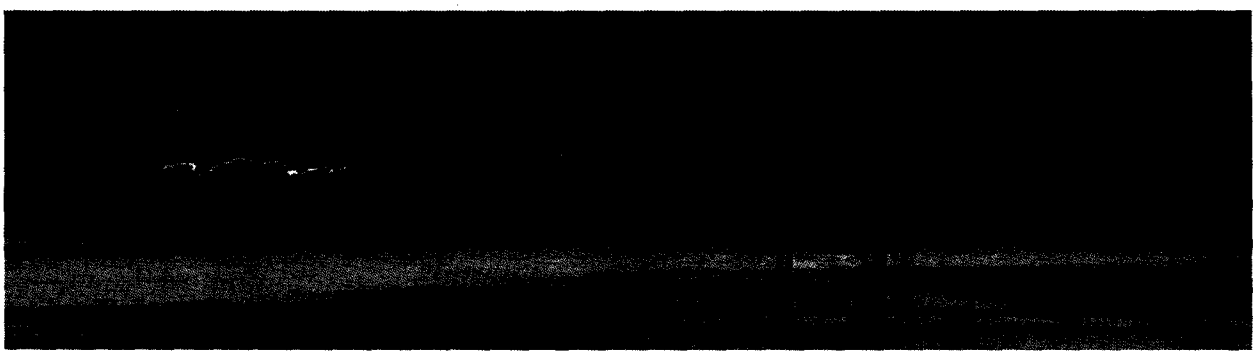

Triumph Gulf Coast, Inc.

Gulf
DISTRICT SCHOOLS

Unmanned Systems

Gulf DISTRICT SCHOOLS

Unmanned Systems

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DISTRICT SCHOOLS

Unmanned Systems

Applicant Information

Applicant: Gulf District Schools (no co-applicants)

Applicant Information:

- Public School System
  - Governed by an elected five-member board
  - Superintendent: Jim Norton
- Federal Employer Identification Number: 59-6000626
- Primary Contact: Lori Price, Assistant Superintendent for Instruction
  150 Middle School Road
  Port St. Joe, Florida 32456
  Phone: 850.229.6940
  Fax: 850.227.1999
  eMail: lprice@gulf.k12.fl.us
  Website: www.gulfcoschools.com
- Comprised of two Pre-K through 6 Title I elementary schools & two 7-12 high schools
- Current Enrollment: 1953
- 2018 School Grades:
  Port St. Joe Elementary: C
  Port St. Joe Jr.-Sr. High School: B
  Wewahitchka Elementary School: B
  Wewahitchka High School: B

District Grade History

2018	B	2014	C
2017	B	2013	C
2016	B	2012	B
2015	B	2011	A

Participating Schools Information

School						
Port St. Joe Elementary School	0051	Jonilyn Mock	2201 Long Avenue, Port St. Joe, FL 32456	850.227.1221	850.227.3422	615
Port St. Joe High School	0061	Joshua Dailey	100 Shark Drive, Port St. Joe, FL 32456	850.229.8251	850.227.1803	506
Wewahitchka Elementary School	0022	Billy Hoover	514 E. River Road, Wewahitchka, FL 32465	850.639.2476	850.639.3298	480
Wewahitchka High School	0081	Jay Bidwell	1 Gator Circle. Wewahitchka, FL 32465	850.639.2228	850.639.5394	352

Demographic Breakdown of Students
(Source: most recent School Public Accountability Report)

White	38.7	78.0	70.3	74.1	88.3	82.0
Black or African American	22.3	12.8	14.4	14.5	9.9	11.3
Hispanic/Latino	32.4	4.0	6.9	4.8	*	*
Asian	2.7	0.4	*	0	0	*
Native American or Other Pacific Islander	0.2	0.1	0	*	0	0
American Indian or Alaska Native	0.3	0.2	0	*	*	*
Two or More Races	3.4	4.6	7.8	5.7	*	4.2
Disabled	13.4	17.5	17.0	12.8	21.6	17.7
Economically Disadvantaged	58.8	60.5	63.6	49.3	69.5	62.6
ELL	13.4	0.6	*	*	0	0
Migrant	0.5	0.2	0	0	0	0
Female	48.7	49.1	48.8	46.9	48.5	54.1
Male	51.4	50.9	51.2	53.1	51.5	45.9

Student Performance Data
(Source: most recent School Public Accountability Report)

Graduation Rate	80.7	81.5	NA	81.6	NA	81.4
High School Dropout Rate	4.0	4.5	NA	3.2	NA	6.5
College Going	75	60	NA	67	NA	52
Percent of Scoring Satisfactory or Above/ELA	51	50	38	50	50	42
Percent of Scoring Satisfactory or Above/Math	64	62	62	67	66	54
Percent of Scoring Satisfactory or Above/Science	55	50	57	49	52	58

School Grades History

2018	C	B	B	B
2017	C	B	B	B
2016	C	B	A	C
2015	B	A	B	C
2014	C	B	C	B
2013	B	A	C	C
2012	A	A	C	C
2011	A	A	B	B

Professional Qualifications of Teachers
(Source: most recent School Public Accountability Report)

Bachelor's Degree	67.0	76.3	72.7	71.4	82.8	82.6
Master's Degree	30.9	22.9	27.3	29.6	17.2	13.0
Specialist Degree	1.0	0.8	0	0	0	4.3
Doctorate	1.1	0	0	0	0	0
Teaching In-Field	91.7	95.4	100	97.6	98.4	85.1
Teaching Out-of-Field	8.3	4.6	0	2.4	1.6	14.9

- Total Amount Requested: $750,000
- Applicant has not applied for this proposed project in the past.

Financial Status Gulf District Schools is in sound financial status. Management's Discussion and Analysis report can be found in Attachment 1. The applicant has not applied filed for bankruptcy in the last ten (10) years.

Eligibility

1. Eligibility is based on the proposed program's preparation of students for future occupations and careers at a 7-12 institution with a campus in the disproportionately affected county of Gulf. The program increases students' skills and knowledge; encourages industry certifications; strengthens career readiness initiatives; and teaches transferable, sustainable workforce skills that are not confined to a single employer.

2. Project Title: Unmanned System

Project Description: Funds made available through Triumph Gulf Coast, Inc. would be used to implement Unmanned Aircraft Systems (UAS) programs at both area high schools.

In the 1970s, personal computers emerged as cutting edge and transformational. No one truly understood at the time the impact they would have on the business world, education, military, and society in general. However, they have become an integral part of daily life.

This is where unmanned aircraft systems are now. Unmanned systems, more commonly referred to as drones, are beginning to be used in a number of ways. The agriculture industry uses them to detect specific acreage in need of irrigation rather than water crops unnecessarily. The commercial and charter fishing industry uses drones to locate schools of fish. Search and rescue teams use them to search rough or remote terrain that would otherwise be difficult to search when seconds count. This will be but the beginning. The possibilities are endless and rapid and consistent growth is inevitable.

Florida is among the top ten states predicted to create jobs and revenue as production and use of drones continues. This translates to 49,334 jobs for the state with the Panhandle region expected to see 40% of that total (Jenkins, 2015).

Giving students the opportunity to obtain Small UAS Safety Certification and certification as a Visual Line of Sight System Operator (VOS) provides them an industry certification demonstrating expertise in the safe and professional application of remotely piloted aircraft making them highly qualified for careers in the burgeoning industry of unmanned aircraft systems.

The program would initially be implemented at Port St. Joe High School and is designed to prepare students for employment and advanced educational training in the emerging aviation industry of unmanned aircraft systems. Instruction is designed to prepare students for Federal Aviation Administration (FAA) ground school examination for Private Pilot rating. Federal Aviation Regulation (FAR) Part 61 identifies minimum requirements for completing this examination, which is required to complete the FAR Part 107 examination to achieve a Remote

Pilot License. This program prepares students for employment in the field of UAS as a Pilot, Operations Technician, and a Line-of-Sight Observer.

The program places emphasis on broad, transferable skills and stresses the understanding of all aspects of the UAS growing industry. It incorporates elements of the industry such as planning, management, finance, technical and production skills, underlying principles of technology, labor issues, community concerns, as well as health, safety and environmental issues.

The UAS program offers a sequences of courses that provides coherent and rigorous content aligned with challenging academic standards and relevant technical knowledge and skills needed to prepare for further education and careers in the Transportation, Distribution and Logistics career cluster; provides technical skill proficiency, and includes competency-based applied learning that contributes to academic knowledge, higher-order reasoning and problem-solving skills, work attitudes, general employability skills, technical skills, and occupation-specific skills.

In addition to the initial implementation at PSJHS during the first year, the project will be adapted for WHS to support agriculture applications (soil and field analysis, livestock and crop monitoring, health assessment, etc.) as the area of agriscience pathways are expanded for students. Students enrolled in agriscience courses would be able to obtain additional certification in Agricultural Use of UAS Technology. The purpose of this course is to provide students who have completed or are currently completing an occupational completion point (OCP) in an agricultural program, a capstone experience in UAS Technology for agriculture. It is designed to enhance competencies in the areas of agricultural science and UAS technology. Laboratory-based activities are an integral part of the course and include the safe use and application of appropriate technology, scientific testing and observation equipment.

Acquisition of this grant would allow Gulf District Schools to immediately implement a drone certification program and, by the end of the third year, have a fully implemented, viable program working toward complete sustainability at both high schools. In the initial phases, both area elementary schools will incorporate coding into the curricula. Doing so will not only spark interest, but open a new domain of knowledge that will be important to the future of every student.

Funding would be used to hire a Drone Aviation Technician to train teachers and oversee the project, obtain drones and related peripheral equipment, provide safe and secure storage, purchase curriculum, and purchase certification exams. Gulf District School's contributions to this project total approximately $652,000 over the life of the proposal in the form of instructor salaries and benefits.

Project Locations:

Port St. Joe Elementary School 2201 Long Avenue Port St. Joe, Florida 32456	Port St. Joe Jr.-Sr. High School 100 Shark Drive Port St. Joe, Florida 32456
Wewahitchka Elementary School	Wewahitchka High School

514 E. River Road
Wewahitchka, Florida 32465

1 Gator Circle
Wewahitchka, Florida 32465

Proposed Timeline:

August – November 2018:

- introduce basic coding programs at the elementary level to build background knowledge and master the primary skills required for participation in the program in the future
- key teachers begin working on the required certification
- purchase enough drones and any necessary peripheral equipment for initial implementation

September – December 2018:

- develop a Drone Aviation Technician job description/position for submission to the Gulf County School Board for approval

October – January 2019:

- hire a Drone Aviation Technician to facilitate implementation of the program, coordinate expansion of the program, train teachers, serve as liaison to public, manage grant, etc.
- purchase two storage buildings to be used for safe storage of batteries decreasing risk of fire in main campus buildings

January 2019:

- introduce UAS curriculum in the ROTC program at PSJHS and Agriscience program at WHS

February 2019:

- purchase additional drones and any necessary peripheral equipment for summer program

May 2019:

- first cohort of agriscience students complete course work and obtain Agricultural Use of UAS Technology

June 2019:

- train teachers to conduct summer drone day camps (see July 2019)

July 2019:

- conduct 3 four-day summer drone day camps for elementary, middle and high schools students which are facilitated by trained school faculty assisted by high school students who have achieved the first level of certification. This will generate interest among student body and faculty, create positive public relations and press, and encourage the partnership of area businesses.

