Universidad San Francisco de Quito

FOOD ENGINEERING

USFQ | POLITÉCNICO

Description of the College of Sciences and Engineering

The College of Sciences and Engineering (*Politécnico*) at Universidad San Francisco de Quito USFQ trains professionals with sharp critical thinking, excellent levels of scientific and technological preparation, a comprehensive humanistic education in the liberal arts, and solid ethical principles.

The College offers a wide variety of scientific and technical programs: Physics, Environmental Engineering, Civil Engineering, Agronomy Engineering, Food Engineering, Computer Science, Electronics Engineering, Industrial Engineering, Mechanical Engineering, Chemical Engineering, Applied Mathematics and Computing Engineering, and Mathematics. Additionally, *Politécnico* offers sub-specializations and postgraduate programs in various fields. The numerous research projects carried out by professors and students across different programs focus on both basic and applied aspects, proposing technological solutions to society's needs. The results of these projects are evidenced by the large number of specialized scientific publications, which have a high impact at the international level, as well as by the collaborations that Politécnico maintains with the local industry.

For more information, visit our website, where you can also find scholarship contests for all the programs at Politécnico to help finance your studies at the #1 University in Ecuador.

Description of the Program

Food Engineering is a multidisciplinary field of engineering that integrates the selection of raw materials, process design and optimization, packaging, and distribution to produce food products that enhance consumer quality of life and meet market demands. Throughout this process, food quality and safety management are prioritized. The program covers all aspects of the food sector, from production to the consumption of the final product.

Mission

The Food Engineering program at Universidad San Francisco de Quito (USFQ) trains highly qualified professionals through an innovative curriculum that combines a strong academic and technological background with a liberal arts perspective. The program aims to develop professionals who are committed to their field, constantly updating their knowledge to benefit society. Graduates are equipped to contribute to scientific and industrial growth in Ecuador and globally, making decisions guided by social, ethical, and environmental responsibility. .

Vision

Food Engineering Program at Universidad San Francisco de Quito USFQ remains a pioneer in training leading professionals and entrepreneurs in the food industry. It promotes continuous innovation, academic excellence, and ethical responsibility with society and the environment.

UNIVERSIDAD SAN FRANCISCO DE QUITO USFQ

College of Sciences and Engineering
INGENIERÍA DE ALIMENTOS / FOOD ENGINEERING
ON-SITE LEARNING MODALITY - 9 SEMESTERS

PRIMER AÑO / FIRST YEAR

COD	PRIMER SEMESTRE / FIRST SEMESTER	CREDITS
MAT 1201	Cálculo Diferencial + Ej *Differential Calculus + Pr*	3
ALI 1003	Taller de Ing. en Alimentos *Food Engineering Workshop*	3
QUI 1003	Química General 1 +Lab/Ej *General Chemistry 1 +Lab+Pr*	3
ECN 1001	Introducción a la Economía *Introduction to Economics*	3
ARL 1001	Autoconocimiento *Self-knowledge*	3
ESL 0001	Inglés Nivel 1 *English Level I*	0
ESL 0002	Inglés Nivel 2 *English Level II*	0
	TOTAL	**15**

COD	SEGUNDO SEMESTRE/SECOND SEMESTER	CREDITS
ESP 1001	Escritura Académica *Academic Writing*	3
BIO 1102	Biología General +Lab *General Biology +Lab*	3
QUI 1004	Química General 2 +Ej *General Chemistry 2 +Pr*	3
MAT 1202	Cálculo Integral + Ej *Integral Calculus +Pr*	3
INQ 2001	Balance de Masa y Energía +Ej *Mass and Energy Balance +Pr*	3
ESL 0003	Inglés Nivel 3 *English Level III*	0
	TOTAL	15

SEGUNDO AÑO / SECOND YEAR

COD	PRIMER SEMESTRE / FIRST SEMESTER	CREDITS
QUI 2001	Química Orgánica Básica +Ej *Basic Organic Chemistry +Pr*	3
MAT 2002	Ecuaciones Diferenciales *Differential Equations*	3
FIS 2701	Física para Ing. 1+Lab/Ej *Physics for Eng. 1 +Lab+Pr*	3
INQ 3001	Termodinámica Química +Lab *Process Thermodynamics +Pr*	3
ARL 2001	Ser y Cosmos *The Self and The Cosmos*	3
ESL 0005	Inglés Nivel 5 *English Level V*	0
ESL 0006	Inglés Nivel 6 *English Level VI*	0
	TOTAL	**15**

