**Title III – STEM Community Engagement Proposal Request** Grant for the period: **Summer 2023**

**Project Director:** *Dr. Robert Owor*

**Co -**Directors: Dr. Wanjun Hu, Dr. Frank Archer

**Project Title: Summer STEM Enrichment Program**

**Budget Request Amount: $235.228.00**

**A. INTRODUCTION**

# BACKGROUND

COVID-19 (coronavirus) led to the closure of primary, secondary, tertiary, and technical-vocational schools. Such closures highlighted the inequity that exist across southwest Georgia as many students lacked adequate resources to participate in virtual learning. This has led to great learning loss among students across southwest Georgia. COVID-19 has pointed out the rural counties of Georgia’s inability to ensure that learning never stops due to weak resilience of our educational program.

This has prompted ASU MAA office to adopt and leverage a multipronged approach to community engagement influenced by technology, innovation, and collaboration. We propose to support such efforts through a focus on science, technology, engineering, and mathematics (STEM) Education in the surrounding counties and also among undergraduates at ASU.

These initiatives include:

* The ASU NASA STEM Ambassadors Program
* The NASA Summer STEM Enrichment Program
* Support of 20 Undergraduate students in STEM education

Through these initiatives we intend to:

* Engage 200 Grade 6-12 students in critical thinking and problem solving in mathematics, computer science, robotics, drones, through in class and out of class activities.
* Train Teachers in the NASA based STEM curriculum for Grades 6-12.
* Engage students and parents in STEM projects culminating in a STEM Olympics Competition at the end of the 3-weeks training.
* Support the training of students and issuance of badges and certificates in Blockchain, Data Analytics, Machine Learning, Robotics, Drone Science, Coding Boot Camps, Hackathons, Artificial Intelligence and Smart Agriculture
* Train students in the basics of Web and Mobile Design using HTML, CSS and JavaScript. This Project is led by Dr. Hu.
* Train young Marines in Drone Science and Technology for a one week session. This Project is led by Dr. Frank Archer, Associate Vice President for Institutional Research.

* The implementation of the Title III Project: SCEP directly aligns with the institutional goals of elevating historically underserved populations and promoting economic development through strengthening the STEM-workforce in Southwest GA. The Goal of the SCEP is to build the interest, skills, and knowledge necessary for K-12 students and undergraduate students to pursue STEM careers by engaging them in authentic STEM experiences built around NASA mission content.

1. ALIGNMENT TO TITLE III PURPOSE

The SCEP aligns to the Title III mandate of establishing community outreach programs that will encourage elementary and secondary school students to develop the academic skills and the interest to pursue postsecondary STEM education. This initiative seeks to increase the number of students enrolled, retained, and graduating in fields related to Science, Technology, Engineering and Mathematics.

1. ALIGNMENT TO EXISTING TITLE III ACTIVITY:

SCEP project will support the following existing ASU Title III activity:

The SCEP will expand the outreach of The Center of Excellence for Community Engagement (CECE) and the Center for Innovation and Emerging Technologies (CIET) to local agencies, local school systems, and a wider pool of community-based organizations to help shape and drive solutions for STEM-related issues such as low levels of educational attainment, workforce development, and service learning. The SCEP will support the CECE in accomplishing the following objectives:

* Support and contribute to the increase in the number of high school students who participate in CECE afterschool programs annually.
* Provide outreach programming for K-12 school systems with the aim of increasing interest in higher education and various careers.
* Contribute to the number of ASU students who engage in service learning

**The NASA STEM Enrichment Program**

# Program Description

Albany State University NASA MAA will offer a 4-week STEM-based enrichment program entitled, STEM Enrichment Program (SCEP) each summer, the SSEP is an innovative activity designed to increase participation, retention, progression, and graduation of historically underserved and underrepresented K12 youth in STEM based careers. ASU NASA MAA will provide 3 uniquely themed sessions of week-long STEM Camps. Each session consists of fun hands-on STEM/STEAM activities that provide students exposure to technology, problem-solving, challenges, and cooperative activities. Sessions are designed to help students develop the skills, knowledge, and capabilities needed for our technology-driven world. Both girls and boys will find fun and creative activities in our week-long camp sessions. Programs will include take-home components so that participants can continue to expand their knowledge long after the week is over!

