

## **Ohio Space Grant Consortium**

Lead Institution: **Ohio Aerospace Institute**

Director: **Jed E. Marquart, Ph.D., P.E.**

Telephone Number: **(419) 302-8998**

Consortium URL: <http://www.osgc.org/>

Grant Number: **NNX15AL50H**

Lines of Business (LOBs): NASA Internships, Fellowships, and Scholarships; STEM Engagement; Institutional Engagement; Educator Professional Development

### **A. PROGRAM DESCRIPTION:**

The National Space Grant College and Fellowship Program consists of 52 state-based, university-led Space Grant Consortia in each of the 50 states plus the District of Columbia and the Commonwealth of Puerto Rico. Annually, each consortium receives funds to develop and implement student fellowships and scholarships programs; interdisciplinary space-related research infrastructure, education, and public service programs; and cooperative initiatives with industry, research laboratories, and state, local, and other governments. Space Grant operates at the intersection of NASA's interest as implemented by alignment with the Mission Directorates and the state's interests. Although it is primarily a higher education program, Space Grant programs encompass the entire length of the education pipeline, including elementary/secondary and informal education. The Ohio Space Grant Consortium is a Designated Consortium funded at a level of \$760,000 for fiscal year 2018.

### **B. PROGRAM GOALS:**

OSGC has 5 goals to accomplish their mission and in support of NASA's and the National Space Grant (SG) Program's goals and objectives for FY2015-2020. The Strategic Plan, Vision, Mission, Goals and SMART Objectives were redefined, approved and implemented by the OSGC Executive Committee in February, 2015; revised in April, 2016 (with submission of the Augmentation Proposal) and the Diversity percentage was updated in August, 2018. We are happy to report that in FY2018, all goals were exceeded. The specific goals of the program, followed by the SMART objectives are as follows:

#### **Goal 1 – Develop a diverse STEM workforce in Ohio and the Nation.**

- NIFS (NASA Internships, Fellowships, and Scholarships)
  - Competitive scholarship and fellowship program at Ohio universities (includes research project + faculty mentors)
  - Internships [with NASA Centers (focus on Glenn Research Center/OAD)] and industry
- 1.1 At least 40 percent of annual student awards [i.e., NIFS (NASA Internships, Fellowships, and Scholarships)] will be made to females to meet NASA's target goal.
- 1.2 Diversity of annual student awards (i.e., NIFS) will meet or exceed 16.50 percent (OSGC's goal as outlined in Table 265, National Center for Education Statistics.)<sup>1</sup>
- 1.3 At least 90 percent of supported students will graduate with a STEM degree from an Ohio university each year.

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<sup>1</sup>Percentage was updated with most recent Table 265 (August, 2018).

- 1.4 Annually longitudinally track all students receiving a “Significant” award that identifies the next step. All scholarship, fellowship, and internship awards are classified as “Significant” awards. A minimum of 80 percent of undergraduate students will enter either graduate school in a STEM discipline or enter the STEM workforce. A minimum of 80 percent of Education scholars will enter the K-12 STEM teaching field. A minimum of 80 percent of Fellowship recipients will enter the STEM workforce or academia. A minimum of 95 percent of students receiving internships will indicate that they are likely to enter the STEM workforce or graduate school as a result of the experience (students and mentors complete evaluation form).

**Goal 2 – Engage students and faculty in hands-on STEM research activities.**

- Student-Innovative-Creative-Hands-on Project (SICHOP) grants
  - Faculty Research/Curriculum grants (aligned to NASA research priorities)
- 2.1 Support a variety of student and faculty hands-on STEM research activities annually (i.e., SICHOP/Research/Curriculum grants, internships (NASA Centers and industry).
  - 2.2 Each year, 80 percent of the students receiving a SICHOP grant will report they are more likely to pursue a STEM career or an advanced STEM degree.
  - 2.3 Faculty who receive funding will report increased research capacity and competency in their field as a result of the award.