August 2019:

- Full scale implementation of curriculum at both high schools

May 2020:

- First cohort of students complete 155 hours of course work and obtain Small UAS Safety Certification

August 2020 – May 2021

- First cohort of students participate in league-sponsored drone competitions

May 2021:

- First cohort of students complete required curriculum and obtain Visual Line of Sight System Operator (VOS) industry certification
- Host local competitions/continued participation in league-sponsored competitions

The program will be in the disproportionately affected county of Gulf, but will it effect will be felt in al surrounding counties as well.

3. Transformational Effect

Northwest Florida FORWARD is a thirteen-county regional strategic initiative that focuses on promoting economic growth and vitality. This project shares in its mission and goals.

The proposed project will promote a transformational effect by:

- Allowing students to develop assets and skills and become a workforce for growing area businesses
- Establishes an employer-driven workforce training initiative
- Expanding work-based learning and career exploration opportunities for students
- Developing employability skills to reduce employment barriers
- Strengthening the area's economy through enticing new businesses to the area and supporting the expansion of existing businesses
- Encouraging entrepreneurship and innovations which promote future economic growth
- Creating an area appeal to both residents and visitors and entice a new generation of talented and creative individuals and companies

The economic future of any area depends upon the workforce available in that area. Career and technical education programs like that proposed here are crucial to creating that workforce. Economic development leaders work to encourage new companies to locate in the area, bringing employment opportunities to local communities. These efforts are admirable, but make it of vital importance that training opportunities are provided to the local workforce if they are to be successful and economic progress to occur. Entering companies must be provided a well-trained talent pool in order to seize their opportunity to expand in the area.

4. Viability Data

The objective of the program is to increase the output of transferable skills in order to increase economic benefits to the area. The program will have an impact locally and will create a return on investment in both human capital and in increased educational opportunities. The program will be inherently viable as it is fully integrated into the organizational structure of the schools in the district. That viability will be demonstrated by the following data:

- Student enrollment
- Industry certifications earned
- Graduation rate
- Graduate placement in a related business and/or continuance in post-secondary program

The program will be held to all accountability measures established by FDOE and the Gulf District School Board.

5. Long-Term Measures of Impact

Long-term impact will be measured by comparing the demand for related occupations, employment rates, and educational attainment rates for the county. It is anticipated that the proposed project will have a positive impact on these indicators.

6. Sustainability

A number of factors contribute to the sustainability of the proposed project whose implementation is in direct response to identified needs within the community. Gulf District School has a proven infrastructure and the capacity to sustain the proposed plan. The maintenance, staffing, and utilities will be assumed by the district. The financial management procedures will be consistent with the policies and procedures of the district and in compliance with Florida Department of Education (FDOE) regulations. FDOE student enrollment funding ensures long-term sustainability. Schools are funded through the Florida Education Finance Program (FEFP) and external sources such as grants and entitlements. However, there will be continued efforts to obtain additional funding through business partnerships and grant opportunities in an effort to enhance the program.

In addition, the program will contribute to its own financial viability through industry certifications, monthly restaurant nights in which the public may select from a planned menu, and catering gigs for local events such as family reunions and awards programs.

7. Measurement deliverables will include:
   - Number of students earning industry certification
   - Number of students completing 3 of the courses in the career pathway and qualify for a Bright Futures CTE scholarship
   - Graduation rate
   - Number of graduates finding employment in related field or furthering their studies in the field

Priorities

1. The proposed project will meet the following priorities:
   - Increase household income in the disproportionately affected county of Gulf above the national average household income.
   - Leverage or further enhance key regional assets, including educational institutions, research facilities, and military bases.

2. The proposed project meets the priorities listed above by:
   - The proposed training program will lead to entry-level positions in the field that are above the minimum wages and to occupation on the high demand list developed by the Florida Department of Economic Opportunity

- The proposed program will serve as a foundation for related post-secondary majors resulting in higher salaries and increased income potential
- The proposed project leverages collaborative relationships with community and business partners as well as economic development leaders and initiatives assuring high-quality outcomes
- The district is able to gather data on the well-defined outcome measures

3. The proposed project meets the discretionary priorities identified by the Board by:
   - The proposed project is aligned with a regional objective to enhance CTE opportunities and its unique nature is unduplicated by any other area high school
   - The project would result in a workforce pool available beyond the district and throughout the region
   - Gulf District schools possesses the organizational ability to efficiently and effectively implement the proposed project

4. The proposed project will be located in the disproportionately affected county of Gulf.

5. & 6. This proposed project was not on a list of proposed projects and programs submitted to Triumph Gulf Coast, Inc. by any of the other disproportionately affected counties as a project and program located within its county and has not been recommended by any other county's Board of County Commissioners. Its unique nature is unduplicated by any other area high school

Approvals and Authority

1. If awarded grant funds based on this proposal, approval must be obtained from the Gulf County School Board prior to executing an agreement with Triumph Gulf Coast, Inc.

2. The Gulf County School board may hold special meetings as needed and is scheduled to meet on the following dates:

Tuesday, September 11, 2018
Tuesday, October 2, 2018
Thursday, October 8, 2018
Tuesday, November 20, 2018
Tuesday, December 4, 2018 (tentative)
Tuesday, January 8, 2019 (tentative)
Tuesday, February 5, 2019 (tentative)

3. Timeline & Milestones: See Proposed Timeline on page 8

The program will be in the disproportionately affected county of Gulf, but will it effect will be felt in all surrounding counties as well.

4. The undersigned, Lori Price, Assistant Superintendent for Instruction, has been given all necessary authority to execute this proposal on behalf of the applying entity, Gulf County School Board. See Attachment 2

Funding and Budget

1. $ 750,000 is being sought over a 5 year period.

2. The requested amount represents 54% of the total project cost.

3. Types and number of jobs and expected wage.

The economic benefits to individual states will not be evenly distributed. However, Florida is ranked fourth among the ten states predicted to have the most jobs created and additional revenue brought in as production of UAS increased. There is an estimated 82 billion dollars in economic impact predicted from 2015-2025 (Jenkins, 2015).

Because there is such a wide range of applications for the use of drones, it is difficult to say precisely how many jobs will be available and what the respective salaries will be. Drones can be used to gather weather data, collect intelligence information, inspect architectural structures, and study traffic patterns and dozens of other tasks. These career areas have varying levels of skill, demand and wage. For purpose of this application, the focus will be on electro-mechanical technicians. Electro-mechanical technicians are professionals who maintain and operate drones, as well as other types of mechanical aircraft. The U. S. Bureau of Labor Statistics reported the median salary in 2016 as being $55,610.

4. The potential award would supplement, but not supplant existing funding.

5. Project Budget

A. Project Costs:

Instructor salaries/benefits (contributed by Gulf District Schools)	$652,000
Salary/Benefits for Drone Aviation Technician for 5 years	$350,000
Professional development/Stipends for trainings beyond regular work day	$100,000
Drones, computers, and related peripheral equipment	$150,000
Online curricula, texts, assessment fees	$75,000
Storage buildings	$25,000
Supplies and materials	$20,000
Organization fees & dues	$30,000
Total Project Costs:	**$1,402,000**

B. Other Project Funding Sources:

Gulf District School's contributions to this project total approximately $652,000 over the life of the proposal in the form of instructor salaries and benefits.

Total Amount Requested: $750,000

C. Budget Narrative

The applicant understands and acknowledges:

- By statute, the award contract must include provisions requiring a performance report on the contracted activities, must account for the proper use of funds provided under the contract, must include provisions for recovery of awards in the event the award was based upon fraudulent information or the awardee is not meeting the requirements of the award.
- That the applicant must regularly report to Triumph Gulf Coast, Inc. the expenditure of funds and the status of the project on a schedule determined by Triumph Gulf Coast, Inc.
- That the applicant will make books and records and other financial data available to Triumph Gulf Coast, Inc. as necessary to measure and confirm performance metrics and deliverables.
- That Triumph Gulf Coast, Inc. reserves the right to request additional information from the applicant concerning the proposed project.

ADDENDUM FOR WORKFORCE TRAINING PROPOSAL

1. Program Requirements

A. This proposal supports a program that prepares students for future occupations and careers at K-12 institution at a campus located in the disproportionately affected county of Gulf. That campus is Port St. Joe Jr.-Sr. High School located at 100 Shark Drive, Port St. Joe, Florida.

B. The proposed program will:
- Encourage industry certifications
- Strengthen career readiness initiatives

Efforts to improve the economy of the area are reliant upon the workforce available in that area. The proposed career and technical education program can be instrumental in creating that workforce. Economic development leaders encourage new companies to bring employment opportunities to the communities. It is of vital importance that training opportunities are provided to the local workforce if economic progress to occur. Offering industry certifications at the high school level will result in graduates prepared to become a viable part of the area's workforce.

C. This proposed program will provide participants in the disproportionately affected county of Gulf with transferable, sustainable workforce skills, but will not confine them to a single employer. Curriculum and instruction will emphasize broad, transferable skills and stress the understanding of all aspects of the UAS growing industry. It will incorporate elements of the industry such as planning, management, finance, technical and production skills, underlying principles of technology, labor issues, community concerns, as well as health, safety and environmental issues. It provides technical skill proficiency, and includes competency-based applied learning that contributes to academic knowledge, higher-order reasoning and problem-solving skills, work attitudes, general employability skills, technical skills, and occupation-specific skills.

D. The Proposed program will operate in the disproportionately affected county of Gulf.

E. This program will increase the output of transferable skills thus increasing economic benefits to the area. It will have a direct impact on Gulf County and will create a return on investment in both human capital and in increased educational opportunities. The program will be inherently viable as it is fully integrated into the organizational structure of the schools in the district. That viability will be seen in graduate placement in a related business and/or continuance in post-secondary program. Long-term impact will be measured by comparing the demand for related occupations, employment rates, and educational attainment rates for the county. It is anticipated that the proposed project will have a positive impact on these indicators.

2. Additional Information

A. The proposed project is not an expansion of an existing training program.

B. Training will be delivered by certified instructors in a classroom setting using both an online curriculum and traditional textbooks. There is a large hands-on field component as well.

C. Anticipated enrollment for the first year will be 50 students. Enrollment for subsequent years will be 75 students and includes those students enrolled in agriscience courses. The first cohort of 50 students are expected to complete 155 hours of course work and obtain Small UAS Safety Certification by May 2020. The first cohort of 25 agriscience students will obtain certification in Agricultural Use of UAS Technology in May 2019 (contingent upon timely release of funds).

D. While this proposal permits the initial implementation of the unmanned systems program and provides funding for the first five years, the program will become self-sustaining and remain viable for an extended period.

E. Several factors contribute to the sustainability of the proposed project whose implementation is in direct response to identified needs within the community. Gulf District School has a proven infrastructure and the capacity to sustain the proposed plan. The maintenance, staffing, and utilities will be assumed by the district. The financial management procedures will be consistent with the policies and procedures of the district and in compliance with Florida Department of Education (FDOE) regulations. FDOE student enrollment funding ensures long-term sustainability. Schools are funded through the Florida Education Finance Program (FEFP) and external sources such as grants and entitlements. However, there will be continued efforts to obtain additional funding through business partnerships and grant opportunities in an effort to enhance the program.

In addition, the program will contribute to its own financial viability through industry certifications, monthly restaurant nights in which the public may select from a planned menu, and catering gigs for local events such as family reunions and awards programs.

