



**Leadership Council Funding Proposal Application**

**Project Title:** CASE Institute: Food Science and Safety

**Timeline:** June 2019 (8 instructional days, exact dates TBD)

**Amount of Funds Requested:** ~~\$104,000~~ \$54,000

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### Abstract of Proposal

**Background.** Agricultural education and Family and Consumer Science education have been a transformational part of the high school curriculum for millions of young people. Agricultural education and Family and Consumer Science education prepares students for successful careers and a lifetime of informed choices on a global level.

Based on an integrated model of delivery, these two content areas work collaboratively by providing students a full spectrum view of food production to consumption for individuals and consumers. Today, students receive this premier experience in over 200 secondary schools across Nebraska. These are growing career fields, while continued to be voluntary in many secondary schools, continue to experience increased student enrollment and participation.

**Rationale.** The field of education, specifically Career and Technical Education, is more closely intertwined than ever before. Every person is directly impacted by food production, processing, safe handling, preparation, and consumption daily. High school CTE programs have the responsibility of properly educating our youth in these processes to better inform their life decisions related to food production, processing, and nutrition. Like the agricultural industry, agricultural education is changing to meet the needs of a new generation of students who will be challenged to feed a world of 9 billion people as they reach the peak of their career. Family and Consumer Science education is equally tasked in ensuring safe processing and preparation of the food being produced while both areas are tasked with ensuring high nutritional values and educating consumers to make healthy food choices.

These industries have changed to rely heavily on emerging biosciences and modern practices to produce more food on less land, while keeping the food supply nutritious, safe and affordable. Nebraska's economy is in need of future employees, entrepreneurs and innovators to meet the food and nutrition challenges of tomorrow and to sustain this vital segment of the state. These demands have created vibrant and exciting potential career opportunities for Nebraska's secondary students within the area of food and nutrition sciences.

**Curriculum.** A nationally supported, intensive, STEM-based curriculum is available for Agricultural Education and Family and Consumer Science programs. The Curriculum for Agricultural Science Education (CASE) was developed in 2007 by the National Council of Agricultural Education with the goal of implementing a national curriculum for secondary agricultural education that provides a high level of educational experiences to enhance the rigor and relevance of agriculture, food, and natural resources (AFNR) subject matter and in select courses, such as Food Science and Safety, related fields such as Family and Consumer Science. In addition to elevating the rigor of a student's knowledge and skills, CASE provides purposeful enhancement of academic and STEM learning.

CASE develops curriculum utilizing science inquiry for lesson foundation and concepts that are taught using activity-, project-, and problem-based instructional strategies. In addition to the curriculum aspect of CASE, the project ensures quality teaching by providing extensive professional development for teachers that leads to certification. CASE is modeled after Project Lead The Way (PLTW), a national pre-engineering curriculum that has been adopted by many Nebraska schools.

**Plan.** Agricultural Education and Family and Consumer Science Education, working within the Nebraska Department of Education in cooperation with the University of Nebraska—Lincoln and the Nebraska FFA Foundation will host the first ever offered CASE Institute that would be open to both AFNR Instructors and FCS Instructors. The first Nebraska hosted CASE Institute was held in 2012. Each year a CASE Institute focusing on a different AFNR Pathway has been offered in Nebraska. Due to the success of these institutes, word has

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spread and a new group hopes to participate in 2019, the first of it's kind to be collaborative across multiple career fields and the first time to offer a Food Science focused CASE Institute.



The institute will be an eight-day intensive training resulting in the practice of all included Agriculture and Family and Consumer Science laboratories for an entire school year. Twenty teachers will participate in the institute that is taught by lead teachers from CASE. Upon completion of the institute, teachers will become certified to teach the CASE Food Science and Safety course, which is an essential course to a student's successful completion in the Family and Consumer Science and Agriculture, Food and Natural Resources Program of Study in Food Science.

Traditionally instructors from other states are welcome to register for the training (per CASE's requirement). However, Nebraska has been fortunate to negotiate an agreement with CASE to allow a certain portion of the initial registration period to be for Nebraska instructors only. For the past two years the institute offered has quickly filled with all Nebraska instructors. We believe that due to the demand heard from both AFNR and FCS instructors that the institute would once again fill with all Nebraska instructors. PFI grant dollars would only be utilized to support Nebraska instructors attending the institute and purchasing necessary supplies to implement the curriculum in their classrooms.