**Goal 3 – Support collaborative STEM research for Ohio faculty and students.**

- Student-Innovative-Creative-Hands-on Project (SICHOP) grants
  - Faculty Research grants (aligned to NASA research priorities)
  - Summer research/internship opportunities (2 HBCUs)
- 3.1 Support at least four faculty/student research grants annually.
  - 3.2 Faculty who receive funding will report increased research capacity and competency in their field as a result of the award.
  - 3.3 Each year, 80 percent of the students receiving a SICHOP grant will report they are more likely to pursue a STEM career or an advanced STEM degree.
  - 3.4 Support at least two students (from an Ohio HBCU) to perform research during the summer at an Ohio-research university.

**Goal 4 – Increase STEM awareness for Ohio K-12 teachers and students.**

- Exposure to NASA Education materials
  - Teacher Training Programs and Workshops
  - OSGC Mini-grants
- 4.1 At least 90 percent of supported K-12 teachers will report increased knowledge in NASA and STEM content as a result of professional development activity.
  - 4.2 At least 90 percent of K-12 teachers receiving a mini-grant will report increased student knowledge in NASA and STEM content as a result of the activity.

**Goal 5 – Encourage informal educational activities promoting STEM.**

- OSGC Informal Education grants
- 5.1 Fund a minimum of four programs annually to increase and engage public awareness in informal STEM activities and NASA opportunities.
  - 5.2 Sponsor STEM programs on Ohio university campuses targeted to women and underrepresented minorities (UM) (minimum of 1 program per year).

**C. PROGRAM/PROJECT BENEFITS TO PROGRAM AREAS:**

1) Ryan A. Reffner, Community College Scholarship recipient, will graduate in December, 2019, A.S., Chemistry, Lorain County Community College, and will transfer to Baldwin Wallace University. *“The NASA/OSGC scholarship has provided me with invaluable knowledge of the*

*opportunities in the sciences outside of academia. It has also served as a resume builder and crucial stepping stone to further my education through independent studies.”* **Aligns to NIFS, Higher Education, and Research Infrastructure.**

2) Kayla M. Pariser, STEM Scholarship recipient, B.S., May, 2018, Mechanical Engineering, University of Dayton, and will attend graduate school. *“The NASA/Ohio Space Grant Consortium scholarship provided me with the opportunity to practice presenting my research in both an oral/podium presentation and in a manuscript. As someone who is continuing my education in graduate school this experience as an undergraduate was invaluable. It was also opportunities like this that helped me get into the programs I applied for and the reason I received an NSF Graduate Research Fellowship.”* **Aligns to NIFS, Higher Education, and Research Infrastructure.**

3) Meghan G. Mulligan, Education Scholarship recipient, will graduate in May, 2019, B.S., Education, and plans to teach Biology (Grades 7-12). *“The NASA/Ohio Space Grant Consortium scholarship award provided a great opportunity for me to collaborate with other future educators and brought attention to NASA educational resources I have available for my future classroom. The scholarship award and the NASA workshop I attended reminded me how passionate I am about education. One day, I hope to join NASA’s team for education, because their Mission really speaks to me, and this program helps future teachers feel prepared for the field.”* **Aligns to NIFS, Higher Education, and Precollege.**

#### **D. PROGRAM ACCOMPLISHMENTS:**

•NASA Internships, Fellowships, and Scholarships (NIFS): OSGC funded 72 “Significant” NIFS student awards in FY18. Summer, 2019, internships are currently being finalized. Of the 72 awards, 13 were made to Underrepresented Minority (UM) students (18.05%) which exceeded the 16.50% OSGC target, and 38 awards to females (52.77%) which exceeded the 40% target. Note that these numbers will change with additional NASA Center/industry/university internships yet to be awarded.

OSGC’s Scholarship (Junior/Senior/Community College) and Fellowship (Master’s 1 and Master’s 2) programs provide financial support to students pursuing STEM degrees at an Ohio Affiliate university. Pre-service teacher scholarships are awarded to students pursuing licensure in Science/Mathematics in the College of Education. Two (2) Special scholarships are also awarded to honor two former Directors (Kenneth J. De Witt and Paul C. K. Lam) who passed away. All awards are competitive and offered to U.S.’ citizens; Underrepresented Minority students, women, and persons with disabilities are especially encouraged to apply. A key feature of the program is an emphasis on exposure to research relevant to NASA under the direction of a faculty mentor. Awardees present their research or educational lesson plan (as a poster or oral presentation) at the annual Student Research Symposium held in March or April at the Ohio Aerospace Institute (OAI), the Lead Institution. Students also write a report on said research which is published in the *Student Research Symposium Proceedings*. All supported students are tracked and individual awards and profiles are reported in the NASA Office of Education Performance Measurement (OEPM) Reporting System.

