Goals:

This Master Degree aims to train graduates in the agricultural field with comprehensive technological skills and coordinated methods. As a result, they can implement and transfer precision agriculture to the productive sector. Thus, the master's degree will train professionals familiar with new technologies applied to agriculture to modernise the agricultural sector.

Students will learn the following:

- Digital tools: modelling, data analysis, programming, decision support systems, Artificial Intelligence, cloud services.
- Technologies: sensory, electronics, remote sensing, positioning systems, mechatronics, state-of-the-art machinery, agricultural robotics, remote crop monitoring systems.
- Applications to farm production: arable crops, woody crops, soil management, livestock farming, sustainability.

The employability of graduates with training in new technologies applied to agriculture is very high. This master's degree aims to train specialists in precision agriculture to meet this market demand.

Why study this Master's Degree?

Precision agriculture is a new setup of agricultural production that aims to manage farms considering their spatial and temporal heterogeneity.

The new tools and technologies qualify for differential management of autonomous management areas, dividing farms into different plots. This type of agriculture refines the rational use of resources and the sustainability of agricultural activity

Target group:

The MSc Degree in Precision Agriculture is aimed at graduates in Agricultural Engineering, or related undergraduate degrees (agricultural sciences, food engineering, environmental engineering, forest engineering). In the case of related undergraduate degrees, additional training may be required.

Branch: Engineering and Agriculture
Area: Agricultural Science and Food Technology
Orientation: Academic
Credits: 60 ECTS
Duration: Two semesters
Education: Attendance-based
Number of places: 25
Language: Spanish

Contact details:
Departamento de Ingeniería Agroforestal – Escuela Técnica Superior de Ingeniería Agronómica, Alimentaria y de Biosistemas (ETSIAAB)
constantino.valero@upm.es
experto.agricultura.precision@upm.es

ETSIAAB's contact details:
Secretaría de Posgrado
Secretaria.postgrado.etsiaab@upm.es
Tel. 910 670 766

More information and enrolment:
www.etsiaab.upm.es/docencia/masteres

Escuela Técnica Superior de Ingeniería Agronómica , Alimentaria y de Biosistemas

MSc Degree in Precision Agriculture

POLITÉCNICA
UNIVERSIDAD POLITÉCNICA DE MADRID

ESCUELA TÉCNICA SUPERIOR DE INGENIERÍA AGRONÓMICA ALIMENTARIA Y DE BIOSISTEMAS

MSc Degree in Precision Agriculture

School of Agricultural, Food and Biosystems Engineering

Structure

MODULE I	**COMPULSORY COURSES**	**48 ECTS**
MODULE II	**ELECTIVE COURSES**	**4 ECTS**
MODULE III	**MASTER'S THESIS**	**8 ECTS**

This Master's Degree can be taken as a Double MSc Degree in Agricultural Engineering + Precision Agriculture

Curriculum

COMPULSORY COURSES	ECTS	SEM
INTRODUCTION TO PRECISION AGRICULTURE AND EMBEDDED SENSORS	6	1
AGROGEOMATICS	4	1
PROGRAMMING FOR AGRICULTURAL SYSTEMS	4	1
BASIC ELECTRONICS AND COMMUNICATIONS FOR AGRICULTURAL SYSTEMS	4	1
PROXIMAL SENSORS FOR CROP MONITORING	4	1
PRECISION AGRICULTURE APPLIED TO PERENNIAL CROPS	4	1
SOIL MAP FOR PRECISION AGRICULTURE	4	1
ADVANCED ELEMENTS IN FARM MACHINES	4	2
INTEGRATED DIGITAL PRODUCTION MANAGEMENT	2	2
ROBOTICS AND RPAS	4	2
PRECISION AGRICULTURE APPLIED TO ARABLE CROPS	4	2
MODELING AND DATA ANALYSIS OF AGRICULTURAL SYSTEMS	4	2

ELECTIVE COURSES	ECTS	SEM
EXTERNAL ACADEMIC INTERNSHIP	4	2
PRECISION LIVESTOCK	4	2
MANAGEMENT OF MACHINERY AND EQUIPMENT	4	2
POWER SUPPLY AND AUTOMATION INSTALLATIONS	4	2
MANAGEMENT OF DIFFUSE AGRICULTURAL POLLUTION	4	2

MASTER'S THESIS	ECTS	SEM
MASTER'S THESIS	8	2

Students must complete 4 ECTS through elective courses in one of these ways:

- Through external academic internships offered every academic year.
- Through the annual educational offer of elective courses, including courses of the MSc Degree in Agricultural Engineering, if the contents are different.
- Through passing courses or recognising activities carried out within the framework of exchange programmes if these courses and activities are previously reflected and accepted in the corresponding specific agreement.

Graduate profile: The master's degree will train specialised professionals to work in:

- Engineering and agricultural services companies that use precision agriculture in farms.
- Agricultural digitalisation consultancy firms.
- Companies with digital needs engaged in supply and raw materials, such as seeds, fertilisers, phytosanitary products, etc.
- Agricultural machinery manufacturers, as part of teams of experts in advanced technologies.
- Remote sensing/drone companies.
- R&D and digitalisation departments, both in the private and public sectors.