



Course Information					
Code:	NUH61022	Course:	FOOD TECHNOLOGY		
Coordination Area / Program:	FAC. CC.SS. NUTRICIÓN Y DIETÉTICA			Mode: Presencial	
Credits: 03	Tipo de hora	Presencial	Virtual	H. Totales	Autonomous Learning Hours: 96
	H.Teoria	32	0	32	
	H.Práctica	0	0	0	
	H.Laboratorio	32	0	32	
Period: 2024-01	Start date and end of period: del 20/03/2024 al 09/07/2024				
Career: NUTRICIÓN Y DIETÉTICA					

Course Pre-requisites		
Code	Course - Credits	Career
FC- P-NUT BIOALI	BIOQUÍMICA ALIMENTARIA	NUTRIC. DIETETICA
FC-AD-NUT INOYLEGDEA	INOCUIDAD Y LEGISLACIÓN DE ALIMENTOS	NUTRIC. DIETETICA

Course Coordinators			
Surname and First Name	Email	Contact Hour	Contact Site
BONIFAZ MORANTE, GRACIELA ALEXANDRA			

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

Course Overview
Food Tech is a course that belongs to the training area of specialty studies, has a theoretical and practical nature, contributes to the competence of food and research, describes and relates the different food preservation and transformation technologies, and assesses the role played by biotechnology in the elaboration of food. Analyze how these technological processes affect their nutritional and sensory value. Integrate the knowledge acquired to carry out research in the field of nutrition and food technology. The product of the course is a final project where the knowledge developed in the course is applied.

Competencias Profesionales y/o Generales			
Carrera/Programa	Sigla/ Denominación de la competencia	Nivel de la competencia	Aprendizajes esperados
NUTRITION AND DIETETICS	CP3: Food and Research	N3 Researches and innovates food products and services according to new scientific and technological advances, participating with national and international multidisciplinary teams to contribute to provide healthy alternatives that improve the quality of life and health of people.	-Identifies the nutritional composition of food and the factors associated with its safety. -Performs scientific information search using different tools, reads and interprets research articles on health and nutrition. -Elaborates research projects related to health, food and nutrition, taking into account the

			<p>application of the scientific method.</p> <p>-Performs the collection of information in the field, analyzes and interprets the results, according to the objectives of the study.</p> <p>-Edit and publish the results of the research carried out, contributing to the knowledge in the field of nutrition, dietetics and health.</p>
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General Course Result	Unit Result
<p>Food Tech is a course that belongs to the training area of specialty studies, has a theoretical and practical nature, contributes to the competence of food and research, describes and relates the different food preservation and transformation technologies, and assesses the role played by biotechnology in the elaboration of food. Analyze how these technological processes affect their nutritional and sensory value. Integrate the knowledge acquired to carry out research in the field of nutrition and food technology. The product of the course is a final project where the knowledge developed in the course is applied.</p>	1. 1. Understands the general concepts of food technology and biotechnology, including types of processed foods, unit operations and equipment, as well as the use of additives, their nature, toxicological aspects, classification and legislative aspects.
	2. 2. Explain the extraction of oils and fats from oilseeds, their refining and obtaining oils. Knows the process of obtaining cocoa paste and elaboration of chocolates, process of obtaining essential oils.
	3. 3. Understands the principles and methods of food preservation; explains the effects of refrigeration, freezing, heat treatment, Aw and pH reduction on the nutritional value and quality of food.
	4. 4. Understands the role of biotechnology in the elaboration of dairy, meat, bakery products, alcoholic beverages and vinegar.
	5. 5. Know the packaging materials used in the food industry.