F. Certifications:

- Unmanned Aircraft Systems (UAS) Operations
    - Small UAS Safety Certification
    - Visual Line-of-Sight System Operations Certification
- Agricultural Use of UAS Technology

It is anticipated that the first cohort of students (approximately 50) will complete the 155 hours of course work and obtain Small UAS Safety Certification by May 2020. An additional 50 each year will be certified in the remaining four years of the program (a total of 200). The first cohort of students is anticipated to complete the required curriculum and obtain Visual Line of Sight System Operator (VOS) industry certification by May 2021. And additional 50 each year will be certified in VOS in the remaining three years of the program (a total of 150).

G. This program provides a local match amount. Gulf District School's contributions to this project total approximately $652,000 over the life of the proposal in the form of instructor salaries and benefits.

H. Works Cited:

Jenkins, D. (2015). "Determining the Future of Unmanned Systems (Commercial Drones –Air, Land, Sea) in the Florida Panhandle: Looking into the Panhandle's Future"

Attachment 1: Management's Discussion and Analysis

GULF DISTRICT SCHOOL BOARD

MANAGEMENT'S DISCUSSION AND ANALYSIS

The management of the Gulf County District School Board has prepared the following discussion and analysis to (a) assist the reader in focusing on significant financial issues; (b) provide an overview and analysis of the District's financial activities; (c) identify changes in the District's financial position; (d) identify material deviations from the approved budget; and (e) highlight significant issues in individual funds.

The information contained in the Management's Discussion and Analysis (MD&A) is intended to highlight significant transactions, events, and conditions and should be considered in conjunction with the District's financial statements and notes to financial statements.

FINANCIAL HIGHLIGHTS

Key financial highlights for the 2016-17 fiscal year are as follows:

- The District's net position decreased by $23,958.92 as a result of normal activity.
- The General Fund (the primary operating fund) in the fund financial statements reflects revenues and other financing sources that exceeded expenditures and other financing uses by $840,075. This may be compared to last fiscal year's results in which General Fund revenues and other financing sources exceeded expenditures and other financing uses by $391,782.
- General revenues in the government-wide statements account for $20,241,657 of total revenues. Program specific revenues in the form of charges for services, grants, or contributions account for $1,154,341 of total revenues.
- The District has $21,419,957 in expenses, including $1,154,341 that are offset by program specific charges for services, grants, or contributions. General revenues, primarily from ad valorem taxes and the Florida Education Finance Program (FEFP), provided resources for the remaining programs.

OVERVIEW OF FINANCIAL STATEMENTS

The basic financial statements consist of three components: (1) government-wide financial statements; (2) fund financial statements; and (3) notes to financial statements. This report also includes supplementary information intended to furnish additional details to support the basic financial statements.

Government-wide Financial Statements

The government-wide financial statements provide both short-term and long-term information about the District's overall financial condition in a manner similar to those of a private-sector business. The statements include a statement of net position and a statement of activities that are designed to provide consolidated financial information about the governmental activities of the District presented on the accrual basis of accounting. The statement of net position provides information about the District's financial position, its assets, deferred outflows of resources, liabilities, and deferred inflows of resources, using an economic resources measurement focus. Assets plus deferred outflows of resources, less liabilities and deferred inflows of resources equals net position, which is a measure of the District's

financial health. The statement of activities presents information about the change in the District's net position, the results of operations, during the fiscal year.

All of the District's activities and services are reported in the government-wide financial statements as governmental activities. The District's governmental activities include its education programs: basic, vocational, adult, and exceptional education. Support functions such as transportation and administration are also included. Local taxes and the State's education finance program provide most of the resources that support these activities.

Over a period of time, changes in the District's net position are an indication of an improving or deteriorating financial condition. This information should be evaluated in conjunction with nonfinancial factors, such as changes in the District's property tax base and student enrollment.

Fund Financial Statements

Fund financial statements are one of the components of the basic financial statements. A fund is a grouping of related accounts that is used to maintain control over resources that have been segregated for specific activities or objectives. The District uses fund accounting to ensure and demonstrate compliance with finance-related legal requirements and prudent fiscal management. Certain funds are established by law while others are created by legal agreements, such as bond covenants. Fund financial statements provide more detailed information about the District's financial activities, focusing on its most significant or "major" funds rather than fund types. This is in contrast to the entitywide perspective contained in the government-wide statements. All of the District's funds may be classified within one of the broad categories discussed below.

Governmental Funds: Governmental funds are used to account for essentially the same functions reported as governmental activities in the government-wide financial statements. However, the governmental funds utilize a spendable financial resources measurement focus rather than the economic resources measurement focus found in the government-wide financial statements. The financial resources measurement focus allows the governmental fund financial statements to provide information on near-term inflows and outflows of spendable resources, as well as on balances of spendable resources available at the end of the fiscal year.

The governmental fund statements provide a detailed short-term view that may be used to evaluate the District's near-term financing requirements. This short-term view is useful when compared to the long-term view presented as governmental activities in the government-wide financial statements. To facilitate this comparison, both the governmental funds balance sheet and the governmental funds statement of revenues, expenditures, and changes in fund balances provide a reconciliation of governmental funds and governmental activities.

The governmental funds balance sheet and statement of revenues, expenditures, and changes in fund balances provide detailed information about the District's most significant funds. The District's major fund is the General Fund and the Special Revenue Fund - Other. Data from the other governmental funds are combined into a single, aggregated presentation.

The District adopts an annual appropriated budget for its governmental funds. A budgetary comparison schedule has been provided for the General Fund and the Special Revenue Fund – Other to demonstrate compliance with the budget.

Fiduciary Funds: Fiduciary funds are used to report assets held in a trustee or fiduciary capacity for the benefit of external parties, such as student activity funds. Fiduciary funds are not reflected in the government-wide statements because the resources are not available to support the District's own programs. In its fiduciary capacity, the District is responsible for ensuring that the assets reported in these funds are used only for their intended purposes.

The District uses private-purpose trust funds to account for scholarship funds established by private donors, and uses agency funds to account for resources held for student activities and groups.

Notes to Financial Statements

The notes provide additional information that is essential for a full understanding of the data provided in the government-wide and fund financial statements.

Other Information

In addition to the basic financial statements and accompanying notes, this report also presents required supplementary information (RSI) concerning the District's progress in funding its obligation to provide other postemployment benefits to its employees, and other RSI relating to pension reporting.

GOVERNMENT-WIDE FINANCIAL ANALYSIS

This section is used to present condensed financial information from the government-wide statements that compares the current fiscal year to the prior fiscal year.

Net position over time may serve as a useful indicator of a government's financial position. The following is a summary of the District's net position as of June 30, 2017, compared to net position as of June 30, 2016:

Net Position, End of Year

	Governmental Activities	
	6-30-17	6-30-16
Current and Other Assets	$ 2,770,765.97	$ 2,104,404.14
Capital Assets	15,158,833.29	15,343,913.67
Total Assets	17,929,599.26	17,448,317.81
Deferred Outflows of Resources	4,482,741.45	2,050,387.00
Long-Term Liabilities	14,091,841.18	9,946,209.69
Other Liabilities	118,441.94	185,775.21
Total Liabilities	14,210,283.12	10,131,984.90
Deferred Inflows of Resources	408,954.58	1,357,512.00
Net Position:		
Net Investment in Capital Assets	15,040,833.29	15,135,913.69
Restricted	448,621.89	364,811.21
Unrestricted Deficit	(7,696,352.17)	(7,491,516.97)
Total Net Position	$ 7,793,103.01	$ 8,009,207.93

The largest portion of the District's net position is investment in capital assets (e.g., land; buildings; furniture, fixtures, and equipment; improvements other than buildings; and motor vehicles), less any related debt still outstanding. The District uses these capital assets to provide services to students; consequently, these assets are not available for future spending.

The restricted portion of the District's net position represents resources that are subject to external restrictions on how they may be used. The unrestricted net position deficit of $7,696,352.17 is primarily the result of reporting employer's proportionate share of the defined benefit pension plans offered by the State of Florida. The District's portion of these pension plans for the Florida Retirement System (FRS) and Health Insurance Subsidy (HIS) pension liabilities were $7,042,691 and $3,869,969, respectively, at June 30, 2017.

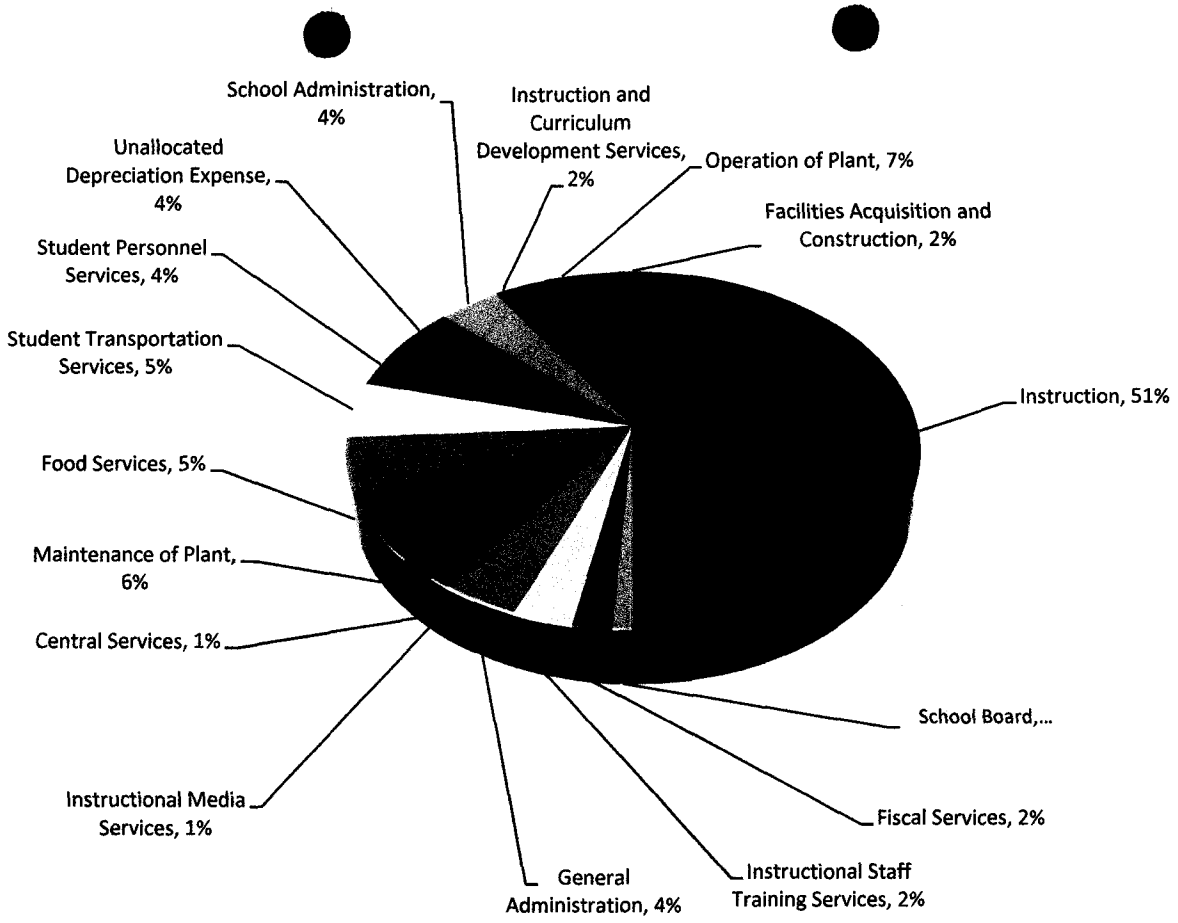
The key elements of the changes in the District's net position for the fiscal years ended June 30, 2017, and June 30, 2016, are as follows:

