


COURSE: ENVIRONMENTAL ASSESSMENT

LEARNING UNITS

1. Competencies	To develop sustainable aquaculture projects, based on market needs and established regulations, to contribute to the development of the sector.
2. Four Month Period	Four
3. Theoretical Hours	55
4. Practical Hours	65
5. Total Hours	120
6. Week Total Hours Four Month Period	8
7. Course Objective	The student will assess the environment, by means of the geographical characterization and the applicable regulations, for the management of aquaculture concessions.

Learning Units	Hours		
	Theoretical	Practical	Total
I. Geographic Information Systems	15	15	30
II. Environmental Impact	20	25	45
III. Natural Resources Management	20	25	45
Total	55	65	120


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1. Learning Unit	I. Graphic Information Systems
2. Theoretical Hours	15
3. Practical Hours	15
4. Total Hours	30
5. Objective of the Learning Unit	The student will select areas with aquaculture potential, to develop productive projects.

Themes	Learning to know	Learning to do	Learning to be
Basic concepts of physical and economic geography.	<p>To identify the principles and branches of physical and economic geography.</p> <p>To identify the geographical regions in which the country is divided and its characteristics:</p> <ul style="list-style-type: none"> - Political-administrative - Hydrological - Climatological - Ecological - Biological - Flora - Fauna - Edaphology 	To perform the geographic characterization of its region.	Responsible Forthcoming Analytical Observer Organized Systematic
Introduction to GPS (Global Position System) and Geographic Information System (GIS).	To identify the basic components, characteristics and function of GPS and GIS.	To manage the basic functions of the GPS.	Responsible Forthcoming Analytical Observer Organized Systematical Patient Proactive

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Themes	Learning to know	Learning to do	Learning to be
Basic Cartography	<p>To identify the basic concepts of cartography.</p> <p>To identify the basic components of a GIS in maps and aerial photographs.</p> <p>To identify the institutions that provide geographic information.</p>	To characterize a region with aquatic potential by means of Thematic Maps and aerial photographs.	Responsible Forthcoming Analytical Observer Organized Systematical Patient Proactive

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EVALUATION PROCESS

Learning outcomes	Learning sequence	Instruments and type of reagents
<p>From a study case, the student will elaborate a system of geographic information from his/her region, identifying potential areas for aquaculture, that contains:</p> <ul style="list-style-type: none"> - Types of climate. - Soils - Maximum, minimum and average temperatures. - Maximum, minimum and average rainfall. - Use of soil and type of vegetation. - Hydrology. - Aquaculture potential areas, defining systems and species. 	<ol style="list-style-type: none"> 1. To identify the principles of physical and economic geography. 2. To analyze the geographical areas in which the country is divided. 3. To understand the components and functions of the GPS. 4. To interpret information of the different types of maps. 5. To characterize regions with aquaculture potential based on geographic information. 	<p>Study cases. Checklist.</p>


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ENVIRONMENTAL ASSESSMENT
TEACHING LEARNING PROCESS

Methods and teaching techniques	Media and didactic materials
Research Tasks Learning through Information and Communication Technology, Collaborative teams	Multimedia Equipment Internet Printed Material GPS Thematic Digital Maps

LEARNING SPACE

Classroom	Laboratory / Workshop	Company
	X	


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LEARNING UNITS

1. Theme Unit	II. Environmental Impact.
2. Theoretical Hours	20
3. Practical Hours	25
4. Total Hours	45
5. Objective of the Learning Unit	The student will determine the sources of environmental impact and mitigation measures, to contribute to sustainable aquaculture practices.

Themes	Learning to know	Learning to do	Learning to be
Habitat Transformations	<p>To explain the concepts of:</p> <ul style="list-style-type: none"> - Habitat Disturbance. - Loss of Diversity. - Load Capacity. <p>To explain global climate change and its effects on the ecosystems.</p>		Responsible Forthcoming Analytical Observer Organized Systematical Patient Proactive
Impact and types of environmental impact	<p>To identify concept and types of environmental impact.</p> <p>To identify the applicable regulations in the field of aquaculture production.</p> <p>To identify federal and state instances in the field of aquaculture management.</p>	<p>To distinguish the sources and factors of environmental impact of aquaculture projects.</p> <p>To select the regulations and instances related to aquaculture projects.</p>	Responsible Forthcoming Analytical Observer Organized Systematical Patient Proactive

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Themes	Learning to know	Learning to do	Learning to be
Remediation, mitigation and damping.	To identify the concepts of remediation, mitigation and damping. To identify the methods, types and techniques of remediation, mitigation and damping.	To determine methods and techniques of remediation, mitigation and damping in aquaculture systems.	Responsible Forthcoming Analytical Observer Organized Systematical Patient Proactive