COD	SEGUNDO SEMESTRE/SECOND SEMESTER	CREDITS
ALI 3002	Química de Alimentos +Lab *Food Chemistry +Lab*	3
FIS 2702	Física para Ing. 2 +Lab/Ej *Physics for Eng. 2 +Lab+Pr*	3
PRC 2000	Aprendizaje y Servicio PASEC *Service Learning PASEC*	3
MAT 2008	Probabilidad y Estadística +Ej *Statistics and Probability +Pr*	3
INQ 3003	Fenómenos de Transporte *Transport Phenomena +Lab*	3
	TOTAL	**15**

TERCER AÑO / THIRD YEAR

COD	PRIMER SEMESTRE / FIRST SEMESTER	CREDITS
GST0010	Cultura Gastronómica *Gastronomic Culture*	1
IIN3005	Diseño de Experimentos +Lab *Design of Experiments +Lab*	3
ADM3002	Emprendimiento *Entrepreneurship*	3
ALI3004	Análisis de Alimentos +Lab *Food Analysis +Lab*	3
MCR3001	Microbiología Alimentos +Lab *Food Microbiology +Lab*	3
ELECTIVA 1	Electiva Libre 1/2	3
	TOTAL	**16**

COD	SEGUNDO SEMESTRE/SECOND SEMESTER	CREDITS
ALI3003	Alimentos Funcionales +Lab *Functional Foods +Lab*	3
IIN3002	Gestión por Procesos *Process Management*	3
INQ4201	Operaciones Unitarias 1 +Lab *Unit Operations 1 +Lab*	3
CCSS	CCSS:HIS/SOC/ ANT/POL/REL/PSI	3
HUM	Humanidades: LIT/FIL/ARH/ESC	3
	TOTAL	**16**

CUARTO AÑO / FOURTH YEAR

COD	PRIMER SEMESTRE / FIRST SEMESTER	CREDITS
DEP0010	Deportes *Sports*	1
ALI4003	Evaluación Sensorial +Lab *Food Sensory Evaluation +Lab*	3
ALI4004	Frutas y Hortalizas +Lab *Fruits and Vegetables +Lab*	3
ALI4002	Cárnicos +Lab *Meat Products +Lab*	3
INQ4202	Operaciones Unitarias 2 +Lab *Unit Operations 2 +Lab*	3
OPT1	Optativa 1/2	3
	TOTAL	**16**

COD	SEGUNDO SEMESTRE/SECOND SEMESTER	CREDITS
ALI4008	Lácteos +Lab *Dairy Products +Lab*	3
ALI5001	Desarrollo de Nuevos Productos *Development of NewProducts/Capstone Project*	3
ALI4005E	Food Biotechnology +Lab *Food Biotechnology +Lab*	3
IIN4007	Ingeniería de la Calidad +Lab *Quality Engineering +Lab*	3
ARTE	Arte: ART/MUS/DAN/TEA	3
	TOTAL	**16**

COD	VERANO / SUMMER	CREDITS
PAS4000	Práctica Pre-Profesional PASEM *Professional Practicum PASEM*	5
	TOTAL	**5**

QUINTO AÑO / FIFTH YEAR

COD	PRIMER SEMESTRE / FIRST SEMESTER	CREDITS
ING0001	Coloquios Colloquium"	1
IIN4011	Proyectos: Gerencia y Análisis *Project Management*	3
ELECTIVA 2	Electiva Libre 2/2	3
OPT2	Optativa 2/2	3
ALI5992	Proyecto Integrador *ALI Senior Project*	5
	TOTAL	**15**

TOTAL DE CRÉDITOS: 142 **3 créditos equivalen a 144 horas**

INGENIERÍA EN ALIMENTOS/ FOOD ENGINEERING

ON-SITE LEARNING MODALITY - 9 SEMESTERS

The sequence of subjects in the curriculum from the second semester onward is a recommendation considering that some subjects are prerequisites for subsequent subjects. The system is calibrated so that students can register for the number of credits listed in the curriculum.

