Oregon NASA Space Grant Consortium

2022-23
STudent Academic Research Review (STARR) Award Program

Open to students attending OSGC
Community College and 4-Year Member Institutions

Program Guide

Release Date: July 20, 2022
Applications Due: September 9, 2022

Oregon NASA Space Grant Consortium
250 Kidder Hall | Corvallis, OR 97331
Phone: 541.737.2414 | Fax: 541.737.9946
http://www.spacegrant.oregonstate.edu

Index

STARR Award Program Guide

INTRODUCTION

The Oregon NASA Space Grant Consortium (OSGC) is a member of the National Aeronautics and Space Administration's (NASA) National Space Grant College and Fellowship Program (Space Grant). OSGC supports the agency's objectives of fostering and encouraging careers in Science, Technology, Engineering, and Mathematics (STEM) and STEM education to develop a skilled, high-performing, capable, and diverse next-generation workforce. Access to experiential learning and research opportunities are crucial to enhancing a student's academic experience in order to meet the needs of NASA and the nation. OSGC programs are directed towards undergraduate students in STEM fields and designed to complement a student's academic career experience. In support of the national priority to increase diversity in STEM fields, women, individuals from underserved and underrepresented groups in STEM fields, and persons with disabilities are strongly encouraged to participate in our programs.

The Oregon Space Grant *STudent Academic Research Review (STARR)* award program is directed towards STEM and STEM Education students attending our member community colleges and four-year universities who are interested in space science/aerospace-related careers. The STARR Program provides students an opportunity to apply for a one-year award to enhance and supplement their academic study in STEM and STEM education. These awards also serve to recognize student's achievements in these fields.

STARR awards are open to students in a broad range of STEM disciplines, including aerospace-related engineering and mathematics, as well as science and math education, earth sciences, chemistry, biology, food science, and computer science relating to NASA's vision and mission. Students are encouraged to contact OSGC with questions about field of study eligibility.

ELIGIBLE INSTITUTIONS

Applicants must be enrolled and in good academic standing throughout the entire award period at one of the following OSGC member institutions:

Table 1: OSGC Affiliate Member Institutions and Representatives

Community College Affiliate Member Institution	**Representative**	**Email**
Lane Community College	Dennis Gilbert	gilbertd@lanecc.edu
Linn-Benton Community College	Kristina Holton	holtonk@linnbenton.edu
Oregon Coast Community College	Matthew Fisher	matthew.fisher@oregoncoast.edu
Portland Community College, Cascade Campus	Deborah Cochrane	dcochran@pcc.edu
Portland Community College, Rock Creek	Andy Hilt	andrew.hilt@pcc.edu
Portland Community College, Southeast Campus	Julia Betts	julia.betts@pcc.edu
Portland Community College, Sylvania Campus	Toby Dittrich	tdittric@pcc.edu
Southwestern Oregon Community College	Aaron Coyner	aaron.coyner@socc.edu
4-Year Affiliate Member Institution	**Representative**	**Email**
Eastern Oregon University	Colby Heideman	cheideman@eou.edu
George Fox University	Robert Hamilton	rhamilto@georgefox.edu
Oregon Institute of Technology	Eklas Hossain	eklas.hossain@oit.edu
Oregon State University	Kyle Niemeyer	kyle.niemeyer@oregonstate.edu
Pacific University*	Kevin Carr	kcarr@pacificu.edu
Portland State University	Alex Ruzicka	ruzickaa@pdx.edu
Southern Oregon University	Peter Wu	wu@sou.edu
University of Oregon	Greg Bothun	dkmatter@uoregon.edu
University of Portland	Christina Ivler	ivler@up.edu
Western Oregon University	David Szpakowski	szpakowskid@wou.edu

*minority serving institution

PROGRAM DESCRIPTION

STARR is a research review program and does not entail hands-on research. A research review is a deeper dive into a research topic and includes an overview, a summary, and an evaluation or critique of the current knowledge that already exists about a specific area of research. A research review may also include a discussion of methodological issues and suggestions for future research.

STARR is a stepping-stone opportunity designed to help students gain a more comprehensive understanding of the research process and be better prepared for future hands-on research opportunities such as NASA internships, Research Experience for Undergraduates (REUs), or senior capstone projects. Applicants select a topic to review that involves current NASA-related research. Selected topics must align with one or more of NASA Mission Directorate's top priorities or speak to the challenges facing the execution of current missions. Topics should be specific and narrow in scope.

