2019-2020 FLORIDA JOB GROWTH GRANT FUND

WORKFORCE TRAINING GRANT PROPOSAL

Entity Information

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Workforce Training Grant Proposal
University of West Florida

A. Provide the title and a detailed description of the proposed workforce training.

See attachment

Multi-Pronged Multi-Faceted Workforce Development for Emerging Technologies (M2WDET) is a collaborative proposal between the University of West Florida and Gulf Coast State College. The goal of M2WDET is to prepare a workforce with technical skills in Emerging Technologies such as the Internet of Things (IoT), Data Science and Photonics and Optics that result in high paying jobs.

The demand for a trained workforce in the areas of STEM is growing exponentially. At the same time, finding a qualified workforce in STEM is becoming a scarce resource. Several ideas on preparing a trained workforce are being tried to meet the growing demand, including industry university partnerships, bridge programs to create pathways from high school to post-secondary education, Internships, associate-level degree programs, certifications, etc. and have reported some success [1,2,3]. M2WDET project is a multipronged approach to prepare a multifaceted workforce in Florida to address the growing demand for a STEM workforce in Emerging technologies. According to a January 2018 survey by Forbes, "Orlando's rate of STEM job growth is the highest in the country. Emsi ranked Orlando third-highest among large MSAs for STEM job growth over the last five years [4,5]. And in its "2018 Leading Metro Locations" report, *Area Development* ranked Orlando 11th out of 394 MSAs for prime workforce" [6,7]. Florida is also one of the top 15 states in the country, hiring a STEM workforce, and spurring economic growth [8,9]. To meet this need M2WDET is a collaborative project between the University of West Florida and Gulf Coast State College that proposes to offer training and prepare students in the following STEM areas, the main areas of focus include:

- Data Analytics
- Internet of Things (IoT)
- Lasers, Optics, and Photonics

These areas have a high demand in the state of Florida, particularly in the panhandle area. The Florida Department of Economic opportunity [10] indicates that there were 72,104 open jobs in STEM, out of which 23,594 were in computational areas, 8,041 were in Professional, Scientific, and Technical Services 1,440 were in Information and communication, and 6,033 were in Management Occupations. M2WDET will offer courses and training that specifically address these areas and prepare a workforce that can meet the demands and challenges of emerging technologies to succeed in a globally competitive and connected world. The training programs will lead to certifications and be part of the degree programs of the students.

M2WDET proposes to design the project using a multi-pronged and multi-faceted approach.

Multi-Pronged Approach

The proposed project is multi-pronged in that it caters to preparing a workforce that includes a broad audience. The project will be open to:

- High school students – take some of the preparatory courses as dual-listed and graduate to Gulf Coast State College (GCSC) or UWF.
- Gulf Coast State College students - take available and relevant courses before coming to UWF
- University of West Florida students – take the remaining necessary courses to complete one or more planned certificates. At this stage, they will be ready to enter the workforce or continue with a degree program and then enter the workforce.
- Open to community members – Working professionals and Veterans can also take these tracks to improve their skills.

Multi-Faceted Approach

M2WDET is also Multi-Faceted, in that it offers three tracks for students to pursue and acquire specific workforce skills. These tracks will lead to certifications or be part of their degree program. Details of the three tracks are provided below.

1. Data Analytics (courses include: Introduction to Programming with Python, Introduction to SQL, Database Design and Management, Web Analytics, and Introduction to Big Data, and from UWF - Python programming, Introduction to machine learning, Data Visualizations, Social Media Analytics, and Big Data Analytics).

Upon completing this certificate, students will be able to:

● Collect and organize data from multiple sources
● Analyze possible outcomes from the data and formulate questions
● Apply machine learning algorithms and predictive analytics to answer questions
● Design visualizations to communicate results

2. IoT (Courses from GCSC include Introduction to Programming with Python, Introduction to SQL, Introduction to Programming for IoT, Java I Programming, and C++ Programming and Courses from UWF include Python Programming for IoT, Introduction to IoT, IoT Applications, Hardware Software Integration.)

Upon completing this certification, students will be able to:

● Articulate principles of an IoT application
● Study requirements from a client and provide an analysis
● Provide a design of an IoT application that adds efficiency
● Include a list of equipment and components, cost estimate and security precautions that are used for a given IoT application.

3. Lasers, Optics, and Photonics (Algebra-based Physics I and II or Calculus-based Physics I and II from PSC or UWF and then come to UWF for Introduction to Optics and Photonics, Laser systems and applications and Integrated Photonics)

Upon completing this certification, students will be able to:

- Work as a Lasers / Photonics technician in research labs or manufacturing jobs
- Work in manufacturing, materials processing, medical instrumentation and fiber optic communications industries using photonics as an enabling technology
- Work as a photonics integration technician by using photonics in larger systems

Additionally, M2WDET will actively encourage and enable women students and veterans to join the STEM workforce and contribute to the Florida Job Growth program by:

- providing scholarships (tuition) for women students if they complete any one certificate.
- providing scholarships (tuition) for veterans if they complete any one certificate

Example IoT applications include:

- Design smart City – Design smart parking lots, smart parks, smart agriculture, smart power, smart monitoring of air quality etc., using data obtained from various sensors and drones and other data generating tools and devices
- Smart and connected healthcare – obtain data from wearable devices from athletes, elderly etc.

Example Data Analytics projects include

Analyze data obtained from multiple sources using machine learning algorithms to:

- observe improvements in performance
- provide alert calls when and where necessary etc.
- perform predictive analytics

Example Laser and Fiber Optics projects include:

- Design and build fiber- optic networks
- Design laser systems for industrial applications such as laser welding, laser cutting etc.

All of the three tracks listed above lead to high paying jobs starting at $70,000 annually at entry-level positions.

B. Describe how this proposal supports programs at state colleges or state technical centers.

This project allows for pathways for students from high schools, and other state colleges to enroll at Universities and obtain credit for state-approved courses.

Dual enrolled students at high schools in Escambia, Santa Rosa and Bay Counties, or register for the listed courses at GCSC and UWF will be able to transfer credits for these courses at any of the state colleges and universities approved by the state of Florida. M2WDET provides funds for relevant course development offered at GCSC and are transferable to other colleges and universities across Florida. All courses and certificates will be designed using the state-approved course curriculum request procedures. Consistent with the mission of UWF and GCSC, this project provides high-quality undergraduate and graduate education, workforce certificates, adult education, and contribute both to the local and statewide needs of professions and society.

Additionally, W2WDET addresses areas in emerging technologies such as data analytics, including machine learning and big data, Internet of Things and applications, and Lasers, Optics, and Photonics, for which there are not many courses available in this region of Northwest Florida. This project will enable us to fill this gap and prepare students to compete for jobs in these areas successfully. Some of these courses will also be available in an online format, so students residing in other parts of the state can avail of this opportunity.