Operating Results for the Fiscal Year Ended

	Governmental Activities	
	6-30-17	6-30-16
Program Revenues:		
Charges for Services	$ 313,239.46	$ 334,551.35
Operating Grants and Contributions	606,825.06	597,009.32
Capital Grants and Contributions	234,276.17	178,455.16
General Revenues:		
Property Taxes, Levied for Operational Purposes	9,877,339.61	9,885,633.70
Property Taxes, Levied for Capital Projects	1,047,364.58	820,563.39
Grants and Contributions Not Restricted to Specific Programs	8,417,653.15	7,620,689.47
Unrestricted Investment Earnings	25,434.92	10,827.79
Miscellaneous	873,865.10	399,132.61
Total Revenues	21,395,998.05	19,846,862.79
Functions/Program Expenses:		
Instruction	10,884,700.06	9,532,166.43
Student Personnel Services	1,069,332.80	873,714.77
Instructional Media Services	281,931.72	261,052.85
Instruction and Curriculum Development Services	492,116.12	360,661.53
Instructional Staff Training Services	435,216.81	408,425.78
Instructional-Related Technology	46,309.81	40,014.15
Board	208,040.94	209,599.29
General Administration	796,492.16	773,035.16
School Administration	918,449.29	858,216.28
Facilities Acquisition and Construction	294,557.89	310,854.32
Fiscal Services	366,100.05	332,855.05
Food Services	947,707.12	960,041.14
Central Services	208,720.60	187,870.62
Student Transportation Services	1,092,039.57	1,013,921.36
Operation of Plant	1,386,770.89	1,373,712.43
Maintenance of Plant	1,334,481.03	1,095,911.29
Administrative Technology Services	73,341.87	65,791.07
Unallocated Interest on Long-Term Debt	14,476.70	22,915.72
Unallocated Depreciation Expense	761,317.54	771,922.54
Total Functions/Program Expenses	21,612,102.97	19,452,681.78
Change in Net Position	(216,104.92)	394,181.01
Net Position, Beginning of Year	8,009,207.93	7,615,026.92
Net Position - Ending	$ 7,793,103.01	$ 8,009,207.93

Revenues from local sources for current operations are primarily received through property taxes. The increase in property taxes is related to the increase in the underlying property values within the county.

Instruction expenses represent 51 percent of total governmental expenses in the 2016-17 fiscal year. The following graph depicts the distribution of expenses of the District as a whole.



FINANCIAL ANALYSIS OF THE DISTRICT'S FUNDS

This section provides an analysis of the fund balances of the District's major fund.

- ***Governmental Funds***. The Board has established a provision, in its strategic plan, to provide for an undesignated fund balance at fiscal year-end of 5 percent of FEFP funding. For comparison purposes, unassigned fund balance, implemented by GASB Statement No. 54, is essentially equivalent to the unreserved, undesignated fund balance classification required before GASB Statement No. 54. The following graph shows the undesignated, unreserved/unassigned fund balance of the General Fund from the 2005-06 through 2016-17 fiscal years. The increase from the 2008-09 fiscal year to the 2009-10 fiscal year was due to the District levying a voted school tax for operating purposes of 1 mill, which was extended through the 2016-17 fiscal year. The decrease in the 2010-11 to 2014-15 fiscal years occurred from lower tax revenues due to lower assessed property values. The District is currently experiencing an increase due to property value increases.

The General Fund total fund balance increased $840,075.10 to $2,506,872.22 at June 30, 2017. General Fund revenues totaled $17,218,406.81, which was an increase from the prior fiscal year. The increase in revenue is mainly due to the increase in local property taxes resulting from rising property values. General Fund expenditures totaled $17,527,993.18. The primary reason for the increase in fund balance was due to the sale of Highland View Elementary.

General Fund Budgetary Highlights

All budget variances for the General Fund were considered normal budget fluctuations.

Capital Assets and Long-Term Debt

Capital Assets

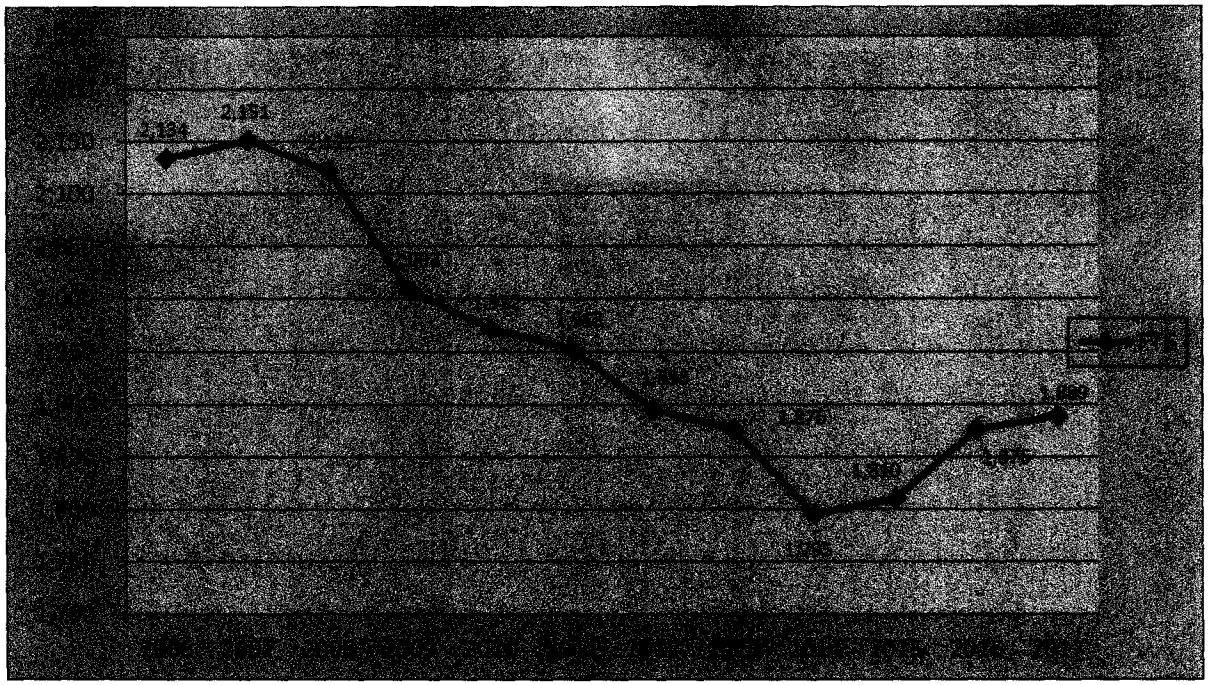
There were no major capital asset projects during the year. Additional information on the District's capital assets can be found in Note III.C. to the financial statements.

Long-Term Debt

There were no issuance or refunding of debt during the fiscal year. Additional information on the District's long-term debt can be found in Note III.H. to the financial statements.

Other Matters of Significance

Student Enrollment and Funding. Revenues from State sources comprise a significant sources of total available resources of the District. Revenues from State sources for current operations are primarily from the FEFP administered by the Florida Department of Education (FDOE) under the provisions of Section 1011.62, Florida Statutes. In accordance with this law, the District determines and reports the number of full-time equivalent (FTE) students and related data to the FDOE. As shown in the following chart, the District experienced an increase in FTE during the 2016-17 fiscal year.



REQUESTS FOR INFORMATION

This report is designed to provide citizens, taxpayers, customers, investors, and creditors with a general overview of the Gulf County District School Board's finances and to demonstrate compliance and accountability for its resources. Questions concerning information provided in the MD&A or other required supplementary information, and financial statements and notes thereto, or requests for additional financial information should be addressed to the Director of Finance, Gulf County District School Board, 150 Middle School Road, Port St. Joe, Florida, 32456.

Attachment 2: Approval and Authority document

JIM NORTON
SUPERINTENDENT

Gulf
DISTRICT SCHOOLS

150 Middle School Road
Port St. Joe, FL 32456
850-229-8256 • 850-639-2871
Fax: 850-229-6089

July 31, 2018

To Whom It May Concern:

This is to verify that Lori Price, Assistant Superintendent for Instruction for Gulf District Schools has been awarded all necessary authority to execute proposals on behalf of Gulf District Schools to Triumph Gulf Coast, Inc. and may apply for funding for proposed projects and programs to benefits the students throughout the district. Your consideration of those proposals is greatly appreciated.

Respectfully,

Jim Norton, Superintendent

Brooke Wooten, Board Chair

Attachment 3: Curriculum Frameworks

Unmanned Aircraft Systems (UAS) Operations

Agricultural Use of UAS Technology

Florida Department of Education
Curriculum Framework

Program Title: **Unmanned Aircraft Systems (UAS) Operations**
Program Type: **Career Preparatory**
Career Cluster: **Transportation, Distribution and Logistics**

Secondary – Career Preparatory	
Program Number	9505100
CIP Number	0615080104
Grade Level	9 – 12; 30,31
Standard Length	4 credits
Teacher Certification	Refer to the **Program Structure** section
CTSO	Technology Student Association, SkillsUSA
SOC Codes (all applicable)	17-3024 – Electro-Mechanical Technicians 49-3011 – Aircraft Mechanics and Service Technicians
CTE Program Resources	http://www.fldoe.org/academics/career-adult-edu/career-tech-edu/program-resources.stml

Purpose

The purpose of this program is to prepare students for employment and advanced educational training in the emerging aviation industry of unmanned aircraft systems (UAS). Instruction is designed to prepare students for Federal Aviation Administration (FAA) ground school examinations for Private Pilot rating. Federal Aviation Regulation (FAR) Part 61 identifies minimum requirements for completing this examination, which is required to complete the FAR Part 107 examination to achieve a Remote Pilot License. This program prepares students for employment in the field of UAS both as a Pilot, Operations Technician, and a Line-of-Sight Observer.

This program focuses on broad, transferable skills, stresses understanding of all aspects of the UAS growing industry, and demonstrates elements of the industry such as planning, management, finance, technical and production skills, underlying principles of technology, labor issues, community issues, and health, safety, and environmental issues.

This program offers a sequence of courses that provides coherent and rigorous content aligned with challenging academic standards and relevant technical knowledge and skills needed to prepare for further education and careers in the Transportation, Distribution and Logistics career cluster; provides technical skill proficiency, and includes competency-based applied learning that contributes to the academic knowledge, higher-order reasoning and problem-solving skills, work attitudes, general employability skills, technical skills, and occupation-specific skills, and knowledge of all aspects of the Transportation, Distribution and Logistics career cluster.

Additional Information relevant to this Career and Technical Education (CTE) program is provided at the end of this document.

Program Structure

This program is a planned sequence of instruction consisting of two occupational completion points.

The following table illustrates the Secondary program structure:

OCP	Course Number	Course Title	Teacher Certification	Length	SOC Code	Level	Graduation Requirement
A	9540610	Private Pilot Ground School	AIR MECH @7 7G AVIONICS @7 7G AEROSPACE 7G	1 credit	49-3011	3	VO
	9505110	Unmanned Aircraft Systems (UAS) Operations 1	ENG TEC 7G	1 credit	17-3024	3	VO
	9505120	Unmanned Aircraft Systems (UAS) Operations 2	TEC ED 1@2	1 credit	17-3024	3	VO
B	9505130	Unmanned Aircraft Systems (UAS) Operations 3	ENG&TEC ED1@2	1 credit	17-3024	3	VO

(Graduation Requirement Abbreviations- EQ= Equally Rigorous Science, PA= Practical Arts, EC= Economics, VO= Career and Technical Education)

Academic Alignment Table

Academic alignment is an ongoing, collaborative effort of professional educators specializing in the fields of science, mathematics, English/language arts, and Career and Technical Education (CTE). This initiative supports CTE programs by improving student performance through the integration of academic content within CTE courses. Career and Technical Education courses that have been aligned to the Next Generation Sunshine State Standards for Science and the Florida Standards for Mathematics and English/Language Arts will show the following data: the quantity of academic standards in the CTE course; the total number of standards contained in the academic course; and the percentage of alignment to the CTE course.