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### Vision and Purpose:



#### 1. Describe the connection(s) to the PFI Areas of Focus

Holding a Food Science and Safety CASE Institute would meet three of the four PFI Areas of Focus.

- **Statewide Agreements**
  - The CASE Institute would be offered to teachers, both secondary and postsecondary, throughout Nebraska and provide a tested and successful national curriculum in this career field. NDE in partnership with ESU's and postsecondary institutions, continue to capitalize on this institute and have designed professional development to be in-line with the principals of the institute in addition to integrating CASE concepts into the teacher education program. This previous work sets the foundation for the Food Science and Safety curriculum to be easily implemented by instructors and supported by ESUs and postsecondary institutions.
- **Technical Skills Assessment**
  - Secondary students participating in the Food Science and Safety course will experience exciting "hands-on" activities, projects, and problems. Student experiences will involve the study of communication, the science and safety of food production and preparation. While surveying the opportunities available in food science careers, students will learn to solve problems, conduct research, analyze data, work in teams, and take responsibility for their work, actions, and learning. For example, students will work in groups to determine the calorie and fat content of various food while exploring how to produce and prepare the foods in a more efficient and healthier manner.
- **Professional Development**
  - The CASE Institute is a professional development workshop to provide teachers training for the instruction related to a specific CASE course. Once a teacher has successfully completed 8 days of intense professional development at a CASE Institute, the teacher is certified to teach that specific CASE course.
  - CASE Institute sessions provide teachers important background related to the pedagogy used in CASE curricula and practice teaching various lessons to prepare them for classroom instruction. Teachers are required to attend the entire eight-day training and CASE Lead Teachers determine if each participating teacher is adequately prepared to provide instruction using CASE curricula.

#### 2. Explain why this activity or product is innovative

CASE courses consist of a full year of lessons that utilize activity-, project-, and problem-based learning set in an inquiry-based approach. CASE has the goal to increase the rigor and relevance of the course subject matter and enhance core academic areas including science, mathematics, and English. A CASE curriculum provides the teacher everything they need to facilitate classroom instruction except equipment and supplies. CASE is student-directed and inquiry based.

While Nebraska has been able to offer previous CASE Institutes, this will be the first ever CASE Institute offered to both AFNR and FCS Instructors. This approach encourages cross curricular collaboration. There is excitement from Nebraska CTE instructors who have heard about the successes and wish to implement the CASE Food Science and Safety course. Food Science has been an area identified by instructors, both in AFNR and FCS, as a need for professional development. By hosting this course, Nebraska instructors will be supported and better equipped to improve the rigor of their local course offerings. Teachers have overwhelmingly expressed their appreciation for PFI's and the other private industry supporters who enable them to participate in CASE institutes due to this scholarship program

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in the past. Over 90% of participating AFNR Nebraska teachers in past years have stated they would not be able to attend CASE without this level of support.



### 3. Describe the overall outcomes

The CASE Institute will allow up to 20 teachers to be certified to teach the Food Science and Safety course. Nebraska CTE instructors teach an average class size of 20 students. Given that, in one year of teaching, this curriculum has the potential to reach 400+ students, allowing them to experience intensive project-based, STEM integrated curriculum in an applied science context. Based on the successes from other states and the last six years in Nebraska, more of these students will likely remain in a program of study and choose to that career path.

In a recent non-formal assessment, Nebraska AFNR and FCS instructors indicated they were interested in attending the CASE Institute - Food Science and Safety in 2019. In years past teachers have struggled to find quality curriculum and professional development to support this Program of Study and future career path for students. This curriculum certification has been achieved by two Nebraska AFNR instructors who speak highly of the curriculum as well as student engagement when the curriculum has been implemented in their local programs.

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### Needs Statement:



- Provide the data which supports the purpose of the proposal  
The Agriculture, Food and Natural Resources Career Field and Family and Consumer Science Career Field are a strength in Nebraska as indicated by the following data: (Do we have new data? Can Rich help us with this?)

Based on data from Nebraska's H3: High Wage, High Demand, High Skill website (h3.ne.gov), the Agriculture, Food and Natural Resources Cluster and Family and Consumer Sciences Cluster consistently ranks in the top five clusters for Nebraska H3 sectors statewide.