C. Describe how this proposal provides participants transferable, sustainable workforce skills applicable to more than a single employer.

M2WDET prepares students with skills that are highly transferable across domains. The main attraction of M2WDET is that it is a multi-faceted project in that the skills students get out of these courses are applicable across disciplines, and hence it is interdisciplinary. The three tracks (1) Data Analytics, (2) IoT and applications, and (3) Lasers, Optics and Photonics, offer training by allowing students to explore the implementation of the acquired skills to multiple disciplines such as healthcare, finance, marketing, education, IT, manufacturing, etc. Such an exercise will prepare students to quickly transfer the skills they obtained to more than one employer and in multiple domains. Some of the industry support letters demonstrate the variety of vendors and companies who could use students graduating from the M2WDET project.

Our experience in offering special topics related to Data Analytics and IoT to college students were well received, and some of the student comments include the following:

“Did you ever find out about the conference back when I was in the programming in R Class? By the way, I miss that class so much! I dislike programming, but I actually enjoyed that class!”

“This course was a blast for me and I appreciate you teaching us this new course. You taught us perfectly on using R and I am excited to see what else I will learn now that you put me on this path.”

“Data science is a game changer and will be an invaluable tool in my IT arsenal. I think it will also help me stand out against my peers as I enter the workforce and attempt to secure a job + jumpstart my career.”

Attached industry support letters also demonstrate that the skills students learn in this program are applicable across industries such as software companies, banking, healthcare, etc.

D. Describe how this proposal supports a program(s) that is offered to the public?

M2WDET has a multi-pronged approach to prepare a workforce from multiple sources, including high school students, community member workshops, online certificates, etc., for emerging technologies.

We plan to offer the following to support public participation and workforce development.

Workshops and Boot camps

Community members will be able to attend workshops and obtain certification in any of the areas addressed by M2WDET. A schedule will be used to rotate and offer the courses designed for each of the three tracks. These courses will be open to working professionals, veterans, and anyone else who may be interested in changing careers, looking for professional development, etc. Some of the courses will also be offered online, which allows extending the scope of the program to the workforce community.

As stated earlier, during the grant period, we would allocate funds for scholarships to women and veterans completing the certificates.

Middle and High School Students

Another popular venue to expand the scope of the project is to offer summer camps, boot camps, Girl Scout camps to build an awareness of a data-centric world to middle and high school students. We have been offering summer camps in technology-related fields for the past ten years, attempting to introduce current and trending topics as the basis for the summer camps. We have often received very positive feedback from students and parents. In 2019 we introduced IoT in the summer camps, and some of the positive feedback is listed below

“Thanks so much! Liam is looking forward to helping out with your camp next week. This camp has really inspired him to go into the cybersecurity field. He’s been having fun reading the Java books I got for him from the library too…..”

“My son, Harrison, attended the Smart Cities camp and would like to purchase the kit. The UWF camp was the first of this type that he’s ever attended, and he thoroughly enjoyed it. He doesn’t say much in class, but he spoke very highly of all the facilitators and instructors. I’m hoping to expose him to more technology-related courses so that he may find his areas of interest. Your camp offerings are an asset to our area, as well as a great way to kindle the interest of children in STEM. We look forward to continuing to build on what he learned this week, and we hope to attend more of your camps in the future.”

Between workshops (online and face to face) and summer camps, we expand the scope of W2DET to the community and encourage further participation to meet the demands of the workforce in emerging technologies.

E. Describe how this proposal is based on criteria established by the state colleges and state technical centers.

M2WDET follows the state recommended policies and guidelines in designing new courses and certificates.

The University of West Florida and Gulf Coast State College are working together and will design the courses per the course curriculum request format and procedures. Attached are sample course descriptions and student learning outcomes for these courses. The industry partners from i10 Gulf Coast will be consulted to obtain pointed feedback on the topics and specific skills required to fill the demands of the industry in these areas. The input will be used to fine-tune the content for the courses. These courses provide students with an academically rigorous content combined with hands-on experiences in real-world projects. The Department of Labor projects a statewide demand for 69,625 jobs in STEM areas. Other search engines anticipate 22,000 jobs open, specifically in IoT, Data Science and Optics, and Photonics in Florida. W2DET will provide an educated and technically competent workforce for this precise need.

F. Does this proposal support a program(s) that will not exclude unemployed or underemployed individuals?

Yes, the University of West Florida and Gulf Coast State College are state colleges that do not discriminate against unemployed or underemployed individuals. M2WDET will offer nontraditional workshops and boot camps to all community members who would like to obtain training in technical areas addressed by this proposal.

G. Describe how this proposal will promote economic opportunity by enhancing workforce training. Please include the number of program completers anticipated to be created from the proposed training. Further, please include the economic impact on the community, region, or state and the associated metrics used to measure the success of the proposed training.

M2WDET proposes to address the disparity of low wages in Escambia, Santa Rosa and Bay counties through building a highly skilled workforce.

Occupations in Emerging Technologies, including Data Analysts, Machine learning scientists, application developers for the Internet of Things, Cloud computing scientists, and communication technologies, command high wages. However, there is a shortage of talent for these occupations in Escambia, Santa Rosa, and Bay counties in Florida, while there is a high demand for these jobs. Additionally, data from the U.S Bureau of labor statistics shows that "Workers in the Pensacola-Ferry Pass-Brent Metropolitan Statistical Area had an average (mean) hourly wage of $20.43 in May 2018, about 18 percent below the nationwide average of $24.98, according to the U.S. Bureau of Labor Statistics" [11].

Such a disparity in wages combined with inflation blocks economic growth, mobility, and opportunity to compete with the rest of the state and the nation. M2WDET specifically addresses

this economic disparity and proposes multiple avenues for a wide audience to obtain on-demand workforce skills in these high wage-earning occupations.

M2WDET will establish:

At UWF

- Three certification programs – IoT development, Data Science, and Optics Photonics.
- Eleven new and or redesigned courses for the certifications

At GCSC

- Eight new and or redesigned courses
- Two new tracks for undergraduate students (IoT and Data Science)

These courses and certifications will provide a pool of top wage earners who, in turn, spur economic growth for the community.

2.Additional Information

A. Is this an expansion of an existing training program?

No

If yes, please provide an explanation for how the funds from this grant will be used to enhance the existing program.