Courses	Anatomy/ Physiology Honors	Astronomy Solar/Galactic Honors	Biology 1	Chemistry 1	Earth-Space Science	Environmental Science	Genetics	Integrated Science	Marine Science 1 Honors	Physical Science	Physics 1
9540610	**	**	**	**	**	**	**	**	**	**	**
9505110	**	**	**	**	**	**	**	**	**	**	**
9505120	**	**	**	**	**	**	**	**	**	**	**
9505130	**	**	**	**	**	**	**	**	**	**	**

** *Alignment pending review* # *Alignment attempted, but no correlation to academic course*

Courses	Algebra 1	Algebra 2	Geometry	English 1	English 2	English 3	English 4
9540610	**	**	**	**	**	**	**
9505110	**	**	**	**	**	**	**
9505120	**	**	**	**	**	**	**

Courses	Algebra 1	Algebra 2	Geometry	English 1	English 2	English 3	English 4
9505130	**	**	**	**	**	**	**

** *Alignment pending review* # *Alignment attempted, but no correlation to academic course*

Florida Standards for Technical Subjects

Florida Standards (FS) for English Language Arts and Literacy in History/Social Studies, Science, and Technical Subjects are the critical reading and writing literacy standards designed for grade 6 and above. These standards are predicated on teachers of history/social studies, science, and technical subjects using their content area expertise to help students meet the particular challenges of reading, writing, speaking, listening, and language in their respective fields. The FS for Mathematical Practices are designed for grades K-12 and describe varieties of expertise that educators at all levels should seek to develop in their students. These practices rest on important "processes and proficiencies" with longstanding importance in mathematics education.

Instructors must incorporate the Florida Standards for Technical Subjects and Mathematical Practices throughout instruction of this CTE program. To access these standards, please click on the following link:
http://www.fldoe.org/core/fileparse.php/5652/urlt/FloridaStandardsTechSubjects.rtf.

Florida Standards for English Language Development (ELD)

English language learners communicate for social and instructional purposes within the school setting. ELD.K12.SI.1.1

English Language Development (ELD) Standards Special Notes:
Teachers are required to provide listening, speaking, reading and writing instruction that allows English language learners (ELL) to communicate for social and instructional purposes within the school setting. For the given level of English language proficiency and with visual, graphic, or interactive support, students will interact with grade level words, expressions, sentences and discourse to process or produce language necessary for academic success. The ELD standard should specify a relevant content area concept or topic of study chosen by curriculum developers and teachers which maximizes an ELL's need for communication and social skills. To access an ELL supporting document which delineates performance definitions and descriptors, please click on the following link: http://www.cpalms.org/uploads/docs/standards/eld/SI.pdf.
For additional information on the development and implementation of the ELD standards, please contact the Bureau of Student Achievement through Language Acquisition at sala@fldoe.org.

National Standards

Programs identified as having Industry or National Standards to the corresponding standards and/or benchmarks for the Unmanned Aircraft Systems (UAS) Operations program can be found using the following link:

https://www.faa.gov/uas/

Common Career Technical Core – Career Ready Practices

Career Ready Practices describe the career-ready skills that educators should seek to develop in their students. These practices are not exclusive to a Career Pathway, program of study, discipline or level of education. Career Ready Practices should be taught and reinforced in all career

exploration and preparation programs with increasingly higher levels of complexity and expectation as a student advances through a program of study.

1. Act as a responsible and contributing citizen and employee.

2. Apply appropriate academic and technical skills.

3. Attend to personal health and financial well-being.

4. Communicate clearly, effectively and with reason.

5. Consider the environmental, social and economic impacts of decisions.

6. Demonstrate creativity and innovation.

7. Employ valid and reliable research strategies.

8. Utilize critical thinking to make sense of problems and persevere in solving them.

9. Model integrity, ethical leadership and effective management.

10. Plan education and career path aligned to personal goals.

11. Use technology to enhance productivity.

12. Work productively in teams while using cultural/global competence.

Standards
After successfully completing this program, the student will be able to perform the following:

01.0 Demonstrate an understanding of safe and effective work practices.
02.0 Demonstrate an understanding of fundamentals of flight.
03.0 Understand and explain Federal Aviation Administration Regulations.
04.0 Demonstrate understanding of meteorology.
05.0 Demonstrate knowledge of aircraft communication equipment.
06.0 Demonstrate knowledge and understanding of aircraft propulsion and associated systems.
07.0 Demonstrate an understanding of navigation systems and procedures.
08.0 Demonstrate flight planning skills.
09.0 Demonstrate effective communication skills.
10.0 Demonstrate analytical skills.
11.0 Demonstrate understanding of applied sciences.
12.0 Describe human factors related to safe aircraft operation.
13.0 Describe the flight training process.
14.0 Describe aircraft safety of flight principles.
15.0 Describe the Airport Environment.
16.0 Demonstrate an understanding of the basics of unmanned aerial systems (UAS).
17.0 Demonstrate an understanding why safety considerations and regulations are necessary.
18.0 Understand the basic rules of safe operations.
19.0 Demonstrate an understanding of the principles of flight.
20.0 Understand UAS propulsion and power.
21.0 Understand the types of control.
22.0 Understand material science.
23.0 Understand core components and assembly.
24.0 Demonstrate and execute basic UAS operations.
25.0 Demonstrate understanding of regulations and aeronautics principles
26.0 Demonstrate understanding of mission planning, preparation, execution, and post flight debrief.
27.0 Review current regulations.
28.0 Describe potential impacts from UAS operations.
29.0 Demonstrate and execute troubleshooting.
30.0 Demonstrate and execute maintenance.
31.0 Understand aeronautical principles.
32.0 Understand weather and weather reporting.
33.0 Execute mission planning.
34.0 Demonstrate a practical application of mission planning.
35.0 Demonstrate and execute mission preparation and UAS design.
36.0 Demonstrate and execute advanced UAS construction.
37.0 Create and execute mission flight plan.
38.0 Analyze and evaluate the mission.

Florida Department of Education
Student Performance Standards

Course Title: Private Pilot Ground School
Course Number: 9540610
Course Credit: 1

Course Description:
The Private Pilot Ground School course prepares students for entry into the aviation industry. Students explore career opportunities and requirements of a professional aviation pilot/mechanic. Students study general shop safety, fundamentals of flight, FAA regulations, meteorology, aircraft communications, propulsion, and navigation systems, flight planning, communication and analytical skills, applied sciences, safe aircraft operation and principles, flight training processes, and airport environments.

Abbreviations:
FS-M/LA = Florida Standards for Math/Language Arts
NGSSS-Sci = Next Generation Sunshine State Standards for Science

Note: This course is pending alignment in the following categories: FS-M/LA, NGSSS-Sci, and FAA

CTE Standards and Benchmarks	FS-M/LA	NGSSS-Sci	FAA FAR Part 61
01.0 Demonstrate an understanding of safe and effective work practices – The student will be able to:			
01.01 Demonstrate an awareness and understanding of fueling operations.			
01.02 Demonstrate an understanding of situational awareness.			
01.03 Demonstrate an awareness and understanding of fire hazards, and how to control and extinguish fires.			
01.04 Demonstrate an awareness and understanding for the need of safety devices, controls, guards and equipment.			
02.0 Demonstrate an understanding of fundamentals of flight – The student will be able to:			
02.01 Name and compare the four forces of flight.			
02.02 Describe the structural components of an aircraft.			
02.03 Describe airfoil design factors.			
02.04 Explain how an airfoil produces lift using Bernoulli's principles and Newton's Laws of Force and Motion.			

CTE Standards and Benchmarks		FS-M/LA	NGSSS-Sci	FAA FAR Part 61
	02.05 Discuss how and why an airplane stalls and spins.			
	02.06 Describe the function of aircraft flight controls and their effect on aircraft pitch, roll, and yaw.			
	02.07 Describe and explain the operation and use of pitot/static, vacuum/gyroscopic, pressure and engine instruments.			
	02.08 Explain factors affecting aircraft design, performance, and operation.			
03.0	**Understand and explain Federal Aviation Administration Regulations -- The student will be able to:**			
	03.01 Explain major portion of Parts 1, 61, 91, 135, 141 and NTSB 830 of the Federal Aviation Regulations.			
04.0	**Demonstrate understanding of meteorology -- The student will be able to:**			
	04.01 Describe the composition, circulation and stability of the atmosphere.			
	04.02 Demonstrate an understanding of air mass development, the movement of fronts and their effect on aviation.			
	04.03 Demonstrate an awareness of weather hazards to aviation and an understanding of how to avoid them.			
	04.04 Demonstrate the ability to access weather information prior to and during flights through a variety of media.			
	04.05 Interpret printed reports, forecasts and graphic weather products.			
05.0	**Demonstrate knowledge of aircraft communication equipment -- The student will be able to:**			
	05.01 Use and explain aircraft voice communication equipment.			
	05.02 Explain function and use of ELT's, voice recorders, and other emergency communication systems.			
	05.03 Demonstrate use of proper phraseology in ATC communications.			
	05.04 Discuss uses and limitations of portable transceivers.			
	05.05 Demonstrate use of phonetic alphabet.			
06.0	**Demonstrate knowledge and understanding of aircraft propulsion and associated systems -- The student will be able to:**			
	06.01 Describe and identify reciprocating and turbine engine components.			

CTE Standards and Benchmarks		FS-M/LA	NGSSS-Sci	FAA FAR Part 61
06.02	Compare the merits of fixed and variable pitch propellers.			
06.03	Describe a typical lubrication system.			
06.04	Describe a typical aircraft electrical system, including a magneto ignition systems and proper magneto checks.			
06.05	Describe the difference between a normally aspirated engine and one that is supercharged or turbocharged.			
06.06	Describe the difference between gravity fed and pump fed fuel systems.			
06.07	Demonstrate basic operation of an aircraft engine, including proper interpretation of instruments and use of appropriate engine controls.			
07.0	**Demonstrate an understanding of navigation systems and procedures -- The student will be able to:**			
07.01	Distinguish between latitude and longitude.			
07.02	Define radio navigation.			
07.03	Explain the operation of the magnetic compass, including compass errors.			
07.04	Describe and demonstrate use of VOR equipment and navigation.			
07.05	Describe the operation of GPS navigation equipment.			
07.06	Explain DME principles.			
07.07	Explain sectional charts and their use.			
07.08	Explain lost communications emergency procedures under VFR.			
07.09	Plot and explain a route of flight.			
07.10	Differentiate different classes of airspace and usage within the FAA national airspace system.			
08.0	**Demonstrate flight planning skills -- The student will be able to:**			
08.01	Explain major portions of Parts 1, 91 and NTSB 830 of the Federal Aviation Rules and Regulations.			
08.02	Define weight and balance.			
08.03	Define center of gravity, moment, datum line, CG envelope,			