If awarded, STARR recipients will thoroughly review the existing literature/research pertaining to a selected research topic and write a white paper evaluating/critiquing the current knowledge that already exists on the selected topic. The white paper must include insight into the contributions of the research being conducted and demonstrate interdisciplinary applications of the research and how it might potentially extend to other areas of science or engineering relating to NASA's priorities and areas of emphasis. Students will not be conducting research of any kind.

STARR recipients must identify a faculty member at their respective institution who has expertise relevant to the research being reviewed and who agrees to serve as faculty advisor on the project. The advisor must be willing to mentor the student, review/edit the student's work, and provide guidance throughout the process; however, white papers must ultimately be the original work of the student. Selected projects and advisors must be approved by the OSGC affiliate representative from the student's respective institution. In addition to the white paper, students attending 4-year institutions will be required to present their work at the OSGC Spring Symposium (virtual or in-person).

AWARD TERMS AND CONDITIONS

Award Funds

A total of $104,000 will be awarded in the 2022-23 STARR Program, contingent upon funding from NASA Office of STEM Engagement. STARR awards will be competitively awarded to students enrolled at an OSGC affiliated community college or 4-year institution. Awards will be made in two disbursements. Awardees will receive $1,000 in October 2022 and the remainder of the award in May 2023 upon completion of deliverables. Awards are compensation of a student's time and effort; supplies/equipment purchases are prohibited. Terms and conditions vary by type of institution.

Community College Student Requirements

- White paper (6-8 pages, excluding title page, references, and appendices)
- Outline
- Midway Meetup (virtual)
- $3K per student award

4-Year Institution Student Requirements

- White paper (8-10 pages, excluding title page, references, and appendices)
- Outline
- Midway Meetup (virtual)
- Presentation
- $5K per student award

Duration

STARR awards are a one-time, non-renewable, academic year-long award.

Number of Awards to be Funded

Number of awards may vary by institution type; total dollar amount of awards not to exceed $104,000.

- Community College – up to 15 awards
- 4-Year University – up to 18 awards

Equal Opportunity and Diversity

Students from underserved groups and groups underrepresented in STEM fields, specifically Native American, African American, Latino, Hispanic, and Pacific Islander, women, and persons with disabilities are strongly encouraged to apply. OSGC seeks to recruit applicants from a variety of higher-education member institutions and disciplines.

Restrictions

STARR is a research review program—students will not be conducting research of any kind and will not need access to onsite resources.

The OSGC Cooperative Agreement stipulates no human subject work can be conducted under the award. Hence, Human Subject Research—including surveys—is prohibited from inclusion in this or any OSGC program.

DATES AND DEADLINES: APPLICATION PROCESS

- Application Deadline: **Friday, September 9, 2022**
- Letter of Recommendation (optional) Due: **Wednesday, September 14, 2022**
- Award Selections: No later than **September 30, 2022**
- Award Disbursements: **October 2022** and **May 2023**

ELIGIBILITY

STARR awards are open to undergraduate students who meet the following eligibility criteria:

Community Colleges

- Student must be a US Citizen.
- Student must maintain good academic standing.
- Student is enrolled in a minimum of 6 credit hours per term in **STEM-related coursework** at an OSGC-affiliated community college at the time of application and remains enrolled for the duration of the award (through spring 2023). Student may be dual-enrolled in an OSGC-affiliated community college and 4-year institution through the duration of the award.
- For community college STEM students not currently enrolled in STEM-related coursework, supplemental information may be provided, including but not limited to:
  - Documentation declaring a STEM-related major or degree path.
  - Documentation of degree plan provided by academic advisor (general or degree-specific), which includes STEM-related coursework.
  - Letter of recommendation from past STEM faculty member or mentor.

  Please discuss options with your OSGC affiliate representative to ensure criteria are adequately met.

4-Year Institutions

- Student must be a US Citizen.
- Student must maintain good academic standing.
- Student is enrolled in a minimum of 12 credit hours per term at an OSGC-affiliated 4-year institution at the time of application and remains enrolled for the duration of the award (through spring 2023).
- Student is enrolled in STEM, STEM education coursework, or an MAT program during the 2022-23 academic year.

See Table 1 for list of OSGC Member Institutions and Representatives.