B. Does this proposal align with Florida's Targeted Industries?

Yes

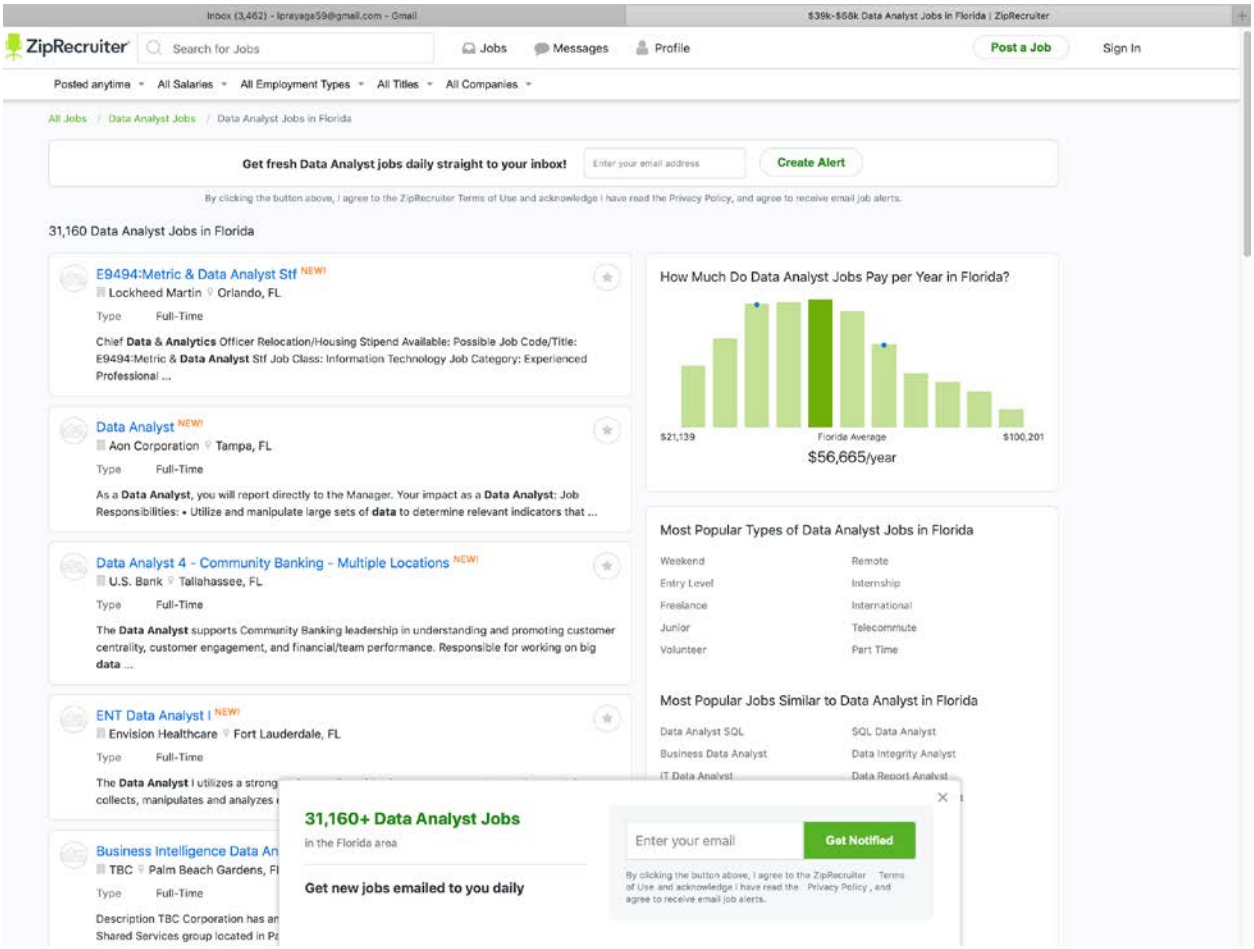
If yes, please indicate the specific targeted industries with which the proposal aligns.

Yes. W2DET aligns with the targeted industry - Information technology and Emerging Technologies listed at the enterprise Florida website [12]. However, the specific workforce skills under emerging technologies include the following:

- Data Analytics
- Internet of Things
- Optics and Photonics

Data analytics and IoT (though can broadly be grouped under Cloud technologies) are very recent and are not yet explicitly listed on the website. W2DET specifically targets these industries since the demand for these jobs is very high, and there is not enough workforce. A quick Google search for Data Analyst jobs in Florida provides results indicating 31,160 plus jobs for this skillset from ZipRecruiter, see figure 1 below. Other sites also list more focused jobs for

specific tasks under Data Analytics and are offered in a table in the following section C.



C. Does the proposal align with an occupation on the Statewide Demand Occupation List and/or the Regional Demand Occupation list?

Since this proposal aligns with Emerging Technologies and some of these are yet to be reflected in the Statewide Demand Occupation list [13] we provide below a table on the demand report created from multiple sources for jobs in these areas:

Source	Num. of Jobs in FL with keyword	Link
IoT		
Indeed	1116	https://www.indeed.com/q-internet-of-things-l-Florida-jobs.html
LinkedIn	55	https://www.linkedin.com/jobs/search?keywords=Internet%20of%20Things%20%28IoT%29&location=Florida%2C%20United%20States
Zip Recruiter	885	https://www.ziprecruiter.com/candidate/search?search=internet+of+things&location=Florida
Glassdoor	1,519	https://www.glassdoor.com/Job/florida-internet-of-things-jobs-SRCH_IL.0,7_IS3318_KO8,26.htm
Simply Hired	479	https://www.simplyhired.com/search?q=internet+of+things&l=FL
Career Builder	456	https://www.careerbuilder.com/jobs?utf8=%E2%9C%93&keywords=internet+of+things&location=Florida
Monster	585	https://www.monster.com/jobs/search/?q=internet-of-things&where=FL
Total:	5095	
Data Science		
Indeed	336	https://www.indeed.com/jobs?q=data+science&l=Florida
LinkedIn	3000	https://www.linkedin.com/jobs/search?keywords=Data%20Science&location=Florida%2C%20United%20States
Zip Recruiter	9337	https://www.ziprecruiter.com/candidate/search?search=data+science&location=Florida

Glassdoor	1128	https://www.glassdoor.com/Job/jobs.htm?suggestCount=0&suggestChosen=true&clickSource=searchBtn&typedKeyword=Data+Sc&sc.keyword=Data+Science&locT=S&locId=3318&jobType=
Simply Hired	283	https://www.simplyhired.com/search?q=data+science&l=Florida
Career Builder	1561	https://www.careerbuilder.com/jobs?utf8=%E2%9C%93&keywords=data+science&location=Florida
Monster	671	https://www.monster.com/jobs/search/?q=data-science&where=FL
Total:	16316	
Optics and Photonics		
Indeed	21	https://www.indeed.com/jobs?q=optics+and+photonics&l=Florida
LinkedIn	12	https://www.linkedin.com/jobs/search?keywords=Optics%20and%20Photonics&location=Florida%2C%20United%20States
Zip Recruiter	40	https://www.ziprecruiter.com/candidate/search?search=Optics+and+Photonics&location=Florida
Glassdoor	311	https://www.glassdoor.com/Job/optical-and-photonics-jobs-SRCH_KO0,21.htm
Simply Hired	18	https://www.simplyhired.com/search?q=optics+and+photonics&l=Florida
Career Builder	5	https://www.careerbuilder.com/jobs?utf8=%E2%9C%93&keywords=optics+and+photonics&location=Florida
Monster	11	https://www.monster.com/jobs/search/?q=optics-and-photonics&where=FL
Total:	418	

Additionally, the Florida Department of Economic Opportunity shows that the number of full-time jobs in STEM for 2018 was 69,625 (http://lmsresources.labormarketinfo.com/library/stem/statewide.pdf). As these data points indicate, these emerging technologies have a high demand for a trained and skilled workforce, which will be addressed by M2WDET.

