Individual Test Item Specifications

8112010- Aquaculture 2

2015

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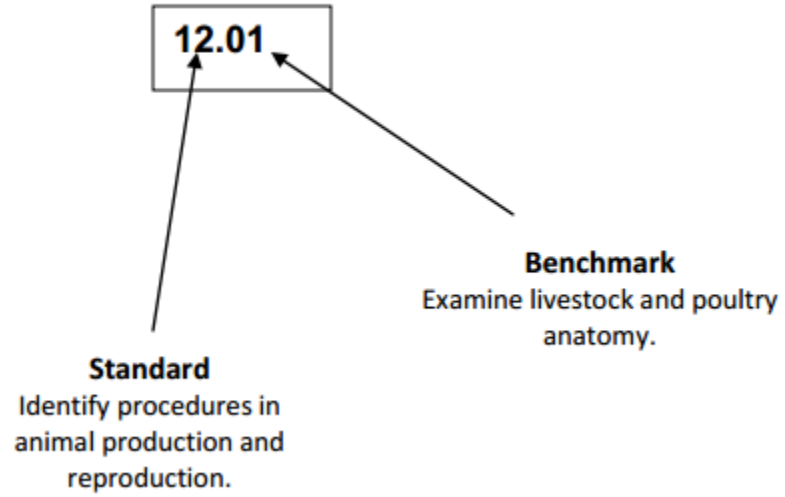
I. Guide to the Individual Benchmark Specifications

Content specific guidelines are given in the *Individual Benchmark Specifications* for each course. The *Specifications* contains specific information about the alignment of items with the Florida Standards. It identifies the manner in which each benchmark is assessed, provides content limits and stimulus attributes for each benchmark, and gives specific information about content, item types, and response attributes.

Benchmark Classification System

- Each Career and Technical Education course has its own set of course standards. The benchmarks are organized numerically, with two numbers separated by a decimal point. The first number is the standard number, and the second number is the benchmark number. You will see these numbers on the Item Specifications for each course.

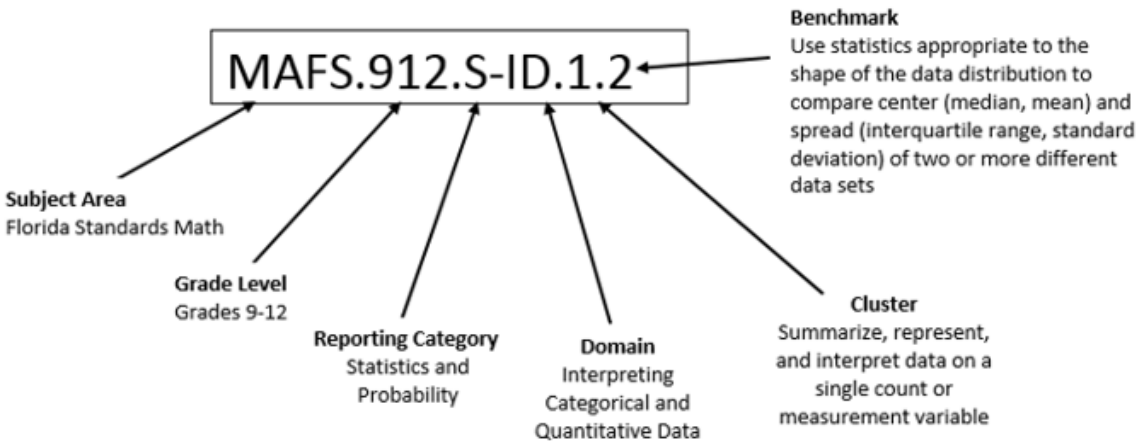
An example, from Agritechnology 1:



The image above describes the components of a Career and Technical Education Standard and Benchmark classification system.

Each MAFS benchmark is labeled with a system of letters and numbers.

- The four letters in the *first position* of the label identify the **Subject**.
- The number(s) in the *second position* represents the **Grade Level**.
- The letter(s) in the *third position* represents the **Category**.
- The number in the fourth position shows the **Domain**.
- The number in the *fifth position* identifies the **Cluster**.
- The number in the last position identifies the specific **Benchmark**.



The image above describes the components of a Florida Standard and Benchmark classification system.

