

## **PURPOSE**

IoT has been earmarked as the key driver of the 4<sup>th</sup> Industrial Revolution as well as the Future Internet. However, most African countries are not keeping pace with these technological advancements and do not have the skills and research required for IoT. This summer school aims to:

- Create an awareness of sustainability issues in water, mobility and energy, as well as the potential of IoT to address such issues.
- Educate participants on IoT and the potential they have to offer.
- Provide participants with the necessary skills to appropriately analyse sustainability issues (in water, energy and mobility) and to design innovative solutions.

## **SPECIFIC LEARNING OUTCOMES**

After the completion of this summer school, participants will be able to:

- Understand the business value of IoT technologies, and how a competitive advantage can be obtained through smart, connected strategies.
- Identify the components and potential of smart connected technologies.
- Apply methods, strategies and frameworks for the planning and design of smart, innovative, connected technologies.
- Understand the layers of design (infrastructure, sensors, connectivity, analytics and smart apps) for the IoT.
- Use data analytics to analyse practical problems in sustainability (using tools such as R or Tableau).
- Review case studies of sustainability within the themes of water, energy, and mobility, and design innovative IoT solutions for these. Key sustainability issues to be investigated relate to:
  - The complexity of the water system (both at international and local level) and a holistic view of the water structure/system and water supply chain.
  - The impact of non-sustainable mobility on the environment.
  - Mobility standards and regulations (legal framework, urban planning) in South Africa, Germany, UK and the Netherlands.
  - Constraints and obstacles (cultural and infrastructure e.g. internet) to sustainability issues.
  - Recent trends in the SA energy sector, transportation modes and integration of mobility services (eg electric vehicles, drones, autonomous vehicles).

## **APPROACH:**

To bring the topic to life we present a series of lectures, and use case studies that cover design strategies, opportunities, and challenges associated with creating IoT solutions for sustainability problems in water, energy, and mobility. Soft skills such as communication, problem solving and scientific writing are developed by means of student essays and presentations. Design thinking approaches are taught and used.

## **DURATION:**

Total duration of the course is 14 days:

- Off campus (virtual) pre-work will take place intermittently from 1 October to 22 November and will constitute 6 days
- 7 days of lectures, workshops and assignments on Nelson Mandela University campus will be from 23rd to 29th November
- 1 day is required for final assessment

## **PRE-REQUISITES:**

Have an undergraduate degree in one of the following fields Computer Science, Information Systems, Business or Engineering or related relevant experience. Any qualification or experience related to mobile application development or data analytics will be an advantage.

## **COST**

No cost for successful candidates. However, participants will need to make their own arrangements for travel and accommodation, unless they are from the selected candidates from UCT or the University of Oldenburg.

## **APPLICATIONS**

Full applications for attendance are open on the HEdIS website (<https://hedis-project.org/application/>). The deadline for submission is the 1st October. Successful applicants will be notified before 20 October 2017.

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