

California Space Grant Consortium
Competitive Opportunity for Community College Partnerships
Announcement Date: December 6, 2016
Proposal Due Date: January 6, 2017
Performance Period: February 1, 2017¹ – August 31, 2017²

The California Space Grant Consortium (CaSGC) with the sponsorship of National Aeronautics and Space Administration (NASA) Office of Education (OE) is accepting proposals for a Space Grant opportunity for California Community College students and faculty. Each funded proposal is expected to increase the understanding, assessment, development, and utilization of space and aeronautics resources.

Program Goal

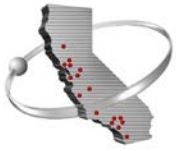
To enhance the STEM preparation at ten (10) California Community Colleges resulting in increased graduation rates and greater campus enrollments in STEM disciplines and to improve a bridge opportunity for a minimum of 100 students (minimum of 10 students per campus) to a STEM major at a four-year university.

Solicitation Background

Many of California's best and brightest high school graduates cannot afford or are not prepared to enter either the University of California or the California State University System. Instead they begin their post-secondary school education in the California Community College System, which include 113 community colleges and over 2.1 million enrolled students. This two-year college system provides workforce training, certificate and degree programs, and critical preparation to four-year universities. Many of these community colleges strive to develop better bridge programs for their students interested in pursuing a STEM (Science, Technology, Engineering, and Math) degree program at a four-year university. Recent NSF-sponsored studies have revealed that the percentage of females and underrepresented minorities are greater at community colleges than at four-year universities and that these numbers have increased by more than 65% in the past 15 years. Moreover the number of women and underrepresented minorities who have graduated with STEM degrees from four-year universities while starting at a community college has also significantly increased, where the factors include: greater academic and social support, greater diversity, welcoming class atmosphere, and supportive faculty mentors that students build skills and confidence.

¹ Award letters to be released in January 2017.

² Official end date of the three-year NASA Grant funding this program is July 5, 2018: Grant #NNX15AP87H.



Understanding that community colleges and technical schools play a vital role increasing numbers of students receiving a quality education to make the nation more competitive in the global arena, President Barack Obama issued a challenge through the White House Summit on Community Colleges to increase the number of community college graduates by five (5) million by the year 2020.

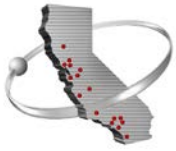
In addition to supporting the White House Summit on Community Colleges goal of five (5) million new community college graduates by 2020, the intent of this solicitation is that the awardee will directly support the following Co-STEM priority areas:

- A. “Enhance STEM Experience of Undergraduate Students: Graduate one million students with degrees in STEM fields over the next 10 years” and, understanding that students from various backgrounds may comprise high enrollment in community colleges and technical schools;
- B. “Better Serve Groups Historically Underrepresented in STEM Fields: Increase the number of students from groups that have been underrepresented in STEM fields that graduate with STEM degrees in the next 10 years and improve women’s participation in areas of STEM where they are significantly underrepresented.”

Description of Opportunity

This solicitation seeks to **a)** attract/retain more California Community College students into STEM-based academic programs; **b)** increase educators’ ability to deliver NASA STEM content; **c)** create or enhance strategic relationships between the awarded institution and California NASA Centers; **d)** build capability of the awarded institution to incorporate NASA STEM content into its curricula and course offerings; **e)** increase the number of students that complete their two (2) year Associate’s degree from a California Community College and obtain employment in a STEM career; and **f)** increase the number of Community College STEM graduates and transfers to either the University of California or the California State University system.

To provide students engaged by this opportunity chances for long-term retention and success, this solicitation also encourages the awarded Community College to expand their STEM education capabilities. These include curricular and course development where possible and/or participating in other STEM education initiatives through partnerships; or, piloting original initiatives that have potential for sustainability beyond the performance period.



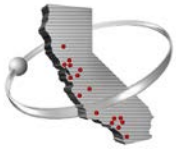
At each community college, students will work in teams of three or more on STEM based projects that enhance the students' STEM preparation, leading to increased STEM retention and an improved bridge to four-year universities. These projects will be centered around the use of low-cost programmable microcomputers (Arduino based³) to collect, store, and transmit in-field sensor and GPS locator data, as well as drive a controller. Possible example projects include onboard experiments involving near-space ballooning, launch vehicles, small satellites, remote controlled aircraft, and ground robotics. Possible non-aerospace examples include wearable sensor vests or helmets for sports and health monitoring, or earth science experiments. The specific project will be selected by the students and the faculty mentor. These students will be taught micro-computer construction (Arduinos assembly) and programming skills as well as the needed STEM project knowledge by their community college faculty mentor. For those with little or no experience with Arduinos, self-paced web courses are available to teach the faculty mentors all of the hardware assembly and programming skills.