Definitions of Benchmark Specifications

The *Individual Benchmark Specifications* provides standard-specific guidance for assessment item development for the Florida Department of Education Career and Technical Education item banks. For each benchmark assessed, the following information is provided.

Reporting Category	is a grouping of related benchmarks that can be used to summarize and report achievement.
Standard	refers to the standard statement presented in the Florida Standards.
Benchmark	refers to the benchmark statement presented in the Florida Standards. In some cases, two or more related benchmarks are grouped together because the assessment of one benchmark addresses another benchmark.
Item Types	are used to assess the benchmark or group of benchmark.
Cognitive Complexity	ideal level at which item should be assessed.
Benchmark Clarifications	explain how achievement of the benchmark will be demonstrated by students. In other words, the clarification statements explain what the student will do when responding to questions.
Content Limits	define the range of content knowledge and that should be assessed in the items for the benchmark.
Stimulus Attributes	define the types of stimulus materials that should be used in the items, including the appropriate use of graphic materials and item context or content.
Response Attributes	define the characteristics of the answers that a student must choose or provide.
Content Focus	defines the content measured by each test item. Content focus addresses the broad key terms and concepts associated with the examples found in the standards, benchmarks, or benchmark clarifications.
Sample Items	are provided for each type of question assessed. The correct answer for all sample items is provided.

II. Individual Benchmark Specifications

Standard	14.0 Safely operate, maintain and repair machinery, equipment and facilities used in aquaculture
Benchmark	14.02 Inspect, maintain and perform basic repairs on aquaculture machinery, equipment and facilities.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)=X (ER)=
Cognitive Complexity Level	L,M
Benchmark Clarification	The student will inspect, maintain and/or repair aquaculture machinery, equipment and/or facilities including but not limited to re-circulating systems, ponds, levees, silos, and raceways aquaculture production systems. Each aspect-inspect, maintain, repairs-may be assessed independently.
Content Focus	Common equipment, machinery and facilities that may include plumbing, electrical, and mechanical components used within various aquaculture systems
Content Limits	The content may include recirculating systems, filtration systems, nets/cages, automatic feeders and tanks used within various aquaculture systems.
Stimulus Attributes	The stimulus may include illustrations, pictures, scenarios, and charts.
Response Attributes	The response may be performance based and may require the student to identify and/or troubleshoot problems and/or solutions; identify and/or describe aquaculture machinery, equipment, and/or facilities. The response may include diagrams and/or models.
Sample Item	During a daily maintenance check, Tommy notices that the water temperature in the recirculating aquaculture system has dropped 10°F overnight. What is most likely the problem? A. the solids filter is clogged B. the heater breaker tripped C. the ultraviolet breaker tripped D. the air stone diffuser is clogged Answer: B

Standard	14.0 Safely operate, maintain, and repair machinery, equipment, and facilities used in aquaculture.
Benchmark	14.04 Discuss the safety and maintenance of a recirculating aquaculture system (RAS) including biological, chemical, and mechanical filtration, degassing, sterilization, and foam fractionation.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)=X (ER)=
Cognitive Complexity Level	L,M
Benchmark Clarification	The student will discuss safety and/or maintenance of re-circulating aquaculture systems only; no other types of aquaculture production systems will be covered.
Content Focus	Common types/kinds of various biological, chemical, and mechanical filtration systems, types of degassing systems, types of sterilization systems and types of foam fractionation systems.
Content Limits	The content may include types of biological, chemical and mechanical filtration systems common in re-circulating systems; common degassing components; common sterilization components; and common foam fractionation components; safety and maintenance may be assessed independently.
Stimulus Attributes	The stimulus may include scenarios, pictures, charts, diagrams, and/or tables.
Response Attributes	The response may be performance based. The response may require students to identify and/or troubleshoot problems and/or solutions; it may require students to identify and/or describe the correct and/or incorrect safety practices within a recirculating aquaculture system.
Sample Item	What is the ideal temperature range for most warm-water fish species? A. 70 - 75° F B. 75 - 80° F C. 80 - 85° F D. 85 - 90° F Answer: B

