

**California Space Grant Consortium
Aerospace Workforce Development Program**

Announcement Date: February 28, 2022

Proposal Due Date: March 21, 2022

Performance Period: April 4, 2022– September 30, 2022

The California Space Grant Consortium (CaSGC) will provide “seed” support for the spring and summer semester of 2022 to CaSGC affiliate institutions (non UC campuses) for a number of higher education aerospace workforce development educational, research, and hands-on projects that will positively impact the aerospace workforce pipeline. For 2022, this funding will focus on the following five different efforts,

(1) Humans in Space. Future human exploration of space will include not only trained astronauts but also non-space experts such as scientists, engineers, artists, and both the young and elderly. This broad audience will create both opportunities and challenges. Project examples include (a) maintaining astronaut health and well-being, (b) long term farming and food creation in space, (c) developing new structures and habitats, and (d) preparations for astronauts to depart on missions.

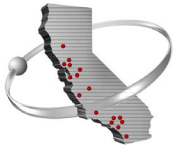


(2) Artemis and Mars Exploration. NASA is committed to returning to the moon in four short years for long-term exploration of the south pole that includes constructing habitats and searching for water and minerals. A few examples include; (a) developing autonomous robots to map the lunar based upon landmarks or serving as mules to follow and assist the astronaut teams, (b) developing autonomous lunar landers to fly into craters, collect soil and water samples, and return to base camp, (c) developing autonomous robots to explore Martian landscape, and mine minerals, (d) constructing habitats using deployable space structures and/or lunar materials, (e) developing small student satellites to map the dark-side of the lunar surface.



(3) CubeSats. A CubeSat is a small satellite that is designed based upon a standard size 1U (one unit) that has a volume of 10 x 10 x 10 cm and a maximum weight of 1.33 kg (2.9 lbs.). Larger CubeSats range from 6U to 12U. Historically the vehicle specifications were first developed in California in 1998 at Stanford University and at California Polytechnic University, San Luis Obispo. Many California universities have a proven history of developing, building, and deploying CubeSats from launch vehicles, satellites, and the International Space Station. Past and current research topics include (a) earth remote sensing including imaging, detection of earthquake, extreme weather detection, and pollution, (b) communication standards, (c) space tethers, solar sails, and formation flying, and (d) biology and life sciences. Funding will be provided for the initiation of new CubeSat programs or for the continuation of existing CubeSat programs.





(4) Next Generation Aircraft and Rotorcraft. Recent advances in aerodynamics, controls, electric propulsion, and structures has opened the door for a broad selection of new aircraft from high performance long-range surveillance aircraft to electric commuter aircraft to fuel-efficient quiet supersonic civil aviation transports to autonomous urban taxis. Funding will be provided both computational and experimental based projects that advance the development of both piloted and autonomous next generation aircraft and rotorcraft.



(5) Earth Science and Climate Change. NASA’s Earth Science Division focuses on understanding our planet’s interconnected systems, from a global scale down to minute processes. Examples include atmospheric motion and composition; land use and vegetation; ocean currents, temperatures, and upper-ocean life; and ice on land and sea. New technology is needed to map and understand the connections between our planet’s vital processes and the climate effects of ongoing natural and human-caused changes. This new technology includes the development of innovative sensors, data acquisition software, and new vehicles including CubeSats, near-space balloons, super-pressure balloons, rotary wing drones, fixed-wing UAVs, autonomous underwater vehicles (AUV), and ocean surface drones. Funding will be provided for the initiation or continuation of (1) new sensor development programs, (2) new vehicle development programs, and (3) research programs focused on collecting and analyzing earth science data.

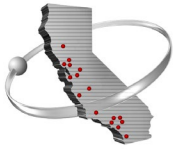


Program Goal: To train students for aerospace and high technology careers to positively impact the aerospace workforce pipeline.

Program Overview: Projects will be funded up to \$15,000. Proposals that include a community college partner will be funded up to \$18,000. Proposals from diverse faculty teams, from either one campus, or multiple CaSGC campuses are encouraged. For team proposals with multiple investigators, each investigator is required to submit a separate proposal and budget that explains their role within the larger project. CaSGC’s goal will be to fully fund all team members separately, but CaSGC reserves the right to fund a portion of the team. Funding is available for up to 8 awards. This opportunity is open to the 16 (non-UC) affiliates only. All funds must be spent by 9/30/2022. As with all Space Grant Funds, no indirect costs are allowed, and funds may only support students/faculty/staff that are U.S. citizens.

