

Northern California & Western Nevada Region:

**2022 RESEARCH PAPER SUBMISSION & COMPETITION GUIDELINES**

Junior Science & Humanities Symposium (JSHS)

Competition Date: March 18, 2022

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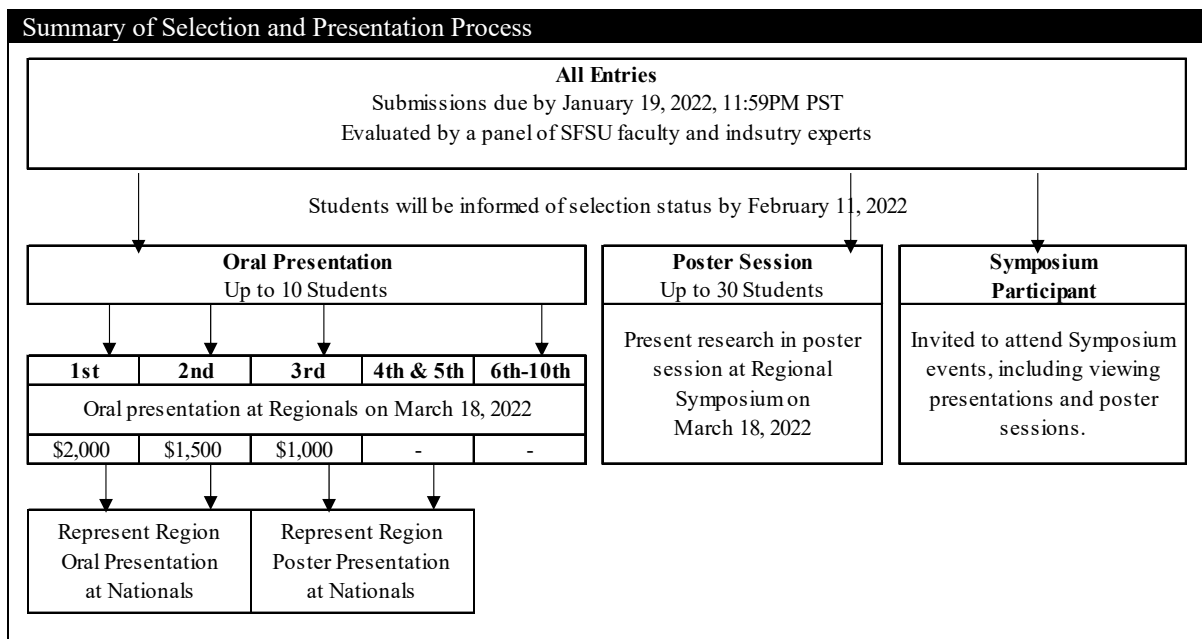
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## OVERVIEW

All high school students in Northern California and Western Nevada (the Region; Regional) are invited and encouraged to submit their original STEM research for consideration in the form of a research paper. All entries will be evaluated, and up to ten (10) students will be selected to give oral presentations of their research; and up to an additional 30 students will be invited to present their work in a competitive poster session, at the regional symposium on March 18<sup>th</sup>, 2022. Of the ten oral presenters, the top two (2) presenters will be invited to present their work at the JSHS National Symposium. Third, fourth and fifth places will be invited to present their research at a poster session at the JSHS National Symposium in Albuquerque, NM.

Three tuition scholarships will be awarded at the regional competition. Students judged to have given the first, second, and third best oral presentations at the regional competition on March 18<sup>th</sup>, 2022, will receive undergraduate tuition scholarships from the JSHS, equal to:

- Regional First Place - \$2000
- Regional Second Place - \$1500
- Regional Third Place - \$1000



## Research Paper Submission Checklist

### *Eligibility*

- Student's school/organization/place of education address is within Northern California or Western Nevada
- Entry into only one regional symposium
- Student is a U.S. citizen, or permanent resident of the United States or U.S. Territories.