GENERAL EDUCATION COURSES AND GRADUATION REQUIREMENTS

Some General Education courses are fulfilled with designated courses for this purpose by each major. When a major designates a particular subject to meet the General Education requirement, that subject requires a passing grade of C.

English as a Second Language Levels ESL (B2 Common European Framework)

Students are assigned an English level (English as a Second Language ESL) based on the proficiency test taken during the admission process. Students can also validate their English knowledge with international certificates detailed in the Foreign Language Learning Proficiency:

English section of the Student Handbook. To meet the mandatory graduation requirements, all students must demonstrate English proficiency by achieving the required score on US-

FQs proficiency test, presenting an international certificate of English validated by USFQ, or completing USFQs ESL levels through Level 6.
To take courses in any academic area in English and courses in other languages, ESL requirements must have been formally and successfully completed.

Academic Writing (ESP 1001)

Students are encouraged to take Academic Writing early in their career. The minimum passing grade for this General Education requirement is C.

Mathematics

The General Education MATHEMATICS requirement is met with the course MAT 1201 Differential Calculus + Pr.
The minimum passing grade for this General College requirement for this major is C.

Sciences

The General Education SCIENCES requirement is met with the course QUI 1003 General Chemistry 1 + Lab/Pr.
The minimum passing grade for this General College requirement for this major is C.

Arts

The ART requirement is met by passing any course in the academic areas detailed below. The minimum passing grade for this General Education requirement for this major is D.
ART - Art
DAN - Dance
TEA - Theater
MUS – Music

Social Sciences

The SOCIAL SCIENCES requirement is met by passing any course in the academic areas detailed below. The minimum passing grade for this General Education requirement for this major is D.
ANT - Anthropology
EDU - Education
HIS - History
REL - International Relations
POL - Political Science
SOC - Sociology
PSI - Psychology

Humanities

The HUMANITIES requirement is met by passing any course in the academic areas detailed below. The minimum passing grade for this General Education requirement for this major is D.
LIT - Literature
FIL - Philosophy
ESC - Creative Writing
ARH - Art History
In some cases, to meet General Education requirements, students must choose a subject from various academic areas (check in the curriculum and see details below).

Community Service Learning and Service PASEC (PRC 2000)

Community service is fulfilled through the LEARNING AND SERVICE PASEC seminar. Students must attend classes and also complete community service hours.

Professional Practicum PASEM (PAS 4000)

The students can start completing PASEMs Professional Practicum requirements from the sixth semester and/or with 75 approved credits, they must complete a minimum of 240 hours. Students must enroll in PASEM in the last summer according to their curriculum, the class is approved with the internship hours and the theory component of the class. The student must ensure that the class end date coincides with his/her last semester.
Sports (DEP 0010)
Every student must choose a SPORTS class from the various options offered each semester.

Gastronomic Culture (GST 0010)

Every student must take a GASTRONOMIC CULTURE seminar from the second semester onward.

Colloquiums

The Colloquium requirement varies by major. Check with the Academic Dean of each College.

Course in English

The student must register in any course taught in English, either from their major or from the General Education. Courses with a code ending in (E), (e.g., ADM 1001E), are taught in English. Any course taught in English will have ESL 0006 English Level 6 as a prerequisite.

Writing Intensive

The student must pass any course with the Writing Intensive attribute. To register for a Writing Intensive course, students must have passed all ESL levels. Writing Intensive courses can be identified with a specific icon in the Offered Courses Catalog each semester.

Free Electives

Any subject that is not a mandatory requirement in the curriculum can serve as a Free Elective for General Education. Free Electives can be used to meet the demands of a second major or a minor.

Ser Dragón (COL 2000)

Ser Dragón is an accompaniment seminar for first-semester students that aims to facilitate the transition from high school to university life. Every student who has enrolled from semester 202210 onward must take and pass COL 2000.

GUIDE FOR TECHNICAL ELECTIVE COURSES

*All courses offered by the College of Sciences and Engineering must be passed with a minimum grade of C.