APPLICATION REQUIREMENTS AND FORMAT GUIDELINES

Application packets for the STARR awards must include the following:

- Letter of Intent
- Student Resume
- Project Description
- Timeline
- Faculty Advisor Statement of Support
- Letter of Recommendation (optional)
- Academic Transcript

Documents are to be single-spaced, using standard 8½ x 11 paper, in font not smaller than 12-point with a minimum of 1" margins. All pages must be numbered sequentially. Students will submit application packets online.

Letter of Intent (Page limit: 1 page)

Includes the following:

- Describe the Plan of Study for your STEM academic goals throughout your undergraduate program.
- Express your interest in and commitment to a space science/aerospace related career.
- Briefly describe your skill sets and qualifications in context of this opportunity.
- Describe how this opportunity would benefit you and contribute to your academic and career goals and objectives.

Student Resume (Page limit: 1 page)

Include relevant employment, education, and extra-curricular activities. Resume should include current contact information including email, phone, and mailing address.

Project Description (Page limit: 1 page)

Includes the following:

- State the research topic you have selected to review and provide an overview of the topic. Include why you are interested in evaluating the current knowledge base of this particular subject.
- Briefly state how the topic substantively aligns with one or more of NASA Mission Directorate's top priorities and/or how it speaks to a specific challenge facing one of NASA's current missions or area of emphasis.

Topics should be specific and narrow in scope. Students are expected to refer to *Appendix A. Agency Information and Strategic Framework*.

Note: If selected for a STARR award, students will conduct a research review of the chosen topic and elaborate on how it aligns with NASA's top priorities and/or how it speaks to the challenges facing NASA's missions. Students should be prepared to offer insight into the contributions of the research and demonstrate interdisciplinary applications and how the research could potentially extend to other areas of science or engineering relating to NASA's top priorities and areas of emphasis.

Timeline and Milestones (Page limit: 1 page)

Develop a timeline for your project that includes milestones and measurable outcomes. Refer to the *Dates and Deadlines: Deliverables* section for associated deadlines. Timelines are tools that help researchers stay on track to complete a project in the allotted time and should be shared with faculty advisors to ensure project deadlines are met in a timely manner.

Faculty Advisor Statement of Support (Page limit: 1 page)

STARR applicants must identify a faculty member at their respective institution with expertise relevant to the research being reviewed and who agrees to serve as faculty advisor on the project. The advisor must be willing to provide guidance and mentorship throughout the process, participate in regularly scheduled check-ins with the student and the Midway Meetup, and review/edit the student's work prior to submitting deliverables. The selected faculty advisor must provide a Statement of Support acknowledging their role and expectations as advisor for the project. The Statement of Support is to be included in the online application packet submitted by the student. The Statement of Support does not serve as a letter of recommendation.

Advisors must be affiliated with an OSGC member institution; OSGC affiliate representatives may serve as faculty advisor on a project. Affiliate representatives may assist students in identifying a faculty member who has expertise relevant to a project.

Letter of Recommendation – Optional (Page limit: 2 pages)

One letter of recommendation is optional. If provided, the letter should specifically address your qualifications and merit for receiving a STARR Award. Students will be asked to provide contact information for the person providing a letter of recommendation. Upon submission of your application, this individual will receive an email request for the letter. The letter of recommendation will be due shortly after the student application is due.

Academic Transcript (Page limit: As needed)

A PDF of your academic transcript must be submitted with your online application. Unofficial transcripts from your college or university website are acceptable and should include record of the courses in which you are currently enrolled.

Online Application

Complete application packets will be submitted online:

- Community college student applications: https://spacegrant.net/apps/ors2
- 4-Year institution student applications: https://spacegrant.net/apps/ors1

FACULTY ADVISORS/MENTOR INFORMATION

Faculty advisors are expected to have expertise relevant to the research being reviewed, and be willing and able to contribute insight and perspective to a project. Advisors must be willing to mentor the student by providing guidance throughout the process and review/edit the student's work prior to the student submitting deliverables, keeping in mind white papers must be original work of the student. Advisors are encouraged to help students understand the components of research and research review—evaluation of the current knowledge base for the specified topic. Faculty advisors should be prepared to participate in regularly scheduled check-ins with the student to maintain progress and make certain that milestones are met and deliverables are submitted on time. Advisors should plan to participate in the Midway Meetup.

Advisors must be affiliated with an OSGC member institution; OSGC affiliate representatives may also serve as faculty advisor on a project. Faculty advisors are required to provide a Statement of Support to be included in the student's online application submission.

