

Course Title: Aqua Experience

Unit 1:	Career Opportunities
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Content Standard(s) and Depth of Knowledge Level(s):	<p>Students will:</p> <ol style="list-style-type: none"> 1. Identify career opportunities in aquaculture.
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Learning Objective(s) and Depth of Knowledge Level(s):	<p>Students will:</p> <ol style="list-style-type: none"> 1. Discuss aquaculture technician 2. Explain aquaculture farmer 3. Discuss fish processor 4. Explain Boating and Fisheries Patrol Officer
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Essential Question(s):	Why is it important to know the career opportunities in the aquaculture industry?
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Content Knowledge	Suggested Instructional Activities Rigor & Relevance Framework (Quadrant)	Suggested Materials, Equipment and Technology Resources
I. Aquaculture careers	PowerPoint presentations and lecture Career research project	Projector with laptop computer Instructional and information videos Guest speaker, Fish hatchery technician

Unit Assessment:	Students will give an oral presentation using PowerPoint Presentation on an aquaculture career.
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Unit/Course CTSO Activity:	Students will research an aquaculture career of choice.
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**Unit/Course
Culminating
Product:**

Students will compile a aquaculture portfolio including their career research and an aquaculture business plan.

Course/Program Credential(s): Credential Certificate Postsecondary Degree University Degree
 Other:

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Unit 2:	Safety
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Content Standard(s) and Depth of Knowledge Level(s):	Students will: 2. Identify safety precautions associated with producing fish.
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Learning Objective(s) and Depth of Knowledge Level(s):	Students will: 1. Proper safety measures used in producing fish.
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Essential Question(s):	Why is it important to practice safety measures in fish production?
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Content Knowledge	Suggested Instructional Activities Rigor & Relevance Framework (Quadrant)	Suggested Materials, Equipment and Technology Resources
I. Aquaculture safety	PowerPoint presentations and lecture	Projector with laptop computer Instructional and information videos

Unit Assessment:	Students will give a written safety test.
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Unit/Course CTSO Activity:	Students will write safety guidelines to be used in their aquaculture business plan.
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Unit/Course Culminating Product:	Students will compile an aquaculture portfolio including their career research and an aquaculture business plan.
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Course/Program Credential(s): Credential Certificate Postsecondary Degree University Degree
 Other:

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Unit 3:	Introduction
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<p>Content Standard(s) and Depth of Knowledge Level(s):</p>	<p>Students will:</p> <ol style="list-style-type: none"> 3. Trace the history of aquaculture. 4. Explain extensive, semi-intensive, and intensive aquaculture production. Examples: extensive-low animal density, low economic risk, little or no environmental manipulation, including <ul style="list-style-type: none"> • Aeration, feeding, and fertilization; semi-intensive- moderate animal density, moderate economic risk, moderate • Environmental manipulation, including supplemental aeration and supplemental feeding; intensive- high animal • Density, high economic risk, complete environmental manipulation, including continuous aeration, nutritionally • Complete feeding, and biological waste management 5. Describe the role of scientific research relative to the aquaculture industry. <ul style="list-style-type: none"> • Identifying vaccines, antibiotics, and breeding techniques used in the aquaculture industry • Identifying sources of nutrients and feed components used in the aquaculture industry • Identifying aquaculture production methods and management strategies for recirculating systems, cages, raceway • Ponds, partitioned aquaculture systems, and super-intensive aquaculture systems 6. Explain the economic impact of aquaculture at the local, state, and national levels.
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<p>Learning Objective(s) and Depth of Knowledge Level(s):</p>	<p>Students will:</p> <ol style="list-style-type: none"> 1. Discuss the history of aquaculture. 2. Discuss terms used for aquaculture. 3. Identify major species used in aquaculture. 4. List management and nutrient requirements of aquaculture.
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<p>Essential Question(s):</p>	<p>Why is it important to know the history of aquaculture? Why is it important to explore the framework of the aquaculture industry?</p>
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Content Knowledge	Suggested Instructional Activities Rigor & Relevance Framework (Quadrant)	Suggested Materials, Equipment and Technology Resources
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I. Aquaculture history II. Aquaculture production III. Aquaculture industry research	PowerPoint presentations and lecture Economic impact analysis of aquaculture industry Aquaculture production research	Projector with laptop computer Instructional and information videos
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Unit Assessment:	Students will give a written exam covering the history, economic impact, and research of the aquaculture industry.
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Unit/Course CTSO Activity:	Students will create an aquaculture history timeline to be presented to the class.
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Unit/Course Culminating Product:	Students will compile an aquaculture portfolio including their career research and an aquaculture business plan.
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Course/Program Credential(s): <input type="checkbox"/> Credential <input checked="" type="checkbox"/> Certificate <input type="checkbox"/> Postsecondary Degree <input type="checkbox"/> University Degree <input type="checkbox"/> Other:
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Unit 4:	Water Quality Management
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Content Standard(s) and Depth of Knowledge Level(s):	<p>Students will:</p> <ol style="list-style-type: none"> 1. Differentiate among water quality parameters relative to the culture of aquatic organisms, including ammonia and nitrate toxicity and pH, oxygen, and temperature tolerances.
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Learning Objective(s) and Depth of Knowledge Level(s):	<p>Students will:</p> <ol style="list-style-type: none"> 1. Define terms related to water quality management. 2. Explain the quality features of water for aquaculture. 3. Calculate treatments for volumes of water. 4. Discuss the role of temperature in oxygen management. 5. List chemicals, compounds, and elements that are detrimental to water quality. 6. Understand the importance of nitrogen compounds in water-quality management. 7. Complete statements about pH and water quality.
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Essential Question(s):	<p>Why is it important to learn about water quality? What is the significance of testing the pH in water?</p>
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Content Knowledge	Suggested Instructional Activities Rigor & Relevance Framework (Quadrant)	Suggested Materials, Equipment and Technology Resources
<ol style="list-style-type: none"> I. Identify units of measure associated with water quality in aquaculture. II. Testing water pH III. Salinity 	PowerPoint Presentation Water testing and experimentation	Computer with projector DVD player Water testing kits

