| SPC 1103 | Sales Communications | A | | | |
| ECN 1103 | Intro to Ag Economics | | | A | |
| ACT 1103 | Accounting I | | | A | |
| ABM 2854 | Farm/Ranch Management | | | A | |

“X” for courses or experiences in which students have the opportunity to learn the outcome.

“A” for courses or experiences in which student performance is used for program level assessment of the outcome.

**Associate of Applied Science – Ag Equipment Management Option
Course and Program Experience and Outcomes Matrix**

Student Learning Outcomes

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 enterprises.
4. Students will be able to exhibit required knowledge and skills consistent with their chosen field of study. (Technical Competence)
 - a. Students will be able to safely operate, troubleshoot and maintain agricultural equipment.

| Course Number | Course Name | SLO1 | SLO2 | SLO3 | SLO4 |
|---------------|-------------------------|------|------|------|------|
| AEQ 1103 | Small Engines | | X | | X |
| AEQ 1203 | Welding | | X | | A |
| AEQ 1171 | Industrial Safety | | X | | |
| AEQ 1303 | Intermediate Welding | | X | | A |
| AEQ 1501 | Intro to Electric Code | | X | | A |
| AEQ 1503 | DC Circuit Analysis | | X | | A |
| AEQ 1513 | AC Circuit Analysis | | X | | A |
| AEQ 2213 | Advanced Welding | | X | | A |
| AEQ 2303 | Equip. Prevent. Maint. | | X | | X |
| AEQ 2103 | Ag Chemical Application | | X | | X |
| AEQ 2323 | Precision Farming | | X | | X |
| AEQ 2404 | Mechanized Irrigation | | X | | A |
| | | | | | |
| AGR 2903 | Internship | A | | | A |
| AGR 2983 | Capstone | X | A | X | |
| ENG 1503 | Tech Communications I | A | | | |
| SPC 1103 | Sales Communications | A | | | |
| ECN 1103 | Intro to Ag Economics | | | A | |
| ACT 1103 | Accounting I | | | A | |
| ABM 2854 | Farm/Ranch Management | | | A | |

“X” for courses or experiences in which students have the opportunity to learn the outcome.

“A” for courses or experiences in which student performance is used for program level assessment of the outcome.

**Associate of Applied Science –Equine Industry Management
Course and Program Experience and Outcomes Matrix**

Student Learning Outcomes

1. Students will be able to effectively communicate in oral and written form.
2. Students will be able to gather, assimilate, and process information for each sound, logical conclusion.
3. Students will be able to apply economic principles of accounting, marketing, and budgeting to ag enterprises.
4. Students will be able to exhibit required knowledge and skills consistent with their chosen field of study
 - a. Students will be knowledgeable in the area of modern livestock husbandry and management practices.

| Course Number | Course Name | SLO1 | SLO2 | SLO3 | SLO4 |
|---------------|-------------------------------|------|------|------|------|
| ASI 1253 | Nutrition | X | X | X | A |
| ASI 1161 | Intro to Horsemanship | X | X | | A |
| ASI 1304 | Animal Management | X | X | X | A |
| ASI 1442 | Equine Practicum I | X | X | X | A |
| ASI 1501 | Equine Safety | X | X | | A |
| ASI 2412 | Equine Marketing Techniques | X | X | X | A |
| ASI 2433 | Equine Industry Management I | X | X | X | A |
| ASI 2442 | Equine Practicum II | X | X | X | A |
| ASI 2443 | Equine Industry Management II | X | X | X | A |
| | | | | | |
| AGR 2903 | Internship | A | X | | A |
| AGR 2983 | Capstone | X | A | X | |
| ENG 1503 | Tech Communications I | A | | | |
| SPC 1103 | Sales Communications | A | | | |
| ECN 1103 | Intro to Ag Economics | | | A | |
| ACT 1103 | Accounting I | | | A | |
| ABM 2854 | Farm/Ranch Management | | | A | |

“X” for courses or experiences in which students have the opportunity to learn the outcome.
 “A” for courses or experiences in which student performance is used for program level assessment of the outcome.

