



announces the

63rd ANNUAL FRONTIERS OF SCIENCE INSTITUTE Summer Program

APPLICATION INFORMATION/DEADLINE: Frontiers of Science (FSI) applications are being accepted from both in-state and out-of-state high school students. The priority deadline for applications is ***March 15***; the extended deadline is *April 13*. Immediate confirmation of the receipt of applications and notification of applicant status within a month of each corresponding deadline will be emailed.

WHEN?

June 13 - July 24, 2021

CHOOSE FROM TWO PROGRAMS!

Option 1: Mentored Research Program

Location: University of Northern Colorado, Greeley, CO

You will...

- spend six weeks immersed in a learning-for-the-thrill-of-learning experiential Science Technology Engineering and Math (STEM) curriculum!
- conduct in-depth STEM research, learn to create a research project, write a scientific paper, design a professional poster, create a website, and media presentation!
- Participate in on-site field studies during field trips* and industrial tours!
- receive an early introduction to college life and the interactions associated with community living!

Option 2: Mentored Bootcamp Program

Location: online/remote

You will...

- spend six weeks in a course and workshops that provide an accelerated learning experience in computer science and data science!
- work with a team of peers to develop a professional project or product, write a technical paper, create a website, and media presentation!

In both programs you will...

- experience educational, personal, and social growth with peers who share similar interests!
- meet professionals in various STEM fields and become acquainted with STEM career opportunities during exclusive Seminar presentations!
- earn University of Northern Colorado college credit that is transferrable as science or elective credit to most any institution!
- Have the chance to receive a scholarship to attend the University of Northern Colorado!

COST OF FSI PARTICIPATION

The Frontiers of Science Institute is a program of the University of Northern Colorado (UNC). Individual and corporate sponsors provide funding to assist FSI students in paying the cost of attendance. This funding is applied as **scholarships for individual students and the award amount varies**. Scholarships are awarded based on several factors, including need, academic accomplishment, and community involvement. Students will be notified of scholarship awards when they are notified of acceptance.

- The maximum amount of an FSI scholarship is the amount of the program fee.
- Low-income students are eligible for scholarships that pay the registration fee.

Mentored research Program Fees

Registration Fee: \$1,000

Program Fee: \$4500

Mentored Bootcamp Program

Registration Fee: \$1,000

Program Fee: \$500

QUALIFICATIONS:

- A strong interest in and aptitude for STEM subjects, (course emphases vary each year and may be determined by funding).
- A high level of self-discipline, dependability, social maturity, strong work ethic, and positive attitude.
- A strong desire to challenge yourself and to engage in STEM investigations. Overnight field trips* (with camping) may be scheduled and are mandatory for each participant.
- An interest in, and appreciation for differences in people, cultures, and ideas.
- Applications from women, differently gendered people, people of color, indigenous people, members of the queer (LGBT+) community, and people with disabilities are strongly encouraged.

HOW DO YOU APPLY?

1. Complete the online [application form](#).
2. Request three letters of recommendation from each of these individuals:
 - a. A science, technology, or mathematics teacher.
 - b. Any teacher, counselor, or school official.

These letters should provide an evaluation of your ability for *self-directed* work, your ability to work in harmony with others, and your dependability as a member of a social group. **Three (2) letters are required to complete your application.** Letters may be sent to the director separate from the application: brandon.batzloff@unco.edu

3. Request a ***transcript of your high-school grades, including grades for the first semester of the current school year.***
4. The above materials should be uploaded in the [application form](#) before the priority deadline of **March 15** or the extended deadline of April 15.

*Please note that due to the COVID-19 pandemic field activities may be limited.

GOALS OF THE FRONTIERS OF SCIENCE INSTITUTE (FSI)

FSI is designed for high-school students with a strong interest in and aptitude for STEM subjects. FSI activities are designed to give students a better understanding of the nature of STEM investigations. Participants will explore problems and limitations in STEM and will be encouraged to continue with advanced STEM studies and the eventual pursuit of a STEM career.

It is intended that FSI should produce these results:

- Increase students' understanding of important basic STEM principles and advances at the cutting-edge of science.
- Help students recognize the interdependence and relationships among STEM subjects.
- Help students understand how mathematics and written and oral communications are used to interpret and report STEM research.
- Increase students' understanding of methods of STEM research and provide opportunities to apply those methods in their own investigations.
- Highlight a personal academic pathway for students to realize their highest potential.
- Challenge students through opportunities for critical thinking based on personal experiences and enhance their understanding of the societal impact of STEM progress.
- Build students' understanding of and appreciation for natural resources and diverse environments in relation to technology, science, and society.
- Cultivate students' passion for STEM and encourage pursuit of higher education and careers in STEM.

COVID-19 PANDEMIC PRECAUTIONS

FSI has taken the following steps to keep students safe:

- Students will not share dorm rooms. All students will have their own room at no additional cost.
- Courses will either take place online or in a hybrid format that emphasizes social distancing.
- In addition to the standard protective gear used in research labs, students will be required to wear a face mask whenever in a public setting.

