

**COORDINATING COMMISSION  
FOR POSTSECONDARY EDUCATION**

140 N. 8<sup>th</sup> Street, Suite 300  
Lincoln, NE 68508

Telephone: (402) 471-2847  
FAX: (402) 471-2886

**PROPOSAL FOR NEW INSTRUCTIONAL PROGRAM**  
Form 92-40

**SECTION I**

Institution Submitting Proposal: Nebraska College of Technical Agriculture

Title of Program: Agricultural Welding

CIP Code: 01.0204

Organizational Unit in which program will be located:

Agriculture Production Systems Division

Name of contact person in the event additional information is needed: Dr. Susan M. Fritz

Telephone: 402-472-5242

Degree, Diploma, or Certificate to be offered (use separate submittal for each level):

Agricultural Welding Undergraduate Certificate

Proposed date to initiate program: When approved by the Coordinating Commission

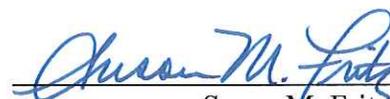
List the location(s) where this program will be offered: NCTA

If the program has a projected ending date, please so indicate:

Date approved by Governing Board: October 9, 2015

(Attach all documents related to this proposal upon which the Governing Board made its decision to approve the proposal.)

Chief Executive Officer's or other Authorized Officer's signature: \_\_\_\_\_

  
Susan M. Fritz

**PROPOSAL FOR THE CREATION OF AN  
UNDERGRADUATE CERTIFICATE IN  
AGRICULTURAL WELDING**

**Nebraska College of Technical Agriculture  
Agriculture Production Systems**

**Proposed by:** The University of Nebraska-Nebraska College of  
Technical Agriculture (NCTA)  
Curtis, Nebraska

**Proposed program:** Certificate in Agricultural Welding

**Proposed degree:** Undergraduate Certificate

**Other programs in this field at NCTA:** None

**CIP Code:** 01.0204

**Administrative Unit:** Agriculture Production Systems

**Proposed delivery site:** Nebraska College of Technical Agriculture

**Proposed delivery method:** Face to face

**Date approved by the academic council:** November 19, 2013

**Date approved by governing board:**

**Proposed start date:** Spring 2016 semester

## 1. Description and Purpose of the Proposed Program

The Nebraska College of Technical Agriculture proposes that the Agriculture Production Systems Division establish an Undergraduate Certificate in Agricultural Welding. The certificate is designed to give the learner applied knowledge in diverse areas of welding with a set of skills that meet agriculture industry requirements.

Nebraska has many agriculture equipment manufacturers that employ full-time welders. Often these positions do not require a full technical degree, but rather a set of welding skills. Orthman Manufacturing Inc., an agricultural equipment manufacturer based in Lexington, NE, has indicated a present need for 20 welders (Ryan Dennhardt, Organizational Development Specialist, Fall 2013). This certificate was developed with their assistance to meet the needs of Nebraska agricultural industries, farms and aspiring entrepreneurs.

This certificate will consist of 16 credit hours of hands-on courses, which includes three comprehensive welding courses, industrial safety and a welding apprenticeship course. All courses will be offered at NCTA in our welding laboratory or our classrooms (for lecture discussions).

The Agricultural Welding certificate is designed for students to enter the workforce to be productive employees and citizens. If they choose to stay at NCTA they can ladder into the Agriculture Equipment Management option of an Associate of Applied Science degree. All the courses required for the certificate can be used to meet AAS degree requirements and with advisor assistance the student could transition into the AAS degree program very efficiently utilizing all 16 credit hours from the certificate program.

## 2. Program of Study

The proposed certificate in Agricultural Welding consists of 16 credits hours of course content. The certificate allows the division to offer a pathway for individuals to advance their education and skills along a focused, professional course of study and to have those skills and abilities acknowledged, documented, and later applied to an Associate of Applied Science degree if the individual wishes to do so. The following table shows the structure of the certificate.