Standard	18.0 Assist in the propagation and culture of an aquaculture organism.
Benchmark	18.07 Discuss proper grow-out techniques for aquaculture organisms.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)= (ER)=X
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will identify and discuss the proper grow-out techniques used for common aquaculture species including, but not limited to, facility selection, stocking rates, and feeding techniques.
Content focus	Ponds, tanks, raceways, pens, cages, ranching, food types (floating, flake, live, moist), feeding rates, feeding practices and stocking rates
Content Limits	The content may include facility selection, food selection, feeding rates and/or schedule/methods, stocking calculations for grow-out structure of common aquaculture organisms.
Stimulus Attributes	The stimulus may include charts, graphs, scenarios, evaluation of situation, analyzing situations, and/or illustrations.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, and/or charts.
Sample Item	A local aquaculture farmer is designing facilities to grow out catfish. In one paragraph, design the proper facilities that would best grow out 10,000 catfish. In your response, be sure to include tank types and sizes. Rubric: 4 points: The response demonstrates thorough understanding of facility design for given aquatic species type. The selected facility type correctly address the need of the aquatic species described. The response accurately explains the benefits of each selected type of grow out facility and contains the correct amounts (volumes) of water. 3 points: The response demonstrates understanding of facility design for given aquatic species type. The selected facility type may address the need of the aquatic species described. The response explains the benefits of each selected type of grow out facility and may or may not contain the correct amounts (volumes) of water. 2 points: The response demonstrates limited understanding of facility design for given aquatic species type. The selected facility type may address the need of the aquatic species described. The response lacks an explanation of the benefits of each selected type of grow out facility and may or may not contain the correct amounts (volumes) of water. 1 point: The response demonstrates little understanding of facility design for given aquatic species type. The selected facility type may address the need of the aquatic species described. The response omits the benefits of each

	selected type of grow out facility and may or may contain the correct or incorrect amounts (volumes) of water. 0 point: No attempt or off topic.

Standard	15.0 Describe the nature and origin of career opportunities in aquaculture.
Benchmark	15.03 List and describe major global aquatic crops and animals.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)= (ER)=X
Cognitive Complexity Level	L,M
Benchmark Clarification	The student will list aquatic crops by grouping (reproduction methods, water requirements) and will describe them visually and /or provide written descriptions.
Content Focus	Including but not limited to meat fish Ornamental fish Crustaceans Mollusks Algae Aquatic fauna Aquatic flora Speciality crops
Content Limits	The content may include aquatic items including but not limited to meat fish, ornamental fish, crustaceans, mollusks, algae, aquatic plants, specialty crops such as alligators, frogs, eels, turtles.
Stimulus Attributes	The stimulus may include illustrations, pictures, scenarios and charts.
Response Attributes	The response may include information about the production methods of major global aquatic crops and animals. The response may include the description or grouping of major global aquatic crops and animals. The response may include terms, phrases, sentences, images, diagrams, charts, and/or videos.
Sample Item	Catfish belong to which group of aquaculture species? A. crustaceans B. finfish C. mollusks D. salmonids Answer: B

Standard	15.0 Describe the nature and origin of and career opportunities in aquaculture.
Benchmark	15.04 Explain the history of aquaculture.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)= (ER)=X
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will have a basic understanding of the history and evolution of the global aquaculture industry.
Content Focus	Including but not limited to ancient Chinese, Egyptian, Roman, English, European, Hawaiian, or American aquaculture development; polyculture, monoculture, stew ponds
Content Limits	The content may include the origin and development of common aquaculture species globally and in Florida.
Stimulus Attributes	The stimulus may include scenarios, pictures, charts, diagrams, and/or tables.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, and/or charts.
Sample Item	Which ancient civilization was noted for raising common carp in early aquaculture systems? A. Chinese B. Egyptian C. European D. Roman Answer: A

Standard	16.0 Demonstrate the management and environmentally sound use of water and land resources.
Benchmark	16.01 Identify and describe the physical and chemical characteristics of water for use in aquaculture.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)= (ER)=X
Cognitive Complexity Level	L,M
Benchmark Clarification	The student will understand water quality parameters and the positive and/or negative effects of each.
Content Focus	Physical water properties (temperature, turbidity, odor, salinity, hardness) and chemical water properties (ammonia, carbon dioxide, chlorine, chloride, nitrite, nitrate, dissolved oxygen
Content Limits	The content may include physical water properties (temperature, turbidity, odor, salinity, hardness) and chemical water properties (ammonia, carbon dioxide, chlorine, chloride, nitrite, nitrate, dissolved oxygen) of water used in aquaculture.
Stimulus Attributes	The stimulus may include illustrations, pictures, scenarios and charts.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, and/or charts.
Sample Item	What is the alkaline death point of water for fish? A. 5 B. 7 C. 9 D. 12 Answer: D