As measured by the Nebraska Department of Agriculture and the USDA, cash receipts from farm products contributed over \$21.5 billion to Nebraska's economy in 2012, which is 6% of the US total. Nebraska's ten leading commodities (in order of value) for 2016 cash receipts are cattle and calves, corn, soybeans, hogs, dairy products, wheat, hay, chicken eggs, dry beans, and sorghum. Nine of those being directly processed for human consumption. In total, over 91% of Nebraska's land area is in use for food production, not including the acres that are utilized for processing purposes. (Nebraska Agriculture Fact Card, Nebraska Department of Agriculture, February 2018)

According to the Battelle Study, the Biosciences industry represents one of the top five current strengths in Nebraska, with agricultural and food processing classified as retention industries for the state. (Battelle Study, Nebraska DOL & DED, 2010)

World population passed 7 billion people in 2012. By 2050, at the height of our current secondary students' careers, world population is expected to surpass 9 billion people. This increase in population will not only require our farmers and ranchers to produce more with less but also challenges our processors to be more aware of nutritional values of food and the nutritional needs of consumers in order to safely maximize the food being produced. (US Census Bureau, 2016)

- Communicate the need related to the data  
Given the above facts and predictions, it will be a global challenge to feed the growing human population and Nebraska is positioned to become a central player in finding the solutions to that dilemma. This challenge will require the best minds of today. It is expected that current secondary students will solve the world's biggest future challenges by developing processes to feed the growing population by developing the necessary science, technology and policies. The Food Science and Safety CASE course provides a technical content as well as academic and STEM principals that will enable our students to meet that challenge across multiple career fields.
- Identify the stakeholders who will be impacted by the activity and how they will be served  
Stakeholders for the Food Science and Safety CASE Institute include up to 20 teachers who will participate in the eight day professional development. They will be exposed to both technical content and pedagogy of the curriculum, experience a year's worth of laboratories that they will use in their classrooms, and become certified to teach the course. Additionally, it is estimated that 400+ students will participate in their courses, gaining technical knowledge and skills that will help them become college and career ready for careers in food and nutrition science. The final stakeholder groups would be post-secondary institutions and the industry, both of which will benefit from better-trained and motivated students who will become tomorrow's college students, entrepreneurs and employees.

**Goals and Objectives:** The goals should be directly related to the PFI Areas of Focus and Purpose Statement; the objectives should be related to the activities and outcomes as a result of the activity or product

- Outline the objective(s) to include measurements, expectations and timeline
- Communicate the activities related to the objectives

**Goal:** To train and certify 20 Nebraska secondary teachers to teach the CASE Food Science and Safety course through their completion of an eight day CASE Institute in June 2019.

This goal meets three PFI Areas of Focus: Statewide Agreements through the implementation of the Nebraska AFNR and FCS Programs of Study via a national curriculum, Technical Skill Assessments through a rigorous curriculum that teaches and measures students' skills within AFNR/FACS pathways, and Professional Development by offering a two-week intensive training for secondary teachers, ending with certification to teach the curriculum with the option of ESUs and postsecondary institutions across the state to support further professional development and implementation of the curriculum at the local level.

- Activity 1:** Utilizing PFI funding to subsidize the \$2,700 fee for teachers to attend through the distribution of scholarships for Nebraska participants.
- Activity 2:** Utilize PFI funding to purchase \$2,500 worth of necessary supplies and equipment which is necessary to implement the curriculum at the local level. Each participants purchase list will be different due to inventory that may already be available in their local school.

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**Impact on Career and Technical Education:** Communicate how CTE will be impacted as a result of the activity or product



1. Identify the number of students, teachers, and/or partners involved

The CASE Institute will allow 20 teachers to be certified to teach the Food Science and Safety course. Nebraska CTE instructors teach an average of 90-180 students each year. Given that, in one year of teaching, this curriculum has the potential to reach 400+ students, allowing them to experience intensive project-based, STEM integrated curriculum in an applied science context. This Food Science and Safety course will serve as the intermediate level course for all food science focused pathways in Nebraska's Program of Study model in both AFNR and FCS Career Fields.

2. Communicate the impact of the activity on student learning and/or professional growth

A previous PFI project in 2010 facilitated the development of AFNR Programs of Study and Course Standards. In 2017 the AFNR Programs of Study were revised. In 2016 the FCS Programs of Study were revised. Through these revisions both career fields focused on the importance of crafting a quality Program of Study to prepare student to enter a career in Food Science. The Food Science and Safety CASE course was added to Nebraska's Course Codes and Clearing Endorsements document and are now recognized as an official course and Program of Study by the Nebraska Department of Education as Career Field Specialists strongly support in the rigor and relevance of the curriculum. Additionally, the CASE Food Science and Safety course has been built to incorporate standards in Science, Math and Language Arts in addition to STEM principals.