### *Documents to submit*

- Abstract (PDF)
- Research Paper (PDF)
- Statement of Outside Assistance Form, Filled. This form includes IRB compliance statements (PDF)

## SCHEDULE AND DEADLINES

The 2022 Regional Symposium competition will be held in-person<sup>1</sup> on the San Francisco State University campus. Key dates and deadlines for participation in the 2022:

- **November 15, 2021** – Research competition application and submission opens.
- **January 19, 2022 11:59PM PST** – Research application submission deadline. High school students submitting a paper or poster to the competition must register and upload their submissions here. <LIINK Forthcoming>
- **February 11, 2022** – Research applicants are notified of acceptance status
- **February 16, 2022** – Final date for students to accept invitation to present or poster at the Symposium
- **March 18, 2022** – Northern California/Western Nevada Regional JSHS competition hosted by I&E@SFSU

## ELIGIBILITY & REQUIREMENTS

Students who wish to compete at the JSHS National Competition, must qualify through competition at their regional symposium first. Students do not need to be nominated by a teacher or mentor for entry into the Regional competition. Students can self-nominate and submit their entry independently. All high-school level (grades 9-12) students are eligible, including home-schooled students.

### Regional

To be eligible for the Northern California & Western Nevada Regional competition, students must, at the time of application, currently attend high school in any of the Northern California or Western Nevada counties listed in Tables 1a and 1b. Students may compete in only one regional symposium.

Table 1a - Eligible Counties (Northern California)				
• Alameda	• Glenn	• Merced	• San Francisco	• Stanislaus
• Alpine	• Humboldt	• Modoc	• San Joaquin	• Sutter
• Amador	• Inyo	• Mono	• San Mateo	• Tehama
• Butte	• Kings	• Monterey	• Santa Clara	• Trinity
• Calaveras	• Lake	• Napa	• Santa Cruz	• Tulare
• Colusa	• Lassen	• Nevada	• Shasta	• Tuolumne
• Contra Costa	• Madera	• Placer	• Sierra	• Yolo
• Del Norte	• Marin	• Plumas	• Siskiyou	• Yuba
• El Dorado	• Mariposa	• Sacramento	• Solano	
• Fresno	• Mendocino	• San Benito	• Sonoma	
Tables 1b - Eligible Counties (Western Nevada)				
• Carson	• Douglas	• Lyon	• Nye	• Washoe
• Clark	• Esmeralda	• Mineral	• Storey	

The student must also be a citizen or permanent resident of the United States or U.S. Territories. The research submitted may be a continuation of a research investigation; however, a study which merely adds data from a previous year's project is not considered a strong continuation project. If a continuation project is submitted, the student must discuss how the project was expanded (i.e. methodology, new variables); discuss any revisions in experimentation and present new data.

<sup>1</sup> The event will be held in-person based on City and County of San Francisco health and safety guidelines, and those that have been set out by the California State University (CSU), and the SFSU President's office. If the organizers deem that an in-person event cannot be safely executed given the State, County, City, and University guidelines, the event will be conducted virtually. All participants will be notified if the event is moved to a virtual venue.

A student may present a report on work done as part of a class project, or as a science fair project, or summer research project. If a presenter is part of a larger group, the presentation should focus on the coordinated efforts of all team members and properly acknowledge the contributions of the team (i.e. students, mentors, and/or teachers). A team leader should be selected to register and present the results of the group work. The research may not be presented by any other member of the team. The judging criteria used to judge all JSHS presentations remains the same. If an individual presenter from a group project is selected as a Regional finalist and is invited to present at the National JSHS, the same presenter must present at the National Symposium. Scholarships and other awards available at Regional and National Symposia are awarded to the presenter.

As part of the application process, the student may choose to designate one of eight STEM research disciplines for their research. The designation will be used to categorize the student's research into an appropriate judging category. If a student does not specify a discipline, judges will determine an appropriate category for the research submission. The eight major disciplines the student must choose from are:

1. **Environmental Science/Engineering** - Bioremediation, Ecosystems management, Environmental engineering, Land Resource Management, Pollution, Toxicity; impact upon ecosystems
2. **Biomedical Sciences** - Biomedical medicine, Microbiology, Molecular/cellular, Genetics, Immunology, Pharmacology, Virology
3. **Chemistry**- Physical Chemistry, Materials Science, Alternative Fuels, Geochemistry, Physical Chemistry, Materials, Alternative Fuels, Organic Chemistry (possibly in life science), Chemical Engineering, Earth Science Geochemistry, Energy-Alternative Fuels, Materials
4. **Engineering and Technology** - Aerospace, Aerodynamics, Electrical Engineering, Energy-Solar, Vehicle Development, Devices, Mechanical Engineering, Robotics
5. **Life Sciences** - Developmental Biology, Plant Physiology, Population Genetics, General Biochemistry, Microbiology
6. **Math and Computer Science, Computer Engineering**: Probability and Statistics, Math, Computer Science-Algorithms, Databases, Networking, Computer Engineering
7. **Medicine and Health/Behavioral sciences** - Behavioral sciences, Biochemistry, Bioengineering, Disease Diagnosis and Treatment, Epidemiology, Immunology, Neuroscience, Physiology, Pathology)
8. **Physical Sciences including Physics, Astronomy, Internet of Things** - Astronomy, Physics-Theoretical, Physics-Solid State, Acoustics, Optics, Thermodynamics, Particle Physics, Quantum Physics, Nuclear; Internet of Things—network of physical objects or “things” embedded with electronics, software, sensors, and network connectivity