REVIEW AND SELECTION PROCESS

Applications are evaluated for eligibility when received. Qualified applications will be reviewed by a diverse selection committee who will make recommendations for funding based on stated review criteria (see below). Preference may be given to women, individuals from underserved and underrepresented groups in the STEM fields, and individuals with disabilities.

Review Criteria

- Academic achievement
- Strength of Letter of Intent
- STEM-related Plan of Study
- Demonstration of Space Science/Aerospace related career goals
- Selected research review topic is in alignment with one or more of NASA Mission Directorate's top priorities and/or speaks to the challenges facing the execution of a current mission or area of emphasis.
- Strength of faculty support

DATES AND DEADLINES: DELIVERABLES

- Student Profile Form: **September 2022**
- Midway Meetup: **February 2023**
- Outline Due: **April 7, 2023**
- White Paper Due: **May 5, 2023**
- Spring Symposium (4-year students): **May 19, 2023**

DELIVERABLES IF AWARDED

More detailed information pertaining to the following deliverables will be communicated directly with students who are selected to receive a STARR award.

Student Profile Form

Students agree to complete an online confidential Student Profile Form when they accept the award. This information is used for reporting to NASA's Office of STEM Engagement and for longitudinal tracking purposes to evaluate the effectiveness of NASA's higher education programs.

Midway Meetup

OSGC will host an online, virtual check-in for STARR recipients and mentors midway through the project. Participates will meet to discuss progress, solicit feedback, bounce ideas, ask questions, and share hurdles and solutions with fellow STARRs and mentors. OSGC leadership will facilitate the meeting and be available to answer questions related to deliverables. The Midway Meetup will be held in February 2023.

Descriptive Outline
STARR recipients are required to submit a descriptive outline of the project approximately one month prior to the white paper due date. Descriptive outlines include introduction, main body, and conclusion and are limited to 2 pages.

White Paper
Students selected to receive STARR awards are required to write an original white paper describing the findings of the research review—overview, summary, and evaluation or critique of the current knowledge base of the selected topic, how it aligns with one or more of NASA Mission Directorate's top priorities, and/or how it speaks to the challenges facing the execution of current NASA missions. Students must include insight into the contributions of the research being conducted and demonstrate interdisciplinary applications of the research and how it might potentially extend to other areas of science and/or engineering relating to NASA's top priorities and areas of emphasis.

Students will not be conducting hands-on or original research and will not need access to onsite resources. Faculty advisors are encouraged to review the paper and offer guidance and edits, but white papers must ultimately be the original work of the student; plagiarism results in loss of award.

Community College Students
- White paper must be 6-8 pages, excluding title page, references, and appendices

4-Year Institution Students
- White paper must be 8-10 pages, excluding title page, references, and appendices

Presentation
In addition to the white paper, STARR recipients attending 4-year institutions are required to present a poster and PowerPoint presentation at the OSGC Spring Symposium. This requirement is for 4-year institution students only.

Contact Information
The student agrees to notify OSGC of any changes in mailing address, email, and telephone number for contact purposes.

Information/Media Release
The student grants permission to release and/or publish requested recipient information to NASA or other appropriate parties. Students submit a signed Media Release Form, granting OSGC permission to release information and utilize any submitted photos for publications and/or social media.

FOR MORE INFORMATION

Direct questions to Catherine Lanier, OSGC Associate Director, via email at catherine.lanier@oregonstate.edu or by phone at 541.829.9065.

Visit the Oregon Space Grant Consortium website: http://spacegrant.oregonstate.edu.
STARR Award Program details: https://spacegrant.oregonstate.edu/scholarships-and-undergraduate-fellowships

APPENDIX A: AGENCY INFORMATION AND STRATEGIC FRAMEWORK

NASA's current topics and relevant missions are listed below. Students should use these priorities to guide them in the selection of a STARR research review topic.