Electives

To fulfill the Food Engineering Electives requirements, students must choose two courses from the following list:

ALI 4007 Packaging Engineering
ALI 4006 Cereals and Byproducts +Lab
QUI 2101 Analytic Chemistry +Lab
INA 4080 Health, Safety and Environment
AGR 5001 Foreign Trade
AGR 5002 Floriculture
AGR 5003 Post-harvest Handling +Lab
IIN 4012 Accounting and Finance for IE

ADDITIONAL ACTIVITIES OF THE PROGRAM

Student Involvement in Research Projects

The Food Engineering Faculty is deeply committed to advancing research, with a strong emphasis on generating new knowledge in the areas of food quality, the development of innovative formulations, the discovery of new food sources and novel food products, and postharvest technology. The program hosts various research groups working on cutting-edge topics such as food safety, product development, sustainable food production, functional foods, postharvest technology, nutritional value of foods, sensory evaluation, food coatings and films, and the development of new food products. Many students actively participate in research projects starting in their third year, often contributing as co-authors in scientific publications. These experiences play a significant role in achieving the Program Student Outcomes, preparing students to address current and future challenges in the food industry as follows:

During the academic years 2023 and 2024, students in the Food Engineering program participated in the following research projects:

PROJECT	NUMBER OF STUDENTS
Academic period 202310	
Physicochemical Characterization and Analysis of the Antimicrobial Capacity of Stingless Bee Honey (Tribe Meliponini) from Ecuador	1
Study of Quality Parameters, Chemical Composition, and Biological Activity of Honey, Pollen, and Bee Bread from Different Floral Origins in the Andean Region of Ecuador	1
Academic period 202320	
Potential of Red Fruits from the Andean Region of Ecuador in the Prevention of Diseases Related to Oxidative Stress and Aging	1

Physicochemical Characterization and Analysis of the Antimicrobial Capacity of Stingless Bee Honey (Tribe Meliponini) from Ecuador	1
Study of Quality Parameters, Chemical Composition, and Biological Activity of Honey, Pollen, and Bee Bread from Different Floral Origins in the Andean Region of Ecuador	1
Potential of Sacha Inchi (*Plukenetia volubilis*) Derivatives from the Ecuadorian Amazon for Use in the Food Industry and Ecuadorian Gastronomy	4
Microencapsulation of Phenolic Extracts from Honey of Different Floral Origins for Their Application in the Food Industry	2
Academic period 202410	
Physicochemical Characterization and Analysis of the Antimicrobial Capacity of Stingless Bee Honey (Tribe Meliponini) from Ecuador	1
Potential of Red Fruits from the Andean Region of Ecuador in the Prevention of Diseases Related to Oxidative Stress and Aging	1
Potential of Sacha Inchi (*Plukenetia volubilis*) Derivatives from the Ecuadorian Amazon for Use in the Food Industry and Ecuadorian Gastronomy	4
Microencapsulation of Phenolic Extracts from Honey of Different Floral Origins for Their Application in the Food Industry	2
Academic period 202420	
Antimicrobial and Synergistic Potential of Melipona Bee Honey Against Multidrug-Resistant Microorganisms	2

Student Involvement in Community Outreach Projects

The Food Engineering Faculty is strongly committed to community outreach, emphasizing the application of knowledge and skills to address real-world challenges faced by local communities. These projects focus on areas such as improving food safety practices, promoting sustainable food production, reducing food waste, and enhancing nutritional education. Students actively participate in these initiatives, often starting in their third year, collaborating with community members, organizations, and faculty to create meaningful impacts. Through these projects, students develop practical solutions that benefit the community while gaining valuable hands-on experience. This involvement contributes significantly to the Program Student Outcomes, equipping students with the skills to address contemporary issues and empowering them to become socially responsible professionals in the food industry as follows:

During the 2023 and 2024 academic periods, students in the program have participated in the following community collaboration projects related to food engineering:

PROJECT	NUMBER OF STUDENTS
Academic period 202310	
Food Engineering and Its Importance in the Food Chain and Public Health (Transition 2022 - 2023)	2
Academic period 202320	
Good Beekeeping Practices to Promote the Sustainable Development of Honey-Producing Areas in the Northern and Central Highlands of Ecuador	5
Academic period 202410	
Good Beekeeping Practices to Promote the Sustainable Development of Honey-Producing Areas in the Northern and Central Highlands of Ecuador	5

