

Graduate in Food Engineering. Program Educational Objectives and Student Outcomes

A graduate in Food Engineering is a professional specially trained to plan design and implementation of projects and production processes in the food industry. A trained to draft, design, implement plans and engineering projects related to food industry professional. All focused on achieving higher productivity, greater economic benefit, considering food safety and respect for the environment.

GRADUATE IN FOOD ENGINEERING BY THE POLYTECHNIC UNIVERSITY OF MADRID (General objectives of Title)	
Objective Number	Target Description
Obj. 1.	Students must acquire the capacity for preparation, design, drafting and signing of projects whose purpose is to construction, alteration repair, maintenance, demolition, fabrication, installation, assembly or use of real property and chattels which by its nature and characteristics are included into the agricultural and livestock production (facilities or buildings, farms, infrastructure and rural roads), the food industry (extractive industries, fermentation, milk, canned food, fruit and vegetables, meat, fish, salted fish and overall production any other dedicated to the production and processing, storage, handling and distribution of food products), gardening and landscaping (urban green spaces and / or rural -parks, gardens, nurseries, urban trees, etc), public sports facilities or private and environments subject to landscape recovery in the field of food engineering.
Obj. 2.	Students must acquire adequate knowledge of physical problems, technologies, equipment and systems for water and energy supply, the constraints imposed by cost factors and building regulations, and the relationships between facilities or buildings and farms, agribusiness and spaces related to gardening and landscaping with its social and environmental as well as the need to relate those and that environment with human needs and environmental protection in the field of food engineering.
Obj. 3.	Students must acquire the ability to run the execution of the work for projects concerning to green food industries, farms and spaces and buildings, infrastructure and facilities, prevention of risks associated with the implementation and management of multidisciplinary teams and human resource management, in accordance with ethical standards in the field of food engineering.
Obj. 4.	Students must acquire the ability to draft and sign measurements, segregations, subdivisions, valuations and appraisals in the rural areas, the agribusiness technique itself and spaces related to gardening and landscaping, whether or not character of expert reports to judicial or administrative Bodies, regardless of the use of real property and chattels serve in the field of food engineering well.
Obj. 5.	Students must acquire the ability for drafting and signing of environmental impact studies and management of waste from agricultural food, agricultural and livestock industries, and spaces related to gardening and landscaping, in the field of food engineering..

Obj. 6.	Students must acquire the capacity for leadership and management of all kinds of food processing and / or rural industries, farms, urban green spaces, and public or private sports areas with the knowledge of new technologies, processes, quality, traceability and certification and marketing techniques and marketing of food products and cultivated plants in the field of food engineering.
Obj. 7.	Students must acquire basic knowledge, scientific and technological topics conducive to continuous learning and the adaptability to new situations and changing environments.
Obj. 8.	Students must acquire the ability to solve problems with creativity, initiative, methodology and critical thinking.
Obj. 9.	Students must acquire leadership skills, communication and transmission of knowledge and skills in social policy areas.
Obj. 10.	Students must acquire the ability to search and use of the rules and regulations concerning its scope.
Obj. 11.	Students must acquire the ability to develop their activities, assuming a social, ethical and environmental commitment in harmony with the reality of human and natural environment.
Obj. 12.	Students must acquire the ability to work in multidisciplinary and multicultural teams.

General Competences (Student Outcomes)

CG 1.	Students have demonstrated knowledge and understanding in the area of agronomy which come from the base of a general secondary education, and although it is supported by advanced textbooks, also includes some aspects that involve knowledge of the forefront of their field of study
CG 2.	Students can apply their knowledge to their work or vocation in a professional manner and have competences typically demonstrated through devising and sustaining arguments and solving problems within the area of agronomy
CG 3.	students have the ability to gather and interpret relevant data (within the area of agronomy) to make judgments that include reflection on relevant social, scientific or ethical points.
CG 4.	students can communicate information, ideas, problems and solutions to both specialist and public unskilled
CG 5.	students have developed those learning skills necessary to undertake further studies with a high degree of autonomy and allow continuous learning
CG 6.	Communicate clearly and rigor information, ideas, problems and solutions orally and in writing
CG 7.	Ethical and professional commitment and respect for the environment and diversity
CG 8.	Organization and planning of projects and general staff
CG 9.	Use of English
CG 10.	Working in multidisciplinary and multicultural teams and in an international context
CG 11.	Knowledge management and use of information technology and communication
CG 12.	Leadership and Decision Making
CG 13.	Initiative, creativity and entrepreneurship
CG 14.	Analysis and synthesis, critical thinking and scientific problem solving and technical
CG 15.	Adaptation to technological change and motivation for quality
CG 16.	Apply acquired knowledge to the practice of agricultural engineering