Humans in Space
International Space Station (ISS) - Commercial Crew Program (CCP) - NASA Astronauts - Low Earth Orbit (LEO) Economy

Moon to Mars
Commercial Lunar Payload Series (CLPS) Initiative - Lunar Gateway - Artemis Mission - Space Launch System (SLS)

Earth
Air – Climate - Hazards - Water, Oceans, and Ice - Land

Space Tech
Space Travel - Living in Space - Manufacturing, Materials, and 3-D Printing - Robotics - Science Instruments - High-Tech Computing

Flight
Green Aviation - Future Aircraft - Supersonic Flight - Reducing Flight Delays - Unmanned Aircraft

Solar System and Beyond
Planets, Moons, and Dwarf Planets - The Search for Life and Exoplanets - The Sun - Stars and Galaxies - Black Holes - Dark Energy and Dark Matter

Current High-Profile NASA Missions

- Artemis Program
- Commercial Crew Program
- Curiosity Mars Rover
- Hubble Space Telescope
- InSight Mars Lander
- International Space Station
- James Webb Space Telescope
- Juno: Mission of Jupiter
- Lunar Reconnaissance Orbiter
- Mars Perseverance Rover
- New Horizons: Pluto and Beyond
- OSIRIS-Rex Asteroid Mission
- Parker Solar Probe

NASA Vision
To discover and expand knowledge for the benefit of humanity

NASA Mission
Lead an innovative and sustainable program of exploration with commercial and international partners to enable human expansion across the solar system and bring new knowledge and opportunities back to Earth. Support growth of the Nation's economy in space and aeronautics, increase understanding of the universe and our place in it, work with industry to improve America's aerospace technologies, and advance American leadership.

Strategic themes that make up the foundation of the 2018 Strategic Plan and NASA's goals

- **DISCOVER** - Expand human knowledge through new scientific discoveries
- **EXPLORE** - Extend human presence deeper into space and to the Moon for sustainable long-term exploration and utilization
- **DEVELOP** - Address national challenges and catalyze economic growth
- **ENABLE** – Optimize capabilities and operations

NASA 2018 Strategic Plan

https://www.nasa.gov/sites/default/files/atoms/files/nasa_2018_strategic_plan.pdf

NASA's vision and mission draw support from the organizational structure of the Mission Directorates, each with a specific responsibility.

NASA's Mission Directorates

- Aeronautics Research Mission Directorate (ARMD): transforms aviation with research to dramatically reduce the environmental impact of flight, and improves aircraft and operations efficiency while maintaining safety in increasingly crowded skies. ARMD also generates innovative aviation concepts, tools, and technologies for development and maturation by the aviation community. https://www.nasa.gov/aeroresearch

- Exploration Systems Development Mission Directorate (ESDMD): defines and manages systems development for programs critical to the NASA's Artemis program and planning for NASA's Moon to Mars exploration approach in an integrated manner. ESDMD manages the human exploration system development for lunar orbital, lunar surface, and Mars exploration. ESDMD leads the human aspects of the Artemis activities as well as the integration of science into the human system elements. ESDMD is responsible for development of the lunar and Mars architectures. Programs in the mission directorate include Orion, Space Launch System, Exploration Ground Systems, Gateway, Human Landing System, and Extravehicular Activity (xEVA) and Human Surface Mobility.

- Science Mission Directorate (SMD): expands the frontiers of Earth science, heliophysics, planetary science, and astrophysics. Using robotic observatories, explorer craft, ground-based instruments, and a peer-reviewed portfolio of sponsored research, SMD seeks knowledge about our solar system, the farthest reaches of space and time, and our changing Earth. http://science.nasa.gov/

- Space Operations Mission Directorate (SOMD): manages NASA's current and future space operations in and beyond low-Earth orbit (LEO), including commercial launch services to the International Space Station. SOMD operates and maintains exploration systems, develops and operates space transportation systems, and performs broad scientific research on orbit. In addition, SOMD is responsible for managing the space transportation services for NASA and NASA-sponsored payloads that require orbital launch, and the agency's space communications and navigation services supporting all NASA's space systems currently in orbit.

- Space Technology Mission Directorate (STMD): pursues transformational technologies that have high potential for offsetting future mission risk, reducing cost, and advancing existing capabilities. STMD uses merit-based competition to conduct research and technology development, demonstration, and infusion of these technologies into NASA's missions and American industry. This mission directorate is being refocused as a new Exploration Research & Technology (ER&T) organization to support exploration as a primary customer. http://www.nasa.gov/directorates/spacetech/home/index.html.

- The Mission Support Directorate (MSD): enables the Agency's missions by managing institutional services and capabilities. MSD is actively reducing institutional risk to NASA's current and future missions by improving processes, stimulating efficiency, and providing consistency and uniformity across institutional standards and practices. https://www.nasa.gov/msd.