**Associate of Applied Science- Livestock Industry Management
Course and Program Experience and Outcomes Matrix**

Student Learning Outcomes

1. Students will be able to effectively communicate in oral and written form.
2. Students will be able to gather, assimilate, and process information for each sound, logical conclusion.
3. Students will be able to apply economic principles of accounting, marketing, and budgeting to ag enterprises.
4. Students will be able to exhibit required knowledge and skills consistent with their chosen field of study.
 - a. Students will be knowledgeable in the area of modern livestock husbandry and management practices.

| Course Number | Course Name | SLO1 | SLO2 | SLO3 | SLO4 |
|---------------|----------------------------------|------|------|------|------|
| ASI 1203 | Feedlot Systems | X | X | X | A |
| ASI 1213 | Livestock and Carcass Evaluation | X | X | X | A |
| ASI 1253 | Nutrition | X | X | X | A |
| ASI 1304 | Animal Management | X | X | X | A |
| ASI 2383 | Large Animal Diseases | X | X | X | A |
| ASI 2773 | Beef Production Systems | X | X | X | A |
| MKT 2203 | Ag Marketing | | X | X | |
| | | | | | |
| AGR 2903 | Internship | A | X | | A |
| AGR 2983 | Capstone | X | A | X | |
| ENG 1503 | Tech Communications I | A | | | |
| SPC 1103 | Sales Communications | A | | | |
| ECN 1103 | Intro to Ag Economics | | | A | |
| ACT 1103 | Accounting I | | | A | |
| ABM 2854 | Farm/Ranch Management | | | A | |

“X” for courses or experiences in which students have the opportunity to learn the outcome.

“A” for courses or experiences in which student performance is used for program level assessment of the outcome.

**Associate of Applied Science- Feedlot Industry Management
Course and Program Experience and Outcomes Matrix**

Student Learning Outcomes

1. Students will be able to effectively communicate in oral and written form.
2. Students will be able to gather, assimilate, and process information for each sound, logical conclusion.
3. Students will be able to apply economic principles of accounting, marketing, and budgeting to ag enterprises.
4. Students will be able to exhibit required knowledge and skills consistent with their chosen field of study.
 - a. Students will be knowledgeable in the area of modern livestock husbandry and management practices.

| Course Number | Course Name | SLO1 | SLO2 | SLO3 | SLO4 |
|---------------|----------------------------------|------|------|------|------|
| ASI 1202 | Feedlot Practicum I | | X | | X |
| ASI 1302 | Feedlot Practicum II | | X | | X |
| ASI 1203 | Feedlot Systems | X | X | X | A |
| ASI 1213 | Livestock and Carcass Evaluation | X | X | X | A |
| ASI 1253 | Nutrition | X | X | X | A |
| ASI 1304 | Animal Management | X | X | X | A |
| ASI 2383 | Large Animal Diseases | X | X | X | A |
| ASI 2203 | Feeds and Feeding | X | X | X | A |
| ASI 2313 | Ration Formulation | X | X | X | A |
| MKT 2203 | Ag Marketing | | X | X | |
| | | | | | |
| AGR 2903 | Internship | A | X | | A |
| AGR 2983 | Capstone | X | A | X | |
| ENG 1503 | Tech Communications I | A | | | |
| SPC 1103 | Sales Communications | A | | | |
| ECN 1103 | Intro to Ag Economics | | | A | |
| ACT 1103 | Accounting I | | | A | |
| ABM 2854 | Farm/Ranch Management | | | A | |

“X” for courses or experiences in which students have the opportunity to learn the outcome.

“A” for courses or experiences in which student performance is used for program level assessment of the outcome.

**Associate of Science (Transfer) – Agronomy Option
Course and Program Experience and Outcomes Matrix**

Student Learning Outcomes

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 enterprises.
4. Students will be able to exhibit required knowledge and skills consistent with their chosen field of study. (Technical Competence)
5. Students will demonstrate the knowledge required to effectively transition to a bachelor’s degree in their chosen field of study.¹

| Course Number | Course Name | SLO1 | SLO2 | SLO3 | SLO4 |
|------------------------------|-----------------------|------|------|------|------|
| AGR 1091 | Crop Practicum I | | X | X | X |
| AGR 1591 | Crop Practicum II | | X | X | X |
| AGR 2091 | Crop Practicum III | | X | X | X |
| AGR 1103 | Crop Science | X | X | | X |
| AGR 1204 | Principles of Soils | | X | | A |
| AGR 1213 | Natural Resource Mgmt | X | X | | X |
| AGR 1891 | Crops Judging I | | | | X |
| AGR 2892 | Crops Judging II | | | | X |
| AGR 2304 | Soil Fertility | | X | | A |
| AGR 2353 | Pest Management | | X | | X |
| AGR 2393 | Irrigation Management | | X | | X |
| AGR 2403 | Crop Management | X | X | X | A |
| AGR 2903 | Internship | X | | | X |
| AEQ 2323 | Precision Farming | | X | | X |
| ECN 1203 | Microeconomics | | | A | |
| ABM 2854 | Farm/Ranch Management | | | A | |
| MKT 2203 | Ag Marketing | | | A | |
| General Education Assessment | | A | | | |

“X” for courses or experiences in which students have the opportunity to learn the outcome.

