Modules in Sustainability in the School of Biosystems & Food Engineering



School of Biosystems and Food Engineering







How sustainable is my food? BSEN10020

Module Coordinator Dr. Tamíris Pacheco da Costa

School of Biosystems and Food Engineering

Available as an Elective module



Purpose and indicative content

There is now widespread recognition that the global food system is unsustainable, particularly in the context of climate change. This means it is responsible for adverse environmental and social impacts. An important question each individual should ask, and answer, is: how sustainable is my food? This module will explore the evidence to help us answer this and related questions including:

- Is the food we choose to eat contributing to climate change and causing impacts, in Ireland and beyond, that will result in future generations inheriting a significantly degraded environment?
- Is the food we eat supplied to us at prices we are willing to pay due to social exploitation?
- Is the food we have access to needlessly wasted?

Module participants will also examine their own diet and work out what kind of impacts they have. Finally, we will explore the possibility of fixing the food system so that we can eat sustainable food.

Outcomes

On completion of this module, you should be able to



Explain the difference between a food item, a meal and a diet



Outline the reasons for considering both sustainability and nutrition when evaluating which foods to eat



Explain the environmental impacts caused by the food system, and the choice of foods you eat



Record and evaluate the food you eat and identify options to reduce the adverse impacts of your food choices

How the module will run

Lectures

- 1. What we mean by sustainability? (The Food System)
- 2. The impact of food (atmosphere)
- 3. The impact of food (water)
- 4. The impact of food (soil)
- 5. Land occupation and biodiversity
- 6. Food waste (Avoidance vs. valorization)
- 7. Estimating the nutritional value of food
- 8. Food communications
- 9. Food safety
- 10. Social aspects
- 11. Food security
- 12. Industry perspectives

- 1. Keeping a Food Diary
- 2. Calculating the impact of food (atmosphere)
- 3. Calculating the impact of food (water)
- 4. Calculating the impact of food (soil)
- 5. Calculating the impact of food (land use)
- 6. Calculating the impact of food waste
- 7. Nutritional LCA
- 8. Creating a poster
- 9. Creating a video
- 10. Uploading data to a central repository
- 11. What actions can you take?
- 12. Is our food sustainable?

Assessment

Assessment Type	Timing	Description	% Final Grade
ASSIGN	Week 4	7-day food diary	25
ASSIGN	Week 6	Calculation of the climate, water and land use impact of the food eaten	25
ASSIGN	Week 10	Information poster	25
ASSIGN	Week 12	Video	25



Intro to Carbon and Energy Footprinting BSEN20190

Module Coordinator Dr. Fionnuala

School of Biosystems and Food Engineering

Available as an Elective module and as an Option in some Prgogrammes



Purpose and indicative content

Sustainability is a priority across sectors as organisations respond to sustainability targets to be achieved by 2030 for compliance, consumer and market retention purposes.

Engineers Ireland have identified a skills gap in understanding of how to implement sustainability.

This module will introduce the concept and practices in carbon footprinting to students in STEM fields.

Students will learn the principles of carbon footprinting in relation to international standards.

Students will develop competencies in carbon footprinting through project-based assignments aimed at development of an excel-based spreadsheet model to calculate their personal carbon footprint.

Outcomes

On completion of this module, you should be able to



Understand the basic concept of life cycle thinking, its relevance and use in different contexts



Comprehend standardised methodologies for carbon footprinting



Apply specific methodological steps of carbon footprinting



Perform a partial carbon footprint including analysing and evaluating the validity of specific steps, the quality and reliability



Interpret the results of the carbon footprint calculation and identify areas for improvement

How the module will run

Lectures

- 1. Introduction to Sustainability and Environmental Impacts
- 2. Life Cycle Thinking
- 3. International Standards for Life Cycle Assessment and Carbon Footprint Methodology
- 4. Goal and Scope
- 5. System Boundary
- 6. Data Inventory
- 7. Energy Footprinting
- 8. Life Cycle Inventory Analysis
- 9. Life Cycle Impact Assessment
- 10. Interpretation
- 11. Reporting
- 12. Case Studies

- 1. What is Sustainability?
- 2. Drawing the life cycle
- 3. Deciding on the goal and scope of products
- 4. Drawing system boundaries for products
- 5. Energy Footprinting Activity

Assessment

Assessment Type	Timing	Description	% Final Grade
ASSIGN	Week 5	Critical Review of Personal Carbon Footprint	20
ASSIGN	Week 8	An Excel-based Energy Footprint Model	30
ASSIGN	Week 12	Carbon Footprint Report	50

Questions?

https://www.ucd.ie/biosystems/