Course	Institution	Credit Hours
AEQ 1172 Industrial Safety	NCTA	2
AEQ 1203 Welding	NCTA	3
AEQ 1303 Intermediate Welding	NCTA	3
AEQ 2214 Advanced Welding	NCTA	4
AEQ 2604 Welding Apprenticeship	NCTA	4
<b>TOTAL</b>		<b>16</b>

The program learning outcomes for the welding certificate are:

- Students will be able to perform welding and fabrication technical skills. Specifically, students will demonstrate:
  - Safe practices in the welding/fabrication shop
  - Shielded metal arc welding skills and practices
  - Gas metal arc welding skills and practices
  - Plasma arc cutting skills and practices
  - Oxyfuel cutting/welding skills and practices
  - Gas tungsten cutting/welding skills and practices
  - Blueprint reading and development
  - Project materials planning and costs
- Students will be able to interact professionally with colleagues and clients.

The above certificate learning outcomes, knowledge and skills will emphasize examples that are prevalent in the agricultural industry such as those utilized in farm equipment repair and maintenance, farm equipment fabrication and center-pivot fabrication. Additionally, the curriculum will adequately prepare students to pursue an American Welding Society (AWS) certification if they so desire.

### **3. Faculty Staff and Other Resources**

#### Number of faculty and staff required to implement the proposed certificate

No new faculty or staff resources are required to implement the certificate. All the courses used in the certificate program for filling student requirements are in place, thus no new courses are required. The current frequency of course offerings is sufficient to support the proposed certificate program. Modest enrollment increases are expected but can be accommodated within the balance of existing faculty workloads.

#### Additional physical facilities needed

The Agricultural Mechanics building is located in central campus and consists of office space, tool room, two large mechanics labs, with an adjacent facility with a welding lab and classroom. This building is currently being used for the agricultural mechanics courses that are integral to many degree options as well as the new Irrigation Technician Certificate.

Students enrolled in this division will take courses currently offered by NCTA. Current classroom, laboratory, and land laboratory facilities are adequate and require no additions or renovations.

#### Instructional equipment and informational resources

There will be no need for additional instructional equipment since students will be taking courses that are currently offered using available laboratory and classroom space. The current NCTA Technology Plan would continue to be followed for regular updates and additions of new computer and technology equipment for all NCTA students and staff.

A course fee structure is already in place for managing welding material and consumable needs. As enrollment increases funds are generated to effectively manage coursework needs.

Students will have access to the NCTA library and information resources as well as access to University of Nebraska resources through the NCTA library. There is no anticipation of further library or resource information services needs with the addition of this certificate. There would potentially be a few more students using the library and related information resources, but not large enough numbers to warrant hiring additional staff.

Equipment in the program is evaluated annually and if equipment needs are identified we utilize funds available from the current NCTA learning capital budget.

#### **4. Evidence of Need and Demand: Enrollment Projections**

##### Need for program and employment and educational advancement opportunities for graduates

The purpose of this program is to provide a path for individuals without an associate's degree to advance their education along a focused, professional course of study and to have that path acknowledged and documented. Prospective students in the workplace who have only a high school education can benefit from this certificate, which also can be used to provide professional development units at the discretion of the employer. In addition, this certificate compliments our Irrigation Technician Certificate by allowing the students to receive additional welding skill development.

According to the Bureau of Labor Statistics, employment of welders, cutters, solderers, and brazers is projected to grow 6 percent from 2012 to 2022, slower than the average for all occupations. Despite slower-than-average employment growth, skilled welders with up-to-date training should have good job opportunities. Additionally, the median annual wage for welders, cutters, solderers, and brazers was \$36,300 or \$17.45 per hour.<sup>1</sup> The Welding career profile highlighted by MyCAERT, an online agricultural educational resource, indicates the job outlook is rated Good to Excellent with annual salaries ranging from \$25,761 to \$44,188.<sup>2</sup> This data focused on Illinois and the surrounding region.

