UNIVERSIDAD SAN IGNACIO DE LOYOLA

SYLLABUS

Course Information						
Code:	**GES51059**	Course:	**TOTAL QUALITY MANAGEMENT**			
Coordination Area / Program:		**FAC. INGENIERÍA: ING. INDUSTRIAS ALIMENTARIAS**			Mode: **A distancia**	
Credits: **03**		Tipo de hora	Presencial	Virtual	H. Totales	Autonomous Learning Hours: **96**
		H.Teoria	0	32	32	
		H.Práctica	0	32	32	
		H.Laboratorio	0	0	0	
Period: **2024-02**		Start date and end of period: **del 19/08/2024 al 08/12/2024**				
Career: **Ingeniería Biotecnológica [SP] - INGENIERÍA AGROINDUSTRIAL - INGENIERÍA EN INDUSTRIAS ALIMENTARIAS - INGENIRÍA EN BIOTECNOLOGÍA**						

Course Pre-requisites		
Code	**Course - Credits**	**Career**
FC- P-IAL MICYCULCEL	MICROBIOLOGÍA Y CULTIVO CELULAR	ING AGROIND - ING. INDUSTRIAS ALIM.
FC-AGR FUNDINGE	FUNDAMENTOS DE INGENIERÍA	ING AGROIND - ING. INDUSTRIAS ALIM.
FC-AD-IAL REGULALIME	REGULACIÓN ALIMENTARIA	ING. INDUSTRIAS ALIM.
FC-SP-FIB INGBIOMEDI	INGENIERÍA BIOMÉDICA	ING. BIOTECNOLOGÍA
FC-P-FIB INGBIOMEDIC	INGENIERÍA BIOMÉDICA	ING. BIOTEC [SP]
FC- P-AGR POSTEC	POSTHARVEST TECHNOLOGY	ING AGROIND
FC-SP-AGR POSTEC	POSTHARVEST TECHNOLOGY	ING AGROIND

Course Coordinators			
Surname and First Name	**Email**	**Contact Hour**	**Contact Site**
BUGARIN FERRE, ALEJANDRA	abugarin@usil.edu.pe	03:00 - 05:00 p.m.	3rd floor - Building C - Campus 1

Instructors
You can check the timetables for each teacher in their INFOSIL in the ***Classes Development Teachers*** option ***Teachers.***

Course Overview
Total quality management is a specialized subject, has a theoretical-practical character, contributes to the development of the competencies of Human and Sustainable Development, Bilingual Communication, Participation and Leadership, Continuous Learning in Agroindustrial Engineering and Continuous Learning in Food Industry Engineering; for the management of projects with a sustainable development approach to contribute to the welfare of society, based on environmental protection, social inclusion and economic growth and to communicate effectively according to the context. It includes the development of the following thematic axes: Concepts of quality and productivity, food safety systems, ISO quality systems, sampling and acceptance limits, statistical process control, QFD quality function and Lean six sigma. The accredited product of the course is the final work in which the use of quality tools in agri-food products is presented.

Professional and/or General Competencies			
Career/Program	**Acronym/ Name of the competition**	**Level of competence**	**Expected Learning**
AGROINDUSTRIAL ENGINEERING	**CG2.** Bilingual Communication	**N3.** Communicates effectively in English using all four	• Demonstrates a sufficient grammatical and lexical linguistic

		language skills-listening, reading, speaking, and writing-with sufficient fluency and naturalness for personal, academic, and professional performance at the international level.	range to produce clear descriptions, express points of view and develop arguments using complex sentence structures.
	CG5. Human and Sustainable Development	**N3.** Assumes a socially responsible vision and sustainable development approach to contribute to the well-being of society, based on environmental protection, social inclusion and economic growth.	• Positively considers and values the interdependence links between living beings, the environment and society as a holistic and systemic whole, which allows the understanding of the challenges of sustainable development.
	CP4. Participation and Leadership	**N3.** Value their participation in agro-industrial projects, as an individual, member or leader of diverse teams for the solution of agro-industrial engineering problems, committing to ethics, professional responsibilities and professional practice standards.	• Acts as an individual, member or leader of diverse teams, performing activities in agribusiness engineering projects, committing to ethics, professional responsibilities and standards of professional practice.
	CP5. Continuous learning in Agroindustrial Engineering	**N3.** Evaluates the implications of developing a permanent autonomous learning to face the technological changes in agroindustrial engineering, which will allow him/her to achieve a continuous academic and professional development.	• Recognizes the need to develop autonomous lifelong learning to face technological changes in agroindustrial engineering based on scientific research in their field of study.
INGENIERÍA EN INDUSTRIAS ALIMENTARIAS	**CG2.** Bilingual Communication	**N3.** Communicates effectively in English using all four language skills-listening, reading, speaking, and writing-with sufficient fluency and naturalness for personal, academic, and professional performance at the international level.	• Demonstrates a sufficient grammatical and lexical linguistic range to produce clear descriptions, express points of view and develop arguments using complex sentence structures.
	CG5. Human and Sustainable Development	**N3.** Assumes a socially responsible vision and	• Positively considers and values the interdependence links