Student Involvement in Industry Collaboration Projects

The Faculty of Food Engineering fosters industry engagement through various strategies, such as the participation of experts in lectures and master classes, industry-linked projects to solve real-world cases identified in the industry, and research and product development projects. These initiatives allow students to apply theoretical knowledge acquired in the classroom to real-life situations, enhancing their understanding and practical skills. Direct contact with companies helps them develop skills and competencies demanded by the job market, increasing their employment opportunities upon graduation. Additionally, interaction with industry professionals enables students to build a valuable network for their future careers. Companies also provide information on the latest trends and technologies in the field, keeping students up-to-date with the most recent advancements. Collaborations with the industry often include internship programs and direct employment opportunities, facilitating students' transition into the workforce.

During the academic periods 2023 and 2024, students of the program have participated in the following industry collaboration projects:

PROJECT	NUMBER OF STUDENTS
Academic period 202310	
Application of UV-C Radiation in the IV Range Salad Production Line of the Company + Fresco.	2
Academic period 202410	
Use of Whey to Make a Sauce (Manjar Type) with Chocolate. Dairy Industry	1
Preservation of Export-Quality Golden Berries Through the Implementation of Non-Thermal Technologies for Golden Sweet Spirit.	3
Academic period 202420	
Microbiological Diagnosis and Use of Ozone as an Antimicrobial Agent in Export-Quality Golden Berries for the Company Golden Sweet Spirit.	2

Industrial Visits/Field Trips

As part of their curriculum, students from the Food Engineering program participate in industrial visits, offering them firsthand exposure to the practical applications of their studies. These visits provide invaluable opportunities for students to observe food production processes, interact with industry professionals, and gain insights into how theoretical concepts are applied in real-world food engineering contexts. By exploring the operations of industrial facilities, students deepen their understanding of food engineering principles and enhance their practical problem-solving skills. Furthermore, these experiences align closely with the Program Student Outcomes by fostering the development of skills such as teamwork, communication, and the ability to apply engineering knowledge to address industry challenges. This activity contributes to the Program Student Outcomes as follows:

- **Engineering Foundations and Problem Solving:** Observing food production processes during industrial visits allows students to see theoretical concepts in action, enhancing their problem-solving skills as they encounter, and address challenges related to quality control, process optimization, and food safety.

- **Engineering Design:** While not explicitly mentioned, industrial visits provide students with valuable insights into the design and operation of food processing facilities. These experiences help students understand how engineering principles are implemented in the design of food production systems.

- **Effective Communication:** Interacting with industry professionals during industrial visits requires students to develop effective communication skills. They must ask questions, engage in discussions, and convey their understanding of complex food engineering concepts, supporting the development of this outcome.

- **Contemporary Issues and Ethical Responsibility:** Industrial visits often involve discussions on topics such as sustainability, food security, safety standards, and ethical considerations in food production. These experiences enhance students' awareness of contemporary issues and the importance of responsible practices in the food industry.

- **Teamwork and Organization:** Industrial visits typically involve group activities, where students must collaborate to observe, analyze, and document industrial processes. These group dynamics foster teamwork and organizational skills essential for professional success.

- **Experiment Design and Analysis:** While not always explicitly included, students may have opportunities to analyze data or observations collected during industrial visits, applying principles of experiment design and analysis to interpret real-world information.

- **Life-long Learning and Broad Knowledge:** Industrial visits expose students to a variety of food production systems, technologies, and industry practices, encouraging a habit of continuous learning and broadening their understanding of food engineering applications in different sectors. This prepares them for ongoing professional growth and adaptability in their careers.