Standard	16.0 Demonstrate the management and environmentally sound use of water and land resources.
Benchmark	16.02 Explain how changes in water affect aquatic life.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)= (ER)=X
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will be able to identify normal ranges of given water quality measurements and explain how they can negatively affect aquatic life.
Content Focus	pH; water temperature; dissolved oxygen; nitrate levels; nitrite levels; ammonia levels
Content Limits	The content may include changes in pH, water temperature, dissolved oxygen levels, nitrate/nitrite levels, ammonia levels and how these changes affect aquatic life and/or how to correct negative changes in water.
Stimulus Attributes	The stimulus may include water tests results, charts, graphs, scenarios, pictures, and illustrations.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, and/or charts.
Sample Item	A pH test of an aquaculture pond results in a level of 5.8. Which measure would correct this issue, resulting in a desirable pH range for fish production? A. liming the pond B. filtering the suspended solids C. decreasing water temperature D. providing aeration to the pond Answer: A

Standard	16.0 Demonstrate the management and environmentally sound use of water and land resources.
Benchmark	16.03 Be able to measure the total ammonia nitrogen (TAN), unionized ammonia, nitrite, nitrate in a water system.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)=X (ER)=
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will be able to use proper equipment to measure water parameters in a water system.
Content Focus	Total ammonia nitrogen (TAN), unionized ammonia, nitrite, nitrate
Content Limits	The content may include testing, interpreting results and selecting tests to measure water quality parameters using meters or chemical tests.
Stimulus Attributes	The stimulus may include illustrations, pictures, scenarios, and charts.
Response Attributes	The response may be performance based and may require the student to identify the proper test/tool required to measure given water parameters.
Sample Item	Which test would be used to accurately measure ammonia levels in an aquaculture system? A. anemometer B. colorimetric C. test kit D. titrimetric Answer: C

Standard	16.0 Demonstrate the management and environmentally sound use of water and land resources.
Benchmark	16.04 Be able to measure the water temperature dissolved oxygen, pH, salinity, hardness, alkalinity, turbidity, chlorine/chloramine and carbon dioxide in a water system.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)=X (ER)=
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will be able to use proper equipment to measure water parameters in a water system.
Content Focus	Water temperature; dissolved oxygen, pH, salinity, hardness, alkalinity, turbidity, chlorine/chloramine; carbon dioxide
Content Limits	The content may include testing, interpreting results and selecting tests to measure water quality parameters using meters or chemical tests.
Stimulus Attributes	The stimulus may include illustrations, pictures, scenarios, and charts.
Response Attributes	The response may be performance based and may require the student to identify the proper test/tool required to measure given water parameters.
Sample Item	Which tool is used to measure turbidity in water? A. anemometer B. colorimetric C. gravimetric D. Secchi disk Answer: D

Standard	16.0 Demonstrate the management and environmentally sound use of water and land resources.
Benchmark	16.05 Explain how the nitrogen cycle is related to maintaining healthy fish.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)= (ER)=X
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will understand the role of the nitrogen cycle as it relates to aquatic species in aquaculture production.
Content Focus	Nitrification, organic waste, ammonia, ammonium, nitrate, nitrite, and oxidation
Content Limits	The content may include the measurable and observable effects of the nitrogen cycle in aquaculture production.
Stimulus Attributes	The stimulus may include illustrations, pictures, scenarios, and charts.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, and/or charts.
Sample Item	Which of the following is not a component of the nitrogen cycle? A. ammonia B. chloride C. nitrate D. nitrite Answer: B