CASE develops curriculum utilizing science inquiry for lesson foundation and concepts that are taught using activity-, project-, and problem-based instructional strategies. In addition to the curriculum aspect of CASE, the project ensures quality teaching by providing extensive professional development for teachers that leads to certification. Teachers will likely utilize these inquiry-based strategies in other courses, therefore growing their pedagogical expertise in addition to technical content.

By offering this professional development to both AFNR and FCS instructors it allows for collaboration in order to effectively deliver content in two different CTE area that easily is connected and related. The opportunities that this would provide for instructors to show connection between different areas, while working together to educate future producers and consumers is progressive and exciting!

3. Describe how the project/activity is relevant to the Nebraska Career Field Model, Economic and/or Workforce Development

In the last two years both AFNR and FCS Programs of Study were revised and approved by the Nebraska Board of Education. Through these revisions both career fields focused on the importance of crafting a quality Program of Study to prepare student to enter a career in Food Science. This Food Science and Safety course will serve as the intermediate level course for all food science focused pathways in Nebraska's Program of Study model in both AFNR and FCS Career Fields.

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As outlined in the Needs Statement, Nebraska's economy is driven by agriculture's success. According to the Battelle Study, the H3 site and other sources, the state is poised to lead many industries based on its geographic location, available resources, infrastructure, and human expertise that exist here.



**Statewide Impact:** Communicate how the activity will impact or be made available to the entire state.

1. Outline how the activity will reach all secondary and postsecondary consortia members

All Nebraska teachers who teach courses in Agriculture, Food and Natural Resources and Family and Consumer Science are invited to participate in the Institute. It will be advertised via listserve, the Nebraska Agricultural Education website, Nebraska Family and Consumer Science Education website, through the Nebraska Agricultural Educators Association (NAEA), Family and Consumer Science Teachers of Nebraska (FCSTN), and the Nebraska Department of Education Professional Development Opportunities documents. These sources represent both secondary and post-secondary educators in various capacities.

2. Identify which of the Nebraska Career Clusters or Fields are addressed/identified.

The Agriculture, Food and Natural Resources Career Field and Human Sciences Career Field are the primary targets for this project.

3. Describe the collaboration with external stakeholders/partners such as: Business, community, state or private colleges/universities, Nebraska Department of Education, professional career education association groups, etc.

The following are partners in the project:

- Southeast Community College- Facilitation
- Nebraska Department of Education - Facilitation
- UNL Department of Agricultural Leadership, Education and Communication - Facilitation
- UNL Department of Food Science - Facilitation
- UNL College of Agricultural Sciences and Natural Resources – Facilities
- Nebraska Community College System - Invited to participate in the training/certification process, will be encouraged to provide further professional development and support at the local level if the grant is secured
- ESUs - Invited to participate in the training/certification process, encouraged to provide further professional development and support at the local level if the grant is secured
- CASE: Curriculum for Agricultural Science Education, NAAE – National organization, delivery of the content/initial eight day professional development

4. Address the proposed delivery method: statewide, regional meetings, face-to-face, distance education, online, conference, etc.

The CASE Institute will take place in June 2019 on the UNL East Campus and Southeast Community College Campus from 8 AM – 5 PM on weekdays. The meeting is face-to-face with ad-hoc support via Communities of Practice, an online discussion board hosted by the National Association of Agricultural Educators.



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**Evaluation:** Describe the project evaluation plan as it relates to the goals and objectives



1. Provide evidence of the impact based on the project goals and objectives.

Project organizers will measure the effectiveness of the Food Science and Safety CASE Institute by the stated goal and objectives:

**Goal:** To train and certify 20 secondary teachers to teach the CASE Food Science and Safety course through their completion of a eight day CASE Institute in June 2019.

- a. **Activity 1:** Utilizing PFI funding to subsidize the \$2,700 fee for teachers to attend through the distribution of scholarships for Nebraska participants.
- b. **Activity 2:** Utilize PFI funding to purchase \$2,500 worth of necessary supplies and equipment which is necessary to implement the curriculum at the local level. Each participants purchase list will be different due to inventory that may already be available in their local school.

Project organizers will maintain contact with participating teachers to provide support to participating teachers during the school year.

### Dissemination of Knowledge:

1. Communicate how the model is replicable

Because CASE is managed by the National Association of Agricultural Educators, the model has been replicated across the United States. There are numerous courses in developmental stages that will be available for future expansion for Nebraska's teachers.