Development of activities		
<p>Unit Result 1: 1. Understands the general concepts of food technology and biotechnology, including types of processed foods, unit operations and equipment, as well as the use of additives, their nature, toxicological aspects, classification and legislative aspects.</p>		
<p>Session 1: Understands the general concepts of food technology and biotechnology, the types of food technology and biotechnology and the</p>		Semana 1 a 2
Learning Activities	Contents	Evidence
Teacher presentation, student brainstorming, concept mapping and discussion forums.	Fields of action of food technology and biotechnology. Classification of processed foods. Unit operations in the food industry.	Flow diagram of various processed foods.
<p>Session 2: Use of additives, their nature, toxicological aspects, classification and legislative aspects.</p>		Semana 2 a 3
Learning Activities	Contents	Evidence
Teacher presentation, student presentations, concept mapping and discussion forums.	Nature, properties, toxicological and regulatory aspects of food additives.	Lab Report 1: Additives in processed foods
<p>Unit Result 2: 2. Explain the extraction of oils and fats from oilseeds, their refining and obtaining oils. Knows the process of obtaining cocoa paste and elaboration of chocolates, process of obtaining essential oils.</p>		

Session 3: <i>Explains the extraction of oils and fats from oilseeds, their refining and the production of oils.</i>		Semana 3 a 4
Learning Activities	Contents	Evidence
Teacher presentation, student presentations, concept mapping and process analysis.	Definition of oilseeds, extraction of oils and fats, their refining and oil production.	Group concept map
Session 4: <i>Learn about the process of obtaining cocoa paste and making chocolates, and the process of obtaining essential and olive oils.</i>		Semana 4 a 5
Learning Activities	Contents	Evidence
Teacher presentation, student presentations, concept mapping and process analysis.	The process of obtaining cocoa paste and making chocolates, obtaining essential oils and olive oil.	Participation in the forum
Unit Result 3: <i>3. Understands the principles and methods of food preservation; explains the effects of refrigeration, freezing, heat treatment, Aw and pH reduction on the nutritional value and quality of food.</i>		
Session 5: <i>Explain the effects of refrigeration on the nutritional value and quality of food.</i>		Semana 6 a 7
Learning Activities	Contents	Evidence
Teacher presentation, student presentations, concept mapping and process analysis.	Food refrigeration, basic concepts. Humidity and temperature parameters according to the food group. Effects of refrigeration on the nutritional value and quality of food. Microbial ecology in refrigeration.	Group concept map
Session 6: <i>Teacher presentation, student presentations, concept mapping and participation forums.</i>		Semana 7 a 8
Learning Activities	Contents	Evidence
Teacher presentation, student presentations, concept mapping and participation forums.	Food refrigeration, basic concepts. Humidity and temperature parameters according to the food group. Effects of refrigeration on the nutritional value and quality of food. Microbial ecology in refrigeration.	Participation in the forum
Session 7: <i>Explain the effects of heat treatment on the nutritional value and quality of the food.</i>		Semana 8 a 10
Learning Activities	Contents	Evidence
Teacher presentation, student presentations, concept mapping and process analysis.	Bleaching and pasteurization, objective and parameters. Pasteurization: HTST and LTLT. Sterilization, objectives, factors that determine its use, thermal its use, thermal resistance of microorganisms and spores. UHT, principles and effect on food. Commercial sterilization: canning	Lab report 2: Butter processing
Session 8: <i>Explain the effects of Aw and pH reduction on the nutritional value and quality of the feed.</i>		Semana 10 a 11
Learning Activities	Contents	Evidence
Teacher presentation, student presentations, concept mapping and process analysis.	Forms of Aw reduction in food, drying, preservation in sugar, salting and smoking. Vegetable and animal pickles. Semi-preserved fish.	Lab report 3: Butter production
Unit Result 4: <i>4. Understands the role of biotechnology in the elaboration of dairy, meat, bakery products, alcoholic beverages and vinegar.</i>		
Session 9: <i>Explains the applications of biotechnology in the food industry.</i>		Semana 11 a 12
Learning Activities	Contents	Evidence

Teacher presentation, student presentations, concept mapping and participation forums.	Production of starters for the food industry. Agro-industrial fermentations and biotechnology products as adjuvants in the food industry.	Group concept map
Session 10: <i>Explains the applications of biotechnology in the dairy, meat, bakery, alcoholic beverage and vinegar industries.</i>		Semana 12 a 14
Learning Activities	Contents	Evidence
Teacher presentation, student presentations, concept mapping and process analysis.	Elaboration of cheese, yogurt and butter, types of cheese and their nutritional of cheese and its nutritional contribution. Preparation of bread, wine, beer and pisco. Elaboration of vinegar.	Participation in the forum
Unit Result 5: <i>5. Know the packaging materials used in the food industry.</i>		
Session 11: <i>Explain the applications of the different packaging used in the food industry.</i>		Semana 14 a 15
Learning Activities	Contents	Evidence
Teacher presentation, student presentations, concept mapping and participation forums.	Definition of packaging. Types of packaging materials, interactions between packaging material and food.	Work Presentation
Session 12: <i>At the end of the session, students will have exhibited the creditable products of the course.</i>		Semana 16 a 16
Learning Activities	Contents	Evidence
Accredited Product Showcase - Final Report	Accredited Product Showcase - Final Report	Final Report