•**Scholarships** – Awarded 68 undergraduate scholarships [47 Junior and Senior; 11 Community College; 8 Pre-Service Teacher, and 2 Special Scholarships – 35 females (51.47%; 14 UM (20.59%)]. Junior, Senior, and Community College students conduct research under the supervision of a faculty mentor. Pre-Service teachers create a future lesson plan using NASA Education materials under the supervision of a faculty mentor and also attend a mandatory Fall Education Workshop conducted by Glenn Office of Education personnel.

•**Fellowships** – Awarded 6 Master’s fellowships (2 females) to students pursuing an advanced STEM field of graduate study and also conduct research relevant to NASA. Master’s fellowships are for one year and may be renewed for an additional 6 months.

•**Internships** – Thus far, 4 internships have been awarded in Spring, 2019 [2 @ Glenn and OAI (1 female); 1 @ Ames (female); and 1 @ IV&V Facility]. A new collaboration this year was created with the West Virginia Space Grant Consortium (Majid Jaridi and Candy Cordwell) to fund a student at the IV&V Facility (first time OSGC supported an intern at this facility). Plans are in process to finalize additional NASA, university, and industry internships.

**Exceeded OSGC Goal 1 (SMART Obj. 1.1, 1.2, 1.3, 1.4); Goal 2 (SMART Obj. 2.1, 2.2). OSGC is investing in the Nation’s diverse STEM workforce through support of NIFS with student research, real-world experiences, and engagement of students in NASA’s missions. OSGC’s NIFS support the National Space Grant (SG) Program goal to contribute to the nation’s science enterprise, NASA current areas of emphasis and aligns with: NASA’s Strategic Obj. 2.4; NIFS LOB; API ED-18-1; & ACRA CoSTEM Report Obj. 4, Points 3-5.**

•**Higher Education (HE) projects:**

Examples of OSGC-funded Higher Education programs include: multiple SICHOP (Student-Innovative-Creative-Hands-on Project) grants (i.e., Rocket / Robotics / UAS/Balloon Satellite teams); faculty/student research project grants; travel funds for students/faculty presenting at technical meetings. Sample funded grant titles include: Kent State University: Kent State Entry Into Space Grant Midwest High-Power Rocket Competition, NASA Robotic Mining Competition, Kent State University High-Power Rocketry Design, and Kent State University Drone Design; University of Cincinnati (UC): Programmable Flight Simulator for Teaching and Research, UC Galacticats, HULK: A Custom Heavy Lift Long Endurance Octocopter, Bearcat Ballistics, Low Earth Orbit Platform for Aerospace Research and Development (LEOPARD), Transitional VTOL: Quadplane for Vertical Takeoff and Landing; Ohio Northern University: College Robotic Football, SAE Aero Design Competition; Wilberforce University (HBCU) and Case Western Reserve University collaborated to support a student research project; Youngstown State University: Development of Novel Fiber Metal Laminates Based on Continuously Reinforced 3D Printing Composites.

Other Higher Education Campus Programs include: Model Solar Boat/Solar Splash Event at Cedarville University; Central State University (HBCU) enrichment activities for STEM majors and K-12 outreach activities by faculty and students; Kent State University Higher Education students collaborate with the local Boy Scouts to earn Space Exploration badges; The University of Akron hosts hands-on workshops to design and build airplanes, develop some “show and tell” robot, steel and concrete toys for display; Also, the Akron Robotics team assisted students with disabilities at the Summit County Developmental Disabilities Board; Wilberforce University (HBCU) supported campus club activities (i.e., IEEE, NSBE, NOBCCChE, Biology, and STEM Club; Wright State (UM female), Minority Engineering Mentorship Program; support to Women in Engineering, and National Society of Black Engineers programs.