		sustainable development approach to contribute to the well-being of society, based on environmental protection, social inclusion and economic growth.	between living beings, the environment and society as a holistic and systemic whole, which allows the understanding of the challenges of sustainable development.
	CP4. Participation and Leadership	**N3.** Value their participation in food industry projects, as an individual, member or leader of diverse teams for the solution of Food Industry Engineering problems, committing to ethics, professional responsibilities and professional practice standards.	• Acts as an individual, member or leader of diverse teams, performing activities in Food Industries Engineering projects, committing to ethics, professional responsibilities and standards of professional practice.
	CP5. Continuous learning in Food Industry Engineering	**N3.** Evaluates the implications of developing a permanent autonomous learning to face the technological changes in Food Industry Engineering, which will allow him/her to achieve a continuous academic and professional development.	• Recognizes the need to develop a permanent autonomous learning to face technological changes in Food Industry Engineering based on scientific research in their field of study.

General Course Result	Unit Result
At the end of the course, the student prepares the final work of the course in which the use of quality tools in agri-food products is presented, considering concepts of quality and productivity, food safety systems, ISO quality systems, sampling and acceptance limits, statistical process control, QFD quality function and Lean six sigma.	1. At the end of the unit, the student understands the concepts of quality and productivity in agri-food companies, considering elements of standardization.
	2. At the end of the unit, the student develops the basic components of a food safety management system, considering the general hygiene principles of CODEX ALIMENTARIUS and the ISO 22000 standard (FSSC 220000).
	3. At the end of the unit, the student develops the basic components of an integrated management system, considering the ISO 9001, ISO 14001 and ISO 45001 standards up to the realization of an audit process and compares them with the main models of excellence.
	4. At the end of the unit, the student applies sampling plans and defines the acceptance and rejection limits appropriate to the type of sample to be evaluated.
	5. At the end of the unit, the student applies statistical process control, considering quality control tools.

	6. At the end of the unit, the student uses generic quality tools which include quality function deployment (QFD), Tagushi method, design of experiments (DOE) as well as failure mode and effects analysis (FMEA).
	7. At the end of the unit, the student applies the Lean six sigma methodology in agri-food companies considering the 5S methodology as a previous step.

