Florida Department of Education
Curriculum Framework

Program Title: **Exercise Science**
Program Type: **Career Preparatory**
Career Cluster: **Health Science**

Secondary – Career Preparatory	
Program Number	8417000
CIP Number	0331050405
Grade Level	9-12
Standard Length	3 credits
Teacher Certification	Refer to the **Program Structure** section.
CTSO	HOSA: Future Health Professionals
SOC Codes (all applicable)	31-9099 Healthcare Support Workers, All Other 39-9031 Fitness Trainers and Aerobics Instructors
CTE Program Resources	http://www.fldoe.org/academics/career-adult-edu/career-tech-edu/program-resources.stml

Purpose

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 Health Science 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 Health Science career cluster.
The content includes but is not limited to planning, management, finance, technical and production skills, applied aspect of leadership, underlying principles of technology, labor issues, community issues and health, safety, and environmental issues. Work based learning experiences are an integral part of this program.

The purpose of this program is to prepare students for the wellness and fitness marketplace and its various components such as instructing or coaching groups or individuals in exercise activities and the fundamentals of an individual's health and wellness. Personal trainers demonstrate techniques and methods of participation and observe participants and inform them of corrective measures necessary to improve their skills and personal health.

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 three courses and two occupational completion points. The two credit core is required as a prerequisite for all programs and options. Secondary students completing the two required courses will not have to repeat the core in postsecondary. When the recommended sequence is followed, the structure allows students to complete at specified points for employment or remain for advanced training or cross-training. A student who completes the applicable competencies at any occupational completion point may either continue with the training program or exit as an occupational completer.

The two courses in the core are:

8417100 - Health Science Anatomy and Physiology
8417110 - Health Science Foundations

To teach the courses listed below, instructors must hold at least one of the teacher certifications indicated for that course.

The following table illustrates the secondary program structure:

OCP	Course Number	Course Title	Teacher Certification	Length	SOC Code	Level	Graduation Requirement
A	8417100	Health Science Anatomy and Physiology	ANY HEALTH OCCUP G (See DOE approved list)	1 credit	31-9099	3	EQ
	8417110	Health Science Foundations		1 credit	31-9099	3	
B	8417120	Exercise Science	PH THER TEC @7 G HEALTH FIT SPEC 7G MED PROF 7 G	1 credit	39-9031	3	

(Graduation Requirement Abbreviations- EQ= Equally Rigorous Science, PA= Practical Arts, EC= Economics)

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
8417100	46/87 53%	6/80 8%	52/83 63%	7/69 10%	26/67 39%	8/70 11%	21/69 30%	34/82 41%	9/66 14%	29/74 39%	6/72 8%

8417110	17/87 20%	16/80 20%	32/83 39%	13/69 19%	28/67 42%	15/70 21%	14/69 20%	28/82 34%	18/66 27%	31/74 42%	12/72 17%
8417120	46/87 56%	20/80 25%	5/83 6%	20/69 29%	1/67 1%	20/70 29%	21/69 30%	2/82 2%	15/66 23%	2/74 3%	20/72 28%

** *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
8417100	21/67 31%	9/75 12%	18/54 33%	14/46 30%	14/45 31%	#	#
8417110	25/67 37%	15/75 20%	18/54 33%	22/46 48%	22/45 49%	25/45 56%	25/45 56%
8417120	8/67 12%	14/75 19%	8/54 15%	**	**	**	**

** *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:

Standards 1-27 encompass the Health Science Core:

01.0 Analyze and interpret an overview of the human body, including organization and chemical process.
02.0 Apply correct medical terminology relating to body structure and function within a real-world application.
03.0 Evaluate cells and tissues microscopically and macroscopically and relate their specialized functions.
04.0 Analyze the integumentary system in relation to health and disease.
05.0 Analyze the skeletal system in relation to health and disease.
06.0 Analyze the muscular system in relation to health and disease.
07.0 Analyze the nervous system in relation to health and disease.
08.0 Analyze the endocrine system in relation to health and disease.
09.0 Analyze the cardiovascular/circulatory system in relation to health and disease.
10.0 Analyze the lymphatic and immune systems in relation to health and disease.
11.0 Analyze the respiratory system in relation to health and disease.
12.0 Analyze the digestive system in relation to health and disease.
13.0 Analyze the urinary system in relation to health and disease.
14.0 Analyze both the male and female reproductive systems in relation to health and disease.
15.0 Identify and explain factors relating to genetics and disease.
16.0 Evaluate and apply the principles of disease transmission and control to real-world scenarios.
17.0 Demonstrate knowledge of the healthcare delivery system and health occupations.
18.0 Demonstrate the ability to communicate and use interpersonal skills effectively.
19.0 Demonstrate legal and ethical responsibilities.
20.0 Demonstrate an understanding of and apply wellness and disease concepts.
21.0 Recognize and practice safety and security procedures.
22.0 Recognize and respond to emergency situations.
23.0 Recognize and practice infection control procedures.
24.0 Demonstrate an understanding of information technology applications in healthcare.
25.0 Demonstrate employability skills.
26.0 Demonstrate knowledge of blood borne diseases, including HIV/AIDS.
27.0 Apply basic math and science skills.

