Capstone Challenge
2023-2024
Grade 3- Semester 1

Grade 3, Semester 1: Communication, Sensing, Information, Informatics

Grand Challenges:

- Work to eradicate public health issues/diseases.
- Increase the industrial bases of Egypt.

Capstone Big Idea:

Information and Communication Technology (ICT) has revolutionized public health by enhancing the lives of people and specially people with disabilities and chronic diseases. ICT fosters inclusivity and empowers these individuals to manage their conditions effectively, ultimately contributing to the broader goals of public health and healthcare equity.

Essential Question:

How can communication, sensing, information, and informatics facilitate the lives of people with disabilities or chronic diseases?

Capstone Design Challenge:

Students will develop (design and implement) a smart system that performs the following stages: sensing, communicating, data analysis, controlling and decision making. This system addresses a chronic health problem or disability and provides a proper solution. You may use AI to help you solve this challenge. For example, you may use AI to help you write code for the controller board, and you must document the AI you used and how you used it for your project.

Design Requirements:

Students must identify <u>two</u> measurable design requirements for their prototype. Design requirements must include <u>one</u> of the following requirements:

- Measurable change in ability or abilities of the person after using the devised system and prototype.
- Testing the system response time in accordance to the system input and processing.
- Measuring the system accuracy and precision when perceiving/sensing the environment.
- Determining more than two design requirements does not affect your score.

Constraints:

- Students **must** use new trends of Artificial Intelligence (AI).
- The project **must** contain hardware component (prototype).
- Using ICT (Information & Communication Technology) is **Essential**.
- The prototype **must** assist the person with disability or patient to be more independent.
- The whole system (software and hardware) **must** be testable and you must be able to show the change in system outputs or states as a function of changing inputs.
- Cost is **not** an acceptable design requirement.