HIGHER UNIVERSITY TECHNICIAN IN AQUACULTURE PROJECTS SPECIALIST

COURSE SYLLABUS WITH BREAKDOWN OF THEMATIC UNITS

1. Course Name	**Informatics**
2. Competencies	Direct the production of auxiliary crops, based on the conditions evaluation of the aquaculture systems to contribute to the profitability of the organization. Coordinate aquaculture production, based on established production systems and under a sustainable scheme, to contribute to the profitability of the organization, preserve and improve the social, economic and environmental surroundings. Develop sustainable aquaculture projects, based on market needs and established regulations, to contribute to the development of the sector.
3. Four Month Period	First
4. Practical Hours	45
5. Theoretical Hours	15
6. Total Hours	60
7. Week Total Hours Four Month Period	4
8. Course Objective	The student will process information of the aquaculture area through office automation to prepare documents and contribute to the efficient management of communication.

Theme Units	Hours		
	Practical	**Theoretical**	**Total**
I. Informatics Fundamentals	5	2	7
II. Word Processor	1	5	15
III. Spreadsheets	2	5	25
IV. Presentation Editors	1	3	13
Total	**45**	**15**	**60**

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THEMATIC UNITS

1. Theme Unit	**I. Informatics Fundamentals.**
2. Practical Hours	5
3. Theoretical Hours	2
4. Total Hours	7
5. Objectives	The student will execute basic operations of the operating system and the main internet tools for file administration and information processing.

Theme	Learning to know	Learning to do	Learning to be
Software Elements	Identify the basic principles and elements of the software. Identify the characteristics and basic functions of the operating system (O.S).	Change computer users, passwords and screen saver. Process files, copy, paste, rename, backup zip and delete.	Teamwork Proactive Organized
Internet	Identify the basic concepts of the internet and the main tools: -Search engines -Email -Browsers	Select information through search engines. Create an email account and send emails.	Teamwork Proactive Organized

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Evaluation Process		
Learning outcomes	**Learning sequences**	**Instruments and type of reagents**
From a practical exercise, perform the demonstration of the following functions: - Change computer user, password and screen saver. - Process files: copy, paste, rename, backup, print, move, zip and delete. - Send and receive emails with information obtained in search engines.	1. Identify the basic concepts and devices of the computer. 2. Understand the procedure of operating tools of the operating system. 3. Understand the processing tools of the operating system. 4. Identify the basic concepts of Internet and its tools. 5. Understand the procedure of using internet tools.	Practical exercises Checklist

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Teaching Learning Process	
Methods and teaching techniques	**Media and didactic materials**
Practical exercises Laboratory practices Collaborative teams	Computer Windows operating system software Projector, Screen Whiteboard Internet

Learning Space		
Classroom	**Laboratory / Workshop**	**Company**
	X	

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THEMATIC UNITS

1. Theme Unit	**II. Word Processing**
2. Practical Hours	10
3. Theoretical Hours	5
4. Total Hours	15
5. Objective	The student will write documents using word processor to present information.

Themes	Learning to know	Learning to do	Learning to be
Word Processing Working Environment	Identify the elements of the working environment of the word processing and its views: - Normal, web layout, print layout, reading layout, Outline and draft.	Locate the elements of the working environment. Select the word processing view layouts	Analytical Proactive Organized Systematic
Editing and Formatting of text	Describe the parameters of a page set up of the word processing. Identify the editing and formatting tools of a text.	Set up pages of word processing Create text documents using editing and formatting tools	Analytical Proactive Organized Systematic

Theme	Learning to know	Learning to do	Learning to be
Tables and Drawing Tools	Identify tools for drawing and working with tables. Identify working tools of images, objects and basic forms.	Design tables Insert into texts images, objects and basic forms.	Analytical Proactive Organized Systematic
Tasks Merging	Identify used tools in the mail merging and the links to data	Mail merge between text sheets and spreadsheet	Analytical Proactive Organized Systemic

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Evaluation Process		
Learning outcomes	**Learning sequences**	**Instruments and type of reagents**
As a practice exercise, the student will write a text document in electronic format that includes: - Page setup - Edition and formats - Tables in text sheets and spreadsheet - Objects - Mailing merge	1. Identify the working environment and the main tools of the word processing. 2. Understand the using procedure of the word processing tools. 3. Create text documents.	Practical exercises Checklist

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Teaching Learning Process	
Methods and teaching techniques	**Media and didactic materials**
Practical exercises Laboratory practices Collaborative teams	Computer with word processing software Projector Screen Whiteboard Internet

Learning Space		
Classroom	**Laboratory / Workshop**	**Company**
	X	

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THEMATIC UNITS

1. Theme Unit	**III. Spreadsheets.**
2. Practical Hours	20
3. Theoretical Hours	5
4. Total Hours	25
5. Objective	The student will identify the basic tools of the spreadsheet for the processing and organization of numerical information.