**Session Details**

Morning Sessions Mon- Thursday 8 AM-1 PM | Afternoon Sessions Mon- Thursday 2 PM – 5 PM

***STEM Olympics Event: June30th, 2023***

**The ASU NASA STEM Ambassadors Program**

# Program Description

The ASU STEM Ambassador program is THE STEM Engagement program funded by the NASA MUREP Aerospace Academy (MAA) and facilitated Albany State University MAA Program and its partners. The STEM Ambassador program STEM teachers are recruited to engage the next generation in real world problem solving with a strong emphasis on STEM. Ambassadors are selected from high schools across Southwest Georgia and provided professional development and supplies to support NASA Mission themed STEM activities at their local school. The STEM Ambassador Teachers will help raise awareness of the amazing opportunities within Science, Technology, Engineering and Mathematics to high school students in their respective schools. **Program Goals:**

* Model and promote the use of scientific inquiry through problem-based learning for in-service teachers.
* Increase teachers’ skills in teaching mathematics and science while incorporating technology into the curriculum.
* To train teachers to use NASA curriculum resources to facilitate improved teaching the areas of science, technology, engineering, and mathematics (STEM) using content from NASA's Directorates.

**Session Details –**

**Program Dates June 5th – June 30th**

# B. KEY PERSONNEL

Camp/Program Director Dr. Robert Owor

Dr. Robert Owor will serve as the Project Director for this Title III project and will devote 100% of his time to Title III grant functions. Dr. Owor will establish/maintain oversight of the grant steering committee; serve as chief spokesperson for the goals and objectives of the project to internal and external constituencies; authorize all expenditures and maintain control over budget; perform regular interface and ongoing communications with faculty and administration with partnering high schools; ensure the development and implementation of an effective and objective system of evaluation (including collection and analysis of high quality and timely data on program participant outcomes) for all components of the project; facilitate and monitor communications and development to maximize sustainable institutionalization of new practices, strategies and partnerships.

Project Manager Kenton Meronard

The Camp Coordinator will assist PI/ Camp Director in carrying out activities of the project as described in the proposal. They will coordinate all activities such as recruitment, class assignments, guest speakers, STEM field trips, workshops, documenting and tracking student performance, documentation of student attendance to all activities, serve as a contact for staff.

Technology Instructor (Faculty)-

will provide instructional support as well as assist with procurement and management of the technology such as computers, robotics and Drone Lab which will be used by students.

Curriculum Specialist Vijay Kunwar

Dr. Kunwar will assist the project with the design and development of curriculum. He will also ensure that the developed curriculum and activities are aligned with NASA STEM content and are appropriate for the grade level. He will also help the team to make sure that the STEM content and activities are of quality standard.

Student Assistants (20) Support program operations @ $2500/student Assistant

**Contractual Support**

Increased contractual support is requested to ensure greater effectiveness. The CIET is requesting External Instructors to support daily instruction. Due to the increasing scarcity of qualified STEM personnel, the following support is requested

Program Coordinator (Casual Labor) - A *Temporary Program Coordinator is requested to assist PI/ Camp Director and Project Manager in carrying out administrative activities of the project as described in the proposal. They will support coordination all activities such as recruitment, class assignments, and guest speakers, STEM field trips, workshops, documenting and tracking student performance, documentation of student attendance to all activities, serve as a contact for staff.*

Technology Specialist (3) – These individuals will provide support for technology training for staff, *instructional support as well as assist with procurement and management of the technology such as computers, robotics and Drone Lab, which will be used by students. In particular, we will look to host a robotics camp for elementary schools to increase our reach. $4000 is requested per specialist*