CTE Standards and Benchmarks		FS-M/LA	NGSSS-Sci	FAA FAR Part 61
	basic empty weight, and gross weight.			
08.04	Calculate, compute, and solve given weight and balance problems.			
08.05	Demonstrate acquisition of appropriate weather data.			
08.06	Demonstrate proper selection of destination/enroute/alternate airports.			
08.07	Explain fuel requirements.			
08.08	Read and interpret performance charts to predict aircraft performance.			
08.09	Demonstrate the use of a flight computer.			
08.10	Access and analyze NOTAMS.			
08.11	Define and describe the various phases of flight.			
08.12	Explain the function of a pilot logbook.			
08.13	Prepare a VFR flight plan.			
08.14	Demonstrate familiarity with various published sources of flight information (Airfield Directories, NOTAMS, Aeronautical Information Manual, and Advisory Circulars).			
09.0	**Demonstrate effective communication skills -- The student will be able to:**			
09.01	Write logical and understandable statements, or phrases, to accurately fill out forms/invoices commonly used in business and industry.			
09.02	Read and understand graphs, charts, diagrams, and tables commonly used in this industry/occupation area.			
09.03	Read and follow written and oral English instructions.			
09.04	Answer and ask questions coherently and concisely.			
09.05	Demonstrate telephone/communication skills.			
09.06	Demonstrate knowledge and use of appropriate computer skills.			
09.07	Demonstrate interpersonal skills.			
10.0	**Demonstrate analytical skills -- The student will be able to:**			

CTE Standards and Benchmarks	FS-M/LA	NGSSS-Sci	FAA FAR Part 61
10.01 Add, subtract, multiply and divide using fractions, decimals, whole numbers, percentages, and ratios.			
10.02 Demonstrate understanding and use of the metric system.			
11.0 Demonstrate understanding of applied sciences -- The student will be able to:			
11.01 Draw conclusions or make inferences from data.			
11.02 Understand pressure measurement in terms of P.S.I., inches of mercury, and metric.			
12.0 Describe human factors related to safe aircraft operation -- The student will be able to:			
12.01 Describe effects of the flight environment on human physiology.			
12.02 Describe the effects of alcohol and drugs on human performance.			
12.03 Explain crew resource management (CRM).			
12.04 Describe situational awareness (SA).			
12.05 Describe aeronautical decision making (ADM) skills.			
13.0 Describe the flight training process -- The student will be able to:			
13.01 Define various pilot certificates and ratings (private, instrument, multi-engine, commercial, certified flight instructor (CFI/CFII/MEI), and airline transport pilot (ATP).			
13.02 List and describe both professional and non-professional aviation opportunities.			
14.0 Describe aircraft safety of flight principles -- The student will be able to:			
14.01 Summarize techniques of collision avoidance, including proper visual scanning and right of way rules.			
14.02 Describe minimum safe altitude (MSA) and preparation for flight over hazardous terrain.			
14.03 Describe proper ground taxi techniques.			
14.04 Summarize the airport traffic pattern (entry, altitudes, turns, legs, and departure).			
15.0 Describe the airport environment -- The student will be able to:			
15.01 Describe the configuration of airports, including runways			

CTE Standards and Benchmarks	FS-M/LA	NGSSS-Sci	FAA FAR Part 61
taxiways markings and signs.			
15.02 Describe airport lighting (runways, taxiways, beacons, and approach lighting systems).			

Florida Department of Education
Student Performance Standards

Course Title: Unmanned Aircraft Systems (UAS) Operations 1
Course Number: 9505110
Course Credit: 1

Course Description:
The Unmanned Aircraft Systems (UAS) Operations 1 course prepares students for entry into the UAS aviation industry. Students explore a basic understanding of the operational aspects that are key to the requirements that are necessary to be part of the professional UAS Aviation Industry. Students study general operational principles and flight safety requirements to perform mission flight profiles, environmental concerns, mathematics, physics, basic aerodynamics, federal aviation regulations, publications and required records.

Abbreviations:
FS-M/LA = Florida Standards for Math/Language Arts
NGSSS-Sci = Next Generation Sunshine State Standards for Science

Note: This course is pending alignment in the following categories: FS-M/LA, NGSSS-Sci, and FAA

CTE Standards and Benchmarks	FS-M/LA	NGSSS-Sci	FAA FAR Part 107
16.0 Demonstrate an understanding of the basics of unmanned aerial systems (UAS) -- The student will be able to:			
16.01 Define UAS.			
16.02 Describe the development of UAS technology.			
16.03 Describe how UAS and their uses have changed over time.			
16.04 Categorize basic UAS types.			
16.05 Explain the role of UAS communities and networks.			
17.0 Demonstrate an understanding why safety considerations and regulations are necessary -- The student will be able to:			
17.01 Explain harm and damage from inappropriate use.			
17.02 Demonstrate basic understanding of restrictions of UAS flights.			
18.0 Understand the basic rules of safe operations -- The student will be able to:			
18.01 Describe appropriate locations and flight conditions.			

CTE Standards and Benchmarks		FS-M/LA	NGSSS-Sci	FAA FAR Part 107
	18.02 Describe basic requirements for safe operations.			
19.0	Demonstrate an understanding of the basic principles of flights -- The student will be able to:			
	19.01 Identify the structure and components of a UAS aircraft.			
	19.02 Explain the four forces of flight.			
	19.03 Explain the basic characteristics of roll, pitch, and yaw.			
20.0	Understand UAS propulsion and power -- The student will be able to:			
	20.01 Define and explain the two types of propulsion.			
	20.02 Describe the function and types of batteries used with UAS.			
	20.03 Describe the properties and functions of propellers.			
21.0	Understand the types of control -- The student will be able to:			
	21.01 Describe and explain various levels of operator versus computer control.			
	21.02 Identify and classify various communication methods.			
22.0	Understand material science -- The student will be able to:			
	22.01 Compare and contrast different materials used in airframe construction.			
	22.02 Describe and demonstrate soldering methods.			
23.0	Understand core components and assembly -- The student will be able to:			
	23.01 Identify core components used in UAS.			
	23.02 Select appropriate components for use in UAS.			
	23.03 Identify tools and equipment for UAS assembly.			
	23.04 Assemble and configure the assigned UAS.			
	23.05 Test system preflight functionality.			
	23.06 Install and configure external payloads.			

CTE Standards and Benchmarks	FS-M/LA	NGSSS-Sci	FAA FAR Part 107
24.0 Demonstrate and execute basic UAS operations -- The student will be able to:			
24.01 Identify the components of the pre-flight checklist.			
24.02 Execute pre-flight check.			
24.03 Execute in-flight operations.			
24.04 Define the roles of a UAS flightcrew.			
24.05 Describe and explain the stages of flight: prep, takeoff, flight profile, landing, and recovery.			
24.06 Perform and execute responses to the proposed flight profile and recovery.			
24.07 Identify elements of the post flight-checklist.			
24.08 Execute post-flight check.			

Florida Department of Education
Student Performance Standards

Course Title: Unmanned Aircraft Systems (UAS) Operations 2
Course Number: 9505120
Course Credit: 1

Course Description:
The Unmanned Aircraft Systems (UAS) Operations 2 course prepares and introduces students to the flight operations associated with the UAS aviation industry. Students examine and explore the applicable of regulations at the Federal, State, and local level as they relate to UAS and manned flight operations. Students are also introduced to the unique governing aspects of flight operations conducted within the National Airspace System (NAS). This course includes introduction to flight navigation, weather, mission planning, software, hardware, and firmware associated with UAS activities. Students continue to examine the aspects associated with environmental concerns, mathematics, physics, advanced aerodynamics, publications, and required records keeping.

Abbreviations:
FS-M/LA = Florida Standards for Math/Language Arts
NGSSS-Sci = Next Generation Sunshine State Standards for Science

Note: This course is pending alignment in the following categories: FS-M/LA, NGSSS-Sci, and FAA

CTE Standards and Benchmarks	FS-M/LA	NGSSS-Sci	FAA FAR Part 107
25.0 Demonstrate understanding of regulations and aeronautics principles – The student will be able to:			
25.01 Review and understand federal regulations that govern UAS operations.			
25.02 Research current state and local regulations that govern UAS operations.			
25.03 Describe current applications of UAS operations.			
25.04 Examine political, economic, and social impacts of UAS operations.			
25.05 Describe different classifications of airspace within the U.S.			
25.06 Identify the 24-hour clock and the associated phonetic alphabet.			
25.07 Identify features of an aeronautical charts.			
25.08 Describe and explain weather and weather reporting.			
25.09 Review and examine different mission planning.			

CTE Standards and Benchmarks		FS-M/LA	NGSSS-Sci	FAA FAR Part 107
	25.10 Develop flight planning dynamics using programmable software.			
	25.11 Program and configure software flight plan.			
26.0	Demonstrate understanding of mission planning, preparation, execution, and post flight debrief -- The student will be able to:			
	26.01 Organize and research the assigned mission.			
	26.02 Develop a flight plan/profile with defined outcomes.			
	26.03 Communicate mission flight plan/profile to flight crew.			
	26.04 Use designed hardware and software to define mission flight plan/profile.			
	26.05 Perform flight plan/profile briefing with Remote Pilot in Charge (RPIC) and flight crew.			
	26.06 Execute flight plan/profile.			
	26.07 Analyze and evaluate mission.			
	26.08 Format and analyze mission data.			
	26.09 Review mission and develop conclusions and present mission finding.			
	26.10 Evaluate and critique mission results.			
27.0	Review current regulations -- The student will be able to:			
	27.01 Review and Understand current federal regulations governing UAS operations.			
	27.02 Research current state and local regulations governing UAS operations.			
28.0	Describe potential impacts from UAS operations -- The student will be able to:			
	28.01 Research current applications of UAS operations.			
	28.02 Explain political, economic, and societal impacts of UAS operations.			
	28.03 Research UAS post-secondary training and careers.			
29.0	Demonstrate and execute troubleshooting -- The student will be able to:			
	29.01 Establish and execute a troubleshooting theory.			

CTE Standards and Benchmarks	FS-M/LA	NGSSS-Sci	FAA FAR Part 107
29.02 Apply theory to solve common UAS hardware, software, firmware, and communications problems.			
30.0 Demonstrate and execute maintenance -- The student will be able to:			
30.01 Select and use appropriate maintenance tools.			
30.02 Demonstrate and execute in-flight tuning to meet performance requirements.			
30.03 Apply appropriate repair/maintenance procedures.			
31.0 Understand aeronautical principles -- The student will be able to:			
31.01 Identify and use phonetic alphabet and Zulu time.			
31.02 Define and classify designated airspace.			
31.03 Identify features and read aeronautical maps.			
32.0 Understand weather and weather reporting -- The student will be able to:			
32.01 Explain how weather impacts UAS operations.			
32.02 Explain and interpret weather reports.			
33.0 Execute mission planning -- The student will be able to:			
33.01 Select appropriate platform for a specific mission.			
33.02 Configure flight plan using appropriate programs and software.			
33.03 Configure transmitter and software for appropriate flight modes, and deploy.			

Florida Department of Education
Student Performance Standards

Course Title: Unmanned Aircraft Systems (UAS) Operations 3
Course Number: 9505130
Course Credit: 1

Course Description:
The Unmanned Aircraft Systems (UAS) Operations 3 course prepares students for executing mission planning and design elements necessary to prototype new industry standards to meet the changing mission requirements as technology continues to adapt and advance. Students explore advanced mission planning from basic organization to enhanced and complex flight profiles. Students study advance operational principles and UAS design and development to support new designs necessary to perform every changing mission flight profiles. This will include environmental concerns, mathematics, physics, basic aerodynamics, federal aviation regulations, publications, and required records.

