Bachelor of Science in Digital Science and Technology (DST)

(1) Internet of Things

Course description of Major Elective Courses

Number of credits (Lecture – Laboratory – Self-study)

ITDS 331 Embedded and Cyber-Physical Systems **3 (2 – 2 – 5)**

Prerequisite: ITDS 281

Co-requisite: None

Principles of the cyber-physical systems; embedded systems; autonomous systems; process control systems; real-time operating systems; robotic systems; sensor and actuator technologies

ITDS 332 Internet of Things Communication Technology **3 (2 – 2 – 5)**

Prerequisite: ITDS 281

Co-requisite: None

Principles and architecture of the Internet of Things (IoT) communication; the IoT communication and protocols; wireless communication technologies and protocols for both the short-range and long-range coverage including Bluetooth, WiFi, LoRaWAN and cellular network (3G/4G/5G); the edge computing and communications

ITDS 333 IoT Platform Development **3 (2 – 2 – 5)**

Prerequisite: ITDS 281

Co-requisite: None

The IoT platform architecture on cloud systems such as Microsoft Azure, Amazon Web Services, Google Cloud Platform, Thingsboard and NetPIE; connectivity with the IoT platform; the device and data management on the IoT platform; the project development with the IoT platform

ITDS 334 Internet of Things Data Analytics and Visualization **3 (3 – 0 – 6)**

Prerequisite: ITDS 281

Co-requisite: None

The Internet of Things (IoT) data collection and the application in different business sectors; middlewares and platforms for the IoT data analytics; the NoSQL database; the IoT data analysis and visualization; the IoT data stream processing

ITDS 335 Internet of Things Security and Privacy 3 (3 – 0 – 6)

Prerequisite: ITDS 281

Co-requisite: None

Roles and impacts of the IoT usage; principles of data security and privacy; penetration of the IoT systems; security and privacy in IoT systems; the IoT device management such as digital signatures; device-firmware-upgrade methodologies

ITDS 336 Practical Internet of Things 3 (0 – 6 – 3)

Prerequisite: ITDS 281

Co-requisite: None

The Internet of Things (IoT) projects based on actual industrial problems, requirings approval from advisors; writing project reports; presenting IoT projects