D. Identify how the training will be delivered (e.g., classroom-based, computer-based, other). If in-person, identify the location(s) (e.g., city, campus, etc.) where the training will be available.

If computer-based, identify the targeted location(s) (e.g. city, county, statewide, etc.) where the training will be available.

M2WDET uses a multi-pronged approach to offer training and develop a highly-skilled workforce in emerging technologies. The proposal provides training in the following manner:

- Traditional classroom instruction
- An online independent certification program
- Workshops / Boot camps for working professionals at UWF main campus (Pensacola) and Gulf Coast State College (Panama City)
- Summer camps for middle and high school students at UWF main campus (Pensacola) and Gulf Coast State College (Panama City)

All four avenues of training and education identified above will include a substantial component of hands-on activities related to the theoretical topics and will have direct relevance to the real-world workforce scenarios. Equipment being requested for this project will be used in all four venues.

E. Indicate the number of anticipated annual enrolled students and completers in the proposed program.

Provided below is a table listing the anticipated number of students graduating with the workforce-related skills in emerging technologies obtained from certificates offered by M2WDET during the two years. Since these are new courses, our estimates are based on general interest and awareness among students, industry partners, and local schools on these emerging technologies. These numbers are representative of enrollment during the two years of the grant and completion of the courses offered through M2WDE. We anticipate the trend to continue upon completion of the grant period due to the nature of the projected job growth in the disciplines. It can be estimated that 800 – 1,000 students would have completed courses and or certifications designed by the M2WDET project. Provided below is a conservative estimate of the anticipated number of students enrolled in the courses designed for M2WDET project. Of these we expect that at least 100 students will complete three or more courses We anticipate that the enrollment will increase once the courses are established.

Discipline	Approximate number of anticipated students GCSC fill in expected number of students for 2 year	Approximate number of anticipated students UWF
Information Technology	0	75
Computer Science	40	20
Math	0	30
Physics	0	20
Marketing	0	10
Finance	0	10
Healthcare	0	10
Workshop attendance	20	30
Summer camps / school visits	75	150
Total number of students	135	355
Total number of female students and veterans (based on demographic information)	15	80

F. Indicate the length of the program, including anticipated beginning and ending dates.

Full-time students will be able to complete the track of their choice (Data Analytics, IoT, Optics, and Photonics) in three semesters. Workshops and boot camps for nontraditional students, professional development students, will be offered two courses per semester, including summer. Plans include offering additional courses should there be a higher demand. Two summer camps in these topics will also be offered each year. Since the courses are new and or redesigned the exact CIP codes and which courses are offered in each semester are not listed, that will be added to the student degree plan once the courses are formalized. See table below for details.

Start date	Details (GCSC)	Details (UWF)
July 2020		End date – August 31st 2022
Fall 2020	Preparation of courses	Preparation of courses
Spring 2021	Introduction to Programming with Python Introduction to SQL Introduction to Big Data	Introduction to Machine Learning IoT Applications Introduction to Photonics Introduction to Optics
Summer 2021	C++ Programming Introduction to Programming for IoT	Data Visualizations
Summer camps	2 summer camps 2021	2 summer camps 2021
Fall 2021	Database Design and Management Java I Programming Web Analytics	Big Data Analytics Embedded Systems IoT and the Cloud Fiber Optics Technology Laser Systems tTchnology
Workshops	Fall 2021 Introduction to Programming Spring 2022 Introduction to Data Analytics Summer 2022 Introduction to IoT	Fall 2021 Data Analytics Spring 2022 IoT Summer 2022 Optics and Photonics
Repeat of schedule from Spring 2021 and Summer 2021 during the Spring and Summer of 2022		

G. Describe the plan to support the sustainability of the program after grant completion.

Grant funds will be used to establish the courses, including course development, purchase lab equipment, testing, and refinement of courses, organize summer camps, and field trips. Upon completion of the grant, the program is expected to self-fund itself using tuition, approved lab and technology fees, state and institutionally supported financial aid, veteran's benefits, and scholarships. Since these are emerging technologies, the department of labor predicts that the demand for these skills persists well beyond the grant period up to 2028 [21]. Marketing Information analysts 20.4%, software developers and applications 25.4%, and for Florida, the projections in Information, Technical, and scientific industries is also a growth of 23% until the year 2026 [22], and hence, enrollment would also increase.

H. Identify any Certification, degrees, etc. that will result from the completion of the program. Please include the classification of Instructional Programs (CIP) code and the percent of completer in each code, corresponding with Section E.

The program will offer the following certificates and courses:

Certificates from UWF

- Certificate in Data Analytics
- Certificate in the Internet of Things
- Certificate in Optics and Photonics

Courses from GCSC

- Introduction to Programming with Python
- Introduction to SQL
- Database Design and Management
- Web Analytics
- Introduction to Big Data
- Introduction to Programming for IoT
- Java I Programming
- C++ Programming

Courses from UWF

- Introduction to Machine Learning
- Social Media analytics
- Data Visualizations
- Big Data Analytics
- IoT Applications
- Embedded Systems
- IoT and the Cloud
- Introduction to Optics
- Introduction to Photonics
- Fiber Optics Technology
- Laser Systems Technology

Since the certificates designed for the M2WDET are new, the CIP codes are not yet established. The courses will be offered as 990s. Once the CCRs for the courses are approved, the CIP codes will be assigned.

I. Does this project have a local match amount?

N/A – See industry support letters which include content related advice and internships.