For this opportunity, the CaSGC will provide to each selected community college, the following:

1. A maximum of **\$500 for the purchase of an Arduino education kit** (for example, SparkFun Tinker Kit⁴) for each student member. When CaSGC receives the list of student names who have been selected by the faculty mentor, CaSGC will then order the appropriate number of student Arduino education kits and have them directly delivered to the campus for student distribution. Only students who are U.S. citizens will be able to receive these kits. Students who are non-U.S. citizens may participate in the program, but funding for individual Arduino kits will have to come from an outside source.
2. A maximum of **\$500 for the purchase of team project sensors, hardware, and printing of NASA presentation poster.** These funds can also be used for a faculty mentor Arduino education kit and/or needed campus electrical assembly equipment (soldering irons, tools, multimeters, etc.). These funds will be released directly to the campus once the faculty mentor submits to CaSGC the following student project information:
 - a. Titles of team projects
 - b. Number and names of student team members
 - c. Brief description of the student team projects
 - d. Bill of Materials (BOM) itemizing the sensors and additional hardware requested
3. A maximum of **\$6,000 for student scholarship awards.** It is recommended that the \$600 awards be given to 10 students. To process the scholarship, when CaSGC receives the list of student names who have been selected by the faculty mentor, the students are required to

³ Overview: [<https://www.arduino.cc/>]. Typical Hardware Purchase Site: [<https://www.sparkfun.com/>].

⁴ Sparkfun Tinker Kit: [<https://www.sparkfun.com/products/13930>] \$49.95 each as of December 2016.

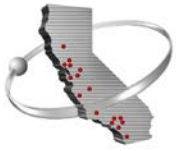


fill out Form W-9, Request for Taxpayer Identification Number and Certification, (<https://www.irs.gov/pub/irs-pdf/fw9.pdf>) as well as their CaSGC Student Awardee Form as detailed in the Project Reporting section. Only students who are U.S. citizens will be able to receive these scholarship awards. Students who are non-U.S. citizens may participate in the program, but funding for scholarships will have to come from an outside source. The scholarships will be awarded at the culmination of the program. If the student drops out of the program before completion, the student will not receive the scholarship. If a student is added to the roster up to halfway through the program, that student will need to fill a W-9 and the CaSGC Student Awardee Form.

4. A **\$500 faculty mentor award**. This is an appreciation award from CaSGC given directly to the faculty mentors for their support and is not included in the proposal budget. The faculty mentors can spend the money as they see fit. If there are multiple faculty mentors at any one Community College, the stipend can be divided amongst them at their discretion.
5. **One-day field trip for Community College students and their faculty mentors to their closest California NASA Research Center** (NASA Ames Research Center near Mountain View, CA, NASA Armstrong Flight Research Center near Palmdale, CA, or NASA Jet Propulsion Laboratory in Pasadena, CA) during the summer of 2017. At the NASA center, the students and faculty mentors will receive a unique walking tour highlighting the current Center research challenges followed by a research seminar, and finally meetings with NASA scientists to discuss their research and NASA education staff to get inspirational career counselling advice and summer internship opportunities. The students will also participate in a poster symposium where they will showcase their STEM projects to NASA researchers and scientists. For transportation,
 - a. CaSGC request that the Community College provide cost-sharing to this activity by providing transportation to the NASA Center in the form of a shuttle, van, or bus.
 - b. If the Community College is unable to do so, CaSGC then request that carpooling of personal vehicles be used, and CaSGC will reimburse for the mileage.
 - c. If the Community College is located 100 or more miles from the nearest CA NASA Center, CaSGC can reimburse up to \$500-\$750 for a rental vehicle selected by the Community College.
 - d. Each Community College may have different extenuating circumstances, and CaSGC will try to provide any assistance for their transportation needs.
6. **Bimonthly NASA webinars** (on-line live seminars) on research topics that highlight the unique work of each national NASA Center

Eligibility

California Community Colleges who can demonstrate the following:



1. Existing STEM degree programs.
2. Student Diversity. Community Colleges participating in Mathematics, Engineering, Science Achievement (MESA) programs are highly encouraged to apply.
3. In-house technical capabilities and infrastructures necessary to support the projects. This includes access to (1) a computer laboratory or personal computers for programming the Arduinos and (2) a dedicated workspace with tables and electrical equipment (multimeters, tools, soldering iron) for kit assembling and team projects. It is encouraged that the campus provide training and access to 3-D printers and machine shop equipment for advanced more complicated student projects.
4. Enthusiastic STEM based faculty mentors who either have existing knowledge of construction and programming of Arduino-based computer projects or are interested in taking provided on-line training courses before mentoring the student teams
5. Support from department chair and administration. The Community College is requested to provide a signed Memorandum of Understanding (MOU) form between itself and The Regents of the University of California, University of California, San Diego (UCSD). See Appendix.
6. Open to all California Community students who are enrolled in a California Community College with a minimum of 12 credit units for the semester. To receive student scholarships, students must be U.S. citizens.

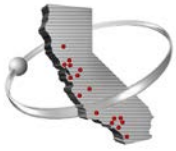
Proposal Content and Format

Document Format – No less than single-spaced, standard size (8 ½” x 11”) paper, in no smaller than 12-point font with a minimum of 1” margins on all sides for each page. Illustrations, tables, charts, exhibits, etc., are restricted to no smaller than 10-point font. All pages must be numbered sequentially.

Save the proposal as a pdf with the following naming convention:

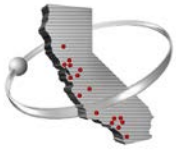
[Your Community College Name]_2017_CaSGC_CC_Opp.pdf

1. Cover Pages (Page Limit: as needed)
Principal Investigator (PI) information- address, phone, email, submitting Community College information, certifications, and appropriate signatures.
2. Community College Profile (Page Limit: 1)



Introductory information about the college, including mission statement, proposed goals, and objectives. Include acceptance, transfer, and graduation rates for STEM students in the past 2 years.

3. Body of Proposal (Page Limit: 5)
 - a. Describe existing STEM degree programs offered at the Community College. Describe any campus programs to stimulate student involvement in STEM disciplines.
 - b. Recruitment. Describe how the students will be recruited for this program. Ideally these students would represent an expanding STEM student population as opposed to supporting already committed STEM students.
 - c. Diversity and inclusion. Describe the diversity of the student body as well as plan to encourage diversity and inclusion in student recruitment for projects.
 - d. Technical capabilities. Describe in-house technical capabilities and infrastructures i.e. laboratories or equipment that will be available to the students and their projects
 - e. Experience. Describe faculty experience in programming and Arduinos.
 - f. Implementation Plan, including interdisciplinary teaming
 - g. Evaluation Plan
 - h. Plans for dissemination of results & documenting quantitative outcomes.
 - i. Description of Matching Resources. In order to encourage the involvement of additional students above the minimum of 10 students per campus or advanced team projects, please describe any resources that your campus will be providing.
 - j. Past participation of California Space Grant sponsored programs and activities
4. Budget (1 page limit). A budget page is required that shows a cost breakdown for the proposed student scholarships (maximum \$6,000), proposed student Arduino education kits (maximum \$500), and proposed student project expenses (maximum \$500). Projects will only be funded up to \$7,000. Budget must delineate funds requested from CaSGC and campus funds or donation that will be applied as matching. This opportunity does not require official submission through a university Contracts & Grants Office. This 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. No campus overhead can be charged. It is recommended to use the editable 2017 CaSGC CC Sample Budget Worksheet Excel file.
5. Appendix (Page Limit: None)
 - a. Résumé or curriculum vitae (2 page limit per mentor): A résumé or curriculum vitae (CV) must be included in the proposal for the lead PI, or faculty mentor, of this project.



b. MOU

Project Reporting:

Principal Investigators (PIs) for awarded proposals will be expected to:

- Have each student fill out the CaSGC Student Awardee Form at:

<https://www.surveymonkey.com/r/2017-CC-Student-Awardee>

The CaSGC office will work with you to inform you which students from your campus have filled out the form.

- 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 Competitive Opportunity for Community College Partnerships Program will be handled entirely within the CaSGC organizational structure. However, if your college requires submission through a Contracts & Grants office or similar entity, please adhere to those requirements.
- CaSGC will only award one application per Community College. If a campus submits more than one proposal, then CaSGC will either select the best one or ask the campus to merge their proposals.

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.
- Funds for this opportunity should be spent by the end date of our NASA grant: 8/31/2017.

Electronic Submission

Please submit proposals by January 6, 2017, via email to both:

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