During the academic periods 2023 and 2024, students of the program have participated in the following industrial visits related to food engineering:

PROJECT	NUMBER OF STUDENTS
Academic period 202310	
National Food Processor (Pronaca)	4
Laboratories of the Phytosanitary and Zoosanitary Regulation and Control Agency - Agrocalidad	10
Academic period 202320	
Blueberry (Mortiño) Wine Factory "El último Inca"	7
Flexiplast S.A (Planta Calderón)	9
Moderna Alimentos S.A. Cayambe Plant	10
National Food Processor (Pronaca)	7
Academic period 202410	
Laboratories of the Phytosanitary and Zoosanitary Regulation and Control Agency - Agrocalidad	10
Metropolitan Public Slaughterhouse Company of Quito	6

Industry Experts and Professional Collaboration

The Food Engineering Faculty provides students with a comprehensive and industry-relevant education by fostering exchanges with distinguished experts from the food sector. Through these visits, students and faculty members benefit from the extensive practical knowledge and leadership of experienced professionals, gaining exposure to cutting-edge technological advancements, best practices, and real-world challenges in food production, quality assurance, sustainability, and regulatory compliance.

Industry experts play a crucial role in enriching the academic environment by delivering specialized lectures, conducting hands-on workshops, and sharing their expertise on emerging trends, innovative methodologies, and industry developments.

During the academic periods 2023 and 2024, the Food Engineering program has hosted several esteemed industry experts who have significantly contributed to the professional development of students through specialized seminars, hands-on training, and collaborative initiatives.

Course	Activity	Industry	Invited Speakers	Number of students
Academic period 202310				
ALI Senior Project	Professional Ethics	Pronaca	1	5
Development of New Products/ Capstone Project	The Science Behind Food Additives	Codan Corporation	3	7
Academic period 202320				
Food Engineering Workshop	Challenges and Opportunities for Food Engineering Graduates	El ordeño Industry	1	8
Food Engineering Workshop	Challenges and Opportunities for Food Engineering Graduates	Cortidesing	2	8
Packaging	Aseptic Packaging in Food	Tetrapak	2	10
Development of New Products/ Capstone Project	The Science Behind Food Additives	Codan Corporation	2	6
ALI Senior Project	Professional Ethics in Food Science	Estrategia S.A	1	5
Academic period 202410				
Development of New Products/ Capstone Project	Innovation in Product Development: The Key to Success	Food Studio V2 Innovation and Development of Food and Beverages	1	2
Food Engineering Workshop (course 1)	Innovation in Product Development: The Key to Success	Food Studio V2 Innovation and Development of Food and Beverages	1	11
Food Engineering Workshop (course 2)	Innovation in Product Development: The Key to Success	Food Studio V2 Innovation and Development of Food and Beverages	1	10
Food Engineering Workshop (course 1)	Recommendations for Obtaining a Fully Funded Master's or PhD Scholarship	Researcher at Anhalt University of Applied Sciences	1	11
Food Engineering Workshop (course 2)	Recommendations for Obtaining a Fully Funded Master's or PhD Scholarship	Researcher at Anhalt University of Applied Sciences	1	10
ALI Senior Project	Professional Ethics	Golden sweet spirit	1	7
Meat + Lab	Cuts and Quality of Beef Carcass	Independent Professional	1	8
Meat + Lab	Meat Protective Cultures and Vacuum Packaging Systems	BIO VITA LIVE (Representante de SACCO - CRYOVAC - YUMAN PACK)	1	8

Academic Events in Food Engineering

IThe Food Engineering program actively encourages and supports student participation in academic events, with a particular emphasis on national and international conferences, symposia, and competitions focused on development and research in the food industry. These events address critical issues within the food engineering profession, providing students with invaluable opportunities to engage with the global food engineering community, stay informed about emerging trends, and gain insights into advancements in areas such as food safety, sustainable production, and innovative food technologies.

During the academic periods 2023 and 2024, students of the program have participated in the following academic events related to food engineering:

Academic event	Number of students	Category
Academic period 202320		
Smart Snacks for Kids Product Development Competition	3	Interrnational
IFTSA & Mars Product Development Competition Sponsored by Mars Wrigley	3	International
First Edition of the “College Bowl in Ecuador”	5	National
Academic period 202410		
I Ibero-American Congress on Food 4.0: Applications in Gastronomy and Agroindustry	3	International
RISE (Research and Innovation in Sciences and Engineering)	2	International
14th Ibero-American Congress of Food Engineering and 9th Ecuadorian Congress of Food Engineering	5	International
InnovaFood de Grupo Danec	4	National
Hackathon "Food for Relief: International Division Student	1	International