New Curriculum Grants: Ohio Northern University, Integrating Microprocessors Across the Mechanical Engineering Curriculum; The Ohio State University, two new awards for Flight Testing Experience for Aerospace Engineering Students. Continuing Curriculum Grants: Novel Curriculum for the Electrical/Computer Engineering Program at Wilberforce University, Kent State University for Innovation in Aircraft Design, and Youngstown State University, Materials Science and Engineering.

Special projects include continued support for the Statewide Unmanned Aircraft Systems (UAS) Program. OSGC was able to expand this program with a dedicated PI which now includes 4-year universities and community colleges (new schools this year include Kent State and Case Western Reserve). The program began after receiving funding for CC-STARS! (Community College – STEM Training and Retention of Students!). Two workshops were held (one in NE Ohio, and in Dayton at Sinclair Community College).

The 27th Annual Student Research Symposium was held at OAI on April 5, 2019. Students of all rankings from Community College, Education, Junior, and Senior Scholars to Master's Fellows gathered at OAI to present the results of their year-long research projects. All presentations (posters or PowerPoints) were evaluated by University faculty, OAI Senior Researchers and Associates, NASA Glenn scientists, and industry. Various industry members and NASA Glenn Human Resources hosted a table offering career assistance. Supported student teams also brought in displays including: The University of Akron Robotic Mining team and their robot, R.O.C.K.E.E., Professor Marlin Linger (Case Western Reserve University) Unmanned Aerial Systems (UAS). After lunch, a STEM panel consisting of former scholarship and fellowship recipients and industry members (3 UM; 1 female) from NASA Glenn, Lockheed Martin, Raytheon, and Swagelok inspired this year's students and explained how to "*Launch A STEM Career.*" The panel was very well received, and plans are to continue this in the future.

Supported a group of Wilberforce University (MSI) students to attend NASA Glenn's University Day (Fall, 2018). Dr. Jennifer Williams reported "*The University Day event at NASA Glenn is a highlight for our students, and there are few experiences that can rival taking my undergraduates to visit Glenn. Being able to witness the world-class facilities firsthand, and for students to network with NASA scientists and engineers is a rare opportunity!*" Additional support is provided for Campus Projects and/or Representative Allocations which include Affiliate engagement, student/faculty travel, and STEM activities on campuses, including community/K-12 outreach programs. Each Representative is required to submit a proposal outlining activities/expenses that is approved by the Director. Support included: travel to ExComm meetings (@ The Ohio State University), Symposium, present research at outside venues, and various on-campus programs and activities (i.e., Minority Engineering STEM programs, Women in Engineering, Women in Science Days, STEM summer STEM camps, etc.)

Thus far, OSGC will support 2 undergraduate students this summer (1 @ Ohio Northern; 1 @ Ohio State) and possibly at other affiliates to perform STEM research under the guidance of their faculty mentors.

**Exceeded OSGC Goal 1 (SMART Objs. 1.1, 1.2, 1.3, 1.4) and OSGC Goal 2 (SMART Objs. 2.1, 2.2, 2.3). OSGC's HE programs are advancing the Nation's diverse STEM workforce pipeline through support of student/faculty hands-on projects, student research, real-world experiences, and engagement of students in NASA's missions. OSGC's HE programs support the National SG Program goal to contribute to the nation's science enterprise, NASA current areas of emphasis and aligns with: NASA's Strategic Obj. 2.4; STEM Engagement LOB; Institutional Engagement LOB; API ED-18-1; and ACRA CoSTEM Report Obj. 4, Points 3-5.**

•Research Infrastructure projects:

Supported faculty and student Principal Investigators (PIs) for the following Faculty Research Initiation Grant Proposal (FRIGP) programs: Miami University: Electrical Discharge Machining Induced Microstructural Changes and Its Effect on Fracture and Fatigue Properties of Ti-6Al-4V for Space Shuttle Applications; Ohio University: Investigation of Plasma Use in Rotating

Detonation Wave Engines and Comparison of Bone Porosity, Diameter, Mineral Density, and Bending Stiffness as Indicators of Radius Strength; University of Cincinnati: CubeCats CubeSat Groundstation, Developing a Novel Trace Element Biosignature for Life on Ancient Earth and Mars, and Youngstown State University, Development of Continuously Reinforced Filament for 3D Printing. Continued work with Surveillance for Intelligent Emergency Response Robotic Aircraft (SIERRA), (University of Cincinnati).