Eligible students are invited to submit the following documents, as application to compete in the JSHS Regional competition. All materials must be uploaded to the submission portal by January 19, 2022 at 11:59PM PST:

1. **Abstract** – A 250-word maximum abstract that accurately conveys the essential nature of the research conducted, and the most significant conclusions reached. The Regional competition follows the abstract guidelines as outlined by the national competition in the [JSHS Core Rules of Competition, available here](#).
2. **Research Paper** – The Northern California & Western Nevada Regional Symposium requires that a full research paper be submitted as a part of the regional competition application. Paper format and guidelines for this regional competition are the same as that for the national competition, and can be found on the National JSHS competition site's [Core Rules of Competition](#).
3. **Statement of Outside Assistance** – Student may only use the [JSHS-provided form](#). This form serves two purposes. First, the form documents the student's contribution to the research investigation. The student's supervising teacher and/or supervising mentor must comment on the student's individual contributions to the research investigation or engineering/computer science project.  
Second, the form documents the student's contribution to the research conducted, and establishes that the research was conducted in compliance with local, state, and federal regulations for such research.

Projects that were conducted without proper supervision may be disqualified from both regional and national competition. If you are unsure of what or how research is appropriate or allowable under an Internal Review Board (IRB) protocol, or in any other way require help with interpreting or validating the research procedures with an established Internal Review Board (IRB) (prior to conducting research activities), please [contact the Northern California JSHS Regional Director's office](#).

### **National Symposium**

As determined by the Northern California & Western Nevada Regional Symposium judges panel, the top two oral presenters, will be invited to represent the region at the National Symposium in the oral presentation session. Third, Fourth, and Fifth place presenters will be invited to present their research at the National Symposium in the poster presentation session.

National Symposium requirements for the oral and poster presentation are specified by the JSHS national organization. Please refer to the National guidelines as provided by the [JSHS Core Rules of Competition](#).

## **ABSTRACT SUBMISSION STRUCTURE**

All JSHS student applicants must submit a 250-word maximum abstract in electronic format. The abstract should accurately convey the essential nature of the research conducted and the most significant conclusions reached. A further purpose of the abstract is to attract the interest and curiosity of the non-specialist reader and thus encourage exchange, discussion, and elaboration between various authors and between authors and readers. The format is as follows:

- One-inch margins,
- Typed in 10 or 12-point font (Times or Times New Roman).
- The header preceding the abstract body must include:
  1. Title of the research;
  2. Authors name(s);
  3. High school, high school city, high school state;
  4. Name of teacher/mentor/sponsor and his or her organization. Precede the individual's name with a subheading (i.e. teacher, mentor, sponsor);
  5. Include one line of space between the heading and the abstract body.

Symposium proceedings will include abstracts. Please carefully proofread your submission, since abstracts will not be typed or edited.

## **RESEARCH SUBMISSION REQUIREMENTS & STRUCTURE**

In general, the Region follows the research paper format as [recommended by the JSHS national competition](#).

### ***National competition research paper requirements:***

- The paper should be a minimum of 5-6 pages and a maximum of 20 pages; inclusive of appendices and references; but *exclusive* of the following:
  - Title/cover page;
  - Statement of assistance, and ethical conduct/IRB statement
  - Table of contents
- Single spaced typography.
- A maximum size limit for the electronic research paper is 1.8 Mb.