Competences specific (Student Outcomes)

Specific Competence Number	Competence
CE 1.	Ability to solve mathematical problems that may arise in engineering. Ability to apply knowledge of linear algebra; geometry; differential geometry; differential and integral calculus; differential and partial differential equations; numerical, algorithmic numerical methods; statistics and optimization
CE 2.	Capacity of spatial vision and knowledge of graphic representation techniques, both traditional methods of metric geometry and descriptive geometry, as in applications of computer-aided design
CE 3.	Basic knowledge on using and programming computers, operating systems, databases and software with applications in engineering.
CE 4.	Basic knowledge of general chemistry, organic and inorganic chemistry and its applications in engineering.
CE 5.	Basic knowledge of general chemistry, organic and inorganic chemistry and its applications in engineering
CE 6.	Basic knowledge of geology and morphology of the land and its application to engineering problems. Climatology.
CE 7.	Adequate knowledge of the concept of business, institutional and legal framework of the company. Organization and corporate governance.
CE 8.	Knowledge bases and biological foundations of plant and animal field in engineering.
CE 9.	Ability to recognize, understand and use the principles of: Identification and characterization of plant species
CE 10.	Ability to recognize, understand and use the principles of: The basis of plant production, production systems, protection and exploitation.
CE 11.	Ability to recognize, understand and use the principles of: The basis of animal production. livestock facilities
CE 12.	Ability to recognize, understand and use the principles of: Applications of biotechnology in agriculture and livestock engineering
CE 13.	Ability to recognize, understand and use the principles of Ecology. Environmental impact study: evaluation and correction
CE 14.	Ability to recognize, understand and use the principles of: topographic surveying and staking. Cartography, Photogrammetry, GIS and remote sensing in agriculture.
CE 15.	Ability to recognize, understand and use the principles of: Engineering rural areas: structural design and construction, hydraulics, engines and machinery, electrical engineering, technical projects.
CE 16.	Ability to recognize, understand and use the principles of: The management and use of agro-products.
CE 17.	Ability to recognize, understand and use the principles of: Decision making using available resources to work in multidisciplinary groups.
CE 18.	Ability to recognize, understand and use the principles of: Technology transfer, understand, interpret, communicate and take progress in the agricultural field.
CE 19.	Ability to recognize, understand and use the principles of: Rating agricultural enterprises and marketing
CE 20.	Ability to recognize, understand and use the principles of Engineering and Food Technology.

CE 21.	Ability to recognize, understand and use the principles of Engineering and basic food operations. Food technology. Process in food processing industries. Modelling and optimization. Quality management and food security. Food analysis. traceability.
CE 22.	Ability to recognize, understand and use the principles of: Engineering agribusiness
CE 23.	Ability to recognize, understand and use the principles of equipment and auxiliary machinery for the food industry. Automation and process control. Engineering works and installations. Agroindustrial constructions. Management and utilization of waste
CE 24.	Ability to recognize, understand and use the principles of biochemistry.
CE 25.	Ability to recognize, understand and use the principles of nutrition
CE 26.	Know the main techniques for the management of logistics systems and supply chain food. Ability to apply quantitative methods for analyzing and improving supply chain
CE 27.	Original perform individually and present and defend before a university tribunal, consisting of a project in the field of specific technologies Agricultural Engineering professional nature which synthesize and integrate the skills acquired in the teachings Exercise.

Annual student enrollment and graduation data

Incoming students

Year2010/2011	Year2011/2012	Year2012/2013	Year2013/2014	Year2014/2015
124	79	87	98	94

Students enrolled

Year2010/2011	Year2011/2012	Year2012/2013	Year2013/2014	Year2014/2015
124	179	238	285	334

Number of graduates

Year 2013/2014	Year 2014/2015	Year 2015/2016
4	16	32