Abbreviations:
FS-M/LA = Florida Standards for Math/Language Arts
NGSSS-Sci = Next Generation Sunshine State Standards for Science

CTE Standards and Benchmarks		FS-M/LA	NGSSS-Sci	FAA FAR Part 61
34.0	**Demonstrate a practical application of mission planning – The student will be able to:**			
34.01	Organize and research the mission.			
34.02	Develop a project plan with defined outcomes.			
34.03	Communicate a project plan with stakeholders, backers, and support agency.			
35.0	**Demonstrate and execute mission preparation and UAS design – The student will be able to:**			
35.01	Use appropriate hardware and software to create UAS design.			
35.02	Assemble all components, software, and tools needed to build a prototype UAS for a designated mission profile.			
35.03	Identify basic and advanced setup for a UAS.			
36.0	**Demonstrate and execute advanced UAS construction – The student will be able to:**			
36.01	Create and utilize a design to build, modify and enhance a UAS.			
36.02	Modify and adjust components and/or payload.			

CTE Standards and Benchmarks	FS-M/LA	NGSSS-Sci	FAA FAR Part 61
36.03 Apply setup procedures to test, calibrate and optimize the UAS.			
37.0 Create and execute mission flight plan -- The student will be able to:			
37.01 Create a flight plan.			
37.02 Configure system for a specific flight plan.			
37.03 Execute a specific flight plan.			
38.0 Analyze and evaluate the mission -- The student will be able to:			
38.01 Format and analyze mission data.			
38.02 Draw conclusions and present mission findings.			
38.03 Describe and summarize mission with a wrap-up and debrief.			
38.04 Evaluate and critique mission results.			

Additional Information

Laboratory Activities

Laboratory investigations that include scientific inquiry, research, measurement, problem solving, emerging technologies, tools and equipment, as well as, experimental, quality, and safety procedures are an integral part of this career and technical program/course. Laboratory investigations benefit all students by developing an understanding of the complexity and ambiguity of empirical work, as well as the skills required to manage, operate, calibrate and troubleshoot equipment/tools used to make observations. Students understand measurement error; and have the skills to aggregate, interpret, and present the resulting data. Equipment and supplies should be provided to enhance hands-on experiences for students.

Classroom, shop, and laboratory activities are an integral part of this program. FAR Section 107.21(e) requires teaching of at least 50 percent of the curriculum in the shop or laboratory. These activities include instruction in the use of safety procedures, tools, equipment, materials, and processes found in the industry. Equipment and supplies should be provided to enhance hands-on experiences for students in the chosen occupation.

Special Notes

Refer to FAA FAR Part 61, 107 and industry publications for more information about required levels of proficiency, hours of instruction, and updates to occupational titles and training requirements. Keeping pace with the standards of industry and maintaining a high quality of training requires ongoing linkages with industry and FAA.

MyCareerShines is an interactive resource to assist students in identifying their ideal career and to enhance preparation for employment. Teachers are encouraged to integrate this resource into the program curriculum to meet the employability goals for each student. Access MyCareerShines by visiting: www.mycareershines.org.

Career and Technical Student Organization (CTSO)

SkillsUSA is the intercurricular career and technical student organization for providing leadership training and reinforcing specific career and technical skills. Career and Technical Student Organizations provide activities for students as an integral part of the instruction offered.

Accommodations

Federal and state legislation requires the provision of accommodations for students with disabilities as identified on the secondary student's Individual Educational Plan (IEP) or 504 plan or postsecondary student's accommodations' plan to meet individual needs and ensure equal access. Accommodations change the way the student is instructed. Students with disabilities may need accommodations in such areas as instructional methods and materials, assignments and assessments, time demands and schedules, learning environment, assistive technology and special communication systems. Documentation of the accommodations requested and provided should be maintained in a confidential file.

In addition to accommodations, some secondary students with disabilities (students with an IEP served in Exceptional Student Education (ESE)) will need modifications to meet their needs. Modifications change the outcomes or what the student is expected to learn, e.g., modifying the curriculum of a secondary career and technical education course. Note: postsecondary curriculum and regulated secondary programs cannot be modified.

Some secondary students with disabilities (ESE) may need additional time (i.e., longer than the regular school year), to master the student performance standards associated with a regular Occupational Completion Point (OCP) or a Modified Occupational Completion Point (MOCP). If needed, a student may enroll in the same career and technical course more than once. Documentation should be included in the IEP that clearly indicates that it is anticipated that the student may need an additional year to complete an OCP/MOCP. The student should work on different competencies and new applications of competencies each year toward completion of the OCP/MOCP. After achieving the competencies identified for the year, the student earns credit for the course. It is important to ensure that credits earned by students are reported accurately. The district's information system must be designed to accept multiple credits for the same course number for eligible students with disabilities.

Additional Resources

For additional information regarding articulation agreements, Bright Futures Scholarships, Fine Arts/Practical Arts Credit and Equivalent Mathematics and Equally Rigorous Science Courses please refer to:

http://www.fldoe.org/academics/career-adult-edu/career-tech-edu/program-resources.stml

Florida Department of Education
Curriculum Framework

Course Title: **Agricultural Use of UAS Technology**
Course Type: **Career Preparatory**
Career Cluster: **Agriculture, Food and Natural Resources**

Secondary – Career Preparatory	
Program Number	8005200
CIP Number	0141039901
Grade Level	11-12, 30, 31
Standard Length	1 credit
Teacher Certification	Refer to the Course Structure section.
CTSO	FFA
SOC Codes (All applicable)	19-4099 – Precision Agriculture Technicians
CTE Program Resources	http://www.fldoe.org/academics/career-adult-edu/career-tech-edu/program-resources.stml

Capstone Course

The purpose of this course is to provide students who have completed or are currently completing an OCP (occupational completion point) in an agricultural program, a capstone experience in UAS Technology for agriculture. This course is designed to enhance competencies in the areas of agricultural science and UAS technology. Laboratory-based activities are an integral part of this course. These include the safe use and application of appropriate technology, scientific testing and observation equipment.

Additional Information relevant to this Career and Technical Education (CTE) program is provided at the end of this document.

Program Structure

This course may be taken only by a student who has completed or is currently completing an occupational completion point in an agriculture program.

OCP	Course Number	Course Title	Teacher Certification	Length	SOC Code	Level	Graduation Requirement
A	8005233	Agricultural use of UAS Technology	AGRICULTUR 1*	1 credit	19-4099	3	VO

(Graduation Requirement Abbreviations- EQ= Equally Rigorous Science, PA= Practical Arts, EC= Economics, VO= Career and Technical Education)

Teacher Certification

Teachers must hold the traditional agriculture teacher certification and an Unmanned Safety Credential to teach this course.

Academic Alignment Tables

Academic alignment is an ongoing, collaborative effort of professional educators specializing in the fields of science, mathematics, English/language arts, and Career and Technical Education (CTE). This initiative supports CTE programs by improving student performance through the integration of academic content within CTE courses. Career and Technical Education courses that have been aligned to the Next Generation Sunshine State Standards for Science and the Florida Standards for Mathematics and English/Language Arts will show the following data: the quantity of academic standards in the CTE course; the total number of standards contained in the academic course; and the percentage of alignment to the CTE course.

Courses	Anatomy/ Physiology Honors	Astronomy Solar/Galactic Honors	Biology 1	Chemistry 1	Earth-Space Science	Environmental Science	Genetics	Integrated Science	Marine Science 1 Honors	Physical Science	Physics 1
Agricultural use of UAS Technology	**	**	**	**	**	**	**	**	**	**	**

** *Alignment pending review* # *Alignment attempted, but no correlation to academic course*

Courses	Algebra 1	Algebra 2	Geometry	English 1	English 2	English 3	English 4
Agricultural use of UAS Technology	**	**	**	**	**	**	**

** *Alignment pending review* # *Alignment attempted, but no correlation to academic course*

Florida Standards for Technical Subjects

Florida Standards (FS) for English Language Arts and Literacy in History/Social Studies, Science, and Technical Subjects are the critical reading and writing literacy standards designed for grade 6 and above. These standards are predicated on teachers of history/social studies, science, and technical subjects using their content area expertise to help students meet the particular challenges of reading, writing, speaking, listening, and language in their respective fields. The FS for Mathematical Practices are designed for grades K-12 and describe varieties of expertise that educators at all levels should seek to develop in their students. These practices rest on important "processes and proficiencies" with longstanding importance in mathematics education.

Instructors must incorporate the Florida Standards for Technical Subjects and Mathematical Practices throughout instruction of this CTE program. To access these standards, please click on the following link:
http://www.fldoe.org/core/fileparse.php/5652/urlt/FloridaStandardsTechSubjects.rtf.

Florida Standards for English Language Development (ELD)

English language learners communicate for social and instructional purposes within the school setting. ELD.K12.SI.1.1

English Language Development (ELD) Standards Special Notes:
Teachers are required to provide listening, speaking, reading and writing instruction that allows English language learners (ELL) to communicate for social and instructional purposes within the school setting. For the given level of English language proficiency and with visual, graphic, or interactive support, students will interact with grade level words, expressions, sentences and discourse to process or produce language necessary for academic success. The ELD standard should specify a relevant content area concept or topic of study chosen by curriculum developers and teachers which maximizes an ELL's need for communication and social skills. To access an ELL supporting document which delineates performance definitions and descriptors, please click on the following link: http://www.cpalms.org/uploads/docs/standards/eld/SI.pdf.
For additional information on the development and implementation of the ELD standards, please contact the Bureau of Student Achievement through Language Acquisition at sala@fldoe.org.

Common Career Technical Core – Career Ready Practices

Career Ready Practices describe the career-ready skills that educators should seek to develop in their students. These practices are not exclusive to a Career Pathway, program of study, discipline or level of education. Career Ready Practices should be taught and reinforced in all career exploration and preparation programs with increasingly higher levels of complexity and expectation as a student advances through a program of study.

1. Act as a responsible and contributing citizen and employee.

2. Apply appropriate academic and technical skills.

3. Attend to personal health and financial well-being.

4. Communicate clearly, effectively and with reason.

5. Consider the environmental, social and economic impacts of decisions.

6. Demonstrate creativity and innovation.

7. Employ valid and reliable research strategies.

8. Utilize critical thinking to make sense of problems and persevere in solving them.

9. Model integrity, ethical leadership and effective management.

10. Plan education and career path aligned to personal goals.

11. Use technology to enhance productivity.

12. Work productively in teams while using cultural/global competence.

Standards

After successfully completing this program, the student will be able to perform the following:

01.0 Investigate the origins and development of unmanned aviation.
02.0 Develop a plan for powered flight in the National Airspace System
03.0 Explain aviation rules and regulations as they pertain to UAS.
04.0 Explain concepts and differences in human factors related manned and unmanned aviation.
05.0 Demonstrate Crew Resource Management principles.
06.0 Demonstrate the appropriate attitudes and behaviors associated with the safety mindset.
07.0 Analyze UAS technologies, platforms, and systems.
08.0 Select appropriate UAV to complete a given objective.
09.0 Analyze the ethics and privacy considerations in the operation of unmanned aircraft.
10.0 Model methods to communicate with air traffic control and conflict aircraft
11.0 Analyze UAS Operating standards and restrictions
12.0 Explain components of airworthiness
13.0 Explain aviation safety systems as they apply to UAS
14.0 Explain new careers that have emerged using technology in agriculture.
15.0 Determine uses for Unmanned Aircraft Systems (UAS) to monitor plant growth.
16.0 Describe how UAS can be used to evaluate soil conditions.
17.0 Develop an integrated pest management (IPM) plan using information from UAS technology.
18.0 Develop fertilizer recommendations by interpreting multiple data sources.
19.0 Determine uses for UAS to monitor animal operations.
20.0 Determine the applications of UAS to provide data forage producers.
21.0 Determine the applications of UAS to provide data on agricultural crops.
22.0 Determine the applications of UAS to provide data to foresters.