Standards 28-33 encompass Health and Wellness 3:

28.0 Identify and classify management and human resource strategies.
29.0 Demonstrate a working knowledge of current and legal issues in fitness and wellness.
30.0 Identify and describe fiscal and facility development.
31.0 Identify and describe basic human anatomy and physiology in relation to personal fitness or personal training.
32.0 Define, identify and describe basic fitness, wellness, and exercise prescription and programming concepts.
33.0 Classify and demonstrate competence and skill in the care and prevention of athletic injuries.

Florida Department of Education
Student Performance Standards

Health Science Core:

The first two courses in this program are referred to as the Health Science Core and consist of the courses Health Science Anatomy & Physiology (8417100) and Health Science Foundations (8417110). These courses were previously titled Health Science 1 and Health Science 2. To ensure consistency whenever these courses are offered, the standards and benchmarks for the health science core have been placed in a separate document.

You can access the course outline, standards, and benchmarks by visiting this link:
http://www.fldoe.org/core/fileparse.php/5655/urlt/health-sci-core-secondary.rtf

The two credit core is required as a prerequisite for all secondary programs except for Practical Nursing and Pharmacy Technician. Secondary students completing the two required courses will not have to repeat the core in postsecondary. When the recommended sequence is followed, the structure allows students to complete at specified points for employment or remain for advanced training or cross-training.

Course Title: **Health Science Anatomy & Physiology**
Course Number: **8417100**
Course Credit: **1**

Course Description:
This course is part of the secondary Health Core consisting of an overview of the human body, both structurally and functionally with emphasis on the pathophysiology and transmission of disease. Medical terminology is an integral part of the course.

The course Anatomy and Physiology (2000350) or Anatomy and Physiology Honors (2000360) may be substituted for the course Health Science Anatomy & Physiology (8417100).

The course Health Science Anatomy & Physiology (8417100) is designated as an equally rigorous (EQ) science credit.

Course Title: **Health Science Foundations**
Course Number: **8417110**
Course Credit: **1**

Course Description:
This course is part of the Secondary Health Core designed to provide the student with an in depth knowledge of the health care system and associated occupations. Emphasis is placed on communication and interpersonal skills, use of technology, ethics and the development of critical thinking and problem solving skills. Students may shadow professionals throughout the course.

Florida Department of Education
Student Performance Standards

Course Title: **Health and Wellness 3/ Exercise Science**
Course Number: **8417120**
Course Credit: **1**

Course Description:

This course prepares students to be employed as Personal Trainers. Content includes, but not limited to, identifying and practicing within the appropriate scope of practice for a personal trainer, develop and implement exercise programs for apparently healthy individuals or those who have medical clearance to exercise, proficiency in the appropriate fitness equipment used, as well as a foundation in the musculo-skeletal system of the body.

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

CTE Standards and Benchmarks		FS-M/LA	NGSSS-Sci
28.0	Identify and classify management and human resource strategies. – The student will be able to:		
28.01	Identify management leadership styles.		
28.02	Identify the major functions of management.		
28.03	Classify activities as part of the planning function of management.		
28.04	Classify activities as part of the organizing function of management.		
28.05	Classify activities as part of the staffing function of management.		
28.06	Classify activities as part of the directing/controlling function of management.		
28.07	Select the most effective communication system.		
28.08	Demonstrate knowledge of the relationship between authority and responsibility to task accomplishment.		