“A” for courses or experiences in which student performance is used for program level assessment of the outcome.

¹SLO5 measured by student degree success at the bachelor’s institution.

**Associate of Science (Transfer) – Mechanized Systems Management
Course and Program Experience and Outcomes Matrix**

Student Learning Outcomes

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 enterprises.
4. Students will be able to exhibit required knowledge and skills consistent with their chosen field of study. (Technical Competence)
5. Students will demonstrate the knowledge required to effectively transition to a bachelor’s degree in their chosen field of study.¹

| Course Number | Course Name | SLO1 | SLO2 | SLO3 | SLO4 |
|------------------------------|-----------------------|------|------|------|------|
| AEQ 1503 | DC Circuit Analysis | | X | | X |
| AEQ 1513 | AC Circuit Analysis | | X | | X |
| AGR 1204 | Principles of Soils | | X | | A |
| AGR 1213 | Natural Resource Mgmt | X | X | | X |
| AGR 2304 | Soil Fertility | | X | | A |
| AGR 2403 | Crop Management | X | X | X | A |
| ASI 1304 | Animal Management | X | X | | X |
| ECN 1203 | Microeconomics | | | A | |
| ABM 2854 | Farm/Ranch Management | | | A | |
| General Education Assessment | | A | | | |

“X” for courses or experiences in which students have the opportunity to learn the outcome.

“A” for courses or experiences in which student performance is used for program level assessment of the outcome.

¹SLO5 measured by student degree success at the bachelor’s institution.

**Associate of Science (Transfer) - Agricultural Education
Course and Program Experience and Outcomes Matrix**

Student Learning Outcomes

1. Students will be able to effectively communicate in oral and written form.
2. Students will be able to gather, assimilate, and process information for each sound, logical conclusion.
3. Students will be able to apply economic principles of accounting, marketing, and budgeting to ag enterprises.
4. Students will be able to exhibit required knowledge and skills consistent with their chosen field of study.
5. Students will demonstrate the knowledge required to effectively transition to a bachelor's degree in their chosen field of study.¹

| Course Number | Course Name | SLO1 | SLO2 | SLO3 | SLO4 |
|------------------------------|---|------|------|------|------|
| AED 1103 | Introduction to Secondary Agriscience Education | X | A | X | X |
| AED 1233 | Planning Leadership and Experiential Programs | X | A | X | X |
| AEQ 1103 | Small Engines | | X | X | A |
| AEQ 1203 | Welding | | X | X | A |
| AGR 1204 | Principles of Soil | | X | | X |
| ASI 1213 | Livestock and Carcass Evaluation | X | X | X | A |
| ASI 1304 | Animal Management | X | X | X | A |
| ASI 2513 | Meat Science | X | X | X | X |
| ECN 1203 | Microeconomics | X | X | A | X |
| ECN 1303 | Macroeconomics | X | X | | |
| PHL 1103 | Critical Thinking | X | X | | |
| General Education Assessment | | A | | | |

“X” for courses or experiences in which students have the opportunity to learn the outcome.

“A” for courses or experiences in which student performance is used for program level assessment of the outcome.

¹SLO5 measured by student degree success at the bachelor's institution.

**Associate of Science (Transfer) - Animal Science
Course and Program Experience and Outcomes Matrix**

Student Learning Outcomes

1. Students will be able to effectively communicate in oral and written form.
2. Students will be able to gather, assimilate, and process information for each sound, logical conclusion.
3. Students will be able to apply economic principles of accounting, marketing, and budgeting to ag enterprises.
4. Students will be able to exhibit required knowledge and skills consistent with their chosen field of study.
5. Students will demonstrate the knowledge required to effectively transition to a bachelor's degree in their chosen field of study.¹

| Course Number | Course Name | SLO1 | SLO2 | SLO3 | SLO4 |
|------------------------------|----------------------------------|------|------|------|------|
| ABM 2003 | Critical Thinking | X | X | X | |
| ABM 2403 | Ag Finance | X | X | X | |
| ABM 2854 | Farm and Ranch Management | | X | A | |
| ACT 1103 | Accounting I | | X | A | |
| ASI 1024 | Fundamentals of Animal Biology | X | X | | X |
| ASI 1213 | Livestock and Carcass Evaluation | X | X | X | A |
| ASI 1253 | Nutrition | X | X | X | A |
| ASI 1304 | Animal Management | X | X | X | A |
| ASI 2203 | Feeds and Feeding | X | X | X | A |
| ASI 2383 | Large Animal Diseases | X | X | X | X |
| ASI 2513 | Meat Science | X | X | X | A |
| ASI 2604 | Anatomy and Physiology | X | X | | X |
| ASI 2773 | Advanced Reproductive Physiology | X | X | | X |
| ECN 1203 | Microeconomics | | | A | |
| ECN 1303 | Macroeconomics | | | X | |
| MGT 2103 | Management Concepts | | | X | |
| General Education Assessment | | A | | | |

“X” for courses or experiences in which students have the opportunity to learn the outcome.

