


INTEGRATIVE COURSE II

LEARNING UNITS

1. Competencies	Coordinate aquaculture production, based on established production systems and under a sustainable framework, to contribute to the profitability of the organization. Preserve and improve the social, economic and environmental surroundings. Develop sustainable aquaculture projects, based on the market needs and the established regulations, to contribute to the development of the sector.
2. Fourth Month Period	FIFTH
3. Theoretical Hours	1
4. Practical Hours	29
5. Total Hours	30
6. Week Total Hours Four Month Period	2
7. Course Objective	The student will demonstrate competencies to coordinate the aquaculture production based on the established production systems and under a sustainable framework, to contribute to the profitability of the organization. Preserve and improve the social, economic and environmental surroundings and develop sustainable aquaculture projects, based on the market needs and the established regulations to contribute to the development of the sector.

Learning Units	Hours		
	Theoretical	Practical	Total
I. General Aspects of Aquaculture Projects	1	4	5
II. Project Environment		10	10
III. Project Development		15	15
Totals	1	29	30


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1. Learning Unit	I.- General Aspects of Aquaculture Projects
2. Theoretical Hours	1
3. Practical Hours	4
4. Total Hours	5
5. Objective of the Learning Unit	The student will integrate general data of the aquaculture productive project to identify and establish its significance.

Themes	Learning to know	Learning to do	Learning to be
Structure of the Aquaculture Project	Identify the script of productive aquaculture projects: - Executive Summary - Introduction - General Objective - Specific Objectives - Goals - Analysis of the Current Situation: - Geographical, Physical, Social and Economic Characterization - Organizational Aspects - Market Analysis - Project Engineering - Financial Analysis - Description of Impacts: Environmental Impact, Social and Economic Assessment - Recommendations and Conclusions		Organized Methodical Honest Responsible Ethical

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Themes	Learning to know	Learning to do	Learning to be
Background of the Project		Document the general data of the Aquaculture production project: - Name -Introduction to fishery and aquaculture of the species to be exploited -Justification -General Objective -Specific Objectives -Goals	Organized Methodical Honest Ethical Responsible

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INTEGRATIVE II
EVALUATION PROCES

Learning outcomes	Learning sequence	Instruments and type of reagents
<p>Based on a productive project, the student will report the background of the project, including:</p> <ul style="list-style-type: none"> - Name -Introduction to the fishery and aquaculture of the species to be exploited <p>Justification</p> <ul style="list-style-type: none"> - General objective - Specific objectives - Goals 	<ol style="list-style-type: none"> 1.- Identify the sections that compose the project script. 2.- Identify the background of the project 3.- Analyze the significance of the Aquaculture project. 	<p>Project Checklist</p>


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INTEGRATIVE II
TEACHING LEARNING PROCESS

Methods and teaching techniques	Media and didactic materials
Project based Learning Collaborative teams Conducting research work	Multimedia resources Internet Printed material

LEARNING SPACE

Classroom	Laboratory / Workshop	Company
X		


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LEARNING UNITS

1. Learning Units	II. Project Environment
2. Theoretical Hours	0
3. Practical Hours	10
4. Total Hours	10
5. Objective of the Learning Unit	The student will integrate the environmental, organizational and market analysis to determine the viability of an aquaculture project.

Themes	Learning to know	Learning to do	Learning to be
Economic, Social and Physical Aspects.		Characterize geographically, physically, socially and economically the project	Organized Methodical Honest Ethical Responsible
Organizational Aspects		Determine the organizational aspects of the project	Organized Methodical Honest Ethical Responsible
Market Analysis		Develop market research. Determine the marketing mix.	Organized Methodical Honest Ethical Responsible

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EVALUATION PROCESS

Learning outcomes	Learning sequence	Instruments and type of reagents
<p>Based on a productive aquaculture project, the student will present the description of the Project Environment, including:</p> <ul style="list-style-type: none"> -Physical and geographical characterization of the region where the project will be developed. -Socio-cultural, demographic and economic characterization of the region where the project will be developed. -Organizational aspects: Type of Institution/agency, Board of Directors, Profile and skills of the executives, List of associates/partners - Market Analysis of the Project. -Project Report of the Marketing Mix. 	<ol style="list-style-type: none"> 1.- Identify the geographical, physical, social and economic characteristics of the project. 2.- Identify the organizational aspects of the project 3.- Interpret the results of a market analysis. 4.- Analyze the marketing strategy of the project. 	<p>Project Checklist</p>

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LEARNING UNITS


1. Learning Unit	III.- Project Development
2. Theoretical Hours	0
3. Practical Hours	15
4. Total Hours	15
5. Objective of the Learning Unit	The student will integrate technical, financial, economic, and environmental impact studies to determine the viability of an aquaculture project.

Themes	Learning to know	Learning to do	Learning to be
Project Engineering		<p>Define the aquaculture system and the equipment to be employed.</p> <p>Delimit the exact location of the exploitation.</p> <p>Refer to applicable regulations.</p> <p>Specify process capacity and production volume.</p> <p>Develop the work timeline, specifying tasks and activities to be carried out in each stage as well as every component of the project.</p>	<p>Organized</p> <p>Methodical</p> <p>Honest</p> <p>Ethical</p> <p>Responsible</p>
Financial Evaluation		<p>Develop the investment budget of the project.</p> <p>Develop the financial analysis, sales program, net cash flow and working capital.</p> <p>Calculate financial viability: NPV, IRR, MARR, and balance point.</p>	<p>Organized</p> <p>Methodical</p> <p>Honest</p> <p>Ethical</p> <p>Responsible</p>