Additionally, in 2012, 10% of Nebraska high school students taking the ACT test and planning on attending college for two years or less indicated their intended major would be "agriculture and natural resources conservation".<sup>3</sup> This is an interesting piece of evidence that supports the importance of agriculture and agriculture programming. Agriculture as an intended major is

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<sup>1</sup> Bureau of Labor Statistics, U.S. Department of Labor, *Occupational Outlook Handbook, 2014-15 Edition*, Welders, Cutters, Solderers, and Brazers, on the Internet at <http://www.bls.gov/ooh/production/welders-cutters-solderers-and-brazers.htm> (visited February 05, 2014).

<sup>2</sup> <http://www.mycaert.com/career-profiles/cp-welder/cp-welder.pdf> (visited June 5, 2015).

<sup>3</sup> <http://www.act.org/newsroom/data/2012/pdf/profile/Nebraska.pdf>, page 26

exceeded only by health sciences and “Repair, Production, & Construction” as an intended major for Nebraska high school students planning to attend a two-year college.

### **NCTA data**

NCTA experienced a 3.4% annual growth rate from fall 2003 through fall 2013 resulting in an estimated 10 year enrollment growth of 39.5% (source: 2014 Nebraska Higher Education Progress Report, Nebraska’s Coordinating Commission for Postsecondary Education, March 13, 2014.) NCTA has enrolled 50% more freshmen in the incoming class as compared to fall 2013, when comparing total enrollment growth NCTA had a 28% growth from 2013 to 2014. Early estimates for fall enrollment point to another significant gain in NCTA enrollment.

### **Number of students expected to enroll in the program in each of the first five years of operation and basis for the estimate**

The estimated demand for the welding certificate reflects growing importance of education in this area. The proposed certificate is of interest to students. Two years ago NCTA enrolled 10 students in our welding course. In just one year the enrollment grew to 26 students taking our welding course in part due to the addition of the Irrigation Technician Certificate, but also due to growing student interest in obtaining welding skills. Orthman Manufacturing Inc. has indicated that they could supply us with 20 individuals in the welding program. We anticipate 15 students enrolled annually in the welding certificate with a 10 to 20% growth per year.

### **Minimum number of students to make the program viable**

A course minimum of eight students would be required before the courses in this program would be offered. Recently, these courses have been taught at NCTA and enrollment has exceeded college minimum requirements. Although enrollment growth is anticipated, no additional enrollment growth is required to make this program viable. No additional resources are required to develop courses or equip a teaching laboratory.

## **5. Partnership with Business**

The Nebraska College of Technical Agriculture has a statewide advisory council where we share information from across the college. This advisory group has been helpful in helping us move forward with educational needs as well as support and partnerships from across the state of Nebraska. In addition, each division at NCTA has advisory councils where they meet annually to review and evaluate curriculum. This advisory council is made up of industry owners and employees. Specific to the welding certificate, Orthman Manufacturing Inc. was instrumental in helping us establish the curriculum, course sequence and student learning outcomes. Lastly, Reinke Manufacturing Company, Inc. has a strong demand for welders in manufacturing their center-pivot systems. Reinke was instrumental in the development of our Irrigation Technician Certificate. The combination of the Irrigation Technician Certificate coupled with the welding certificate would provide a valued employee in the irrigation sector. We also have guest speakers in classes and we encourage student membership in professional organizations.

Collaborations with outside agencies have been explored and developed. Orthman Manufacturing Inc. has toured NCTA and our facilities. They have met with our instructor to develop courses that meet the needs of the industry. Other agricultural manufacturing industries with welding needs will be approached for establishing more formal partnerships once the certificate is in place.

#### **6. Collaborations within NCTA**

NCTA courses in the certificate are entirely offered by the Agriculture Production Systems Division, thus no other departments within NCTA are involved in offering the curriculum. We will advertise the availability of this certificate across campus as a relevant complementary program. Students pursuing degrees in agricultural equipment management and diversified agriculture can easily incorporate the courses into their degrees utilizing elective unit options. Students with concentrations in agronomy or animal science could also expand career options through the addition of this certificate.

#### **7. Collaborations with other University of Nebraska Campuses, other Higher Education Institutions and Agencies External to the University**

At this time no discussions have taken place with other institutions of higher learning. As appropriate, we will work to determine applicable course equivalencies with Nebraska's community colleges.

#### **8. Centrality to the Role and Mission of the Institution**

The University of Nebraska - Nebraska College of Technical Agriculture (NCTA) is a two year public college of the University of Nebraska system first serving the students and people of Nebraska, but also the nation and the world. Since its founding in 1968, NCTA has evolved into a quality institution of higher education, committed to excellence in program offerings, responsive to a dynamically changing agricultural industry and aspirations of a diverse student population.

The Nebraska College of Technical Agriculture is devoted to a statewide mission of preparing students for successful careers in agriculture, veterinary technology, food and related industries. The college provides open access to innovative technical education resulting in associate degrees, certificates, diplomas and other credentials.<sup>4</sup> The Certificate in Agricultural Welding supports NCTA's overall role and mission by providing a focused curriculum that contributes to workforce development and helps to bring new students into the university. Specifically, the certificate is consistent with several objectives in the same areas as are noted in the next section, including accessibility, lifelong education, student preparation, targeted programs, collaboration, and workforce development.

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<sup>4</sup> <http://ncta.unl.edu/mission-statement>

## **9. Consistency with the University of Nebraska Strategic Framework**

The proposed certificate builds on the University's focus on excellence in undergraduate education by implementing a series of options and certificates that addresses an important need both in the state, regionally and nationally. In relation to the University's Strategic Planning Framework<sup>5</sup>, the certificate aligns well with the long-term interests of the University of Nebraska's goal to build a talented, competitive workforce while pursuing excellence through targeted programs (strategic Goals 2b and 3). The certificate will afford many opportunities to local professionals to develop lifelong educational opportunities through preparation for success in higher education (Goal 1e). Furthermore, this aligns well with Goal 3 as we attract and build a talented and competitive workforce. The program also aligns with Goal 5 in that the faculty, staff and students in the program are already directly engaged with the business community in Nebraska through advisors, and professional organizations. Overall, the spirit of the following passages from the University's Strategic Planning Framework is evident in this proposal:

**1. The University of Nebraska will provide the opportunity for Nebraskans to enjoy a better life through access to high quality, affordable undergraduate, graduate and professional education.**

- a. The university will strive to increase affordability and ensure qualified students are not denied access based on economic circumstances.
- b. Increase the percentage of Nebraska high school graduates (the state "college-going rate") who enroll at and graduate from the university.
- e. Promote adequate student preparation for and success in higher education.

**2. The University of Nebraska will build and sustain undergraduate, graduate and professional programs of high quality with an emphasis on excellent teaching.**

- b. Pursue excellence through focus on targeted programs in areas of importance to Nebraska where the university can be a regional, national and/or international leader (e.g. agriculture and natural resources, life sciences, information technology and architectural engineering).

**3. The University of Nebraska will play a critical role in building a talented, competitive workforce and knowledge-based economy in Nebraska in partnership with the state, private sector and other educational institutions.**

- b. Increase proportion of the most talented Nebraska high school students who attend the University of Nebraska.
- c. To attract talent to the state, increase the number of nonresident students who enroll at the university.

**5. The University of Nebraska will serve the entire state through strategic and effective engagement and coordination with citizens, businesses, agriculture, other educational institutions, and rural and urban communities and regions.**

- a. Support economic growth, health and quality of life through policy initiatives consistent with university mission.