References

1. White, Erin and Shakibnia, Ariana F. (2019) "State of STEM: Defining the Landscape to Determine High-Impact Pathways for the Future Workforce," Proceedings of the Interdisciplinary STEM Teaching and Learning Conference: Vol. 3, Article 4. DOI: 10.20429/stem.2019.030104
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3. Jason L. Selwitz, Birgitte Ahring, Manuel Garcia-Perez & Judith Morrison (2018) Engineering an Associate Degree-Level STEM Workforce Education Curriculum, Community College Journal of Research and Practice, 42:6, 405-421, DOI: 10.1080/10668926.2017.1330714
4. https://news.orlando.org/blog/orlando-is-no-1-for-stem-job-growth/
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16. https://www.linkedin.com/jobs/data-scientist-jobs-florida/?position=1&pageNum=0
17. https://www.linkedin.com/jobs/iot-jobs-florida/?position=1&pageNum=0
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20. https://www.glassdoor.com/Job/optical-and-photonics-jobs-SRCH_KO0,21.htm
21. https://www.bls.gov/emp/tables/fastest-growing-occupations.htm
22. http://www.floridajobs.org/workforce-statistics/data-center/statistical-programs/employment-projections

Social media analytics

Title	Social Media Data Analytics
Short Title	Social Media Data Analytics
Course Description	This is a new course for anyone interested in social media analytics. Students enrolled in this course will use the vast amounts of data generated by social media and analyze the data to make informed decisions applicable to interdisciplinary projects and products.
Student learning outcomes (SLO's)	• Explore social media and describe what types of data is generated by social media. • Access and store data from digital media • Analyze and visually represent results from analysis • Articulate the challenges in accessing social media data
Topics	• Sources of digital media data • Methods of data retrieval and storage • Software and Tools to analyze data repositories, trends and patterns • Visualization tools • Ethics in accessing social media data • Security issues in accessing social media data

Data Visualizations

Title	Data Visualization
Short Title	Data Visualization
Course Description	Students will develop skills to efficiently and effectively display data, using a variety of tools that can be used to prepare and present the data in visually compelling manners. Data visualization tools have wide applicability in a wide variety of settings and environments in documentation and presentations.
Student learning outcomes (SLO's)	• Apply the principles of data visualizations • Analyze and construct meaning from large data sets • Create visualizations using standard visualization techniques with a variety of tools • Experiment with visualizations for non-numeric data sets
Topics	• Data visualization and principles of visual design • Data preparation for usability • Numeric and non-numeric forms of visualizations • Quantitative data visualizations (compare various types of charts) • Describe and use linear regression • Visualizations for abstract data such as music • Design interactive dashboards

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11/7/2019

Dear Sir/Madam:

Fifteen years ago, CGI began building a technology consulting services center on the Gulf Coast with a couple of main goals: 1) connect clients to the technology talent already on the Gulf Coast, and 2) build and promote high quality IT careers in our local communities. As one of the top five global IT consultancies, CGI must continue to evolve its capability to guide its clients to best-of-breed solutions. The CGI strategy depends on high quality technology programs in local universities and colleges to attract, retain, and graduate the next generation of experts.

We believe one element of our competitive advantage lies in our relationships to local institutes of higher education. Each year, the local CGI sector invests significant time, effort, and expense in an internship program that we rely on as our number one talent acquisition tool. We find that some of our best consultants come through our internship program and graduate university having already made the first step in their IT careers.

The University of West Florida is a key relationship of the local CGI sector. We currently have more than ten UWF alumni on staff. Our internship typically selects multiple UWF undergraduates to participate in the program. The computing related programs at UWF produce the type of high potential graduates that allow us to help our clients unlock the potential of the internet of things (IoT) and empower our clients to discover insights through meaningful analysis of ever-growing quantities of raw data. The M2WDET program promises to offer education that directly aligns with the information technology strategic plans of many of the clients CGI services. CGI will continue to help UWF prepare the local workforce to engage new and emerging technologies.

Best Regards,

James VanDyne
Director

appriver®
Email & Web Security Experts™

Florida Development of Economic Opportunity
Attn: Florida Job Growth Grant
107 E. Madison St.
Tallahassee, FL 32399

To whom it may concern:

AppRiver is a fast-growing company in the state of Florida in Pensacola. There is a huge need for skilled workforce in data analysts, IoT applications, and communications technologies. In this regard AppRiver is very interested in supporting M2WDET project for the Florida Job Growth grant. It is a timely and much needed skills-based approach that addresses the workforce needs of the industry and especially in Escambia county and the state of Florida. This proposal will prepare a talented workforce that can succeed in a globally competitive world.

AppRiver is interested in serving as members of advisory board to help identify skills required by the industry and provide a needs assessment to the faculty members of UWF and Pensacola State College. We would also be happy to collaborate in discussions of new technologies suitable for the industry. Additionally, we plan to recruit students with such skills as Interns at AppRiver that has a high growth potential in these areas.

We would be happy to answer any questions.

Sincerely,

Michael Percy
Director of Software Engineering
p: 850-932-5338 x 6428
c: 850-206-9661
w: appriver.com e: mpercy@appriver.com

appriver®
a zix company

NATIONAL FLIGHT ACADEMY

Florida Department of Economic Opportunity
Attn: Florida Job Growth Grant
107 E. Madison St.
Tallahassee, FL 32399

To whom it may concern:

The National Flight Academy (NFA) is a nonprofit Science, Technology, Engineering, and Mathematics (STEM) Academy in Pensacola FL which aims to inspire students to pursue more challenging STEM courses upon returning to their parent schools. As the Career Pathways Coordinator for NFA I work one-on-one with students to connect them to training opportunities, mentors, and other resources to equip them with the specialized skills needed to pursue high-demand STEM careers.

I support the M2WDET project for the Florida Job Growth grant, as the proposed program will provide industry aligned, competency-based learning to address widening workforce gaps that exist in Northwest Florida. If implemented, I would be interested in recruiting students from the pool of participants in my program for this opportunity, as well as offer any additional support within my power to see the program succeed. Training the next generation of leaders in emerging technologies is imperative to continued innovation and economic growth of Florida, as well as the nation as a whole.

Please feel free to reach contact me if you would like to discuss this topic further.

Best regards,

Jama Jenkins
Career Pathways Coordinator
National Flight Academy
NAS Pensacola, FL 32508
(850) 308-8890 Office
Email: jjenkins@nationalflightacademy.com

3. Program Budget and Justification

Estimated Costs and Sources of Funding: Include all applicable workforce training cost and other funding sources available to support the proposal.

1. **Total Amount Requested $1,572,025**
   Florida Job Growth Grant Fund

A. Other Workforce Training Project Funding: Sources:

City/County	$	0	
Private Sources	$	0	
Other (grants, etc.)	$	0	Please Specify: NA
Total Other Funding	**$**	**0**	

B. Workforce Training Project Costs

Equipment	$	121,932	(See attached list)
Personnel	$	408,276	
Facilities	$	0	
Tuition	$	165,549	
Training Materials	$	5,000	
Other	$	871,268	Please Specify: See below
Total Project Costs	**$**	**1,572,025**	

Other:

Travel	$	4,000
Food for Participants	$	31,800
Office Supplies	$	1,000
Supplies for Equip.	$	176,619
Subcontract (GCSC)	$	390,654
Indirect Costs (41%)	$	267,195
Total Other	$	871,268

NOTE: The total amount requested must be calculated by subtracting the total other workforce training project funding sources in A. from the total workforce training project costs in B.

