New Bachelor

In “IT in Agriculture and Environment”

Bachelor’s Program “IT in Agriculture and Environment”

The Bachelor’s program in **“IT in Agriculture and Environment”** is a cutting-edge interdisciplinary degree designed to equip students with the technical and practical skills needed to drive digital transformation in agriculture and environmental management. By integrating **information technology (IT), automation, and data science** with traditional agricultural sciences, this program addresses critical challenges such as labor shortages, climate change adaptation, and sustainable resource management. Graduates will emerge as innovators capable of implementing **smart farming solutions, precision agriculture, and environmental monitoring systems** to modernize the sector.

Program Objectives

This program aims to:

- Provide **specialized knowledge in IT applications** for agriculture and environmental sustainability, including farm management software, IoT devices, drones, and AI-driven analytics.
- Foster **innovation and digital automation** to enhance productivity, reduce waste, and optimize resource use (e.g., water, soil, energy).
- Bridge the **skills gap in the labor market** by training professionals who can merge agronomic expertise with advanced IT competencies.
- Empower farms and agribusinesses to adopt **automated solutions** (e.g., robotic harvesters, smart irrigation) to counteract labor shortages.

Key Competencies

Graduates will gain expertise in:

1. **Digital Tools for Agriculture**: Proficiency in farm management software, IoT sensors, GPS-guided machinery, and drone technology for crop monitoring.
2. **Precision Agriculture**: Application of satellite imagery, AI, and sensor networks to analyze soil health, predict yields, and minimize environmental impact.
3. **Smart Farming Practices**: Implementation of automated systems like livestock feeding robots, climate-controlled greenhouses, and data-driven pest control.

4. **Data Analytics and GIS**: Skills to collect, process, and interpret agricultural and environmental data using cloud computing, geospatial mapping (GIS), and Python/R programming.

Career Opportunities

Graduates can pursue roles as:

- **Agri-Tech Specialists** in companies developing solutions for precision farming, food safety, or environmental monitoring.
- **Public Sector Experts** managing e-governance systems for agriculture, veterinary services, or environmental protection agencies.
- **Consultants or Entrepreneurs** offering IT-driven solutions to farms, such as automation services or decision-support platforms.

Curriculum Structure

The three-year program blends **natural sciences, technical IT courses, and social sciences**:

- **1st Year**: Foundational courses in physics, mathematics, agriculture technologies, climatology, and basic IT (60 ECTS).
- **2nd Year**: Advanced training in agricultural mechanization, big data, geospatial technologies, and environmental information systems (60 ECTS).
- **3rd Year**: Specialization in automation, precision farming, digital governance, and a thesis project (60 ECTS).

Interdisciplinary Approach

Aligned with international standards (Muster Curricula), the program balances:

- **Natural Sciences (15 ECTS)**: physics, mathematics, informatics, meteorology, etc..
- **Technical Sciences (70 ECTS)**: automation, mechatronics, precision agriculture, programming.
- **Social Sciences (15 ECTS)**: economy, agricultural policy, rural sociology, and agribusiness management.

Why Choose This Program?

This degree is ideal for students passionate about **technology, sustainability, and agriculture**. It prepares them to lead the **digital revolution** in farming and environmental conservation, ensuring relevance in a rapidly evolving global job market. By combining hands-on IT training with agronomic principles, graduates will be at the forefront of **solving 21st-century challenges** in food security and climate resilience.

For a greener, smarter future—powered by technology.

STUDY CURRICULUM

Year I, Semester I (1)

No.	Courses	ECTS
1	Physics	5
2	Fundamental in Biology and Chemistry in Agriculture and Environment	5
3	Soil and Water Management	5
4	Mathematics	5
5	Basics of Informatics	5
6	Meteorology and Climatology, Climate Changes	5
	Total	**30**

Year I, Semester II (2)

No.	Courses	ECTS
1	Principles and Technologies of Plant Production	5
2	Technologies in Horticulture and Plant Protection	5
3	Technologies in Livestock Farming and Animal Welfare	5
4	Technologies in Aquaculture and Fisheries	5
5	Basics of Economics and Agricultural Policies	5
6	Statistics	5
	Total	**30**

Year II, Semester I (3)

No.	Courses	ECTS
1	Basics of Applied Mechanics and Electrical Engineering	5
2	Legislation in Agricultural, Environmental and Digitalization	5
3	Communication Techniques, Extension Service and Rural Sociology	5
4	Environmental Monitoring, Management and Information Systems	5
5	Business Management and Marketing	5
6	Database Management	5
	Total	**30**

Year II, Semester II (4)

No.	Courses	ECTS
1	Agricultural Mechanization	5
2	Economics of Natural Resources and the Environment	5
3	Electronic	5
4	Geospatial Technologies in Agriculture and Environment	5
5	Computer Network	5
6	Big Data in Agriculture and Applications in Python	5
	Total	**30**

Year III, Semester I (5)

No.	Courses	ECTS
1	Mechatronic Systems	5
2	Measurements and Sensors	5
3	Precision Farming	5
4	Precision Livestock	5
5	Software Applications in Agriculture and Environment	5
6	Basics of Automation	5
	Total	**30**

Year III, Semester II (6)

No.	Courses	ECTS
1	Introduction to Digital Agriculture	5
2	*Elective course*	5
3	*Elective course*	5
4	Internship	10
5	Final Comprehensive Exam/Thesis	5
	Total	**30**

Elective module

No.	Courses	ECTS
1	Territory Management	5
2	R Programming and Visualization	5
3	Codes and Data Security Transmission	5
4	Digital Public Governance	5
5	Good Agricultural Practices and Quality	5
6	Bioinformatics	5
7	English for Engineering students	5