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<sup>5</sup> <http://nebraska.edu/docs/StrategicFramework.pdf>, University of Nebraska Strategic Planning Framework, 2014-2016

#### **10. Avoidance of Unnecessary Duplication**

Welding and metal fabrication has been a skill set taught at NCTA for many decades, starting soon after the institution opened its doors in the early 1900s. The purpose of this proposal is to offer a credentialed certificate to help shape the skills of Nebraska's workforce in agriculture, while meeting the needs of the industry. The courses were developed in conjunction with the agricultural industry advisory council for NCTA. Welding skills are a common need required throughout Nebraska's agricultural and production industries so training in this area is offered by other institutions in the state, in a manner similar to other high demand technologies. While welding programs are present in several community colleges in Nebraska, this program is differentiated from those through its emphasis on welding and fabrication skills important to the farm and agricultural manufacturing industries. Additionally, all the courses required for the certificate can be used to meet a portion of Associate of Applied Science degree requirements for the Ag Equipment Management option. Therefore students can combine the welding certificate credential with other agriculturally related skills for a more complete educational experience. This proposal allows the institution to offer a credential to Nebraska residents wishing to concentrate their studies in this long-standing NCTA program area.

#### **11. Consistency with the Comprehensive Statewide Plan for Postsecondary Education: How this program would enhance relevant statewide goals for education**

The proposed certificate is consistent with expectations of the agricultural business community and the strategic plan of the college. Students who complete the Certificate in Agricultural Welding will be prepared to contribute and succeed in a highly skilled world through their understanding of the vital role of welding and metal systems in today's complex business.

**TABLE 1: PROJECTED EXPENSES - NEW INSTRUCTIONAL PROGRAM**  
**Agricultural Welding Undergraduate Certificate**

	FY2016 Year 1		FY2017 Year 2		FY2018 Year 3		FY2019 Year 4		FY2020 Year 5		Total	
	FTE	Cost	FTE	Cost	FTE	Cost	FTE	Cost	FTE	Cost	FTE	Cost
<b>Personnel</b>												
Faculty <sup>1</sup>												
Professional												
Graduate assistants												
Support staff												
Subtotal												
<b>Operating</b>												
General Operating <sup>2</sup>		\$5,250		\$6,300		\$7,700		\$9,100		\$10,850		\$39,200
Equipment <sup>3</sup>		\$500		\$750		\$1,000		\$1,250		\$1,500		\$5,000
New or renovated space												\$0
Library/Information Resources												\$0
Other												\$0
Subtotal		\$5,750		\$7,050		\$8,700		\$10,350		\$12,350		\$44,200
<b>Total Expenses</b>	0	\$5,750	0	\$7,050	0	\$8,700	0	\$10,350	0	\$12,350	0	\$44,200

<sup>1</sup> This certificate is built on curriculum that already exists. There is sufficient capacity to offer the certificate without requiring additional faculty or staff resources.

<sup>2</sup> Welding materials and supplies (\$350/student/yr).

<sup>3</sup> Significant investment was made in new equipment for the welding laboratories in 2014 and 2015. Funds listed will replace worn-out and broken equipment as needed.

**TABLE 2: REVENUE SOURCES FOR PROJECTED EXPENSES - NEW INSTRUCTIONAL PROGRAM**  
**Agricultural Welding Undergraduate Certificate**

	FY2016 Year 1	FY2017 Year 2	FY2018 Year 3	FY2019 Year 4	FY2020 Year 5	Total
Reallocation of Existing Funds						\$0
Required New Public Funds						\$0
1. State Funds						\$0
2. Local Tax Funds (community colleges)						\$0
Tuition and Fees <sup>1</sup>	\$28,320	\$34,848	\$44,000	\$53,664	\$65,968	\$226,800
Other Funding (course fees) <sup>2</sup>	\$5,250	\$6,300	\$7,700	\$9,100	\$10,850	\$39,200
<b>Total Revenue <sup>3</sup></b>	<b>\$33,570</b>	<b>\$41,148</b>	<b>\$51,700</b>	<b>\$62,764</b>	<b>\$76,818</b>	<b>\$266,000</b>