Standard	17.0 Apply biological principles to the reproduction, identification and growth of aquaculture species.
Benchmark	17.04 Identify and describe the anatomy and physiology of fish.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)= (ER)=X
Cognitive Complexity Level	L,M
Benchmark Clarification	The student will be able to identify and describe the external and internal anatomy and major physiology systems of finfish.
Content Focus	External anatomy: nares, eye, lateral line, dorsal fin, adipose fin, caudal fin, anal fin, pelvic fin, pectoral fin, operculum, barbels. Internal anatomy: nostril, olfactory lobe, brain, vertebra, kidney, stomach, swim bladder, spinal cord, anus, gonads,
Content Limits	The content may include the following systems: skeletal, muscular, digestive, excretory, respiratory, circulatory, nervous, sensory, and reproductive systems. The content may include anatomy of finfish.
Stimulus Attributes	The stimulus may include illustrations, pictures, and diagrams.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, and/or charts.
Sample Item	What is the proper name for the tail fin of a fish? A. adipose fin B. caudal fin C. pectoral fin D. pelvic fin Answer: B

Standard	17.0 Apply biological principles to the reproduction, identification and growth of aquaculture species.
Benchmark	17.06 List and describe important characteristics in choosing a production species.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)= (ER)=X
Cognitive Complexity Level	L,M
Benchmark Clarification	The student will identify and/or recommend appropriate aquatic species or characteristics of species for aquaculture production based on given conditions (i.e.. region, water parameters, facilities, etc.).
Content Focus	Freshwater, marine water, coldwater species, warmwater species, meat fish, ornamental fish, specialty crops
Content Limits	The content may include the selection of a production species for a given situation or the selection of the proper facility type for a given aquaculture production species.
Stimulus Attributes	The stimulus may include scenarios, pictures, charts, diagrams, and/or tables.
Response Attributes	The response may require the student to select and/or describe the aquatic species and/or facility for a given situation.
Sample Item	Which aquatic species would be best reared in a raceway production facility? A. alligators B. swordtails C. tilapia D. trout Answer: D

Standard	17.0 Apply biological principles to the reproduction, identification and growth of aquaculture species.
Benchmark	17.07 Identify and describe common aquaculture organism by family, genus and species.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=XX (SA)= (P)= (ER)=X
Cognitive Complexity Level	L,M,H
Benchmark Clarification	The student will identify aquatic species by family, genus and/or species visually or by written descriptions.
Content Focus	None specified.
Content Limits	The content may include common, commercially important aquaculture production species produced in the United States and Florida.
Stimulus Attributes	The stimulus may include scenarios, pictures, charts, diagrams, and/or tables.
Response Attributes	The response may require the student to identify common aquaculture organisms by family name, genus name or species; may require the student to identify the common name of an aquatic species based on its scientific name; may require the student to identify a picture or graphic of an aquatic species by common and scientific name.
Sample Item	What is the scientific name of the Atlantic salmon? A. Salmo affumicato B. Salmo gairdneri C. Salmo trutta D. Salmo salar Answer: D

Standard	17.0 Apply biological principles to the reproduction, identification and growth of aquaculture species.
Benchmark	17.09 Identify aquaculture species of commercial importance in Florida.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)= (ER)=
Cognitive Complexity Level	L,M
Benchmark Clarification	The student will identify commercially important aquaculture species visually and/or by written descriptions.
Content Focus	Including but not limited to ornamental Tropical Fish; Speciality crops--alligators, hard clams, oysters; crustaceans; bait fish
Content Limits	The content may include tropical fish; clams and oysters; alligators; catfish; sport and game fish; bait fish; aquatic plants; may require statistics, or production numbers *FL Dept. of Ag and Consumer Services statistics of most important aquaculture species (2007).
Stimulus Attributes	The stimulus may include scenarios, pictures, charts, diagrams, and/or tables.
Response Attributes	The response may require the student to identify common aquaculture organisms by family name, genus name or species; may require the student to identify the common name of an aquatic species based on its scientific name; may require the student to identify a picture or graphic.
Sample Item	What is one of Florida's most commercially important specialty aquaculture species? A. alligators B. carp C. mullet D. trout Answer: A

