

ITMT 492 SYLLABUS

ITMT 492 Introduction to Smart Technologies

Hours: 3 credit hours / 45 contact hours

Instructor: Jeremy Hajek

Textbook, title, author, and year: Online resources will be assigned in Blackboard.

Specific course information

- a. **Catalog description:** This course covers reconfigurable intelligent devices programmed with modern high-level languages focusing on design and integration to modern environments. This course also covers the topic and deployment of wireless sensor networks and the use of rapid prototyping for commercial application. Students will discover hardware, software and firmware design trade-offs as well as best practices in current embedded systems development. A final project will integrate course topics into a system using an embeddable single-board microcontroller.
- b. **Prerequisites:** ITM 311 or ITM 312 or ITM 313.

Specific goals for the course

- a. **Course Outcomes:** The student will be exposed to a wide array of tools and services that support smart technology. They will be able to solve problems that involve the concepts of data collection, data transmission, and data presentation by using the technologies learned in the course. This survey of Smart Technologies covering wireless protocols, AR devices, voice assistants, solar powered and battery back sensor networks and cloud storage will give students a sufficient ability to create innovative solutions to problems they encounter.
- b. **Student course outcomes:**
At the conclusion of the course, the student should be able to:
 - Describe and apply principles of electricity and electronics that support smart tech.
 - Read and use schematics, diagrams, and electronic symbols.
 - Explain concepts of Data Collection, Data Transmission, and Data presentation using small computers and sensor networks
 - Recall the fundamentals and use of wireless communication standards: Bluetooth, NFC, xBee (802.15), Wi-Fi
 - Describe concepts of solar panels and LiPo batteries
 - Deploy solar panels and LiPo batteries
 - Describe the use of cloud data storage for smart technology
 - Recall the basics of Augmented Reality devices

- Describe the principles and use of Voice Assistants
 - Demonstrate a basic working knowledge of Voice Assistants

Topics to be covered

- a. Data Transmission: wireless tech Wi-Fi
- b. Adafruit IoT Portal
- c. AWS/Azure IoT Portals
- d. Intro to Voice Assistants
- e. Final Project