CTE Standards and Benchmarks		FS-M/LA	NGSSS-Sci
	28.09 Identify the different stages of goal setting.		
29.0	Demonstrate a working knowledge of current and legal issues in fitness and wellness. – The student will be able to:		
	29.01 Demonstrate an understanding of negligence and basic legal terms.		
	29.02 Demonstrate an understanding of contract law.		
	29.03 Demonstrate an understanding of labor laws and their purpose in Florida.		
	29.04 Demonstrate an understanding of workers compensation law.		
	29.05 Demonstrate an understanding of tort law and its significance in the health field.		
	29.06 Demonstrate an understanding of disability laws.		
	29.07 Identify the personal trainers' responsibilities and duties within their legal scope of practice.		
	29.08 Discuss the legal and ethical consequences of drug use with a focus on performance enhancing drugs and supplements.		
	29.09 Outline and present a current and/or legal issue related to fitness and wellness.		
30.0	Identify and describe fiscal and facility development. – The student will be able to:		
	30.01 Identify various types of budgets.		
	30.02 Identify sources to become fiscally responsible as an exercise science professional.		
	30.03 Prepare a budget spreadsheet that identifies the components of a budget.		
	30.04 Identify requisitions and purchase orders and their use.		
	30.05 Describe and design a process of inventory control.		
	30.06 Describe the importance of a market analysis for the construction of a training facility.		
	30.07 Identify the individuals in groups in the planning process of construction.		
	30.08 Discuss the sources of funding for the construction of a facility.		
	30.09 Design a training facility that includes identifying the sources of		

CTE Standards and Benchmarks	FS-M/LA	NGSSS-Sci
funding.		
31.0 Identify and describe basic human anatomy and physiology in relation to personal fitness or personal training. – The student will be able to:		SC.912.L.14.13 SC.912.L.14.14 SC.912.L.14.16 SC.912.L.14.19 SC.912.L.14.20 SC.912.L.14.21 SC.912.L.14.27 SC.912.L.14.28 SC.912.L.14.29 SC.912.L.14.30 SC.912.L.14.31 SC.912.L.14.34 SC.912.L.14.35 SC.912.L.14.36 SC.912.L.14.40 SC.912.L.14.42 SC.912.L.14.44 SC.912.L.14.46 SC.912.L.14.47 SC.912.L.14.48 SC.912.L.14.49 SC.912.L.14.50 SC.912.L.14.52 SC.912.L.16.3 SC.912.L.18.6 SC.912.L.18.8
31.01 Analyze directional terms referring to areas of the body.		
31.02 Evaluate the construct of the human skeleton form, including the structure and function of the different types of muscles.		
31.03 Compare and contrast the different muscle contractions including concentric, eccentric and isometric.		
31.04 Identify the origin, insertion and action for each major muscle.		
31.05 Evaluate the anatomy and physiology of each of the following systems and how they interact with each other: 31.05.01 nervous system 31.05.02 immune		

CTE Standards and Benchmarks			FS-M/LA	NGSSS-Sci
	31.05.03	lymphatic		
	31.05.04	vascular		
	31.05.05	circulatory		
	31.05.06	cardiac		
	31.05.07	pulmonary		
	31.05.08	respiratory		
	31.05.09	digestive		
	31.05.10	urinary		
	31.05.11	reproductive		
32.0	Understand the theories and practices of exercise physiology. - The student will be able to:			SC.912.L.14.39 SC.912.L.16.18 SC.912.L.18.2 SC.912.L.18.3 SC.912.L.18.4 SC.912.N.1.1
	32.01	Perform patient education utilizing concepts of communication and differing learning styles.		
	32.02	Classify health fitness standards, including components of wellness, describe health appraisals, fitness assessments, and exercise prescriptions.		
	32.03	Compare and contrast lifestyle factors that improve health and increase longevity.		
	32.04	Describe the relationship between the agonist, antagonist, fixators and synergist for muscle movement.		
	32.05	Demonstrate an understanding of common training types.		
	32.06	Identify risk factors that may interfere with safe participation in exercise		
	32.07	Assess and research various techniques to assess body composition and its relationship to assessment of recommended body weight.		
	32.08	Evaluate and explain the physiology of weight loss and management.		
	32.09	Prepare and explain a beneficial lifetime exercise program and staying healthy in relation to cardio-respiratory exercise prescriptions.		
	32.10	Define cardio-respiratory endurance and the benefits of cardio-respiratory endurance training.		