Provide a detailed budget narrative, including timing and steps necessary to obtain the funding, how equipment purchases will be associated with the training program, if applicable, and any other pertinent budget-related information.

Timing - Should M2WDET be funded, the steps necessary to obtain funding will start as soon as we are notified of the award. UWF Office of Research and Engagement will work with the UWF General Counsel and Florida Department of Economic Opportunity to negotiate the terms and conditions of the contract document and secure the funds following the required approvals.

Equipment:

Photonics Components	$ 7,355
Laser System Components	$ 56,337
Fiber Optic Components	$ 58,200
Total Equipment Costs	**$121,932**

Funds totaling $121,932 are requested to equip labs for IoT, Data Analytics and Optics, Photonics and Laser Technologies. These labs will afford students and community members access to emerging technologies to design and test projects in an authentic lab environment. All equipment will be purchased in year 1. See attached list of equipment.

Personnel (includes salaries and fringe benefits):

Salaries:

PI Grant Administration (10% effort)	$ 17,982
Course Development (11 courses * $3,500 ea.) yr 1 only	$ 38,500
Course Delivery (11 courses * $4,500 ea. * 2 yrs.)	$ 99,000
Workshops (6 workshops * $2,500 ea. * 2 yrs.)	$ 30,000
Summer Camps (5 faculty at 37.5% effort based on salary)	$109,130
UG Students ($10.25/hr. * 70 hrs/wk * 48 wks/yr * 2 yrs)	$ 68,880
Total Salaries	$363,492
Fringe Benefits	$ 44,784
Total Personnel	**$408,276**

The five faculty on this project have both research and practical experience working in these emerging technology fields as evidenced by their research, teaching experience and effective community engagement through summer camps and workshops. Faculty members will be designing all the projects and developing and teaching the course materials for the M2WDET project. Student help is requested to assist faculty members in testing lab projects, course materials, running labs, and summer camps and workshops.

Facilities – Laboratories at UWF and GCSC will be used to ensure that the students and community have access to resources. These labs will provide hands-on experience with emerging technologies and build projects relevant to the real world with guidance from the faculty members. Classrooms will be used for courses that are offered in a face to face mode. No costs are calculated for Facilities for this project.

Tuition

Year 1 – ($218.98/credit hr. * 9 credit hrs ea.) * 40 students = $78,833
Year 2 – ($240.88/credit hr. * 9 credit hrs. ea.) * 40 students = $86,716
Total Tuition = $165,549

Scholarships for tuition are requested to encourage women and veteran students to pursue high wage-earning careers in the stated emerging technologies. We have requested scholarship funds to award 40 undergraduate students per year for 9 credit hours each. An anticipated increase of 10% per credit hour is included in year 2.

Training Materials - $5,000
Training Materials include general laboratory supplies to support project participants.

Other:

Travel	$ 4,000	
Food for Participants	$ 31,800	
Office Supplies	$ 1,000	
Supplies for Equip.	$ 176,619	(see attached list)
Subcontract (GCSC)	$ 390,654	
Indirect Costs (41%)	$ 267,195	
Total Other	$ 871,268	

Travel funds are requested to cover the attendance at conferences to present findings of the project for dissemination purposes. Costs are estimated at $2,000 per year * 2 years = $4,000

Food for Participants - Funds are requested to provide lunch ($11 state per diem rate) and a light snack ($4) for students attending summer camps at UWF, GCSC and food for students making field trips to UWF from GCSC. For Summer Camp participants we anticipate having 50 students attending 2 camps per year for 5 days each (50 students * $15 each * 10 days * 2 camps/year * 2 years = $30,000). For field trip participants we anticipate having 30 students attending 2 field trips per year (30 students * 15 each * 2 field trips per year * 2 years = $1,800) Total Food for Participants = $31,800

General Office Supplies are budgeted at $500 per year * 2 = $1,000

UWF will award a subcontract to Gulf Coast State College for $390,654. Their budget justification is attached.

The University of West Florida has a Negotiated Indirect Cost Rate Agreement with the US Department of Health and Human Resources. Our rate for an on-campus project is 41%. Our base is Modified Total Direct Costs (MTDC) which means that the cost of Equipment ($121,932), tuition ($165,550) and subaward costs over $25,000 ($365,654) are excluded from the base in calculating indirect costs.

Total Direct Costs	$1,304,829
Minus MTDC Items	$ 653,135
MTDC Base	$ 651,694
Indirect Cost 41%	$ 267,195

EQUIPMENT AND SUPPLIES TO SUPPORT EQUIPMENT

Description	Cost each	# of units	Total
IoT & Data Analytics Supplies			
ARM-based IoT Kit for Cloud IoT Core - w/ Raspberry Pi 3	$ 115.00	60	$ 6,900.00
ESP32 development boards (WiFi) (2 per station)	$ 30.00	120	$ 3,600.00
Raspberry Pi 4 starter kit	$ 99.95	60	$ 5,997.00
Sensor kit for Raspberry Pi 4	$ 98.95	60	$ 5,937.00
Activity Monitor Unit	$ 507.00	10	$ 5,070.00
Laptops	$ 1,849.88	30	$ 55,496.40
3-d printer	$ 1,500.00	5	$ 7,500.00
3-d scanner	$ 1,000.00	5	$ 5,000.00
Macbook Pro 13"	$2,748	3	$ 8,244.00
TOTAL Supplies for IoT & Data Analytics		**Total**	**$ 103,744.40**
Photonics Components Supplies			
Optics Cleaning Kit	$25.00	1	$25.00
Diffraction Grating Package, 300-800 lines/mm, 2×2", 25 ea.	$25.50	1	$25.50
Color Filters Kit; red, green, blue, cyan, magenta, yellow; 8×10" ea.	$12.00	1	$12.00
7 Piece Glass Prism and Lens Set	$59.95	1	$59.95
Smoked Acrylic Block Lens Set, 4pcs.	$99.00	1	$99.00
Deluxe Green Laser Pointer	$75.00	2	$150.00
Polarizing Filters Package, 35mm, 50 ea.	$35.00	1	$35.00
Support Stand, 6×11" base, 36×½" rod	$22.70	1	$22.70
Buret Clamp, accommodates ½" rod	$11.35	2	$22.70
Straight Forceps	$9.60	1	$9.60
Spectrometer	$47.90	1	$47.90
Neutral-density filter D= 2.0 (1% transmission)	$47.50	1	$47.50
Spherometer Kit**	$325.00	1	$325.00
Photoelectric power meter	$250.00	1	$250.00
Maglite 2AA NBCF Mini Maglite	$9.99	1	$9.99
Red Laser Diode Class II-A	$24.25	2	$48.50
Linear Stage	$255.00	1	$255.00
SM Sries Vernier Micrometer	$117.00	1	$117.00
Prism Set	$45.35	1	$45.35
Microscope Slide, glass, 3×1", 1-1.2mm thick, 72 ea.	$7.90	1	$7.90
Meter Stick, wood	$5.20	1	$5.20
Front/Rear Surface Mirror	$19.00	1	$19.00
Lab Jack	$98.88	2	$197.76
Total Suppplies for Photonics Components		**Total**	**$1,812.55**
Photonics Components Equipment			
Optics Kits	$7,355.00	1	$7,355.00
Total Equipment for Photonics Components		**Total**	**$7,355.00**