The University of Cincinnati PI and Student PI designed a website for the Cincinnati Public Schools relating to fossils and the ancient Earth and Planets reaching multiple classrooms and students under their project, Developing a Novel Trace Element Biosignature for Life on Ancient Earth and Mars.

OSGC will support 2 UM undergraduate students from both Ohio MSIs: Central State University and Wilberforce University in Summer, 2019. The students will be working on STEM research under the guidance of their faculty mentors.

**Exceeded OSGC Goal 3 (SMART Obj. 3.1, 3.2, 3.3, 3.4). OSGC RI programs are advancing the Nation's diverse STEM workforce pipeline through support of student/faculty hands-on research projects, real-world experiences, and engagement of students in NASA's missions. OSGC's RI programs support the National SG Program goal to contribute to the nation's science enterprise, NASA current areas of emphasis and aligns with: NASA's Strategic Obj. 2.4; STEM Engagement LOB; Institutional Engagement LOB; API ED-18-1; and ACRA CoSTEM Report Obj. 4, Points 3-5.**

•Precollege projects:

Supported K-12 teacher mini-grants which included: Benjamin Logan Elementary School, Great Mathematical Minds; Benjamin Logan Elementary School, The Buzz About Drones, From Coding to Liftoff; Benjamin Logan High School, Robotics and Design; Bishop Mussio Elementary, Expedition to Mars; Boyd E. Smith Elementary, Lego League JR WEDO2Education (Robotics and Coding); FIRST Buckeye Regional for 2018; Huron Public Schools, Exploring Laser Cutting with Models; McCormick Junior High, Huron, Coding Challenge ACCEPTED; Milford Exempted Village School District, Pattison Lego League; Pattison Elementary School, Milford, FIRST Lego League Team; Talawanda Schools, Space Camp; Waterville Primary School, Forging Ahead with Engineering and 3D Printing; STEM Night in Lucy's Lab at Wright State University, Lake Campus Featuring Author Michelle Houts.

OSGC also offered a pre-service teacher workshop in collaboration with NASA Glenn for OSGC Education scholars at OAI. Participants received NASA education materials, professional development opportunities, curriculum modules for classroom use, and NASA resources for enhancing classroom teaching/student experiences. Students also participated in hands-on educational activities that can be replicated into a future lesson plan. Other teacher training included: support to iSPACE STEM Educators Academy.

Additional programs included: Cedarville University, supported students/faculty to attend National Science Teachers Association Conference; 2 summer camps for girls: Camp GEMS (Ohio Northern); Women in Engineering (U Dayton); FIRST Robotics (Buckeye Regional); K-12 Outreach component with HE SICHOP grants [Ohio Northern Pathways classroom visits to 3 Ada middle schools and Ohio Northern Engineering students worked on the Moon Buggy replica for The Armstrong Air and Space Museum and participates in various community outreach projects; Wright State-Thurgood Marshall HS, Dayton Public Schools (DPS), DPS Math/Science Olympiad, Math Counts; Miami U hosted Dater High School (Urban Cincinnati school) students for wind tunnel testing, and community outreach in Columbus City Schools (Ohio State)].

Continued support for Flight Camp (University of Cincinnati); Pathways Camp (Ohio Northern U); Miami/Talawanda Science Week activities (Miami U); The University of Akron Robotic Mining team public outreach: Girl Scouts Career Day, FIRST Lego League, Scholars Day, K-12 Women In Engineering; High School Programming Contest (Baldwin Wallace U).