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INTEGRATIVE II

Themes	Learning to know	Learning to do	Learning to be
Economic and Environmental Impacts		<p>Determine the economic impact of the project.</p> <p>Develop the environmental impact assessment of the project.</p>	<p>Organized</p> <p>Methodical</p> <p>Honest</p> <p>Ethical</p> <p>Responsible</p>
Project Integration		Elaborate conclusions, recommendations, and executive summary.	<p>Organized</p> <p>Methodical</p> <p>Honest</p> <p>Ethical</p> <p>Responsible</p>

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INTEGRATIVE II
EVALUATION PROCESS

Learning outcomes	Learning sequence	Instruments and type of reagents
<p>Based on a productive aquaculture project, the student will present the development outline of the project, including:</p> <p>-Project Engineering: definition of the species to be farmed, exact location and description of the site, infrastructure and equipment, technical description of the project and compliance with sanitary standards.</p> <p>-Environmental impact assessment</p> <p>-Financial evaluation.</p> <p>-Economic impact of the project</p> <p>The student will integrate the productive project according to the outline for aquaculture productive projects.</p>	<ol style="list-style-type: none"> 1.- Analyze the elements that integrate the engineering of the project. 2.- Analyze the project's financial indicators. 3.- Analyze the economic impact of the project 4.- Analyze the environmental impact of the project 5.- Identify the outline for aquaculture production projects. 	<p>Project Checklist</p>

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INTEGRATIVE II

CAPACITIES DERIVED FROM THE PROFESSIONAL COMPETENCES TO WHICH THE COURSE CONTRIBUTES


Capacity	Performance Criteria
Schedule the activities of the productive cycle according to the biology of the species, the demand of the product and the climatic conditions, to optimize the resources and to meet the production goals.	<p>Develop a program of the productive cycle based on the manual of good practices for the respective species or species, that contains:</p> <ul style="list-style-type: none"> - Sowing Period (climatic and biology of the species) Morphometric measurements of organisms. - Homogenization of sizes of organisms. Harvest period. Feeding schedule - Monitoring of water quality. - Water refill. - Disinfection activities of the infrastructure and the system - Acquisition of supplies
Prepare the aquaculture production system through cleaning, disinfection, filling, and fertilization techniques and based on the productive program, to carry out the sowing of the organisms according to the requirements of the species.	<p>Prepare a report of activities for the conditioning of the system, based on the production cycle schedule, the species and the aquaculture system, which should contain:</p> <ul style="list-style-type: none"> - Materials and methods for cleaning and disinfection. - Materials and methods used for the conditioning of the system.
Direct the sowing process through the methodology corresponding to each species and considering good management practices, to start the production cycle and avoid economic losses.	<p>Prepare a report on the transportation, arrival and sowing process based on the good practices manual, including:</p> <ul style="list-style-type: none"> - Transportation: conditions of reception of organisms, number of organisms, size, weight, temperature, oxygen, legal documentation, preventive treatments, method and time of transport. - Arrival at the farm: tempering methodology, number of organisms, weight, sizes, planting densities, preventive treatments. - Sowing method.

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Capacity	Performance Criteria
<p>Verify the fattening process of aquaculture organisms through biometric, health, safety and nutrition techniques, based on good practices to contribute to the performance and quality of aquaculture production.</p>	<p>Prepare logbooks of the fattening process of aquaculture organisms, based on good practices, which should include:</p> <ul style="list-style-type: none"> - Morphometric records - Records of physicochemical parameters of water quality. - Observations of the signs of internal or external injuries, diseases and behavior alterations - Record of feeding (percentages of protein, food ration, feed conversion and pellet size). - Mortality records - Preventive, corrective treatments and adjustments.
<p>Justify the profitability of the sustainable aquaculture project through a financial study. Consider the market analysis and the technical study to establish the financing requirements, yield and its approval.</p>	<p>Prepare the financial report of a sustainable aquaculture project that must contain the following criteria:</p> <ul style="list-style-type: none"> - Budgets, investment program and funding sources. - Financial projection (fixed asset and working capital) annual - Current and projected financial situation - Analysis of cost-benefit (constant prices and values). - Conclusions and recommendations. - Annexes with supportive evidence in the document.
<p>Evaluate the environmental impact of the sustainable aquaculture project through a study with reference to the applicable regulations, to establish the remediation and mitigation measures and to obtain the respective approval.</p>	<p>Prepare an Environmental Impact Statement for an aquaculture project that includes:</p> <ul style="list-style-type: none"> - General information about the project, the promoter and the person responsible for the environmental impact study - Project description. - Linkage with the applicable legal systems in environmental matters, where applicable, with the regulation on land use. - Description of the environmental system and identification of the environmental problems detected in the area of influence of the project - Identification, description and evaluation of environmental impacts. - Preventive measures and mitigation of environmental impacts. - Environmental forecasts and, where appropriate, evaluation of alternatives.

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Capacity	Performance Criteria
	- Identification of the methodological instruments and technical elements that support the indicated information.
Manage the financial support needed with the corresponding institutions according to the established procedure and regulations for the implementation of the sustainable aquaculture project.	Integrate a file of financial support for a sustainable project, including: <ul style="list-style-type: none"> - Institutions that provide financial support according to the characteristics of the project - Policies of operation of the institutions. - Request forms.
Supervise the technical conditions of the sustainable aquaculture project according to the technical criteria and the applicable regulations, to comply with the requirements of the implementation.	Present the design of a checklist that includes: <ul style="list-style-type: none"> -The technical criteria required for the project. -Description of the adjustments needed regarding infrastructure and equipment and their justification. Conclusions and recommendations for the implementation.

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