***Junior Instructors (11)***

*Junior instructors have become a fixture in our programs as these individual bring both real world STEM experience and strong instructional skills seldom found in locally. These individuals are requited from around the state and beyond to serve our students. Serve as co-instructors and support Technology instructors paid @ $3000 per instructor (40 hrs/ per week - @18.75) 3,000.00/instructor.*

Professional Development Consultant

To ensure standardized training of our staff, we are requesting GaTech CEISMC Workshop Facilitator to provide with training on the curriculum materials to ensure proper implementation. They will also provide Professional Development sessions for teachers. We are requesting a budget of (1) $2,000.00 X 3 to cover associated costs and fees.

**Project: Web Design and Development by Dr. Hu**

**Topics**

2023 | HTML5+CSS3

2024 | JavaScript Beginner Level

2025 | React+Node.Js –Beginner Level

2026 | Data Mining Algorithms – Beginner Level

**Assessment Plan**

After completion of the boot camp, students will publish their webpages to Github that will be used as their profile. Further, they receive a certificate of the training.

**Project to train Young Marines in Drone Science and Technology led by Dr. Frank Archer**

The intended purpose of this proposal is to introduce drone technology to young individuals looking to learn more about drones or unmanned aerial vehicles. We look to partner with the Albany Young Marines of Albany, Georgia. The Albany Young Marines is a national non-profit 501c (3) youth education and service program for boys and girls, aged eight through high school. The Albany Young Marines promotes the mental, moral and physical development of its members. The program focuses on teaching the values of leadership, teamwork and self-discipline, so its members can live and promote a healthy, drug-free lifestyle. ([www.youngmarines.org](http://www.youngmarines.org))  The expected outcomes are to teach/learn about the current top drones, using a drones to capture images and footage with a camera and drone terminology. The Course will cover the following:

* Introduction to Drones
* How drones work
* Practicing Flying Drones
* Drone Games
* Short Drone Quiz
* Issue of Certificates

# C. ASSESSMENT PLAN

* Identify methods assessment of the project to determine effectiveness.
* Identify methods used to determine achievement of project outcomes.

**PROJECT ANTICIPATED RESULTS**

Grant Year Ending July 31, 2023

***List the objective(s) and performance indicator(s) in which the proposed project will address.***

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| **1. Project Director:**  **Dr. Robert Owor** | **2. Project Title:**  **Summer STEM Enrichment Program** |
| **3. Activity Objective(s)** | **4 Anticipated Results to Measure Success (Performance Indicators):** |
| **Objective 1:**  Engage 200 grade 6-12 students in STEM activities under the Summer STEM Enrichment Program | **Performance Indicator 1:**  Number of 6-12 grade students who participated in the Summer STEM Enrichment Program. |
| **Objective 2:**  *Train a minimum of 10 Teachers in the NASA based STEM curriculum for Grades 6-12:* | **Performance Indicator 2:**  Number of teachers who participated in the NASA based STEM curriculum training. |
| **Objective 3:**  Engage 6-12 grade student in a STEM Olympics Competition project | **Performance Indicator 3:**  Number of 6-12 grade students who participated in the STEM Olympic competition project. |
| Objective 4:  To provided service learning opportunities for ASU students: | Number of ASU students who participated in service learning opportunities under the Summer STEM Enrichment Program. |
| Objective 5:  Train middle and high school kids in Web and Mobile Design – Dr. Hu | Number of Students who participated in Web and Mobile Design. Students will publish their websites on GitHub. Students will receive a Certificate of Web Design |
| Objective 6:  Train Middle and High School Young Marines in Drone Science and Technology – Dr. Frank Archer | Number of Students, Students will be trained in Drone Science and Technology, Flying Drones, Analyzing Images taken by drones, a Quiz |