•Informal Education projects:

Highlighted Informal Education Innovation Proposal (IEIP) grants included: Case Western Reserve University, Northeast Ohio Regional Science Olympiad and Elementary Science Olympiad; Cedarville University, Solar Splash Event; Cleveland State University, Engineering Diversity Connections Networking Program; Ohio Northern University, outreach events at local schools in Ada, Ohio, and Engineering Education Program, K-12 outreach activities to local schools by students at: Kent State University, Miami University, Ohio Northern University; The Ohio State University; The University of Toledo, Diversity Dream Big; Affiliate Societies Council, TechFest 2018; The University of Akron, Women in Engineering Summer Camp; The Ohio State University, Eli Pinney in Space: An Elementary School Project to Fly an Experiment Into Space; iSPACE Day Event; Drake Science Center in Cincinnati, conducts structured visits for teachers, students, and in astronomy topics; Ohio Northern University Lunar Rover for the Armstrong Air and Space Museum in Wapakoneta, Ohio, is used for demonstrations in the museum, parades, etc., in a continuing effort to educate the general public. Special projects include support for Star Gazers at the Cincinnati Observatory Center, a unique, bite-sized astronomy program that challenges viewers to get outside and experience the night sky.

**E. PROGRAM CONTRIBUTIONS TO NASA EDUCATION PERFORMANCE GOALS:**

•**Diversity:** Of the 25 Affiliates, 2 are MSIs. Diversity for the Affiliates includes 6 UM members (24.00%); 6 females (24.00%); 1 Asian (4.00%). The OSGC Executive Committee (ExComm) is composed of 18 individuals which includes 5 UM members (27.78%) and 3 females (16.67%). The OSGC Program Manager is also female. Diversity is a priority in all OSGC programs. Of the 72 total NIFS awards, 13 were made to UM students (18.05%) which exceeded the 16.50% OSGC target. Additional statistics will be provided in future OEPM reporting and Student Tracking Tables submissions.

•**Minority Serving Institution Collaborations:** 2 Affiliates are designated as MSIs: Central State University (CSU) and Wilberforce University (WU). Both are federally recognized as HBCUs (CSU was designated a Land-Grant Institution in February, 2014). Both are Charter Affiliate members. Cuyahoga Community College’s Metropolitan Campus is also classified as an MSI (per Robert LaSalvia, NASA GRC). 8 scholarships (3 STEM scholars per university; 2 CSU Education scholars) were awarded to UM students. CSU has an active balloon satellite program, and OSGC funds 2 students (1 per school) for a summer research experience. WU students/faculty participated in “University Day” (for UM students) at NASA Glenn (October, 2018), continued support for a curriculum grant for Novel Curriculum for the Electrical/Computer Engineering Program; and a travel grant.

o API 3.3.3: STEM-18-1 51

o API 3.3.5: STEM-18-5 25\*

\*If we add 70 student reports published in the Annual Student Proceedings, the total would be **95**.

**F. IMPROVEMENTS MADE IN THE PAST YEAR:**

- OSGC Director Jed Marquart serves as an Officer on the National Space Grant Foundation Board. Program Manager Laura Stacko served as a facilitator in the OEPM session at the 2019 Spring Directors’ meeting and also serves on the Communications Sub-Committee. Laura also mentored 2 new Program Coordinators (i.e., shared Best Practices, provided OEPM training materials, etc.)
- Successfully collaborated with the West Virginia Space Grant Consortium to support a Student Intern at the IV&V Facility (first time OSGC supported a student at that NASA location).
- Recruited former scholarship/fellowship recipients and industry members (now working in STEM) to be part of a diverse panel at the Annual Student Research Symposium who inspired this year’s students and explained how to “Launch A STEM Career.” Participants were from NASA Glenn, Lockheed Martin, Raytheon, and Swagelok [5 participants: 4 males (2 UM); 1 UM female].
- Collaborated with OAI Senior Research Associates (SRAs) to place student as researchers/interns at OAI and Glenn Research Center. Future plans are to replicate this program with OAI’s Dayton location with OAI SRAs.
- Successfully completed all of the FY2018 OSGC reporting requirements in the NASA OEPM Database System ahead of the deadline, as well as completing the Undergraduate Student Instrument Project (USIP) data entry.
- Removed Owens Community College as an academic Affiliate due to a lack of funding available to meet cost share requirements and also lack of involvement in OSGC programs.
- The Ohio Drone LLC company was formed by two former OSGC scholarship recipients (UM males) as a result of serving together on the STEM Panel in 2017. The company is reporting that they are now profitable.
- Continue working with Dr. Peter Lee and his team at The Ohio State University on “Evaluation of Gravity Sensing Mechanisms in Tissue-Engineered Skeletal Muscle” [selected for NASA Undergraduate Student Instrument Project (USIP) funding].