### ***Recommended research paper structure:***

You are free to structure your research presentation as you wish, however, the regional competition recommends the same research paper structure that has been recommended by the National competition:

- Title page, or cover page stating: the student's name, school address, and title of the research,
- Acknowledgement of major assistance received,
- Your IRB or ethical conduct statement that "research involving non-human vertebrates or human subjects was conducted under the supervision of an experienced teacher or researcher and followed state and federal regulatory guidance applicable to the humane and ethical conduct of such research."
- Table of contents
- Introduction
- Materials and methods
- Results (data or findings)
- Discussion and conclusions
- References, or literature cited (APA or MLA format, please)
- Appendices

## JUDGING PROCESS

There are potentially three rounds of judging possible between Regional and National competitions. At the Regional level, all entries will undergo a preliminary round of review, conducted by SFSU faculty and expert reviewers. Based on the recommendation of the preliminary reviews, entrants may be invited to compete at the Regional Symposium as either an oral or poster presenter, or to attend the symposium. Oral and Poster presenters will undergo a Regional Competition round of judging. The top two oral presenters will represent the Region at the National competition as oral presenters. The third, fourth and fifth place oral presenters from the Regional competition will represent the Region at the National competition as poster presenters.

### Regional Entry & Judging

All entries submitted before the January 19, 2022 11:59PM PST entry deadline will go through a preliminary round of review conducted by SFSU faculty reviewers based on the following criteria:

- **Construct Validity** – does the research actually attempt to address what the student hopes to research?
- **Content Validity** – do the methods chosen adequately/comprehensively address the relevant components of the research question asked? If not, has the author appropriately defined the limitations of the research?
- **Internal Validity** – do the methods and analysis clearly documented the relationship between variables?
- **External Validity and Significance of Topic** – How generalizable are the findings to the real world? To what degree would/could this research topic impact how we do things as a society?
- **Research Presentability** – How likely is the research to be ready/completed in time for the Symposium. And how appropriate is the topic for the Symposium?

Reviewers will be asked to provide written feedback on the research for the student applicant. Reviewer comments and acceptance decision (oral presentation, poster session, or attendee) will be communicated to students by February 11, 2022. Students will have until February 16, 2022 to accept or decline their invitation to present at the Regional symposium. SFSU faculty reviewers will select up to ten students to give oral presentations, and up to thirty students to give poster presentations. All other entrants will be offered invitations for symposium attendance:

- **Oral Presentation** – The student is invited to present their research at the Regional symposium in a *maximum* 12 minute oral presentation, followed by a six minute question-and-answer period.
- **Poster Presentation** – The student is invited to present their research as a poster, in a physical poster format that is *maximum* 36" high by 48" wide. SFSU will provide complimentary poster printing services for poster presenters that submit final, print-ready PDF poster files at least one week prior to the Regional Symposium date. Students selected for poster presentation will receive further poster specifications at the time of selection.
- **Symposium Attendance** – The student's research was not selected for either oral or poster presentation at this time. However, the student is invited to attend and participate in the events and view the competition.

Funding may be available if a student presenter requires transportation assistance in order to present at the Regional symposium, please contact the Regional Symposium Director for details.

**Oral & Poster Presentation Criteria – Regional and National Symposia**

Oral and Poster presentations at the Regional Competition will follow the judging requirements and criteria as set out by the national competition. Please refer to the JSHS Core Rules of Competition for the National judging criteria.

**Awards**

Three tuition scholarships will be awarded at the regional competition. Students judged to have given the first, second, and third best oral presentations at the regional competition on March 18<sup>th</sup>, 2022, will receive undergraduate tuition scholarships from the JSHS, equal to:

- Regional First Place - \$2000
- Regional Second Place - \$1500
- Regional Third Place - \$1000

Of the ten presenters at the regional competition, the top two (2) presenters will be invited to present their work at the 2022 JSHS National Symposium. Third, fourth and fifth places will be invited to present their research at a poster<sup>2</sup> session at the JSHS National Symposium in Washington DC. The five regional finalists selected to present their research at the JSHS National Symposium (oral and poster presentation), will receive an expense-paid trip to attend and present their research at the National JSHS. The National JSHS brings together over 360 participants in a program of educational and scientific exchange.

Awards at the National Symposium include tuition scholarship award levels of \$12,000, \$8,000, and \$4,000, respectively, for each 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> place National winners in each of the eight major competition discipline categories.

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<sup>2</sup> Regional representatives may request poster printing assistance for the national competition, please contact the regional director if you require access to professional poster printing services.