FSI PROGRAM STRUCTURE

FSI's instructional approach is different than that found in most high school classes. The FSI curriculum consists of daily blocks (~105 min each) involving either single discipline instruction or interdisciplinary team teaching, depending on the STEM topics considered. Class blocks focusing on STEM usually involve combinations of discussions and laboratory activities emphasizing current topics within each of FSI's listed areas of study. On-campus studies are integrated with fieldwork and tours of industrial, government, or institutional research and production facilities along Colorado's Front Range.

Another component of FSI's varied approach to learning is a four-day camping trip to the Black Hills of South Dakota. A goal of FSI is to extend beyond the scope of high school STEM curricula and thus explore new, exciting frontiers of science. This trip is not only educational but also an essential time for group bonding.

FSI students are also engaged in *research* with a faculty, graduate/undergraduate student, or industry mentor to complete a focused STEM project. *Most projects fall within the scope of a mentor's current work; students are pre-assigned to a project by the program director according to the interests listed on their application.* Every effort is made to match a student with a project that most closely meets their research, higher education, and career interests. *However, a perfect match cannot be guaranteed.* The intent of the research is that FSI students learn to design experiments, collect and analyze data, and write a research paper, thus building understanding of how mathematics and written and oral communications are used to interpret and report research. Students will also prepare a professional poster for display, design a multi-media presentation, develop a website, and communicate their research findings and conclusions during formal talks and informal discussions to their FSI peers, staff, and alumni, family and friends, the UNC community, and FSI sponsors. *Through this experience, FSI students learn skills that are valued in business and industry and build contacts for summer internships, as well as future employment opportunities.*

Every effort is made to expose FSI students to industrial researchers, professionals in STEM fields, faculty at UNC, as well as experts from nearby universities. These experts conduct think-tank seminars in many areas. Such interactions clarify current research projects, demonstrate how STEM professionals think and work, and offer insight into STEM-related careers. Seminars are offered on topics concerning the relationship of STEM knowledge and research to societal problems and philosophical questions.

Important Note: Each student will participate in *all program activities* (camping trip(s), evening seminars, industrial/educational visits, research, all STEM classes, committees, formal presentations, and the Annual Open House Poster Session). Therefore, FSI students should be open to broaden their interests and explore all areas of STEM. ***No early program dismissal will be allowed.***

UNC CAMPUS LIFE

Approximately 30 students will live in an air-conditioned campus residence hall that is reserved for FSI's exclusive summer use. Meals will be provided by campus dining halls, and work in classrooms and laboratories within UNC's Ross Hall located within a short walking distance of the dormitory. Resident advisors will plan varied evening and weekend activities according to student interests; e.g., recreation center swim and gym, bowling, movies, shopping, hiking, etc. **Please be advised that these activities will be extremely restricted during the COVID-19 Pandemic.**

Casual attire is acceptable during the normal class day; however, *formal business-like attire is required on most industrial visits and at FSI's Annual Open House Poster Session.* More detailed information regarding what to bring will be mailed to each participant upon their admittance into the program.

EVALUATION

All students' efforts are evaluated at FSI's conclusion as instructors jointly prepare and write descriptive evaluations. These are retained on file and sent out at the request of each student. Many students ask that these evaluations serve as letters of recommendation for college admission &/or scholarship applications. Students taking the course for college credit will receive a letter grade, while those who do not will receive a rating only.

UNC COLLEGE CREDIT (optional & transferable)

FSI students may earn four UNC (transferable) college credits upon completion of the full six-week program. *A tuition fee of ~\$240 payable directly to UNC (NOT FSI)* will be required of each student who opts to participate in the program for college credit. Students will receive letter grades based on their overall effort (classroom and laboratory participation, research paper, multi-media presentation, poster & website design).

UNC SCHOLARSHIP

FSI students are eligible for a scholarship to attend UNC. Details about this scholarship will be provided during the Summer program. Information about other UNC scholarship programs can be found at www.unco.edu/ofa.

ADDITIONAL INFORMATION

FSI participants are expected to attend the *entire* six-week program and are responsible for their own travel to and from Greeley on June 14 for check-in and July 24 for check-out. Students will not be admitted who plan to attend other programs that interrupt their six-week commitment to FSI. *No early dismissal is allowed.*

Upon complete review of applications (approx. a month after each deadline), student applicants will be notified by email of their status. *If being admitted to the program, the cost of attendance will be included in the status letter.* The student will then have seven days to respond.

Students selected to attend the 2020 Frontiers of Science Institute are expected to arrive at UNC on **Sunday afternoon, June 13th**; classes and research commence on Monday, June 14th. Arrival information and other details will be mailed upon formal admission to the Institute.

ADDRESS ANY QUESTIONS ABOUT FSI AND APPLICATIONS TO:

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