Theme	Learning to know	Learning to do	Learning to be
Spreadsheet Working Environment	Identify the elements of the working environment of the spreadsheet and its views: -Normal, web layout, print layout, reading layout, Outline and draft Identify spreadsheet tools: - Rows, columns and cells, and functions to insert, delete, modify and apply format.	Identify the elements of the working environment of the spreadsheet and its views: Insert, delete, modify and apply format to cells	Analytical Proactive Organized Systematic

Themes	Learning to know	Learning to do	Learning to be
Spreadsheet Basic Functions	Explain the procedures for processing data and creating formulas in a spreadsheet. Identify the basic functions and operation process of the spreadsheet: - Addition, average, minimum, maximum, SI, Y, O, date, today and now.	Create spreadsheets with data, formulas and functions.	Analytical Proactive Organized Systematic
Graphics	Explain the procedures for creating and processing graphics, as well as their characteristics.	Insert graphics in spreadsheet.	Analytical Organized Systematic Creative

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Evaluation Process		
Learning outcomes	**Learning sequence**	**Instruments and type of reagents**
As a practice exercise, the student will design a calculation book in electronic format that includes: - Spreadsheet setup - Edition and Formats - Numerical information obtained through functions and basic formulas - Graphics	1. Identify the working environment and the main tools of the spreadsheet. 2. Understand the using procedure of the tools and the basic functions of the spreadsheet. 3. Understand the procedures of creation, processing of graphics and their characteristics.	Practical exercise Checklist

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Teaching Learning Process	
Methods and teaching techniques	**Media and didactic materials**
Practical exercise Laboratory practices Collaborative teams	Computer with spreadsheet software, Projector, Screen, Whiteboard, Internet

Learning Space		
Classroom	**Laboratory / Workshop**	**Company**
	X	

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THEMATIC UNITS

1. Theme Unit	**IV. Presentation Editor**
2. Practical Hours	10
3. Theoretical Hours	3
4. Total Hours	13
5. Objective	The student will prepare a presentation with slides for information exposition.

Themes	Learning to know	Learning to do	Learning to be
Working Environment	Identify the elements of the working environment of the presentation editor and its views: - Normal, slide sorter, notes page, slide show, slide master, documents and notes	Locate the elements of the working environment.	Analytical Organized Systematic Creative
Presentation structure with Slides	Identify the presentation editor tools: creation, content assistant, templates such as: - Blank presentation, slide layout, templates, content assistant, and photo album.	Design presentations	Analytical Organized Systemic Creative

Themes	Learning to know	Learning to do	Learning to be
Customizing Slide Show	Identify the customizing tools of the presentations editor and multimedia elements: - Slide transition, motion paths, entrance animations, emphasis, exit, hyperlink, sound and video. Identify the tools for setting up a slide show: - Slide sorter view, move, copy, delete and hide slides, rehearse timing and slide templates	Design presentations using animations and drawing tools. Play the presentation.	Analytical Organized Systematic Creative
Working Environment	Identify the elements of the working environment of the presentation editor and its views: - Normal, slide sorter, notes page, slide show, slide master, documents and notes	Locate the elements of the working environment.	Analytical Organized Systemic Creative

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Evaluation Process		
Learning outcomes	**Learning sequence**	**Instruments and type of reagents**
As a practice exercise, the student will design a slide presentation in electronic format that includes: - Templates, graphs and content assistant - Multimedia elements - Animations and slide transitions	1. Identify the working environment and the main tools of the pr4esentations editor. 2. Understand the using procedure of the presentation editor tools. 3. Create slide presentations.	Practical exercises Checklist

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Teaching Learning Process	
Methods and teaching techniques	**Media and didactic materials**
Practical exercises Laboratory practices Collaborative teams	Computer with presentation editor software Projector, Screen, Whiteboard, Internet

Learning Space		
Classroom	**Laboratory / Workshop**	**Company**
	X	

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CAPACITIES DERIVED FROM THE PROFESSIONAL COMPETENCES TO WHICH THE COURSE CONTRIBUTES

