

New Rockford High School Student Research Proposal Guide for the CREC

Research is conducted in a variety of scientific areas during any given season at the CREC. Topic areas available for students will depend on currently funded areas and may change from year to year.

AGRONOMY

Possible Agronomy Field Projects: Summer → Fall

- Seeding rate study – determining the effect of seeding higher or lower plant numbers per acre on yield and return on investment (various crops)
- Seed spacing study – determining the effect of seeding distance between plants on yield and return on investment (various crops)
- Biological application study – determine the effect of different biological applications on yield and return on investment (different products, rates and/or crops)
- Intercropping study – determine the effect of seeding two crops together (for example soybean and canola)

Possible Agronomy Greenhouse Projects: Fall/Spring

- Alkaloid accumulation in lupin – environment or genetic effect on accumulation

Time expectations and benchmarks:

Hands on time:

- Equivalent of 1 day per week during summer (required for agronomy field study – prefer full time student)
- 2-3 periods per day during school year
- Hands on work will be paid. Students should expect to work on additional projects to provide exposure to additional research areas. They will have help to accomplish their projects when a timeline must be kept.

Homework: One page report twice a month geared towards the final project to occur during school year (submission to mentor and school for benchmarking).

Possible Topics to be Assigned:

- Scientific Method
- Statistical Designs
- Project Background
- Project Methods
- Project Results
- Project Return on Investment
- Project Discussion

Final project: Research report suitable for publication

CROP DISEASE MANAGEMENT

Options for crop disease management projects (time frame = summer and fall):

- Quantifying the impact of planting date, fungicide seed treatment, and crop rotation interval on field pea agronomic performance in fields with elevated Fusarium and Aphanomyces root rot pressure.
- Quantifying the impact of fungicide spray volume on white mold management in soybeans and/or dry beans.

Time expectations and benchmarks:

Hands on time:

- Full-time paid work during the summer (first week of June into early/mid August)
- Approx. 3 hours/day paid work during the school year
- Contribution to all aspects of the crop disease management research program. When tasks need to be completed on the student's research project, the student will be assigned to work on that project. When there are not tasks to be done on that project, the student will be expected to do whatever tasks need to be done at that time for the full scope of the crop disease management research program.
- If the student wishes to work on the fungicide spray volume project, the student must be comfortable working around pesticides and must be available to work early mornings, late evenings, or weekends as needed when fungicide applications are made. Applications must be made when the weather and the crop growth stage are appropriate for this task.
- In the fall semester, a portion of the paid time will be dedicated to teaching the student how to analyze data and write the research report.

Homework: Instructions on writing the research report will be given in a sequentially over several weeks in the following order: (1) methods summary, (2) results summary, (3) writing the project introduction, and (4) discussion of the results. After instructions are given for writing the appropriate section, the student will be expected to work on that section as homework (non-paid time) with deadlines for completion given. The writing assignment will be reviewed by project leader Michael Wunsch, with requested edits and changes explained, and then the student will be expected to make revisions as homework.

Final project: Research report suitable for publication

Animal Science

Research is conducted year-round at the CREC. Topics would be influenced by the time of year and will vary year-to-year. Below are potential projects at the CREC-Livestock Unit.

Summer

- Finishing of yearling cattle
 - Determine performance metrics of beef steers on various feedstuffs
- Cow/Calf
 - Identify phenotypic traits of beef cattle and their relation to morbidity

Fall

- Receiving and backgrounding cattle
- Weaning calves

Spring

- Finishing cattle

Time expectations and benchmarks:

Hands on time:

- Equivalent of 1 day per week during summer (required for animal science field study – prefer full time student)
- 1-2 periods per day during school year
- Hands on work will be paid. Students should expect to work on additional projects to provide exposure to additional research areas. They will have help to accomplish their projects when a timeline must be kept.

Homework: One page report once a month geared towards the final project to occur during school year (submission to mentor and school for benchmarking).

Topics to be Assigned:

- Scientific Method
- Project Background
- Project Methods & Design
- Project Results
- Project Discussion/relation to relevant research

Final project: Research report suitable for the Carrington Research Extension Center Annual publication

Northern Cass School District Policies

Description Code: GACG-E

Northern Cass School District Sponsoring Entity Proposal Application

Contact Information

Name: April Berntson NDSU Extension – Cass County 4-H Youth Development

Address: 1010 2nd Ave N, Fargo ND 58103

Primary Contact: April Berntson

Phone: 701-241-5700

Email: April.s.berntson@ndsu.edu

Organization Description and Mission

Describe your sponsoring entity and its mission.

To assist youth, and adults working with those youth, to gain additional knowledge, life skills, and attitudes that will further their development as self-directing, contributing, and productive members of society

Program Description

Describe your program. What is the experience you are offering to learners? You should include information about the program schedule, program location(s) and how often learners meet.

4-H offers programs to give youth life skills in leadership, communication, and personal responsibility. These skills are developed through workshops, classes, and club meetings. They are then showcased at county and state competitions as well as the Red River Valley Fair during in-person interview judging.

Course Titles & State Course Code

Please list the course title(s) and course code(s) for each course provided.

1. Community Development (01993)

2.

3.

Teacher of Record Approval

Please list a teacher of record who is employed by the school district, is licensed under NDCC chapter 15.1-18, and has approved this proposal.

Name: Lucas Schmatz

School: Northern Cass School District

Phone: 701-874-2322

Email: Lucas.Schmaltz@northerncassschool.com

Learner Proficiency

For each course, explain how learners will demonstrate proficiency. How will a learner demonstrate they have attained the desired level of mastery?