Unit Assessment:	Written assessment at the end of the unit as well as a water pH test
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Unit/Course CTSO Activity:	Water quality testing experiment and log
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**Unit/Course
Culminating
Product:**

At the end of the students' experimentation, they must be able to test for pH, balance the levels, and prescribe a plan for water management in a certain body of water (e.g. pond).

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Unit 5:	Business and Economics
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Content Standard(s) and Depth of Knowledge Level(s):	<p>Students will:</p> <ol style="list-style-type: none"> 8. Explain entrepreneurship opportunities available in the aquaculture industry. 9. Explain results of an aquaculture market survey. <ul style="list-style-type: none"> • Comparing various aquaculture market outlets Examples: local, regional, national, international • Identifying market promotions for the aquaculture industry 10. Construct a budget for an aquaculture operation.
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Learning Objective(s) and Depth of Knowledge Level(s):	<p>Students will:</p> <ol style="list-style-type: none"> 1. Understand and prepare a budget for an aquaculture unit. 2. Understand how to maintain an aquaculture business. 3. List and describe ways to improve money management. 4. Describe ways to increase the gain of an aquaculture unit while decreasing the input.
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Essential Question(s):	<p>Why is learning about financial business management important? What are the benefits of being an entrepreneur?</p>
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Content Knowledge	Suggested Instructional Activities Rigor & Relevance Framework (Quadrant)	Suggested Materials, Equipment and Technology Resources
<ol style="list-style-type: none"> I. Describe entrepreneurship II. Financial planning and aquaculture business management 	<p>PowerPoint presentation SIM farm computer simulation</p>	<p>Computer with projector DVD player</p>

Unit Assessment:	Written assessment at the end of the unit and form their own aquaculture business plan
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Unit/Course CTSO Activity:	Students will complete a financial management simulation.
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**Unit/Course
Culminating
Product:**

Form a 5-year financial plan.

Course/Program Credential(s): Credential Certificate Postsecondary Degree University Degree
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Unit 6:	System Design and Maintenance
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Content Standard(s) and Depth of Knowledge Level(s):	<p>Students will:</p> <ol style="list-style-type: none"> 11. Compare aquasystem designs for various aquatic species. <ul style="list-style-type: none"> • Designing a maintenance plan for an aquasystem • Identifying site specifications, components, and operations for aquasystems
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Learning Objective(s) and Depth of Knowledge Level(s):	<p>Students will:</p> <ol style="list-style-type: none"> 1. Identify site-specific factors that determine costs. 2. Identify layout and design considerations. 3. Determine whether soil is suitable for pond construction. 4. List steps in determining a site's water quality.
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Essential Question(s):	Why is it important to know about aquasystem designs and their maintenance?
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Content Knowledge	Suggested Instructional Activities Rigor & Relevance Framework (Quadrant)	Suggested Materials, Equipment and Technology Resources
<ol style="list-style-type: none"> I. Describe an aquasystem. II. Identify site requirements for aquasystem construction. 	PowerPoint presentation on site visit to an aquatic farm	Computer with projector DVD player

Unit Assessment:	Written assessment will be given at the end of the unit.
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Unit/Course CTSO Activity:	Students will visit an aquatic farm to observe the site layout and operation of that site.
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Unit/Course Culminating Product:	Students will build a model recirculating aquatic system to illustrate the skills and knowledge they have gained from the unit.
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 Other: