



announces the

## **63<sup>rd</sup> ANNUAL FRONTIERS OF SCIENCE INSTITUTE Summer Program**

**APPLICATION INFORMATION/DEADLINE:** Frontiers of Science (FSI) applications are currently being accepted. The deadline for applications has been extended to **June 4, 2021**. Applicants will be notified of acceptance by June 7, 2021.

### **Program Dates**

June 14 - July 23, 2021

### **Program Description:**

#### **Mentored Online Research Program**

Location: online/remote

The program consists of:

- One class that covers an area of science that has computational aspects, such as biology, physics, etc.
- Workshops twice per week led by experts in the fields of computer science, data science, neural networks, data science, etc.
- Experts from across the US will mentor students through the completion of a computational project, including the creation of a research poster and presentation of the project to the entire program.

There is also a seminar series that occurs twice per week. A few of the notable speakers this year are:

- Michael Spivey, Ph.D. Professor of Cognitive and Information Sciences, and Cognitive Dynamics Expert at the University of California Merced.
- Jessica Ross, Ph.D. Cognitive Neuroscientist at Harvard Medical School
- Bodo Winter, Ph.D. Senior Lecturer and Computational Linguistics Expert at the University of Birmingham.
- Lee Hunter, MFA. Multimedia Artist whose work focuses on the intersection of arts and sciences, Manhattan, NY
- Engineers from Lawrence Livermore National Lab and the Laboratory for Laser Energetics at the University of Rochester.

Attending the FSI online program will help you:

- Experience educational, personal, and social growth with peers who share similar interests!
- Earn University of Northern Colorado college credit that is transferrable as science or elective credit to many universities!
- 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 pay for educational programs.

FSI Online registration fee: \$0 - \$1500 based on income level.

## **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.
- 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 a letter of recommendation, one from any teacher, counselor, or school official.  
  
This letter 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. Two **(2) letters are required to complete your application**. Letters should be uploaded to the application, but may be sent to the director separate from the application: FSI.admin@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](#) by May 22, 2021.

## **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.

## **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.

FSI students are also engaged in *research* with a researcher, engineer, 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 the results of data analysis, 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 other 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.

## **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](http://www.unco.edu/ofa).

**ADDRESS ANY QUESTIONS ABOUT FSI AND APPLICATIONS TO:**

Brandon Batzloff

Director. [Frontiers of Science Institute](#)

University of Northern Colorado

501 20<sup>TH</sup> Street – CB 123

Ross Hall 2279B

Greeley, CO 80639

Phone: 970.351.3622

E-Mail address: [FSI.admin@unco.edu](mailto:FSI.admin@unco.edu)