Standard	17.0 Apply biological principles to the reproduction, identification and growth of aquaculture species.
Benchmark	17.10 Describe necessary biosecurity measures for various aquaculture facilities.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)= (SA)= (P)=X (ER)=X
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will identify proper and/or improper biosecurity measures and/or make recommendations/designs for biosecurity within an aquaculture facility.
Content Focus	Including but not limited to critical control points, quarantine standards, acclimation standards, bio-containment procedures, cleaning and/or disinfection practices, sterilization practices, on-farm management
Content Limits	The content may include the identification of proper and/or improper biosecurity practices; may include disinfecting chemicals; may include record keeping practices.
Stimulus Attributes	The stimulus may include scenarios, pictures, charts, diagrams, and/or tables.
Response Attributes	The response may require the student to select and/or describe the proper biosecurity practices for a given aquaculture facility; may be performance based; may require the student to identify and/or troubleshoot problems and/or solutions relating to biosecurity measures.
Sample Item	Which chemical is used to disinfect aquaculture facilities? A. ammonia B. chlorine C. hydrogen peroxide D. silver nitrate Answer: B

Standard	18.0 Assist in the propagation and culture of an aquaculture organism.
Benchmark	18.01 Identify/describe facilities used in a grow-out operation.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)= (ER)=X
Cognitive Complexity Level	L,M,H
Benchmark Clarification	The student will identify and/or describe grow-out facilities used in various aquaculture operations.
Content Focus	Raceways, silos, tanks, ponds, nets, levee-type pond, impoundments, ranching
Content Limits	The content may include common grow-out facilities used within the US aquaculture industry--may or may not include raceways, tanks, silos, ponds, nets.
Stimulus Attributes	The stimulus may include scenarios, pictures, charts, diagrams, and/or tables.
Response Attributes	The response may require the student to select and/or describe a grow-out facility to accommodate a given aquatic crop; it may require the student to identify a picture or graphic.
Sample Item	Which grow-out facility would be best suited for trout production? A. cages B. ponds C. raceways D. stews Answer: C

Standard	18.0 Assist in the propagation and culture of an aquaculture organism.
Benchmark	18.03 Determine the purpose and functions of a hatchery.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)= (ER)=X
Cognitive Complexity Level	L,M,H
Benchmark Clarification	The student will identify the history, purpose and/or function of hatcheries.
Content Focus	Including but not limited to California tray incubators; upwelling incubator; Heath (vertical) incubators; rearing troughs
Content Limits	The content may include history and/or development of hatcheries, hatchery practices for common aquaculture species, hatchery and/or incubator systems, functions and/or purposes of hatcheries in the aquaculture industry.
Stimulus Attributes	The stimulus may include scenarios, pictures, charts, diagrams, and/or tables.
Response Attributes	The response may require student to select and/or describe the historical and/or current purpose of hatcheries; it may require student to identify and/or describe tools and/or equipment used in hatcheries.
Sample Item	Which aquaculture activity results in seed or young fish that are used to stock growing facilities? A. grow-out B. hatchery C. harvesting D. marketing Answer: B

Standard	18.0 Assist in the propagation and culture of an aquaculture organism.
Benchmark	18.05 Describe and contrast types of spawning exhibited by aquaculture organisms.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)= (ER)=X
Cognitive Complexity Level	L,M,H
Benchmark Clarification	The student will describe various spawning types exhibited by aquaculture and will contrast common types.
Content Focus	Spawning methods of trout, catfish, tilapia, shrimp, clams, oysters, mouth brooders, substrate spawning
Content Limits	The content may include spawning methods of finfish, crustaceans, and mollusks; may include species specific reproductive anatomy; may include spawning tools and/or equipment.
Stimulus Attributes	The stimulus may include scenarios, pictures, charts, diagrams, and/or tables.
Response Attributes	The response may require the student to select and/or identify the proper spawning method and/or tools for specific aquatic organisms; it may require the student to identify spawning techniques.
Sample Item	How frequently do channel catfish spawn? A. once a day B. once a week C. once a month D. once a year Answer: D

Standard	19.0 Describe procedures used in locating markets and marketing aquaculture products.
Benchmark	19.03 Describe the product characteristics of marketable animal and plant products for both food and ornamental markets.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)= (ER)=X
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will describe, select, and/or identify desirable characteristics of marketable aquatic animals and plants for both food and ornamental uses.
Content Focus	None specified.
Content Limits	The content may include marketing characteristics
Stimulus Attributes	The stimulus may include scenarios, pictures, charts, diagrams, and/or tables.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, and/or charts.
Sample Item	Which characteristic would make a tilapia filet less marketable? A. breading B. glazing C. off-flavoring D. skinning Answer: C