Development of activities		
Unit Result 1: *At the end of the unit, the student understands the concepts of quality and productivity in agri-food companies, considering elements of standardization.*		
Session 1: *At the end of the session, the student defines in his/her own words the concept of quality and its relationship with productivity, proposing a standard model for a product and/or process of a selected agri-food company.*		Semana 1 a 2
Learning Activities	**Contents**	**Evidence**
-Explain the concepts of quality and productivity and the importance of using standardization in the agri-food sector.	- Definitions of quality, productivity, standardization definitions and quality standards.	- Product and process standard.
Unit Result 2: *At the end of the unit, the student develops the basic components of a food safety management system, considering the general hygiene principles of CODEX ALIMENTARIUS and the ISO 22000 standard (FSSC 220000).*		
Session 2: *At the end of the session, the student interprets the mandatory requirements of the general principles of hygiene (GPH), HACCP system and the safety system applied to an agri-food company.*		Semana 3 a 4
Learning Activities	**Contents**	**Evidence**
- Develop a checklist in an agri-food company. - Develop a HACCP system plan in an agri-food company.	Good Manufacturing Practices (GMP): Procedures, work instructions and records. Food safety rules and regulations. Sanitary authorization. Food Sanitation Code. Hazard Analysis and Critical Control Point System (HACCP). Steps to implement HACCP.	-Checklist -HACCP plan
Session 3: *At the end of the session, the student prepares documented information on the general principles of hygiene, HACCP and the food safety system applied to an agri-food company.*		Semana 5 a 5
Learning Activities	**Contents**	**Evidence**
- Develop an ISO 22000 (FSSC 220000) checklist in an agri-food company.	ISO 22000 (FSSC 22000) Safe food systems management standards.	-ISO 22000 Checklist (FSSC 22000)
Unit Result 3: *At the end of the unit, the student develops the basic components of an integrated management system, considering the ISO 9001, ISO 14001 and ISO 45001 standards up to the realization of an audit process and compares them with the main models of excellence.*		
Session 4: *At the end of the session, the student interprets the mandatory requirements of the ISO 9001, ISO 14001 and ISO 45001 standards applied to an agri-food company to prepare the mandatory documented information.*		Semana 6 a 6
Learning Activities	**Contents**	**Evidence**
-Develop a continuous improvement cycle to identify mandatory documents based on ISO 9001, ISO 14001 and ISO 45001 standards.	Quality management systems (ISO 9001) Environmental management systems (ISO 14001) Occupational health and safety management system (ISO 45001) Integrated management system	-Correspondence matrix of an integrated management system - Integrated management documents
Session 5: *At the end of the session, the student performs a quality management audit applied to a model agri-food company.*		Semana 7 a 7

Learning Activities	Contents	Evidence
-To carry out an audit process in an agri-food company.	Auditing principles and process (ISO 19011)	-Audit plan, audit checklist and audit report
Session 6: *At the end of the session, the student compares the requirements of the ISO standards with the models of excellence.*		Semana 8 a 8
Learning Activities	**Contents**	**Evidence**
-Apply the checklist for each of the models of excellence in an agri-food company.	-Business excellence models: National Quality Award, U.S. Baldrige Award, Japanese Deming Award and European Quality Award.	-Correspondence matrix for Business Excellence Models
Unit Result 4: *At the end of the unit, the student applies sampling plans and defines the acceptance and rejection limits appropriate to the type of sample to be evaluated.*		
Session 7: *At the end of the session, the student proposes a sampling plan in an agri-food company where the limits of acceptance and rejection are defined.*		Semana 9 a 9
Learning Activities	**Contents**	**Evidence**
-Apply the main acceptance sampling on a selected agri-food product. Apply the military standard in a case of an agri-food company.	-Acceptance sampling by attributes and variables -Sampling with the standard military tables	-Acceptance sampling plan for an agricultural product.
Unit Result 5: *At the end of the unit, the student applies statistical process control, considering quality control tools.*		
Session 8: *At the end of the session, the student uses quality control tools in a model agri-food company.*		Semana 10 a 10
Learning Activities	**Contents**	**Evidence**
-Apply the Basic Quality Tools to develop quality exercises.	-Basic Quality Tools	Quality control tools for an agri-food product.
Session 9: *At the end of the session, the student uses the tools for statistical process control applied to a selected agri-food company.*		Semana 11 a 11
Learning Activities	**Contents**	**Evidence**
-Apply statistical process control based on variables to solve exercises related to the agri-food product.	-Statistical process control: Control charts by variables and control charts by attributes.	-Statistical control of the processes carried out on an agri-food product.
Unit Result 6: *At the end of the unit, the student uses generic quality tools which include quality function deployment (QFD), Tagushi method, design of experiments (DOE) as well as failure mode and effects analysis (FMEA).*		
Session 10: *At the end of the session, the student uses the Quality Function Deployment (QFD) tool applied to a selected agri-food company.*		Semana 12 a 12
Learning Activities	**Contents**	**Evidence**
-Develop the QFD matrix in an agri-food product.	-Quality Function Deployment - QFD Matrix	-QFD matrix
Session 11: *At the end of the session, the student uses Tagushi's method, design of experiments (DOE) to improve the process conditions of a selected agri-food company.*		Semana 13 a 13
Learning Activities	**Contents**	**Evidence**
-To develop a Taguchi and DOE method in an agri-food company.	-Taguchi Method -Design of Experiments (DOE)	-Document with the Taguchi method applied in an agri-food company.
Session 12: *At the end of the session, the student uses the Failure Mode and Effects Analysis (FMEA) applied to a selected agri-food company.*		Semana 14 a 14
Learning Activities	**Contents**	**Evidence**
-To develop the FMEA matrix in an agri-food process.	-Failure mode and effects analysis (FMEA)	-FMEA Matrix
Unit Result 7: *At the end of the unit, the student applies the Lean six sigma methodology in agri-food companies considering the 5S methodology as a previous step.*		