**G. CURRENT AND PROJECTED CHALLENGES:**

- Continue working and educating new Senior Management at the lead institution (OAI) to regain a commitment for NIFS monetary support and additional cost sharing.
- Increase industry and statewide presence to foster STEM collaborations (i.e., fund raising, student internships, and research opportunities).
- Provide orientation to new Campus Representatives at OSGC Affiliates.
- Challenge if funds are reduced in new 4-year solicitation and the ability to sustain current OSGC programs.

**H. PROGRAM PARTNERS AND ROLE OF PARTNERS IN PROJECT EXECUTION:**

- Lead Institution – Ohio Aerospace Institute (OAI). OAI is a 501 (c) (3), not-for-profit organization located in Cleveland, where the OSGC Program Offices are also located. OAI’s mission is to build Ohio’s aerospace economy through research and technology development, workforce preparedness, and engagement with global networks for innovation and advocacy. OAI is an active participating member providing in-kind, supplementary, and website support as part of the match.
- Membership – 25 Affiliates [18 University Affiliates, 6 Community College (CC) Affiliates, and OAI (successfully added Baldwin Wallace University in FY2017)]. 18 individuals from University Affiliate Members comprise the OSGC ExComm with full voting rights (12 are from the original Ohio universities with Colleges of Engineering). OSGC also collaborates with the College of Education at OSGC-member universities to recruit and award Education scholarships (for pre-



service teachers) to students seeking certification in Science and Mathematics. All Affiliates are eligible to apply for OSGC funding opportunities.

*Affiliate Members and OSGC Executive Committee (ExComm) Members (18):*

- Baldwin Wallace University (BWU) – Private degree-granting university offering Bachelor's/Master's Degrees, certificates and professional education programs. Dr. James W. McCargar serves as Campus Representative (CR) and ExComm member.
- Case Western Reserve University – Private Ph.D. degree-granting independent research university. Dr. Roger Quinn serves as Campus Representative (CR) and ExComm member.
- Cedarville University – Private 4-year degree-granting university. Dr. Robert Chasnov, P.E., serves as Campus Representative and ExComm member.
- Central State University (MSI) – Public Historically Black 4-year degree-granting university; designated as a Land-Grant Institution. Dr. Augustus Morris, Jr., P.E. (UM male) serves as CR and ExComm member.
- Cleveland State University – Urban Public Ph.D. degree-granting research university. Ms. Rose Begalla (UM female) serves as Campus Representative and ExComm member.
- Kent State University – Public Ph.D. degree-granting research university. Dr. Joseph Ortiz (UM male) serves as Campus Representative and ExComm member.
- Marietta College – Private 4-year degree-granting university. Professor Craig Rabatin, P.E., serves as the Campus Representative and ExComm member.
- Miami University – Public Ph.D. degree-granting research university. Dr. James Moller serves as Campus Representative and ExComm member.
- Ohio Northern University – Private 4-year degree-granting comprehensive university. Dr. Jed E. Marquart, P.E., is the Director and also serves as Campus Representative and ExComm member.
- The Ohio State University – Public Ph.D. degree-granting research university. Dr. Mo Samimy serves as Campus Representative and ExComm member, and hosts all OSGC meetings at the Aerospace Research Center (ARC) in Columbus (centrally located within Ohio).
- Ohio University – Public Ph.D. degree-granting university. Dr. Shawn Ostermann serves as Campus Representative and ExComm member.
- The University of Akron – Public Ph.D. degree-granting research university. Dr. Craig C. Menzemer serves as Campus Representative and ExComm member.
- University of Cincinnati – Urban Public Ph.D. degree-granting research university. Dr. Kelly Cohen serves as Campus Representative and ExComm member.
- University of Dayton – Private Ph.D. degree-granting university. Dr. Robert J. Wilkens serves as Campus Representative and ExComm member.
- The University of Toledo – Public Ph.D. degree-granting research university. Dr. Lesley M. Berhan (UM female) serves as Campus Representative and ExComm member.
- Wilberforce University (MSI) – Oldest private Historically Black 4-year degree-granting university. Dr. Jennifer Williams, (UM female) serves as CR and ExComm member.
- Wright State University – Public Ph.D. degree-granting comprehensive university. Dr. Mitch Wolff serves as Campus Representative and ExComm member.
- Youngstown State University – Urban Public Ph.D. degree-granting urban university. Dr. Kevin J. Disotell serves as the Campus Representative and ExComm member (replaced Dr. Hazel Marie who is assuming additional duties at the university).