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| **GRANT ACTIVITY FOR THE TITLE III PART B OR PART F PROGRAMS** | | | | |  |  |
| **IMPLEMENTATION STRATEGY AND TIMETABLE FORM** | | | | |  | |
| **1. NAME OF ACTIVITY COORDINATOR AND OFFICE:**  Kenton Meronard, BCBB 391 | | | | **2. Activity Title:** Summer STEM Enrichment Program (SSTEM) |  | |
| **3. SPECIFIC TASKS TO BE**  **COMPLETED** | **4. PRIMARY**  **PARTICIPANTS** | **5. METHODS**  **INVOLVED** | **6. TANGIBLE**  **RESULTS** | | **7. TIMEFRAME**  **FROM/TO** | |
| 1.1 Create Comprehensive Evaluation  Plan | Program Evaluation  Consultant; Project Director,  Project Coordinator | Establish evaluation questions, data elements to collect, and statistical analyses to be used | Comprehensive plan for formative and summative evaluation | | 04/15/23 – 05/03/23 | |
| 1.2 Develop STEM-based activities and materials | Project Director, Curriculum specialist, Project  Coordinator, Professional  Development Consultant; | Develop curriculum and activities to including  Project-Based Learning for 6-12 | Develop curriculum and activities to including  Project-Based Learning for 6-12 and undergraduate Students | | 04/15/23 – 05/30/23 | |
| 2.1 *Provide training for Staff*. | *Program Facilitators,*  *Professional Development*  *Consultant, Student*  *Assistants, Select Faculty members* | *Establish a schedule of workshops to enhance the effectiveness of teaching and learning in courses.* | *An increase infusion of project-based learning into classes* | | *05/15/23 –06/10/23* | |
| 2.1 Provide STEM-based activities for students grade 6-12 | Project Director, Project  Coordinator, Facilitators,  Faculty, Student Assistants | Execute planned STEM  activities |  | | 06/05/23 – 06/01/23 | |
| 3.1 Provides skills to parents/caregivers to work with and encourage their children in STEM activities and programs. | Project Director, Project Coordinator, Faculty, Student  assistants;    Parents, Students |  |  | | 06/30/23 | |
| Train Students in Web and Mobile Design | Dr. Hu, Student Assistants | Execute Planned Training using HTML, CSS, Javascript | Knowledge of how to design Web abd Mobile Web Pages  Award of Certificates | | 6/5/2023-06/30/23 | |
| Train Students in Drone Science and Technology | Dr. Frank Archer, Dr. Laquata Sumter, two students Assistants, 15 Mini Drones | Execute Planned Training Using Drones | Knowledge of how Drones work, how to fly drones, Drone Certification and Drone Applications | | 06/19/2023-06/23/2023 | |