Standard	20.0 Apply business management skills in managing an aquaculture operation.
Benchmark	20.02 Demonstrate basic bookkeeping skills.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)= (SA)= (P)=X (ER)=X
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will demonstrate basic bookkeeping skills including financial records.
Content Focus	Balance sheet, daily logs, expenses, income, profit, loss, statement, interest, fixed cost, budget
Content Limits	The content may include basic bookkeeping skills excluding computer software programs and required business taxes (tax rates).
Stimulus Attributes	The stimulus may include graphics, sample record book pages, illustrations, scenarios, and evaluation and/or analyzing of situations.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, and/or charts.
Sample Item	José purchases $1,892 worth of supplies for his aquaculture farm. In which column of his financial book should this amount be recorded? A. expense B. income C. loss D. profit Answer: A

Standard	21.0 Identify applicable local, state, and federal rules, regulations, and assistance programs.
Benchmark	21.03 Identify and list agencies regulating the industry and their functions.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)= (ER)=X
Cognitive Complexity Level	L,M,H
Benchmark Clarification	The student will identify regulating agencies within Florida's aquaculture industry and identify the function of each.
Content Focus	USDA; EPA; Southern Regional Aquaculture Center (SRAC); Natural Resources Conservation Service (NRCS)
Content Limits	The content may include aquaculture regulatory agencies affecting the Florida aquaculture industry.
Stimulus Attributes	The stimulus may include charts, graphs, scenarios, evaluation of situation, and analyzing situations.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, and/or charts.
Sample Item	Which regulatory agency provides laws that regulate water discharge from an aquaculture facility? A. Alternative Farming Information Systems Information Center (AFISIC) B. Animal Plant and Health Inspection Service (APHIS) C. US Department of Agriculture (USDA) D. US Environmental Protection Agency-Agriculture-Aquaculture Operations (EPA) Answer: D

Standard	22.0 Discuss leadership, employability, communication, and human relations skills.
Benchmark	22.02 Identify acceptable work habits (ethics) and desired personal characteristics.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)= (ER)=X
Cognitive Complexity Level	M,H
Benchmark Clarification	The student will identify and/or select desirable work habits, personal characteristics, and/or proper ethical behaviors of employees in the agricultural industry.
Content Focus	Communication methods, personal grooming, customer service, response to criticism, leadership, employability
Content Limits	The content may include work and personal habits related to agricultural jobs and/or careers; ethical and/or unethical personal characteristics and work habits.
Stimulus Attributes	The stimulus may include scenarios, descriptions, and/or pictures.
Response Attributes	The response may require students to select, identify, and/or describe correct and/or incorrect work and personal habits; may require students to select, identify, and/or describe ethical and unethical work and personal characteristics.
Sample Item	Bill has been working at Sunset Tropical Fish Farm for two weeks and is still on his probationary period. During his daily sanitation activities, he accidentally breaks an expensive water meter. What is the most ethical course of action for Bill to take? A. Leave the broken meter where it is at the end of his shift and deny that he knew he broke it if he is questioned. B. Attempt to repair the broken meter to the best of his ability and put it where it belongs at the end of his shift. C. Report the broken meter to his supervisor and admit that he broke it if he's questioned about it. D. Report the broken meter to his supervisor and deny that he knows how the meter was broken. Answer: C

Standard	23.0 Evaluate the importance of the food and fiber system to understand the impact on global economy.
Benchmark	23.01 Assess the impact of US aquaculture products to the total global aquaculture industry.
Item Types **(MC)-Multiple Choice** **(SA)-Short Answer** **(P)-Performance** **(ER)-Extended Response**	(MC)=X (SA)= (P)= (ER)=X
Cognitive Complexity Level	L,M,H
Benchmark Clarification	The student will compare and/or contrast the aquaculture industry in the US to the global aquaculture industry.
Content Focus	Production rates and/or rankings; percentages of total aquaculture production
Content Limits	The content may include aquatic plants, meat fish, tropical fish, speciality crops, total values and/or production rankings.
Stimulus Attributes	The stimulus may include scenarios, pictures, charts, diagrams, and/or tables.
Response Attributes	The response may include terms, phrases, sentences, images, diagrams, and/or charts.
Sample Item	Which statement describes North America's global ranking in terms of aquatic plant production? A. first in the world B. second behind China C. second behind Japan D. last in the world Answer: D