



Northern California Region:

2024 RESEARCH PAPER SUBMISSION & COMPETITION GUIDELINES

Junior Science & Humanities Symposium (JSHS)

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OVERVIEW

All high school students in Northern California (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 selected students will be invited to present their work in a competitive poster session at the regional symposium on March 10, 2023. Of the regional poster presenters, ten regional finalists will be selected to give an oral presentation in the afternoon session that same day. The top two (2) oral presenters will be invited to represent the Region as an oral presenter at the JSHS National Symposium. Regional third, fourth and fifth places will be invited to represent the Region at a poster session at the JSHS National Symposium.

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, will receive undergraduate tuition scholarships from the JSHS, equal to:

- Regional First Place - \$2,000
- Regional Second Place - \$1,500
- Regional Third Place - \$1,000

Research Paper Submission Checklist

Eligibility

- Student's school/organization/place of education address is within Northern California
- 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

This year's Regional Symposium competition will be held in-person¹ on the San Francisco State University campus. Key dates and deadlines for participation are:

- **October 2, 2023** Research competition application and submission opens.
- **January 12, 2024 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](#).
- **February 2, 2024** Research applicants are notified of acceptance status.
- **February 9, 2024** Final date for students to accept invitation to present their research at the symposium.
- **February 23, 2024** Northern California Regional JSHS on the San Francisco State University campus.
- **April 2024** National JSHS

¹ 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.

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 Symposium

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

• Alameda	• Glenn	• Modoc	• San Mateo	• Sutter
• Alpine	• Humboldt	• Mono	• Santa Clara	• Tehama
• Amador	• Lake	• Napa	• Santa Cruz	• Trinity
• Butte	• Lassen	• Nevada	• Shasta	• Tuolumne
• Calaveras	• Madera	• Placer	• Sierra	• Yolo
• Colusa	• Marin	• Plumas	• Siskiyou	• Yuba
• Contra Costa	• Mariposa	• Sacramento	• Solano	
• Del Norte	• Mendocino	• San Francisco	• Sonoma	
• El Dorado	• Merced	• San Joaquin	• Stanislaus	

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.

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 12, 2024** 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 (SOA)** – 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 SOA 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 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, Forth, 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.

National symposium proceedings will include abstracts. The Regional symposium will not publish presenter abstracts.

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 40 pages double-spaced; inclusive of appendices and references; but *exclusive* of the following:
 - Title/cover page;
 - Statement of assistance, and ethical conduct/IRB statement
 - Table of contents
- Double 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 using APA format
- 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 a poster presenter, or to attend the symposium. Poster presenters will undergo additional judging at the regional symposium. Ten poster presenters will be selected as regional finalists and invited to give an oral presentation in the afternoon session of the regional symposium. The top two regional finalists 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 will go through a preliminary round of review 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 document 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?

Acceptance decision (poster presenter or attendee) will be communicated to students by February 2, 2024. Students will have until February 9, 2024 to accept or decline their invitation to present at the regional symposium.

All students that are invited to present at the regional symposium will be required to present their research in a general poster presentation session on February 23, 2024. Symposium judges will select up to ten student, regional finalists from the poster presentation session to give oral presentations in the afternoon session of the regional symposium. If selected as a finalist for an oral presentation session, the student should be prepared to present their research in a *maximum* 12-minute oral presentation, followed by a six-minute question-and-answer period.

The top two oral presenters will be selected to represent the Region at the JSHS Nationals symposium's oral presentation session. The third, fourth and fifth place oral presenters will be selected to represent the Region at the JSHS National symposium's poster session.

Funding may be available if a student presenter requires transportation assistance in order to present at the regional symposium, or to professional print their presentation poster. Contact the Regional Symposium Director for details. All transportation and travel expenses for regional representatives to present at the national symposium will be covered by and paid for by the JSHS National office.

Oral & Poster Presentation Criteria – Regional and National Symposia

In addition to the preliminary judging criteria listed above, oral and poster presentations at the Regional Competition will also be scored on the judging requirements and criteria as set out by the national competition. Please refer to the [National Judging Score Sheet](#) for the National judging criteria. Please note the following from the National Core Rules of Competition:

- Materials for the poster may be pre-printed or hand written and may be attached to a tri-fold board as one large sheet or in pieces.
- Poster board dimensions are 36" high x 48" wide. The poster board includes two folds. The fold dimensions are 12" x 24" x 12".

- Header boards are allowed and must be no larger than 10” high x 36” wide. The header board should only contain a title.
- The poster should be visible from a 4-foot distance.
- Suggested font point sizes (based on Helvetica)
 - The Title should be at least one inch (72 pts) in height.
 - The student’s name and JSHS Region should be included and should be (48 pts).
 - All other lettering should be in 24-point font size. (Point size is a suggested size only).
- Keep the amount of text to a minimum.
- There should be more emphasis on graphics, tables, charts, and graphs. These items should be cited on the poster board.
- Photographs in addition to other illustrations may be used.
- Figures may be in color.
- No hazardous materials are allowed.
- No specimens, no apparatus, no chemical reagents, no models are to be used during the presentation. Only printed material, affixed to the poster, will be allowed for the poster presentation.
- All materials must be prepared (printed) and “poster ready” in advance of arriving.

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, will receive undergraduate tuition scholarships from the JSHS, equal to:

- Regional First Place - \$2,000
- Regional Second Place - \$1,500
- Regional Third Place - \$1,000

Of the oral presenters, chosen from the poster presenters, at the regional competition, the top two (2) presenters will be invited to present their work at the JSHS National Symposium in the oral presentation competition. Third, fourth and fifth places from the regional oral presentation will be invited to present their research at a poster session at the JSHS National Symposium. 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 1st, 2nd, and 3rd place National winners in each of the eight major competition discipline categories.