Methodology
<p>The course will be developed based on the following methodologies: The course will be developed based on the following methodologies: Project-based learning, Collaborative Learning, The course will be developed based on the following methodologies: Project Based learning and collaborative learning. Theoretical classes will be taught through active methodology, making use of Audiovisual material, developing problems and cases related to the subject, to reaffirm and fix the knowledge learned.</p> <p>Practical classes are carried out in laboratories and/or practice sites, during which students apply what they have learned in the theoretical classes. Students are distributed by group in the laboratories and/or practice sites, where appropriate equipment and materials are used to develop the subject to be covered.</p>

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.
Evaluación Permanente	70%			
Promedio de Prácticas	30%			
Práctica 1	33,33%		Semana 5	No
Práctica 2	33,33%		Semana 9	No
Práctica 3	33,34%		Semana 12	No
Promedio de Tareas	30%			

Tarea 1	33,33%		Semana 5	No
Tarea 2	33,33%		Semana 9	No
Tarea 3	33,34%		Semana 12	No
Prueba Final	40%		Semana 14	No
Examen Final	30%	Creditable product.	Semana 16	No

Attendance Policy	
Total Percentage Absences Permitted	30%
<p>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).</p> <p>In hybrid classrooms, only synchronous virtual participation (via zoom) is allowed, up to a maximum of 50% of the total course.</p>	

Basic Required Reading
<p>[1] Alba Cuéllar (2008). <i>Ciencia, tecnología e industria de los alimentos</i>. Latino editores: .</p> <p>[2] Casp Vanaclocha, Ana (2003). <i>Procesos de conservación de alimentos (2a ed.)</i>. Madrid: A. Madrid Vicente Ediciones. : .</p> <p>[3] Tscheuschner, Horst-Dieter (2001). <i>Fundamentos de tecnología de los alimentos (1a.)</i>. . Zaragoza : Acribia.: .</p> <p>[4] Schmidt-Hebbel, H. (1982). <i>Las enzimas en los alimentos: su importancia en la química y la tecnología de los alimentos</i>. Fundación Chile: .</p> <p>[5] Rickman, J. C., Barrett, D. M., & Bruhn, C. M. (2007). <i>Nutritional comparison of fresh, frozen and canned fruits and vegetables. Part 1. Vitamins C and B and phenolic compounds</i>. Journal of the Science of Food and Agriculture, 87(6), 930-944.: .</p>

References Supplementary
<p>[1] Rickman, J. C., Bruhn, C. M., & Barrett, D. M (2007). <i>Nutritional comparison of fresh, frozen, and canned fruits and vegetables II. Vitamin A and carotenoids, vitamin E, minerals and fiber</i>. Journal of the Science of Food and Agriculture: .</p> <p>[2] Valero-Cases, E.; Cerdá-Bernad, D.; Pastor, J.J.; Frutos, M.J. (2020). <i>Non-Dairy Fermented Beverages as Potential Carriers to Ensure Probiotics, Prebiotics, and Bioactive Compounds Arrival to the Gut and Their Health Benefits</i>. Nutrients: https://doi.org/10.3390/nu12061666</p> <p>[3] Acosta-Coello, C., Parodi-Redhead, A., & Medina-Pizzali, M. L.. (2021). <i>Design and validation of a nutritional recipe for a snack made of green banana peel flour (Musa paradisiaca)</i>. . Brazilian Journal of Food Technology: https://doi.org/10.1590/1981-6723.34919</p>

Prepared by:	Approved by:	Validated by:
CHAQUILA CUBILLAS, JOSE AUGUSTO /	SAAVEDRA GARCIA, LORENA MARIA	Office of Curriculum Development
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