2. Outline how the responsible parties will report-out results, for example (choose one or more):
  - a. Share with local administrators
    - i. Chief Instructional Officers/Chief Executive Officers (postsecondary only)  
This does not apply.
    - ii. Principals/Superintendents (secondary only)  
Participating teachers will receive training on how to communicate the effectiveness of the curriculum with local stakeholders, including principals, superintendents and guidance counselors. Program organizers will also communicate the program directly to all AFNR/FACS programs' administrators.
  - b. Draft a brief executive summary for publication in the PFI newsletter and/or state/national education association publications  
Nebraska will host intensive professional development training for high school agricultural education and family and consumer sciences teachers that will prepare them to teach about food science and safety in a new way. The Nebraska Food Science and Safety CASE Institute (CASE stands for Curriculum for Agricultural Science Education) is an eight day training that is inquiry-based and integrates Science, Technology, Engineering and Math (STEM) principles throughout a year's worth of laboratory-based curriculum. Twenty teachers are expected to participate in the institute, which will take place on the University of Nebraska—Lincoln

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Campus and Southeast Community College Campus in June 2019. Teachers will be apply to attend at [www.neaged.org](http://www.neaged.org).



- c. Share the end results with activity participants  
Program organizers will remain in contact with participants and arrange meetings at appropriate CTE meetings and conferences for continued support.
- d. Present at the Nebraska Career Education Conference  
Program organizers would encourage participants to present at the 2020 NCE Conference sharing the value in the curriculum and need for increased rigor and relevance of Food Science curriculum at the local level.
- e. Report to the PFI Leadership Council either orally or in written format  
Program organizers would be happy to report the success of the program in whichever format is preferred by the PFI Leadership Council.
- f. Other: Communicate with assigned PFI Leadership Council Mentor  
Program organizers are happy to work with an assigned mentor and invite them to visit the institute in June 2019.

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Budget Plan**



**Budget Narrative:** Outline how the funding will be allocated based on the activity(ies) described and include any in-kind match (not required). Stipends for participation will not be granted; however, funds may be allocated to substitute teacher reimbursement.

**Participant Cost:** The conference costs participants or their schools \$2,700 to attend. This fee pays for the conference, including the CASE lead teachers and related supplies/laboratory equipment, the participant’s room and board, including evening meals. The curriculum is provided free to teachers once they complete the training.

**Financial Match:** Not planned for at this time but can be explored and sought for if requested by the PFI Leadership Council.

**In-Kind Match:** The University of Nebraska—Lincoln and Southeast Community College will provide the classroom and laboratories needed at little to no cost. Outside of the CASE lead teachers, no UNL faculty or NDE staff member will be compensated for organizing the CASE institute.

**Scholarships and Supplies Cost for Nebraska Teachers:** Because CASE is a national initiative, teachers from other states can attend. PFI and other corporate sponsor dollars will only be applied to Nebraska teachers’ costs. The easiest way to do this is to provide scholarships to Nebraska participants to cover only Nebraska instructors registration costs for the Institute while maintaining the \$2,700 fee for teachers from other states as well as provide funding to purchase necessary supplies to implement the curriculum. The scholarship (\$2,700) and supplies stipend (\$2,500) would be in the total amount of \$5,200 per instructor. The scholarship and supplies stipend would be made payable to the school that pays the \$2,700 participant registration fee.

<b>Budget Table</b>						
	<b>Personnel: Stipends/Presenter Fees/Substitute Fees</b>	<b>Supplies</b>	<b>Travel: Lodging, Mileage, Meals</b>	<b>Conference Expenses</b>	<b>In-Kind (not required)</b>	<b>Total</b>
<b>Goal:</b> To train and certify 20 secondary teachers to teach the CASE Food Science and Safety course through their completion of an eight day CASE Institute in June 2019.						
<b>Activity 1: Scholarships</b>	\$54,000 (20 scholarships)				\$28,000 (estimated)	\$82,000
<b>Activity 2: Supplies</b>		<del>\$50,000</del> (20 stipends)				<del>\$50,000</del>

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**Other Ideas/Thoughts to Consider:** Share additional ideas or thoughts relating to the activity the PFI Leadership Council not previously highlighted.



To learn more about CASE and the Food Science and Safety course, visit these two sites:

- Nebraska Agricultural Education: [www.neaged.org](http://www.neaged.org)
- National CASE Site: <http://case4learning.org/>