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EVALUATION PROCESS

Learning outcomes	Learning sequence	Instruments and type of reagents
<p>- From a study case of an aquaculture project, the student will write a report including:</p> <p>-</p> <p>-Sources and factors of environmental impact</p> <p>-Environmental regulations and related institutions</p> <p>-To propose remediation, mitigation and damping measures.</p>	<ol style="list-style-type: none"> 1. To identify the concept of protected area and its regulations. 2. To identify aquaculture concessions and their requirements. 3. To understand types and functions of environmental management units. 4. To identify types of environment and types of pollution. 5. To understand concept and methods of remediation, mitigation and damping. 	<p>Study cases. Checklist.</p>

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TEACHING LEARNING PROCESS

Methods and teaching techniques	Media and didactic materials
Research Tasks Collaborative Teams Group Discussion	Multimedia Equipment Internet Printed Material

LEARNING SPACE

Classroom	Laboratory / Workshop	Company
X		

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1. Learning Unit	III. Natural Resources Management
2. Theoretical Hours	20
3. Practical Hours	25
4. Total Hours	45
5. Objective of the Learning Unit	The student will integrate natural resources management records for the development of aquaculture projects.

Themes	Learning to know	Learning to do	Learning to be
Protected Natural Areas (PNA).	<p>To explain the concept of protected area and the existing categories.</p> <p>To identify the applicable regulations to aquaculture projects, within the PNA's.</p> <p>To identify the federal and local authorities in the field of aquaculture management in PNA's.</p> <p>To identify the structure of the environmental impact statement of aquaculture projects in PNA's.</p>	To develop the environmental impact statement in PNA's of aquaculture projects.	Responsible Forthcoming Analytical Observer Organized Systematical Patient Proactive

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Themes	Learning to know	Learning to do	Learning to be
Environmental Management Units (EMU).	<p>To identify the types, characteristics and purposes of EMU's in aquaculture projects.</p> <p>To identify the rights and obligations as a responsible for the EMU's</p> <p>To identify the requirements for the integration of EMU's in aquaculture projects.</p>	To integrate files of procedures and conformation of aquaculture projects within EMU's.	Responsible Forthcoming Analytical Observer Organized Systematical Patient Proactive
Aquaculture and Fishing Concessions	To identify the types and structure of aquatic and fishing concessions, and the required paperwork.	To integrate file of procedures of aquaculture concessions.	Responsible Forthcoming Analytical Observer Organized Systematical Patient Proactive

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EVALUATION PROCESS

Learning outcomes	Learning sequence	Instruments and type of reagents
<p>From a study case, the student will elaborate an aquaculture concession file including:</p> <p>A) Environmental Impact Statement:</p> <ul style="list-style-type: none"> • Location of the project, indicating whether it is in or out of a PNA. • Regulations applicable to the project. • Type of concessions and the necessary requirements. • Environmental impact assessment by pointing out: <ul style="list-style-type: none"> -Impact types. -Recommendations -Mitigation and damping measures if necessary. 	<ol style="list-style-type: none"> 1. To identify the concept of protected area and its regulations. 2. To understand how to elaborate an environmental impact statement. 3. To understand types, function and registration of aquaculture projects in EMU's. 4. To identify the types and structure of the aquaculture and fishing concessions registry. 	<p>Study cases Checklist</p>

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TEACHING LEARNING PROCESS

Methods and teaching techniques	Media and didactic materials
Research Tasks Cases Analysis Collaborative Teams	Multimedia Equipment Internet Printed Material

LEARNING SPACE

Classroom	Laboratory / Workshop	Company
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CAPACITIES DERIVED FROM THE PROFESSIONAL COMPETENCES TO WHICH THE COURSE CONTRIBUTES

Capacity	Performance Criteria
<p>To diagnose the environment, social, economic, physical environmental and normative according to the criteria of regional diagnostic study, to identify the possibility of developing aquaculture projects.</p>	<p>To prepare a technical report on the regional context of the aquaculture sector, describing the following aspects:</p> <ul style="list-style-type: none"> - Social character of the population: composition, mortality rate, fertility, growth, education, migration, economically active population. - Economic nature: productive sectors, GDP, economic activities, - Physical-environmental character: geographical, biological, climatological characterization. - Normative character: applicable regulations - Opinion on the possibility for developing aquaculture projects.
<p>Calculate the production capacity of a sustainable aquaculture project through a technical study, to establish the species and the required aquaculture production system.</p>	<p>To prepare a report that reflects the productive potential of the sustainable aquaculture project, which should include:</p> <ul style="list-style-type: none"> - Location and specific description of the project site - Infrastructure and equipment - The species to work with - The processes and technologies to be used. -The capacity of processes and production programs. - Scenarios with different processes of volumes. - Programs of execution, administrative, training and technical assistance. - Applicable regulatory framework. - Project production and investment costs. - Production costs and investment of the project. - Opinion on the technical feasibility of the Project.

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Capacity	Performance Criteria
<p>To 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 obtain the respective approval.</p>	<p>To 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. - Identification of the methodological instruments and technical elements that support the indicated information.
<p>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.</p>	<ul style="list-style-type: none"> - To present the proposal of a checklist that includes: - The technical criteria required by the project. - Description of the infrastructure and equipment adjustments and their justification. - Conclusions and recommendations for the implementation.


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