*Community Colleges (CC) (6):*

- Cincinnati State Technical and Community College – Associate degree-granting community college. Professor Abigail Yee (Asian female) serves as the Campus Representative.
- Columbus State Community College – Associate degree-granting community college. Professor Jeffery M. Woodson (UM male) serves as the Campus Representative.
- Cuyahoga Community College (CCC) – Associate degree-granting community college. Professor Michelle S. Davis (female) serves as the CR (replaced Dr. Lam F. Wong who retired). The CCC Metropolitan Campus is also classified as an MSI (Per Robert LaSalvia, NASA GRC).
- Lakeland Community College – Associate degree-granting community college. Professor Thomas Ciferno serves as the CR (replaced Constance Edwards who resigned).
- Lorain County Community College – Associate degree-granting community college. Dr. Regan L. Silvestri serves as the Campus Representative.
- Sinclair Community College – Urban Associate degree-granting community college. Eric C. Dunn serves as the Campus Representative.

*Colleges of Education: (16)*

- Baldwin Wallace University – Dr. James W. McCargar is the Campus Representative.
- Cedarville University – Dr. Robert Chasnov, P.E., is the Campus Representative.
- Central State University (HBCU) – Dr. Rajeev Swami (UM male) is the Campus Representative.
- Cleveland State University – Kristine Lynn Still, Ph.D., is the Campus Representative.
- Kent State University – Dr. Joseph Ortiz (UM male) is the Campus Representative.
- Marietta College – Dr. Cathy Mowrer is the Campus Representative.
- Miami University – Dr. Ann Haley MacKenzie is the Campus Representative.
- Ohio Northern University – Dr. Todd France is the Campus Representative.
- The Ohio State University – Mr. Sean R. Thompson is the Campus Representative.
- Ohio University – Dr. Shawn Ostermann is the Campus Representative.
- The University of Akron – Dr. Craig C. Menzemer is the Campus Representative.
- University of Cincinnati – Dr. Regina Sapona is the Campus Representative.
- University of Dayton – Dr. Mary Kay Kelly is the Campus Representative.
- The University of Toledo – Dr. Mark Templin is the Campus Representative.
- Wright State University – Dr. Romena Garrett Holbert (UM female) is the CR.
- Youngstown State University – Ms. Karen L. Henning is the Campus Representative.

*Other Partners:*

- Government: NASA Centers (especially Glenn Research Center) [Educational Programs Office Chief Robert LaSalvia, Education Specialist Susan Kohler, University Programs Officer M. David Kankam (UM male)]; Air Force Research Laboratory, and Wright-Patterson Air Force Base. All are involved partners and attend meetings/events regularly.
- Industry: ArcelorMittal, Cornerstone Research Group, Etegent Technologies, L-3, Lockheed Martin, Nanotech Innovations, Orbital Research, Sierra Lobo, ZIN Technologies. Industry partners have provided support for internships and financial/in-kind faculty support.
- Foundations: Nordson Foundation and the Nord Family Foundation have provided financial support for OSGC scholarships and fellowships.
- State of Ohio: Choose Ohio First (Ohio Board of Regents) has provided NIFS support.
- Education Outreach: Cincinnati Observatory Center, Drake Science Center, and iSPACE. All Education Outreach partners are eligible to apply for OSGC grants.

***Information may be revised with additional NASA OEPM reporting and Student Tracking Tables.***