Capacity	Performance Criteria
Diagnose the conditions of aquaculture systems, through physical and chemical analysis techniques and historical records, to ensure the health, safety and profitability of production.	Write a report about the current conditions of an aquaculture system, specifying: - Obtaining and processing the samples and their justification. - Analysis and interpretation of information (logs, histories, analysis results, laboratory reports). - Conclusions and recommendations.
Evaluate the operating conditions of the productive process through the analysis of the infrastructure, personnel and supplies, based on good management practices, to contribute to the quality of production.	Prepare an evaluation file according to the guidelines of the good practices manual for the respective species or species that includes: - The internal verification forms of good production practices duly completed -Formats of corrective recommendations for non-conformities detected Schedule of corrections
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.	Develop a program of the productive cycle based on the manual of good practices that contains: - Monitoring of water quality - Water spare parts - Disinfection activities of the infrastructure and the system - Acquisition of supplies

Capacity	Performance Criteria
Supervise the operations of production of auxiliary crops based on the manual of good practices, the characteristics of the species, to obtain live food.	Integrate a production log with the following data: Species. - Density of organisms - Physicochemical parameters of production systems - Data for statistical control (date, time, number of pond, percentage of survival) Harvesting techniques Goals achievement indicators and interpretation. - Conclusions and recommendations
Schedule the activities of the productive cycle of mollusks and auxiliaries, according to the biology of the species, the demand of the product and climatic conditions, to optimize resources and meet production goals.	Develop a program of the productive cycle based on the manual of good practices for the respective species or species, that contains: - 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.	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: - Materials and methods for cleaning and disinfection. - Materials and methods used for the conditioning of the system.

Capacity	Performance Criteria
Supervise the reproduction process in aquaculture systems by means of the methodology corresponding to each species, considering good management practices, for obtaining larvae and post-larvae and offspring.	Write a reproduction logbook and reproduced species logbook according to the of good practices manual where the students reports the following data: - Selection of breeders - Number of breeders (males and females) - Systems density breeders, degree of gonadal maturation - physicochemical parameters of reproduction systems data for statistical control (date, time, number of the pond, number of eggs, biometrics, percentage of survival)
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.	Prepare a report on the transportation, arrival and sowing process based on the good practices manual, including: - 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.

Capacity	Performance Criteria
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.	Prepare logbooks of the fattening process of aquaculture organisms, based on good practices, which should include: - 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.
Supervise the process of harvesting aquaculture products based on the established program, the methods and techniques corresponding to the species and good practices, to meet the requirements of the organization and the market.	prepare a report on the process of harvesting aquaculture products, based on good practices, specifying: - Harvesting techniques according to the species and stage of development - Indicators of compliance with the goals or objectives of the organization - Analysis and interpretation of indicators - Conclusions and recommendations

Capacity	Performance Criteria
Diagnose the social, economic, physical and normative environment according to the criteria of regional diagnostic study, to identify the possibility of developing aquaculture projects	To prepare a technical report on the regional context of the aquaculture sector, describing the following aspects: - 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 - Final report explaining the possibility for developing aquaculture projects.
State the potential market of an aquaculture product through an analysis of the situation of the markets, to identify marketing opportunities.	Prepare a report about the market analysis of aquaculture products that includes: - Characteristic of the markets of the main products and supplies. - Channels of distribution and sale. - Conditions and mechanisms for supplying raw materials and supplies. - Plan and marketing strategy: A) Price structure of products and by-products, as well as sales policies. B) Competitiveness analysis. C) Income projection - Letters of Intent and/or contracts for the purchase and sale of raw materials and products.

Capacity	Performance Criteria
Calculate the production capacity of a sustainable aquaculture project through a technical study, to establish the species and the required aquaculture production system.	Prepare a report that reflects the productive potential of the sustainable aquaculture project, which should include: - 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. - Final report on the technical feasibility of the project.
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.	Prepare the financial report of a sustainable aquaculture project that must contain the following criteria: - 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.

Capacity	Performance Criteria
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.	Prepare an Environmental Impact Statement for an aquaculture project that includes: - 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.
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: - 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: -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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BIBLIOGRAPHY

Author	Year	Tittle	City	Country	Publisher
Beskeen, D.	(2009)	*Microsoft Office Power Point 2007: Serie libro visual*	Distrito Federal	México	Cengage Learning
Delgado, J. M.	(2009)	*Openoffice Org 3.0*	España	España	Anaya Multimedia
Guy-Hart, D.	(2007)	*Word 2007 Paso a Paso: Microsoft Office Word 2007*	Distrito Federal	México	McGraw-Hill Interamericana
Guy-Hart, D	(2007)	*Excel 2007 Paso a Paso: Microsoft Office Excel 2007*	Distrito Federal	México	McGraw-Hill Interamericana
Preppernau, J	(2007)	*Office 2007*	España	España	Anaya Multimedia