Florida Department of Education
Student Performance Standards

Course Title: Agriculture and UAS Technology
Course Number: 8005233
Course Credit: 1

CTE Standards and Benchmarks	FS-M/LA	NGSSS-Sci	National Standards
01.0 Investigate the origins and development of unmanned aviation.			
01.01 Actively participate in a group to present important systems, people, and technologies important to the development of the industry.			
01.02 Summarize the evolution of commercial UAS operations in the United States.			
01.03 Explain the limitations and constraints placed on the development of commercial UAS.			
01.04 Describe the process and evolution of a UAS regulatory framework.			
01.05 Explain technologies that led to modern day UAS.			
01.06 Describe the events important to the development of UAS.			
01.07 Explain classification schemes of UAS.			
01.08 Explain intelligence modes of control for UAS.			
01.09 Explain the difference between direct control versus supervisory control.			
01.10 Design a diagram illustrating the differences and similarities between beyond line of sight, beyond visual line of sight, electronic line of sight, and visual line of sight.			
02.0 Develop a plan for powered flight in the National Airspace System.			
02.01 Interpret Aeronautical Charts to determine airspace for a given location.			
02.02 Explain the classes of airspace.			
02.03 Describe weather and associated hazards to aviation.			

CTE Standards and Benchmarks	FS-M/LA	NGSSS-Sci	National Standards
02.04 Interpret "official" sources of weather to make sound decision.			
02.05 Interpret the Notices to Airman Information reporting system.			
02.06 Interpret both airport and center NOTAMs.			
03.0 Explain aviation rules and regulations as they pertain to UAS.			
03.01 Explain the limitations and requirements of Visual Flight Rules as they pertain to UAS.			
03.02 Explain state and local rules and regulations governing UAS.			
04.0 Explain concepts and differences of in human factors related to manned and unmanned aviation			
04.01 Explain the human factors of UAS operations.			
04.02 Explain how ground control stations operate.			
04.03 Describe personnel required for UAS operations.			
04.04 Explain how human factors effect operation.			
04.05 Demonstrate an understanding of human imitations in perception, processing and performance			
04.06 Describe the type and causes of human errors			
04.07 Describe the physiological effects of drugs and alcohol			
04.08 Describe methods for dealing with automation and the lack of sensory cues			
05.0 Demonstrate Crew Resource Management principles			
05.01 Explain the purpose of Crew Resource Management			
05.02 Describe situational awareness			
05.03 Demonstrate effective crew communication and coordination			
05.04 Utilize advocacy and inquiry to champion a course of action			
05.05 Describe strategies for dealing with task saturation or overloads			
05.06 Demonstrate the skills associated with aeronautical decision			

CTE Standards and Benchmarks	FS-M/LA	NGSSS-Sci	National Standards
making and operational analysis			
05.07 Demonstrate proper site survey and analysis skills			
06.0 Demonstrate the appropriate attitudes and behaviors associated with the safety mindset.			
06.01 Describe and demonstrate professional conduct			
06.02 Demonstrate the importance of being risk averse in UAS planning and flight			
07.0 Analyze UAS technologies, platforms, and systems.			
07.01 Summarize UAS intelligence and components.			
07.02 Summarize platform capabilities and limitations.			
07.03 Analyze the control station of UAS.			
07.04 Summarize the payload element of UAS			
07.05 Analyze the environment in which the UAS operate.			
07.06 Explain frequency management in the United States.			
07.07 Assess UAS lifecycle and its implication on UAS operations.			
07.08 Compare UAS component reliability and operational considerations.			
07.09 Describe UAS user interfaces.			
07.10 Analyze levels of automation in robotic systems.			
07.11 Analyze when to use UAS rather than manned aircraft.			
07.12 Describe UAS sensors used for navigation and stabilization.			
08.0 Select appropriate UAV to complete a given objective.			
08.01 Explain characteristics of airborne robotic systems.			
08.02 Compare wing designs and benefits of each to the field of UAS.			
08.03 Analyze criteria set forth via a request for proposal to identify			

CTE Standards and Benchmarks	FS-M/LA	NGSSS-Sci	National Standards
appropriate aircraft to conduct operations.			
08.04 Compare energy sources available for UAS.			
08.05 Compare payload options and apply them to appropriate operations.			
08.06 Explain uses of infrared technology.			
09.0 Analyze the ethics and privacy considerations in the operation of unmanned aircraft.			
09.01 Explain the regulations and policies currently in place for UAS operations.			
09.02 Describe the foundations of an ethical code of conduct for UAS operators.			
09.03 Define professional use of UAS.			
09.04 Demonstrate standards of professionalism in everyday operations.			
09.05 Analyze ethical use of robotic aircraft. (safety of people)			
10.0 Model methods to communicate with air traffic control and conflict aircraft.			
10.01 Describe aviation communications practices.			
10.02 Explain the essential information required in aviation communication.			
10.03 Use the Aeronautical Information Manual to make a radio call.			
11.0 Analyze UAS Operating standards and restrictions.			
11.01 Analyze UAS limitations and regulations.			
11.02 Explain guidelines and safety protocols.			
11.03 Explain the reporting requirements for UAS operations.			
12.0 Explain components of airworthiness.			
12.01 Explain the concept of system limitations.			
12.02 Prepare airworthiness inspections.			

CTE Standards and Benchmarks	FS-M/LA	NGSSS-Sci	National Standards
13.0 Explain aviation safety systems as they apply to UAS.			
13.01 Explain the four pillars of a safety management system (SMS).			
13.02 Conduct a risk assessment.			
13.03 Develop risk mitigation strategies.			
13.04 Explain methods for safety assurance and promotion.			
13.05 Describe how a well working SMS can recover from an accident.			
14.0 Explain new careers that have emerged using technology in agriculture.			
14.01 Identify significant career shifts with technology in the agriculture industry.			
14.02 Examine the role of technology in the agriculture industry.			
14.03 Solve mathematical applications using technology.			
14.04 Describe technologies associated with active and passive remote sensing payloads.			
14.05 Explain the limitations of remote sensing.			
15.0 Determine uses for Unmanned Aircraft Systems (UAS) to monitor plant growth.			
15.01 Describe the uses of UAS remote sensing technology to examine the processes of plant growth.			
15.02 Determine the health of plant using chlorophyll counts.			
15.03 Identify nutrient deficiencies in plants using UAS remote sensing technology.			
16.0 Describe how UAS can be used to evaluate soil conditions.			
16.01 Analyze soil properties using UAS remote sensing technology.			
16.02 Develop a plan to use UAS technology in best management practices for irrigation.			
16.03 Examine irrigation application effectiveness using UAS technology.			
17.0 Develop an integrated pest management (IPM) plan using information from UAS technology.			

CTE Standards and Benchmarks	FS-M/LA	NGSSS-Sci	National Standards
17.01 Identify pests and diseases and the damage they cause.			
17.02 Recommend appropriate solutions for pest and disease control.			
17.03 Differentiate between nutrient deficiencies and pest/disease damage in plants.			
18.0 Develop fertilizer recommendations by interpreting multiple data sources.			
18.01 Identify nutrient deficiencies plan using UAS remote sensing.			
18.02 Make fertilizer recommendations based on data from visual appraisal of plants and soil samples.			
18.03 Determine the appropriate type and rate of fertilizer to apply to plants.			
19.0 Determine uses for UAS to monitor animal operations.			
19.01 Describe the uses of UAS technology to observe animals.			
19.02 Identify animals using UAS remote sensing.			
19.03 Determine calving percentages using UAS remote sensing.			
19.04 Identify the systems of common diseases of cattle, sheep, and goats.			
20.0 Determine the applications of UAS to provide data forage producers.			
20.01 Identify common forages, pests, and diseases using UAS remote sensing.			
20.02 Identify the growth stage of forage crops.			
20.03 Identify common diseases that impact forage crops.			
20.04 Evaluate forage and hay as a source of nutrition for animals.			
21.0 Determine the applications of UAS to provide data on agricultural crops.			
21.01 Use UAS remote sensing technology to identify pest and diseases.			
21.02 Analyze the use of UAS for early detection of diseases.			

CTE Standards and Benchmarks	FS-M/LA	NGSSS-Sci	National Standards
21.03 Calculate yield estimates using UAS data.			
21.04 Evaluate and monitor crops using UAS remote sensing technology to predict harvest times.			
22.0 Determine the applications of UAS to provide data to foresters.			
22.01 Identify economically important tree species.			
22.02 Identify forest pests, insects and diseases using UAS remote sensing techniques.			
22.03 Make forest management decisions using data from UAS images and data.			

Additional Information

Laboratory Activities

Laboratory investigations that include scientific inquiry, research, measurement, problem solving, emerging technologies, tools and equipment, as well as, experimental, quality, and safety procedures are an integral part of this career and technical program/course. Laboratory investigations benefit all students by developing an understanding of the complexity and ambiguity of empirical work, as well as the skills required to manage, operate, calibrate and troubleshoot equipment/tools used to make observations. Students understand measurement error; and have the skills to aggregate, interpret, and present the resulting data. Equipment and supplies should be provided to enhance hands-on experiences for students.

Extended Student Supervision

Because of the production and marketing cycle of the agriculture industry, this program requires individual instruction and supervision of students for the entire period beyond the 180-day school year.

Special Notes

MyCareerShines is an interactive resource to assist students in identifying their ideal career and to enhance preparation for employment. Teachers are encouraged to integrate this resource into the program curriculum to meet the employability goals for each student. Access MyCareerShines by visiting: www.mycareershines.org.

Career and Technical Student Organization (CTSO)

FFA is the intercurricular career and technical student organization for providing leadership training and reinforcing specific career and technical skills. Career and Technical Student Organizations provide activities for students as an integral part of the instruction offered.

Accommodations

Federal and state legislation requires the provision of accommodations for students with disabilities as identified on the secondary student's Individual Educational Plan (IEP) or 504 plan or postsecondary student's accommodations' plan to meet individual needs and ensure equal access. Accommodations change the way the student is instructed. Students with disabilities may need accommodations in such areas as instructional methods and materials, assignments and assessments, time demands and schedules, learning environment, assistive technology and special communication systems. Documentation of the accommodations requested and provided should be maintained in a confidential file.

In addition to accommodations, some secondary students with disabilities (students with an IEP served in Exceptional Student Education (ESE)) will need modifications to meet their needs. Modifications change the outcomes or what the student is expected to learn, e.g., modifying the curriculum of a secondary career and technical education course. Note: postsecondary curriculum and regulated secondary programs cannot be modified.

Some secondary students with disabilities (ESE) may need additional time (i.e., longer than the regular school year), to master the student performance standards associated with a regular Occupational Completion Point (OCP) or a Modified Occupational Completion Point (MOCP). If needed, a student may enroll in the same career and technical course more than once. Documentation should be included in the IEP that clearly

indicates that it is anticipated that the student may need an additional year to complete an OCP/MOCP. The student should work on different competencies and new applications of competencies each year toward completion of the OCP/MOCP. After achieving the competencies identified for the year, the student earns credit for the course. It is important to ensure that credits earned by students are reported accurately. The district's information system must be designed to accept multiple credits for the same course number for eligible students with disabilities.

Additional Resources

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http://www.fldoe.org/academics/career-adult-edu/career-tech-edu/program-resources.stml