Trinity College Dublin
Coláiste na Tríonóide, Baile Átha Cliath
The University of Dublin

Toolkit for a Smart and Sustainable World

Module Coordinator	**Dr Nicholas Payne, School of Natural Sciences, Professor Siobhán Clarke, School of Computer Science and Statistics**
What will you learn from this Elective?	People both reshape the surface of the planet and depend on its living and non-living components for survival and wellbeing. Perhaps the biggest global challenge facing humanity today is how to achieve acceptable levels of wellbeing in the long-term, while the strain on our natural environment continues to rise. This module aims to teach students about key aspects of the 'sustainability challenge', and the new and innovative ways of solving sustainability problems. With an emphasis on group participation, we will look to nature and technology to help us mitigate and adapt to our changing environment.
Student Workload	• 11 hours lectures (1 per week) • 22 hours pre/post lecture reading (2 hours per week) • Approx. 64 hours team-building, planning, creation, justification and presentation of group artefact assessment item • 3 hours in-module quizzes
Assessment Components	Continuous Assessment/Coursework: 100% Coursework evaluation is based on the end-of-year project artefact with a live demonstration, oral examination within teams, peer and teaching staff assessment of engagement and contribution and in-module quizzes (Blackboard MCQ). 50% of the marks are group-wide, and 50% is individual. Criteria for evaluation are: 1. Demonstration/presentation of artefact produced by group; 2. Oral exam in teams – answering questions based on artefact & presentation; 3. Individualised assessment of engagement & contribution based on team-members' peer reviews and lecturer/TA observation in class and online; 4. In-module quizzes throughout the semester.
Indicative Reading List	Further reading list/material will be provided during module. *https://www.un.org/sustainabledevelopment/sustainable-development-goals/* https://www.tcd.ie/provost/sustainability/initiatives/
Learning Outcomes	Students who complete this module should be able to: • Analyse and evaluate the connections between the physical, biological, technological and societal elements of the Earth's systems.

- Assess where, when and how the climate changing and the consequences for society and the services we get from nature.
- Assess how people can use behaviour change, technology and nature-based solutions to mitigate and adapt to changes in temperature, precipitation and sea level rise.

(Challenge 1. Surviving and thriving in new climates)

- Analyse global challenges to future prosperity and wellbeing in the context of the UN's Sustainable Development Goals
- Critically evaluate actions taken to achieve SDGs
- Critically assess the targets for one of the Sustainable Development Goals and develop actions to achieve the targets.

(Challenge 2. Achieving the United Nations Sustainable Development Goal (SDG) targets)

- Recognise the potential of existing and emerging technologies for solving the sustainability challenge
- Evaluate how the use of existing and new technologies respects legal and ethical privacy norms
- Justify, design and communicate an artefact (e.g. phone app, video, game, book proposal) that contributes to progress on meeting one or more Sustainable Development Goals (e.g., increases citizens' understanding, encourages behavioural change).

(Challenge 3.Inventing and repurposing technology for sustainable living)

•work effectively in a multi-disciplinary context to develop specific solutions

•work as part of a team to co-produce an artefact

•communicate effectively to a multi-disciplinary audience