Session 13: *At the end of the session, the student uses the principles of the 5S methodology applied to a selected agri-food company.*		Semana 15 a 15
Learning Activities	**Contents**	**Evidence**
-Planning the implementation of 5S in an agri-food company.	-5S Methodology	-Implementation of 5S plan
Session 14: *At the end of the session, the student develops the five steps of the DMAIC methodology of Lean six sigma in a selected agri-food company, and concludes with the presentation and exhibition of the final work (creditable product).*		Semana 16 a 16
Learning Activities	**Contents**	**Evidence**
-Apply the DMAIC Methodology in a case about an agri-food company including the cost of non-quality in the agri-food sector. - Present the final work (creditable product).	-DMAIC methodology -Lean Six Sigma. Non-quality costs. - Presentation of the final work of the course (accreditable product).	-DMAIC Methodology Case - Presentation of the final work of the course (creditable product).

Methodology

The course will be developed based on the following methodologies: project-based learning, Inverted Classroom, to encourage students to study and prepare before class sessions, helping them with previous knowledge and reinforcing what they have learned in class with practical cases, as well as integrating their learning in collaborative work developing their social skills. The methodology is adequate for the development of the course in the distance modality.

The professor is the motivator and mediator of the learning process. The materials used for consultation and research will be books and specialized publications. Likewise, seminars will be held where quantitative reinforcement problems will be solved.

Assessment System

Each of the items of the evaluation scheme and the final grade of the course are rounded to whole numbers. The final grade of the course is the weighted average of the corresponding items: permanent evaluation, partial exam and final exam.

The averages calculated components of the item 'Permanent Evaluation' will keep your calculation with 2 decimals.

Type Evaluation	%Weighing	Observation	Week Assessment	Rezag.
Continuous Assessment	**70**%			
Activities	**20**%		Semana 15	No
Assignments	**50**%			
Assignment 1	50%	Practice 1	Semana 6	No
Assignment 2	50%	Practice 2	Semana 12	No
Prueba_Fin	**30**%	Written evaluation of all course contents.	Semana 15	Si
Evaluación Final	**30**%	Creditable product (final work)	Semana 16	No

Attendance Policy

Total Percentage Absences Permitted	30%

Class attendance is mandatory. The student who reaches or exceeds the limit of thirty percent (30%) of absences in the course, defined by the total of effective hours, will be disqualified from taking the final evaluation, corresponding to said evaluation with a grade of zero (0).

In hybrid classrooms, only synchronous virtual participation (via zoom) is allowed, up to a maximum of 50% of the total course.

Basic Required Reading
[1] Evans, James R. (2020). *Administración y control de la calidad..* (10a ed.). Cengage Learning,. [2] Yiannas, F. (2010). *Food safety culture creating a behavior-based food safety management system.* Springer science. [3] Couto Lorenzo, L. (2008). *Auditoría del sistema APPCC : cómo verificar los sistemas de gestión de inocuidad alimentaria HACCP.* Díaz de Santos,. [4] Secretaria Central de ISO (2018). *ISO 22000 : 2018. Norma Internacional ISO 22000. Sistemas de gestión de la inocuidad de los alimentos. Requisitos para cualquier organización en la cadena alimentaria = Food safety management systems : requirements for any organization in the food chain = Systèmes de management de la securité des denrées alimentaires.* (2a ed.). Secretaria Central de ISO. [5] Cortés, J. M. (2017). *ISO 9001 : 2015. Sistema de Gestión de Calidad.* (1a ed.). Ediciones de la U,.

References Supplementary
[1] Armendáriz Sanz, J. L. (2013). *Gestión de la calidad y de la seguridad e higiene alimentarias.* Editorial Síntesis,. [2] Sower, V. E. (2011). *Essentials of quality : with cases and experiential exercises.* John Wiley & Sons,.

Prepared by:	Approved by:	Validated by:
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Date: 18/08/2024	Date: 18/08/2024	Date: 18/08/2024