<sup>1</sup> Projection is for 15 students in the first year, each of whom are projected to take 16 credit hours in the certificate over the course of a year, with a growth of ~20% per year. NCTA tuition used for the calculation is \$118 per credit hour for FY2016, \$121 for FY2017, and for the purposes of these projections is incremented by 3% yearly thereafter. University Program and Facilities fees are excluded from the calculation for simplicity. Tuition income does not directly accrue to the proposed academic program, but is used to partially fund overall instructional capacity at NCTA. In addition, tuition income projections do not consider internal shifts in enrollment and therefore are likely to overestimate the income generated to support overall instructional capacity.

<sup>2</sup> Current total course fees for all welding courses combined is \$350 per year per student to cover applicable supplies. Total reflects enrollment projections described above.

<sup>3</sup> The certificate's curriculum uses preexisting instructional capacity not exclusively dedicated to this program; this curriculum is required to deliver other programs and thus these expenses are not allocated to this certificate (table 1). As the full potential tuition revenue and programmatic fees are enumerated in table 2, revenues are not expected to match expenses.

October 12, 2015

Dr. Michael Baumgartner  
Executive Director  
Coordinating Commission for  
Postsecondary Education  
140 N. 8<sup>th</sup> Street, Suite 300  
Lincoln, NE 68509

**RECEIVED**  
OCT 15 2015  
Coordinating Commission  
for Postsecondary Ed.

Dear Michael:

Enclosed is a copy of the proposal to create an Agricultural Welding undergraduate certificate within the Agriculture Production Systems Division at NCTA. The proposal was approved by the Board of Regents at the October 9, 2015 meeting. Also enclosed is the Proposal for New Instructional Program Form 92-40.

Please do not hesitate to contact me if you have any questions.

Sincerely,



Susan M. Fritz  
Executive Vice President and Provost

Enclosure

c: Vice President, Interim Senior Vice Chancellor, and Harlan Vice Chancellor Ronnie Green  
Dean Ronald Rosati, NCTA

TO: The Board of Regents  
Academic Affairs

MEETING DATE: October 9, 2015

SUBJECT: Creation of an Agricultural Welding undergraduate certificate within the Agriculture Production Systems Division at the Nebraska College of Technical Agriculture (NCTA)

RECOMMENDED ACTION: Approval is requested to create an Agricultural Welding undergraduate certificate within the Agriculture Production Systems Division at NCTA

PREVIOUS ACTION: The Associate of Applied Science degree at NCTA was established prior to modern records of Board approvals.

EXPLANATION: The proposed certificate will consist of 16 credit hours of existing courses to provide the learner applied knowledge in diverse areas of welding with a set of skills that meet agriculture industry requirements. Nebraska has many agriculture equipment manufacturers that employ full-time welders. Often these positions do not require a full technical degree, but rather a set of welding skills. This certificate was developed with employer input to meet the needs of Nebraska agricultural industries, farms and aspiring entrepreneurs.

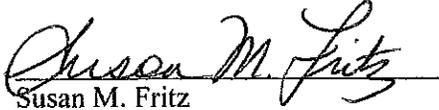
This proposal has been reviewed by the Council of Academic Officers. This proposal also has been reviewed and recommended for approval by the Academic Affairs Committee.

PROGRAM COST: \$5,750 first year (\$44,200 over five years) (see page 9)

SOURCE OF FUNDS: Tuition revenue and existing funds

SPONSORS: Ronald Rosati  
Dean, Nebraska College of Technical Agriculture

Ronnie D. Green  
Vice President, Agriculture and Natural Resources, University of Nebraska  
Interim Senior Vice Chancellor for Academic Affairs  
Harlan Vice Chancellor, Institute of Agriculture and Natural Resources,  
University of Nebraska-Lincoln

RECOMMENDED:   
Susan M. Fritz  
Executive Vice President and Provost

DATE: September 16, 2015