Scientific Publications

As part of their academic training, students from the Food Engineering program are encouraged to actively participate in scientific research, contributing to publications that address cutting-edge topics in the field. These opportunities allow students to engage in innovative studies, such as developing new food formulations, optimizing production processes, ensuring food safety, and discovering novel food sources. By collaborating with faculty members and research groups, students often co-author scientific articles published in peer-reviewed journals, presenting their findings to the global scientific community. These experiences align closely with the Program Student Outcomes by enhancing critical skills such as research methodology, technical communication, and the ability to address complex engineering challenges.

During the 2023 and 2024 academic years, students in the Food Engineering program have participated in the following scientific publications related to food engineering:

Type of product	Title	Number of students	Indexing and Ranking of the Journal in the Area of Food Engineering
Academic period 202310			
Article in Per-Reviewed Journal	Edible Coatings of Aloe Vera Gel and Carnauba Wax Microparticles to Increase Strawberry (Fragaria ananassa) Shelf Life	3	Scopus/Q2
Academic period 202410			
Article in Peer-Reviewed Journal	Effect of bottle storage on the color, chemical composition, antioxidant activity, and physicochemical parameters of wild Andean blueberry (mortiño) wine	2	Scopus/Q1

Student Chapter

The Institute of Food Technologists (IFT) is an international nonprofit organization dedicated to advancing the science and technology of food. Founded in 1939, the IFT brings together food industry professionals, academics, researchers, and students with the goal of advancing knowledge and application of food science to improve the safety, quality, and sustainability of food products.

The IFT offers a variety of resources and opportunities for its members, including access to scientific publications, conferences, workshops, and a global network of professional contacts. Additionally, the IFT advocates for public policies that support innovation and development in the field of food science.

Since July 2024, our program has included the IFT-USFQ chapter. The importance of having this chapter includes the following advantages:

- IFT chapters offer opportunities for continuous professional development through workshops, seminars, and conferences. This helps members stay updated with the latest trends and advancements in food science and technology.
- Participating in an IFT chapter allows students and professionals to build a valuable network of contacts. This network can be useful for finding job opportunities, collaborating on projects, and sharing knowledge and experiences.
- IFT members have access to a wide range of resources, including scientific publications, databases, and educational materials that can greatly aid in their training and professional development.
- Being part of an IFT chapter adds credibility and recognition to students and professionals, as the IFT is a globally respected organization in the field of food science and technology.
- IFT chapters offer opportunities for members to take on leadership roles, which can be beneficial for developing management and leadership skills that are valuable in any career.

Publications from our team of professors

Our team of professors effectively combines their teaching activities with research. During the 2023 academic period, ten publications were registered in Scopus, a figure that remained the same in 2024. So far, in 2025, three publications have been registered. The following table summarizes the publications of the program during the respective academic periods.