“A” for courses or experiences in which student performance is used for program level assessment of the outcome.

¹SLO5 measured by student degree success at the bachelor's institution.

Agricultural Welding Certificate
Course and Program Experience and Outcomes Matrix

Student Learning Outcomes

1. Students will be able to perform welding and fabrication technical skills.
2. Students will be able to interact professionally with colleagues and clients.

| Course Number | Course Name | SLO1 | SLO2 |
|-----------------------|------------------------|------|------|
| AEQ 1203 | Welding | A | |
| AEQ 1171 | Industrial Safety | X | |
| AEQ 1303 | Intermediate Welding | A | |
| AEQ 2213 | Advanced Welding | A | |
| AEQ 2604 ^a | Welding Apprenticeship | A | A |

^a NOTE: AGR 2903 Internship may be substituted for Apprenticeship

Irrigation Technician Certificate
Course and Program Experience and Outcomes Matrix

Student Learning Outcomes

1. 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.
2. Students will be able to interact professionally with colleagues and clients.

| Course Number | Course Name | SLO1 | SLO2 |
|---------------|-------------------------------|------|------|
| AEQ 1171 | Industrial Safety | X | |
| AEQ 1501 | Intro to Electric Code | A | |
| AEQ 1503 | DC Circuit Analysis | A | |
| AEQ 1513 | AC Circuit Analysis | A | |
| AEQ 2404 | Mechanized Irrigation Systems | A | X |
| SPC 1103 | Sales Communication | | A |

Ag Chemical Application Certificate
Course and Program Experience and Outcomes Matrix

Student Learning Outcomes

1. Students will be able to deliver, mix and apply agricultural chemicals safely and efficiently.
2. Students will be able to maintain and safely operate ag chemical application equipment.
3. Students will be able to interact professionally with colleagues and clients.

| Course Number | Course Name | SLO1 | SLO2 | SLO3 |
|----------------------------|---|------|------|------|
| AEQ 2103 | Ag Chemical Application | A | A | |
| AEQ 2323 | Precision Farming Technology | | X | |
| AGR 1881 or AGR 2903 | Applied Agricultural Experience Internship | X | X | A |
| AGR 2353 | Pest Management | X | | |

“X” for courses or experiences in which students have the opportunity to learn the outcome.

“A” for courses or experiences in which student performance is used for program level assessment of the outcome.

**Equine Training/Management Certificate
Course and Program Experience and Outcomes Matrix**

Student Learning Outcomes

Students gain a foundational knowledge in the area of equine management and training practices, typical in the equine industry.

| Course Number | Course Name | Outcome |
|---------------|-------------------------------|---------|
| ASI 1161 | Intro to Horsemanship | A |
| ASI 1262 | Basic Equitation | A |
| ASI 1501 | Equine Safety | A |
| ASI 1442 | Equine Practicum I | A |
| ASI 2442 | Equine Practicum II | A |
| ASI 2462 | Colt Starting | X |
| ASI 2412 | Equine Marketing Techniques | A |
| ASI 2363 | Intermediate Training | X |
| ASI 2463 | Advanced Performance Training | X |

**Beef Production Certificate
Course and Program Experience and Outcomes Matrix**

Student Learning Outcomes

Students gain a foundational knowledge in the area of beef cattle management and husbandry.

| Course Number | Course Name | Outcome |
|---------------|----------------------------------|---------|
| ASI 1203 | Feedlot Systems | X |
| ASI 1213 | Livestock and Carcass Evaluation | A |
| ASI 1253 | Nutrition | A |
| ASI 1304 | Animal Management | A |
| ASI 2383 | Large Animal Diseases | X |
| ASI 2773 | Beef Production Systems | A |
| ASI 2203 | Feeds and Feeding | X |
| ASI 2353 | Livestock Breeding | X |

“X” for courses or experiences in which students have the opportunity to learn the outcome.

“A” for courses or experiences in which student performance is used for program level assessment of the outcome.