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| **INDIVIDUAL ACTIVITY BUDGET NARRATIVE** | | |
| **Grant Period:** May 1st,2023 - July 31st, 2023 | | |
| **1. Name of Institution: Albany State University** | **2 Activity Title: A: Summer STEM Enrichment Program** | |
|  | **3. Activity Number:** | |
| **4. Focus Area: To encourage students to pursue STEM careers** | **5. LAA Category:** | |
| **CATEGORY** | **DESCRIPTION** | **AMOUNT** |
| **1. Personnel** |  | |
| Camp/Program Director Robert Owor | *The Program Director will provide major oversight of all activities.* | $5,000.00 |
| Project Manager | *Will assist PI/ Camp Director in carrying out activities of the project as described in the proposal. They will coordinate all activities such as recruitment, class assignments, and guest speakers, STEM field trips, workshops, documenting and tracking student performance, documentation of student attendance to all activities, serve as a contact for staff.* | $4,500.00 |
| Faculty Instructor (2) | *Provide instructional support as well as assist with procurement and management of the technology such as computers, robotics and Drone Lab, which will be used by students.* | $6,000.00 |
| Student Assistants (18) | (@ $2500.00 each (15.625/hr) | $45,000.00 |
| **Total Personnel** |  | **$60,500.00** |
| **2. Fringes Benefits** | *(@ 37.6%) Fringes for Full-Time Staff Note: 0% fringes for student workers* | **$5,828.00** |
| **3. Travel** | (Include all persons traveling, per diem rate, cost, hotel, and destination, etc.) |  |
| Partners Meetings | Travel is requested for team staff to meet with community partners: GATech Atlanta, Museum of Aviation, Participants: Kenton Meronard, Robert Owor, Arun Saha, Vjay Kunwar, | **$3,000** |
| **Total** |  | **$3,000** |
| **4. Equipment** |  | |
| **5. Supplies** |  |  |
| STEM Supplies & Technologies | STEM supplies will support both morning and afternoon sessions for the SSEP. STEM supplies will be used to conduct the STEM program with 200+ students. These include Microcontrollers, Robotics Kits, Tablets, drones and other items. Itmeized list:Tello Drone Supplies: $3000, Yahboom Kits (Microbit Robot) $3000:, Lego Robotics Kits: $4000, Circuit Scribe Drones: $5000, Stem Lingo Kits: $8,000.00. Miscellaneous (wires connectors soldering tools: $3500 | $26,500 |
| **Total** |  | **$26,500.00** |
| **6. Contractual** |  | |
| Technology Specialist (Contractual External) \*3 | *Provide instructional support as well as assist with procurement and management of the technology such as computers, robotics and Drone Lab, which will be used by students. $4000 is requested per specialist* | *12000* |
| Program Coordinator (Casual Labor) | *Temporary Program Coordinator is requested to assist PI/ Camp Director and Project Manager in carrying out administrative activities of the project as described in the proposal. They will support coordination all activities such as recruitment, class assignments, and guest speakers, STEM field trips, workshops, documenting and tracking student performance, documentation of student attendance to all activities, serve as a contact for staff.* | $4,000.00 |
| Junior Instructors (11) | *Externally sourced instructors Serve as co-instructors and support Technology instructors paid @ $3000 per instructor (40 hrs/ per week - @18.75) 3,000.00/instructor* | *33000* |
| Professional Development Consultant | GaTech CEISMC Workshop Facilitator to provide with training on the curriculum materials to ensure proper implementation. They will also provide Professional Development sessions for teachers. We are requesting a budget of (1) $2,000.00 X 3 to cover associated costs and fees. | $6,000.00 |
| **Total** |  | **$55,000.00** |
| **7. Project Web and Mobile Design – Dr Hu** | **Dr. Robert Owor - Director**  **Dr. Hu – Instructor - $15,000.00**  **Fringe Benefits 37.6%X$15,000=$5640.00**  **4 Student Assistants @ $2500 = $10,000.00**  **Total = $30,640.00** | $30,640.00 |
| **8. Project Train 30 Young Marines in Drone Science and Technology** | Dr. Robert Owor – Director  Dr. Frank Archer – Co-Director - $10,000  Fringe Benefits 37.6 x $ 10,000 = 3,760.00  Dr. Laquata Sumter – Drone Instructor - $10,000  Drone Assistant - $2500  Student Assistant - $2500  20 Mini Drones @ $300 = $6000  Certificates - $1000  10 Robots @ $1000 = $10,000  One-week lunch provided at ASU for 20 Young Marines - $4000  Young Marines Junior Leadership School fee: $1,000 ($200 x 5 people –  3 Youth, 2 Volunteers) July 16 to July 21, 2023.  Zwolle, Louisiana Passenger van rental: $1000  Fuel for 1500 miles round-trip: $500 | $53,760.00 |
| **9. Construction** |  |  |
| **10. Other** |  |  |
|  |  |  |
| **TOTAL – Summer Project** |  | **$150,828.00** |
| **Total- Dr. Hu’s Web Design Project**  **Total Young Marines Drone Training** |  | **$30,640.00**  **$53,760.00** |
| **Final Total** |  | **$235,228.00** |
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