No.	Title of the publication	Journal/book
	2023	
1	Advances in mass and thermal transport in engineering materials IV. Capítulo del libro: Optimizing Diffusion Time and other Resources by Using the Diffusion Rate and Number of Stages Concepts	Trans Tech Publications
2	Vegetable and fruit consumption during the COVID-19 lockdown: eating habits in Ecuador. Agricultural and Food Economics,	Agricultural and Food Economic
3	The International Natural Product Sciences Taskforce (INPST) and the power of Twitter networking exemplified through #INPST hashtag analysis	Phytomedicine
4	Cinnamomum sp. and Pelargonium odoratissimum as the Main Contributors to the Antibacterial Activity of the Medicinal Drink Horchata: A Study Based on the Antibacterial and Chemical Analysis of 21 Plants	Molecules
5	Anthocyanins: What do we know until now?	Journal of Berry Research
6	Evaluation of the polyphenolic profile of native Ecuadorian stingless bee honeys (Tribe: Meliponini) and their antibiofilm activity on susceptible and multidrug-resistant pathogens: An exploratory analysis	Current Research in Food Science
7	Exploring the Chemistry of Ocimum Species under Specific Extractions and Chromatographic Methods: A Systematic Review	ACS Omega
8	Can the phenolic compounds of Manuka honey chemosensitize colon cancer stem cells? A deep insight into the effect on chemoresistance and self-renewal	Food Chemistry
9	Influence of altitude on the physicochemical composition and antioxidant capacity of strawberry: a preliminary systematic review and meta-analysis	Phytochemistry review
10	House cricket (Acheta domesticus): A review based on its nutritional composition, quality, and potential uses in the food industry	Trends in Food Science and Technology
	2024	
1	Edible Coatings of Aloe Vera Gel and Carnauba Wax Microparticles to Increase Strawberry (Fragaria ananassa) Shelf Life	International Journal of Fruit Science
2	Could Snacks Based on Lupin Be a Nutritious Treat? A Point of View	Foods
3	Is per capita fish consumption in Latin America aligned with international recommendations for a healthy diet?	Food Science and Technology
4	Ethnobiology of edible palm weevil larvae Rhynchophorus palmarum L. (Curculionidae, Coleoptera), a common food source in Amazonian Ecuador	Journal of Insects as Food and Feed
5	Influence of altitudes and development stages on the chemical composition and antioxidant capacity of Andean blackberries (Rubus glaucus Benth)	Frontiers in Nutrition
6	The preventive and inhibitory effects of red raspberries on cancer	Journal of Berry Research
7	Modulatory effect of Andean blackberry polyphenols on genes related to antioxidant and inflammatory responses, the NLRP3 inflammasome, and autophagy	Journal of Berry Research
8	Antimicrobial activity of stingless bee honey (Tribe: Meliponini) on clinical and foodborne pathogens: A systematic review and meta-analysis	Food Frontiers

9	Nutritional, functional, and safety characterization of the edible larva of the South American palm weevil (chontacuro) Rhynchophorus palmarum L. from Amazonian Ecuador	Journal of Food Composition and Analysis
10	Effect of bottle storage on the color, chemical composition, antioxidant activity, and physicochemical parameters of wild Andean blueberry (mortiño) wine	LWT- Food Science and Technology
	2025	
1	Relationship between plasma uric acid levels, antioxidant capacity, and oxidative damage markers in overweight and obese adults: A cross-sectional study	Plos one
2	Miracle Fruit berry: Hedonic pleasure meets technological progress	Journal of Berry Research
3	Edible Insects as Functional Foods: Bioactive Compounds, Health Benefits, Safety Concerns, Allergenicity, and Regulatory Considerations	Frontiers in Nutrition

Research Laboratory- interdisciplinary and international projects

In August 2023, the Food Engineering Research Laboratory (LabinAli) became operational, significantly boosting the program's research activities with the active participation of students in various projects, thereby fostering a strong culture of scientific research. Currently, two students from the program are working as research assistants on several projects that have generated indexed journal publications.

The food engineering program has integrated into various interdisciplinary projects, both nationally and internationally. Within the university, collaboration with other departments (Chemical Engineering, Biotechnology, Nutrition and Dietetics, Microbiology, Gastronomy, and Hotel Management) has been strengthened, promoting the development of high-impact interdisciplinary research. Thanks to this infrastructure, the program has applied for international research grants such as Horizon 2020 (2024 call) and the ERC Consolidator Grant 2025, and new proposals are being prepared for European funding opportunities. These improvements have also facilitated access to internal university funding, significantly boosting research activities in this field.

Additionally, the improvement of research infrastructure has opened doors to international graduate students (master's, doctoral, and postdoctoral researchers) from various universities (Complutense University of Madrid and University College Dublin) to conduct research stays and contribute to different projects.

The latest ongoing project, with international funding and participation, includes researchers from the Institute of Food Science and Technology and Nutrition (ICTAN) in Spain and several Ecuadorian universities. It focuses on studying the quality of Biloxi and Emerald blueberries from organic and conventional production grown at high altitudes (2560 and 2780 meters above sea level) through a molecular approach, examining changes in the expression of genes encoding key enzymes in the synthesis of sugars and phenolic compounds. The goal is to understand how these are modulated in organic and conventional cultivars during ripening in relation to cultivation altitude. In addition to USFQ researchers, the project also includes students from the program and will last for two years.