**AS and AAS - Agribusiness Management Systems
Course and Program Experience and Outcomes Matrix**

- SLO 1. Demonstrate computer skills
- SLO 2. Apply economic information to real world situations
- SLO 3. Think critically and demonstrate problem-solving skills
- SLO 4. Read, comprehend, and analyze basic financial statements and demonstrate basic accounting skills
- SLO 5. Effectively communicate in both an oral and written format
- SLO 6. Demonstrate skills enabling them to work effectively as individuals and in groups

| | SLO1 | SLO2 | SLO3 | SLO4 | SLO5 | SLO6 |
|--|------|------|------|------|------|------|
| ABM 2004: Internship | X | X | X | X | X | X |
| ABM 2103: Personal Finance | X | | | X | X | |
| ABM 2403: Ag Finance | X | X | X | A | X | X |
| ABM 2603: Ag Law | | X | X | | X | X |
| ABM 2854: Farm & Ranch Management | X | X | A | A | X | X |
| ABM 2903: Entrepreneurship | A | A | A | X | X | A |
| ACT 1103: Accounting I | X | | X | A | X | X |
| ECN 1103: Introduction to Ag Economics | A | A | X | | X | |
| ECN 1203: Microeconomics | A | A | X | | X | X |
| ECN 1303: Macroeconomics | X | A | X | | X | X |
| ECN 1803: Statistics | X | X | X | | X | X |
| MGT 2103: Management Concepts | X | | X | X | X | X |
| MGT 2503: Human Resource Management | X | | X | | X | X |
| MKT 2103: Retail Marketing | X | | X | | X | |
| MKT 2203: Ag Marketing | X | X | A | X | X | X |
| ENG 1503 Tech Communications I | | | | | A | |
| SPC 1103: Sales Communications | | | | | A | |

“X” for courses or experiences in which students have the opportunity to learn the outcome.

“A” for courses or experiences in which student performance is used for program level assessment of the outcome.

**Associate of Applied Science – Veterinary Technology Systems
Course and Program Experience and Outcomes Matrix**

Upon successful completion of the Veterinary Assistant Option, students will be able to demonstrate proficiency in motor skills, critical thinking, entrepreneurship, and clinical application skills at the veterinary assistant entry level in the following areas

- J. Office and Hospital Procedures
- K. Pharmacy and Pharmacology
- L. Nursing Skills
- M. Anesthesia
- N. Radiology
- O. Surgical Prep and Nursing
- P. Parasitology, Hematology and Clinical Pathology
- Q. Animal Husbandry, Handling, Behavior and Restraint
- R. Anatomy and Physiology

| Course Number | Course Name | A | B | C | D | E | F | G | H | I |
|----------------|--|---|---|---|---|---|---|---|---|---|
| VTS 1403 | Anatomy & Physiology | | X | | | X | | | X | A |
| VTS 2933 | Anesthesiology | X | A | A | A | A | A | A | A | |
| VTS 1513 | Animal Care | X | | A | X | | A | A | A | X |
| VTE 2423 | Canine & Feline Nutrition or Livestock Nutrition | X | X | | | | A | | A | |
| VTS 2241 | Career Strategies | X | | | | | | | | |
| VTS 1604 | Intro to Laboratory Science | X | X | X | X | | A | A | | X |
| VTS 2652 | Parasitology | X | X | X | X | | A | A | X | X |
| VTS 2662 | Hematology | X | | X | X | | A | A | X | X |
| VTS 2682 | Clinical Pathology | X | | X | X | | X | X | | |
| VTS 2331 | Clinical Practices | A | A | A | X | X | X | A | A | X |
| VTS 2733 | Diseases of Vet Medicine | X | X | | | | | A | | A |
| VTS 1542 | Facility Management I | A | | X | | | | | | |
| VTS 2563 | Fur and Feather | | | X | X | | | X | X | X |
| VTS 1511 | | | | | | | | | | |
| VTS 1521 | | | | | | | | | | |
| VTS 2533 | Large Animal Techniques I, II, III | | | X | X | | X | | A | X |
| VTS 1313 | Math for Vet Techs | | X | X | X | | A | X | X | |
| VTS 1301 | Medical Terminology | X | X | X | X | X | X | X | X | X |
| VTS 2583, 2593 | Nursing I and II | X | X | A | X | X | A | X | A | X |
| VTS 1713 | Pharmacology & Anesthesia | X | A | | A | | A | | | X |
| VTS 1822, 1923 | Radiology I & II | X | | | | A | A | | A | X |
| VTS 2953 | Surgery Prep | X | A | A | A | A | A | X | A | A |

“X” for courses or experiences in which students have the opportunity to learn the outcome.

“A” for courses or experiences in which student performance is used for program level assessment of the outcome.