Program Objectives: To creatively leverage limited Space Grant funds by “seeding” projects that:

- Provide hands-on student-mentor Science and Engineering experiences preparing students for the aerospace workforce;
- Support graduate student research for students conducting research in the subject area of this project;
- Demonstrate ties to NASA Centers or Mission Directorates and alignment with NASA Vision and Mission as it relates to the national goal of an increased Science, Technology, Engineering, and Math (STEM) talent pool;
- Promote interdisciplinary (science, engineering, and business) teaming;
- Seek partnerships with community colleges, particularly Minority Serving Institutions (MSIs);



- Actively pursue the participation of science and engineering students from underrepresented ethnic¹ or gender groups on each participating campus. Diversity efforts can include reaching out to student and STEM diversity organizations on your campuses to recruit underrepresented students. Those organizations include, but are not limited to:
 - Society of Women Engineers (SWE)
 - National Society of Black Engineers (NSBE)
 - Society of Hispanic Professional Engineers (SHPE)
 - Association for Women in Science (AWIS)
 - American Indian Science and Engineering Society (AISES)
 - Mathematics Engineering Science Achievement (MESA)
 - California Alliance for Minority Participation in Science, Engineering and Mathematics (CAMP);
- Obtain matching resources from industry, state agencies, educational institutions, and community workforce organizations;
- Provide a means for efficient and effective dissemination of results (through websites, social media, newsletters, journal articles, and presentations, for example); and
- Take responsibility for documenting the quantitative outcomes & impacts of your project and providing timely responses to CaSGC performance data requests for our annual NASA report.

Project Reporting:

Principal Investigators for awarded proposals will be expected to:

- Have each student involved in the project fill out the CaSGC awardee form at: [https://www.surveymonkey.com/r/2022STEMPipeline WorkforceDev Awardee](https://www.surveymonkey.com/r/2022STEMPipelineWorkforceDevAwardee)

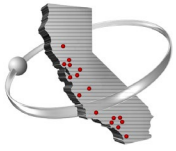
We recommend making this a condition before providing funding to the students. The CaSGC office will work with you to inform you which students from your campus have filled out the form.
- Fill out the relevant project report form as needed for NASA. CaSGC will send online links to report forms directly.

We expect to request this data in fall, 2022.
- Send a financial report at the end of the project showing all expenses made against the award; total expenses should equal the award amount. Can be in the form of a spreadsheet or pdf.

Proposal Submission:

- This opportunity does not require official submission through a university contracts & grants office. The CaSGC Aerospace Workforce Development Program will be handled entirely within the CaSGC organizational structure. However, if your university requires submission through a contracts & grants office or similar entity, please adhere to those requirements.
- This CaSGC Aerospace Workforce Development Program is open to any faculty at current California Space Grant (non-UC) affiliate institutions. We encourage junior faculty to apply. For a list of affiliate institutions and affiliate Campus Directors, please visit the following link: http://casgc.ucsd.edu?page_id=27.

¹ Underrepresented minorities in STEM include Blacks, Hispanics, Native Americans, and Pacific Islanders.



Funding Requirements:

- As with all Space Grant Funds, no indirect costs are allowed, and funds may only support students/faculty/staff that are U.S. citizens.
- To maximize the number of students funded on your Workforce Development project while encouraging graduate student research, student awards from this grant may be no more than \$3,000 per student for undergraduate students and \$6,000 per student for graduate students.
- A detailed budget justification must be included in your proposal to receive funding under this program.
- No equipment, food, or clothing may be purchased with Space Grant funds under this solicitation; Supplies up to \$4000 can be purchased.
- Funds for this opportunity must be spent by 9/30/2022.

Proposal Elements:

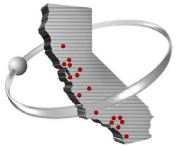
- 1) Cover Page: Include proposal title, principal investigator name and contact information (one page).
- 2) Proposal Main Body (3 pages or less)—Includes:
 - a) Abstract (as submitted online)
 - b) Background
 - c) Proposal goals and any milestones
 - d) Ties (if any) to NASA Centers or Mission Directorates
 - e) Implementation plan, including interdisciplinary teaming
 - f) Plans to encourage diversity & inclusion
 - g) Description of matching resources
 - h) Evaluation plan
 - i) Plans for dissemination of results & documenting quantitative outcomes.

This section must be brief, three pages or less. Projects seeded by these CaSGC funds must meet the rigorous standards of evaluation and reporting associated with the National Space Grant program.

- 3) Detailed Budget Breakdown & Justification: Space Grant funds may only account for a part of the total budget of the project and are primarily for funding and managing students. Total budget may include a portion of PI's salary to show matching funds applied to the project. Projects will only be funded up to \$15,000. Proposals that include a community college partner will be funded up to \$18,000. Budget must delineate funds requested from CaSGC and funds that will be applied as matching. There should be a clear correlation with the Proposal Main Body. This section is one page.
- 4) If applicable, a summary of the outcomes of your past California Space Grant workforce projects. Please include number of students involved, diversity statistics, partners, publications, outreach, and evidence of this project developing a workforce (i.e. past awardees working in a STEM field or pursuing an advanced degree). This section is one page.

Proposal Evaluation Criteria:

- Originality within one of the five research focus areas.
- Detailed description of proposed project that includes student involvement, campus facilities, and project timeline
- Project Outcomes, Documentation, and Dissemination of Results
- Ties to NASA (NASA Personnel, Facilities and/or Resources)
- Interdisciplinary Teaming



- Diversity (Individuals or Organizations)
- Matching Resources
- Budget Justification
- Past Project Performance, where appropriate if the proposed project is a continuation of a past project.

Proposal Submission (on or before March 21, 2022):

1) Email your proposal in pdf format to

Professor John Kosmatka
Director – CaSGC
jkosmatka@ucsd.edu

Amy Arkwright
Program Manager – CaSGC
aarkwright@ucsd.edu

Note: Each faculty member is limited to at most one proposal submission, either STEM Pipeline or Workforce Development.