Learners will complete a pathway based on their interest and create a hands-on 'learn by doing' opportunity. All learners will be encouraged to take on proactive leadership roles.

Learners will build internal and external partnerships. The projects will teach problem solving while encouraging critical thinking. Learners will focus on the skills of adaptability, accountability, leadership, learner's mindset, and communication. Learners will engage in agricultural science topics while raising and training animals.

Learner Evaluation

For each course, explain how your instructors will evaluate learner progress. Do your learners do projects or performances which can be evaluated? Do your learners take tests or submit some kind of written work? Do your instructors determine mastery by careful observation of learner participation in your program? These methods are some examples of acceptable assessment practices. Describe what you will do in order to confirm learner proficiency.

Learners will complete a community project under the direction of a certified educator, our Director of College, Career, and Life Readiness, and a 4H advisor. Educators will evaluate the final community project according to a rubric which is co-designed by educators and learners. Northern Cass will utilize their Portrait of a Learner rubrics which were developed locally. They will also use the Career Ready Practices rubrics of leadership, creativity, and communication to inform the evaluation.

Affirmation of Content Standards

- I affirm that the course(s) meets course content standards, as determined by the Superintendent of Public Instruction.

Acknowledgement

I certify that the information included on this form is accurate to the best of my knowledge. I acknowledge that I have read, understand, and agree to comply with all relevant school board policies, including those relating to learner records and privacy. I understand and agree that failure to comply with any of the district’s policy requirements may cause the partnership with the District to end and denial of future requests to participate in this program.

April Berntson

10/31/2022

Sponsoring entity signature

Date

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● Approved	● Denied	Date:

End of Northern Cass School District Policy GACG-E.....Adopted: XX/XX/XXXX

Northern Cass School District Policies

Description Code: GACG-E

Northern Cass School District Sponsoring Entity Proposal Application

Contact Information

Name: Department of Earth, Environmental, and Geospatial Sciences -NDSU

Address: 1311 Albrecht Blvd, 238 Sugihara Hall, Fargo, ND 58102

Primary Contact: Stephanie S. Day

Phone: 701-231-8837

Email: stephanie.day@ndsu.edu

Organization Description and Mission

Describe your sponsoring entity and its mission.

The Department of Geosciences through its teaching, research, and service, provides the State, the University, and regional community it serves with the most current views in geology and geography interpreted through examples with a strong regional emphasis.

The teaching program provides undergraduate and graduate level courses that are used by students to meet requirements in degree programs in agriculture, environmental science, life sciences, engineering and architecture, and the humanities and social sciences.

The undergraduate major, emphasizing field and laboratory studies, prepares students for positions in industry, government agencies, and secondary education, and for graduate programs in geology and geography. Faculty in the Department of Geosciences advise graduate students in the Environmental and Conservation Sciences Graduate Program, or in other programs as appropriate.

The basic and applied research programs of the Department's faculty augment the teaching program and provide information about geologically recent events and processes. Service to the community is provided by disseminating geological and geographical information to members of the public and the news media, and through visits to area schools.

Program Description

Describe your program. What is the experience you are offering to learners? You should include information about the program schedule, program location(s) and how often learners meet.

This is a field research class where learners will have an opportunity to spend a week in the Hell Creek Formation in Eastern Montana (near Jordan, MT). Topics of studies will include geologic formations, geologic history, paleontology (dinosaurs), and the processes that shape the environment. While in the field, learners will be prospecting and excavating for prehistoric fossils, learning how to read a topographic map, conducting field research, and performing camp duties. Learners will also be preparing fossils and conducting research in the geology lab at Concordia College before and after the research trip.

Learners will meet June 13-17 in a classroom setting to prep for the field work. Learners will then be camping in the Hell Creek Formation in Montana from June 18-24, with some bone restoration work the week following.

Course Titles & State Course Code

Please list the course title(s) and course code(s) for each course provided.

1. STEM Seminar (13150)

2. General Physical Education (08030)

3.

Teacher of Record Approval

Please list a teacher of record who is employed by the school district, is licensed under NDCC chapter 15.1-18, and has approved this proposal.

Name: Christian Thompson (science) and Troy Kinn (PE)

School: Northern Cass

Phone: 701-874-2322

Email: Christian.thompson@northerncassschool.com and
Troy.Kinn@northerncassschool.com

Learner Proficiency

For each course, explain how learners will demonstrate proficiency. How will a learner demonstrate they have attained the desired level of mastery?

Learners will demonstrate proficiency by meeting the expectations set before, during and after the field research trip. There will be multiple assessments throughout to determine their understanding and skills in the field.

Learner Evaluation

For each course, explain how your instructors will evaluate learner progress. Do your learners do projects or performances which can be evaluated? Do your learners take tests or submit some kind of written work? Do your instructors determine mastery by careful

observation of learner participation in your program? These methods are some examples of acceptable assessment practices. Describe what you will do in order to confirm learner proficiency.

The culminating project will be a research project that they will conduct both in the field or in the lab after. They will then create a science poster on their findings and present to their peers as well as the school board at Northern Cass.

Affirmation of Content Standards

- I affirm that the course(s) meets course content standards, as determined by the Superintendent of Public Instruction.

Acknowledgement

I certify that the information included on this form is accurate to the best of my knowledge. I acknowledge that I have read, understand, and agree to comply with all relevant school board policies, including those relating to learner records and privacy. I understand and agree that failure to comply with any of the district's policy requirements may cause the partnership with the District to end and denial of future requests to participate in this program.

Stephanie S Day

6/1/2022

Sponsoring entity signature

Date

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● Approved	● Denied	Date:

End of Northern Cass School District Policy GACG-E.....Adopted: XX/XX/XXXX