Laser Systems Supplies			
Passive Q-switch option	$3,643.00	1	$3,643.00
Mirror Extension Kit	$2,350.00	1	$2,350.00
FIND-R-SCOPE IR VIEWER 350-1350NM	$1,695.00	1	$1,695.00
1000:1 optical Attenuator	$495.00	1	$495.00
Coherent® High Sensitivity Optical Power Sensor 1098313 | VIS, 400-106	$695.00	1	$695.00
Coherent® LabMax-TO Laser Power Meter 1104619	$1,825.00	1	$1,825.00
Coherent® Thermopile Power Sensor 1098314 | 100mW - 30W, DB25	$1,160.00	1	$1,160.00
WinCamD-XHR – ½" CMOS Beam Profiler System	$2,750.00	1	$2,750.00
UV-VIS Collimating Lens, 200-2000nm	$678.00	1	$678.00
Lab-grade Bifurcated Fibers, 200 micron	$341.00	1	$341.00
ESD Benchtop Grounding Mat	$97.43	1	$97.43
SDS1204X-E 200MHz 4 Channel Digital Super Phosphor Oscilloscope	$759.00	1	$759.00
Laser Safety Glasses	$164.00	2	$328.00
Laser Safety Glasses	$149.00	2	$298.00
Laser Safety Glasses	$45.00	2	$90.00
Laser Safety Glasses	$159.00	2	$318.00
Laser Safety Glasses	$94.00	2	$188.00
Laser Safety Glasses	$164.00	2	$328.00
Laser Safety Glasses	$45.00	2	$90.00
TOTAL SUPPLIES for Laser Systems			**$18,128.43**

Laser Systems Equipment:			
Multi-Line 150mW, 4 Lines Selectable, Argon-Ion Laser	$9,995.00	1	$9,995.00
Nd:YAG Laser	$16,972.00	1	$16,972.00
Frequency Doubling Crystal	$5,654.00	1	$5,654.00
Active Q-switch	$8,908.00	1	$8,908.00
BUNDLE-FLAME-ABS	$8,321.00	1	$8,321.00
Coherent® Diamond Series CO2 Laser 1165227 | 20W with power supply	$6,527.00	1	$6,527.00
TOTAL EQUIPMENT for Laser Systems	**$56,377.00**		**$56,377.00**

Fiber Optics Supplies:			
UniCam High-Performance Installation Tool Kit TKT-UNICAM-PFC	$1,592.50	5	$7,962.50
AFL SMLP4-4 KIT ST SM/MM Fiber Optic Test Kit	$2,330.00	5	$11,650.00
Optical cables and connectors	$10,000.00		$0.00
PRO Cleaning Kit w/Microscope	$610.00	5	$3,050.00
Ripley Miller PK2000 Fiber Optic Polishing Kit	$151.42	5	$757.10
FiberXP DI-200 Fiber Optic Inspection Scope / Microscope, 200X	$110.00	5	$550.00
AFL FS300-325-PRO-P0-W1 FlexScan Quad OTDR Pro, Bluetooth/WiFi	$9,655.00	3	$28,965.00
TOTAL SUPPLIES for Fiber Optics			**$52,934.60**

Fiber Optics Equipment:			
AFL FTK1-02-0900PR Oil & Gas 70S Fusion Splicer & M310 OTDR Kit	$29,100.00	2	$58,200.00
Total Equipment for Fiber Optics			**$58,200.00**

Grand Total Supplies			**$ 176,619.98**
Grand Total Equipment			**$121,932.00**
Grand Total Supplies and Equipment			**$ 298,551.98**

4. Approvals and Authority

A. If entity is awarded grant funds based on this proposal, what approvals must be obtained before it can execute a grant agreement with the Florida Department of Economic Opportunity (e.g. approval of a board, commission or council)?

The Department Chairs and Dean have approved this proposal for submission. If this proposal is selected for funding by the Florida Department of Economic Opportunity, the grant agreement will have to be reviewed and approved by the UWF General Counsel before being signed by the Institutional Authority. No special meetings will be required.

B. If approval of a board, commission, council or other group is needed prior to execution of an agreement between the entity and the Florida Department of Economic Opportunity:

i. Provide the schedule of upcoming meetings for the group for a period of at least six months:

NA – No special meetings will be required

ii. State whether the entity is willing and able to hold special meetings, and if so, upon how many days' notice.

NA – No special meetings will be required

C. Attach evidence that the undersigned has all necessary authority to execute this proposal on behalf of the entity. This evidence may take a variety of forms, including but not limited to: a delegation of authority, citation to relevant laws or codes policy documents, etc.

Please see attached after signature page

I, the undersigned, do hereby certify that I have express authority to sign this proposal on behalf of the above-described entity and to the best of my knowledge, that all data and information submitted in proposal is truthful and accurate and no material fact has been omitted.

Name of Entity: University of West Florida

Name and Title of Authorized Representative: Matthew Schwartz, Ast. VP, Research Admin.

Representative Signature: DocuSigned by: Matthew Schwartz EE54FB85E706412...

Signature Date: 12/13/2019

Office of the President
11000 University Parkway
Pensacola, FL 32514-5750

MEMORANDUM
September 14, 2018

To: Matthew Schwartz, Ph.D., Interim Assistant Vice President of Research Administration
Office of Research and Sponsored Programs

From: Martha Saunders, Ph.D., President

Subject: Signature Authorization
Sponsored Research/Grants and Contract Activities

Copy to: Pamela Northrup, Ph.D., Vice President
Research and Strategic Innovation Division

Pursuant to the University of West Florida's Presidential Policy P-04.05-05/18 related to signature authorization for executing contracts and documents on behalf of the University and its constituent units, I hereby designate you, as Interim Assistant Vice President of Research Administration, to sign on my behalf, all documents necessary to approve and execute agreements, contract solicitations, acceptances of research grants and awards, representations and certifications incidental to research contracts and grants, and agreements related to the assignment of intellectual property. In addition to your signature, the signature of the Provost is required on agreements related to the assignment of intellectual property including technology transfers and on agreements through which the University is expending over $250,000. Agreements through which the University is expending over $500,000 require your signature, the signature of the Provost and of the President.

