



Topics in Agriculture

(Spring 2026)

Instructors: [H. Golpira](#) & [P. Salami](#)

Course Description and Objectives

The course teaches developing and new knowledge areas in agricultural and biosystems engineering. It combines circular bioeconomy with emerging technologies, i.e., biomanufacturing to sustainably feed the world. Biofuel, hydrogen and fuel cell, electric driveline which reduces Co2 emission and mitigate environmental hazardous are also discussed. Furthermore, AI-based tools for precision farming provide high productivity and AI-based quality assessment.

Topics Covered

Part I: Instructor: H. Golpira

1. Circular bioeconomy
2. Modeling and simulation in agriculture
3. Digitalization in agriculture
4. Electric drives and alternative fuels
5. Autonomous vehicles and robots
6. Climate-smart circular bioeconomy
7. Nutrient management and measurement

Part II: Instructor: P. Salami

1. The topics covered is provided by the instructor.

Homework/ short report (Assignments)

The course assignments will be performed throughout the semester.

1. Homework 1: Data analysis and synthetic data for decision-making
2. Homework 2: AI-based tools for precision farming

References



[1] *References is provided in classroom based on the subject.*

Grading

- Homework: 30%
- Final Exam: 30%
- Final project: 40%

Final Project

Each student must work on a special project based on his/her interest. This will give students a chance to deepen their knowledge in a specific area. You will provide a detailed written report and/or simulation files. Detail will be discussed in the class.