CTE Standards and Benchmarks		FS-M/LA	NGSSS-Sci
	32.11 Define aerobic and anaerobic exercise and examples of each.		
	32.12 Define and identify the principles that govern cardio-respiratory exercise prescription: Frequency, Intensity, Time and Type of Exercise.		
	32.13 Demonstrate an understanding of length tension relationship and how it relates to muscles.		
	32.14 Demonstrate an understanding of the concept of force coupling and how it relates to muscles.		
	32.15 Differentiate between muscular strength and muscular endurance and types.		
	32.16 Define and understand muscular flexibility.		
	32.17 Define and understand the role of fitness in relation to stress management and maintaining health.		
	32.18 Evaluate the physiological effects of illness, alcohol, tobacco and drugs.		
	32.19 Describe the relationship between fitness and aging.		
	32.20 Define and describe factors on how to select appropriate exercise.		
	32.21 Demonstrate safe and proper techniques in using fitness, protective and personal training equipment.		
	32.22 Prepare and creatively present experiences to help individuals enhance their personal health, as well as develop sound programs for others.		
	32.23 Design a comprehensive training program.		
33.0	Classify and demonstrate competence and skill in the care and prevention of injuries. – The students will be able to:		
	33.01 Demonstrate skills necessary to recognize the causes and preventative measures associated with athletic participation.		
	33.02 Demonstrate knowledge and understanding of the care and prevention of fitness related injuries.		
	33.03 Discuss the selection and use of appropriate modalities for athletic injuries.		
	33.04 Identify acceptable selection and usage of reconditioning techniques.		
34.0	Apply principles of nutrition and wellness in assessing health and wellness. - The student will be able to:		

CTE Standards and Benchmarks		FS-M/LA	NGSSS-Sci
34.01	Demonstrate an understanding of supplementation including benefits, indications and contraindications		
34.02	Define basic nutrition and describe its relationship to health, wellness, and weight management.		
34.03	Discuss the national Dietary Guidelines for Americans.		
34.04	Identify and describe the relationship between nutrition, diet and athletic performance.		
34.05	Create a nutrition and wellness research paper.		
35.0	Perform medical office management duties. - The student will be able to:		
35.01	Evaluate different types of patient scheduling.		
35.02	Determine scheduling needs of the healthcare facility.		
35.03	Explain protocol for no-show, missed, cancelled or follow up appointments.		
35.04	Perform diagnostic testing using appropriate procedures.		
35.05	Explain processes, procedures and standardized forms as they pertain to patients.		
35.06	Demonstrate and follow financial procedures as it pertains to patients/clients.		
35.07	Analyze federal guidelines as pertains to a healthcare facility, to include, but not limited to OSHA, HIPAA, SDS, CMS.		
35.08	Perform office opening and closing procedures.		

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.

This program requires a clinical component of approximately 50% the length of the courses following the health science core. A portion of the clinical experience can be achieved through simulation when appropriate.

Clinical courses require contact hours in the clinical setting in order to complete the health science program. Hospitals, nursing homes, and other clinical facilities with clinical affiliation agreements limit the number of students that can rotate and/or be on site at one time. Most facilities, including hospitals and nursing homes, limit the number of students to 15. Due to these industry limitations, it is recommended that the student ratio be 15:1 (student/teacher) based on the clinical facilities that students attend to for clinical training.

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.

The purpose of the programs in this cluster is to prepare students for employment or advanced training in the health occupations industry. The programs in this cluster also provide students the opportunity to be cross-trained in a variety of entry level positions.

Following the completion of the Health Science Core, the student is eligible to take the National Health Care Foundation Skill Standards Assessment with instructor approval and the completion of a portfolio.

However, In order for students to participate in the ACSM Certified Personal Trainer Certification exam they must be 18 years of age, have earned a high school diploma, and hold a current Adult AHA CPR certification. For more information on this exam please visit www.acsm.org

This program meets the Department of Health's education requirements for HIV/AIDS, Domestic Violence and Prevention of Medical Errors. Although not a requirement for initial licensure, it is a requirement for renewal, therefore the instructor may provide a certificate for renewal purposes to the student verifying these requirements have been met.

Career and Technical Student Organization (CTSO)

HOSA: Future Health Professionals is the intercurricular career and technical student organization 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.

Cooperative Training – OJT

On-the-job training is appropriate but not required for this program. Whenever offered, the rules, guidelines, and requirements specified in the OJT framework apply.

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