The Office of the General Counsel must approve for signature contractual agreements, teaming agreements, non-disclosure agreements, assignments of intellectual property including technology transfers, and memoranda of understanding and other documents regarding legal assurances, commitments, and obligations on behalf of the University and its constituent units related to research activities.

cc: Office of the General Counsel
Dr. George Ellenberg, Provost and Senior Vice President
Ms. Betsy Bowers, Interim Vice President, Finance and Administration Division
Ms. Colleen Asmus, Associate Vice President of Financial Services and Controller
Ms. Cindy Talbert, Interim Internal Audit Director, Internal Auditing & Management Consulting
Dr. Kim LeDuff, Vice President, Division of Academic Engagement
Dr. Joffery Gaymon, Vice President, Enrollment and Student Affairs Division

Phone **850.474.2200** Fax **850.474.3131**
Web **uwf.edu**

GULF COAST STATE COLLEGE
SINCE 1957

November 20, 2019

Dr. Lakshmi Prayaga
Associate Professor, Information Technology
University of West Florida
11000 University Parkway
Pensacola, FL 32514

Dear Dr. Prayaga,

We are very excited about the opportunity to partner with the University of West Florida (UWF) in pursuit of funding through a Florida Job Growth Grant for the proposal entitled Multi-Pronged Multi-Faceted Workforce Development for Emerging Technologies (M2WDET). The project will use a multipronged approach to prepare a multifaceted workforce in Florida to address the growing demand for a STEM workforce in Emerging technologies. M2WDET proposes to offer training and prepare students in the STEM related areas.

In collaboration with UWF, our computer science faculty have identified data analytics and IoT courses that will prepare students for STEM related career fields as well as prepare them for transfer to other colleges and universities across the state of Florida. Funding from this project will enhance our ability to deliver up to date learning experiences to develop required skillsets necessary to successfully fill high demand jobs. An approved budget has been included with this letter for your consideration. We look forward to working with you on this project.

Sincerely,

Glen McDonald
Vice President of Strategic Initiatives and Economic Development
Gulf Coast State College

5230 West U.S. Highway 98
Panama City, Florida 32401
850.769.1551 T 800.311.3685
www.gulfcoast.edu

Course Development

	Data Analytic Courses	Quantity	Cost	Totals
COP1000	Introduction to Programming using Python			
COP2700	Introduction to SQL Programming			
COP2701	Database Design and Management			
CAP4774	Introduction to Big Data			
ISM4548	Web Analytics			
	IoT Courses			
COP2250	Java Programming I			
COP2224	C+ Programming			
CEN2122	Introduction to Programming the Internet of Things			
	Total Courses Design\Redesign:	8	5,000 $	40,000
Field Trips				
2 per year (1 each year to UWF)		4	500 $	2,000
Workshops				
3 workshops per year		6	2,000 $	12,000
Summer Camps				
2021	Design curriculum and instruct	2	2,000 $	4,000
	Camp Equipment	2	1,000 $	2,000
2022	Design curriculum and instruct	2	2,000 $	4,000
	Camp Equipment	2	1,000 $	2,000
Lab Manager				
July 2020 - August 2022		1	68,750 $	148,500
PI Release Time				
1 class release time per year		2	2,000 $	4,000
Equipment				
Student Lab Station		36	949 $	34,164
Instructor Lab Station		2	1,980 $	3,960
Touch Screen Monitors		36	320 $	11,520
Monitors		25	130 $	3,250
Arduino Starter Kits		25	88 $	2,200
Grove Starter Kit Plus IOT Edition		25	90 $	2,250
Raspberry Pi 4-Model Starter Kit		25	98 $	2,450
Sensors		50	50 $	2,500
Andriod Tablets		25	280 $	7,000
Laptops		5	2,500 $	12,500
Scholarships				
Data Analytic students 5 classes				
	Tuitition - 5 Clases	532		
	Books	770		
	Elearning Fees	135		
		20	1,437 $	28,740
IOT Students 5 classes				
	Tuitition - 5 Clases	494		
	Books	677		
	Elearning Fees	135		
		20	1,306 $	26,120
Indirect Costs			$	35,500
			$	390,654

Approvals:

Melanie A. Boyd, Chair Business and Technology

Glen McDonald, Vice President of Strategic Initiative and Economic Development

Florida Job Growth Grant -- Data Analytics and IoT
Budget Justification

Gulf Coast State College (GCSC) submits the attached budget to participate with University of West Florida in the Florida Job Growth Grant. The grant focuses on expanding the community's opportunity to gain skills in Data Analytics and the Internet of Things (IoT).

GCSC will modify eight courses. The course modifications provide an on-line modality for the identified classes. The modified design will include video lectures and demonstrations and on-line tutoring sessions as needed.

Each year current and prospective GCSC students will have the opportunity to participate in a field trip to learn about how Data Analytics and/or IoT is utilized in industry. In addition, GCSC students will have the opportunity to participate in a daylong field trip to UWF to learn about UWFs programs so the student can continue their education in Data Analytics and/or IoT.

GCSC will actively recruit students by hosting workshops in Data Analytics and IoT programming. GCSC plans to hold three half-day workshops each year of the grant. The workshops will be free of charge and will provide hands-on activities for the participants. The target participant for the workshops will be returning students, military, and women.

GCSC will host two summer camps per year. The summer camps will be one week each for 3 to 4 hours per day. The camps will be free of charge and will focus on middle and high school students. The camps will provide hands-on activities where the students will learn basic programming for IoT and basic database concepts.

To facilitate student-learning GCSC will hire a Lab Manager who will be responsible for assisting with labs, tutoring students, and maintaining the associated equipment. The budgeted amount includes base salary and fringe benefits for 25 months. GCSC PI will receive one-three-credit course per year of the grant. This release time provides the GCSC PI with adequate time to complete the necessary activities and reporting requirements for the grant.

To ensure our students have access to up-to-date computers and devices, one classroom lab and one tutoring lab will be outfitted with new computers and monitors. For the IoT classes student will

require access to Arduino, Raspberry Pis, Android Tablets and a host of associated sensors. Faculty will also need to have up-to-date equipment for developing and teaching the course curriculum.

Twenty scholarships for women and veterans will be awarded per year to include the cost of tuition for five courses, associated books, and ELearning fees.

5230 West U.S. Highway 98
Panama City, Florida 32401
850.769.1551 T 800.311.3685
www.gulfcoast.edu