**ITSC 305 Spring 2025 – Final Project**

**Objectives:**

**Self-selected** groups of **up to four** students will create a project based on all principles learned throughout the semester. This project will include various sensors, input and output devices to create a functioning IoT system. Groups will then showcase the functionality of their system and present the theoretical aspects of the design.

**Requirements:**

Learners will work in self-selected groups of up to four students to design their system with the following requirements.

**Hardware:**

* The core of the system must be based on Raspberry Pi Pico platform (Pico, Pico W or W5100S)
* It is required to include IoT elements (have some type of data acquisition capabilities – for example temperature, humidity, etc.)
* It must include device-side or server-side human interface (for example LCD with menus, system LEDs, rotary encoder, HTTPS server, etc.)

**Software/Data:**

* The system must be capable of collecting data using external IoT Portal (AWS, MS Azure, Google Cloud, Hive MQ, ThingSpeak, Mosquitto or other)
* The data needs to be **reasonably secured** within the capabilities of the Portal and hardware used

**Other:**

* The system must explicitly follow the Sustainable Development Goals (SDG) principles. To confirm your design fulfills this requirement, talk to your instructor, who can give you more information on SDGs.

**Group vs Individual work:**

This project is designed to have one system per group, but with individual evaluations. The expectation is that individuals will work together to create the product and keep track of their individual contributions (through logs). The evaluations will be based on the system functionality, presentation, debrief, individual contributions and peer reviews.

**Project management:**

As a group, you will be required to keep track of your project progression, using **individual -or- group logs.**

**Project progression:**

**Phase 1**

* Form groups, decide on your project and confirm the SDG requirement, no later than **July 17, 2025**

**Phase 2**

* Work on your Project as a group.
* Prepare presentation about your project (see Deliverables section).
* Submit these to Brightspace, no later than **Friday, August 1, at 11:59**
  + Power Point presentation slides
  + Log/contributions file(s)
  + Fill out Peer Review (done through MS Forms)

**Phase 3**

* Showcase your project in front of your instructor and the lab cohort during your Cohort’s Lab Time-slot during **Week 15** (August 4, 2025 for Monday cohort; August 5 for Tuesday cohorts)
* Present the details of your project in-person, in front of your instructor and the lab cohort.
* As a group, participate in a 10-minute debrief with your instructor (right after the presentation).

**Deliverables:**

Product:

* Group will showcase the working product in front of their lab cohort in week 15.

Presentation:

* Group will prepare up to 30-minute (including showcase and Q&A) presentation. The presentation must address these aspects of the project:
  + Introduction
  + Background about the project and the selected SDG
  + Inner workings of the product
  + Security implementation
  + Challenges encountered
  + Summary and Critical reflection

Evidence of Contributions:

* Group will upload final version of logs/contributions file(s) to Brightspace. This must accurately capture the (human) resources and the progression of the project.
* Fill out peer review form on MS Forms (accessible via Brightspace)

Debrief:

* Right after the presentation, the instructor will have a technical debrief with the whole group, trying to gauge the individual understanding of the project. This will aide with an individual evaluation component.