WASHINGTON STATE UNIVERSITY
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School of Engineering and Computer Science
MECH 405 Internet of Things with Microcontrollers

Catalog Data:	**405 Internet of Things with Microcontrollers** 3 Course Prerequisite: MECH 304. Microcontroller programming for Internet of Things (IoT) and network connectivity, IoT capable smart product design. Typically offered Spring.
Class Schedule:	Three 50-minute lectures per week, for one semester.
Laboratory Schedule:	Lecture sessions converted into active learning with hardware/software.
Prerequisites by Course:	MECH 304
Prerequisites by Topic:	1. Basic electrical circuits knowledge 2. Basic understanding of computer programming (preferably knowledge of Python programming language)
Textbook:	None
Course Coordinator:	Prof. Hakan Gurocak
Course Objectives:	1. Learn fundamental concepts of the Internet of Things (IoT) technology 2. Understand operation of sensors and actuators commonly used in IoT devices 3. Develop software for network connectivity, cloud computing and visualization 4. Gain hands-on experience with microcontroller programming 5. Develop an IoT capable smart product through teamwork 6. Learn software engineering and computer science techniques used in smart product design
Topics Covered:	1. Intro to Python programming 2. Data collection (sensors, actuators, interfacing) 3. Data transmission and processing 4. Data transmission and user interface design 5. Software engineering
Lab Experiments and Activities:	1. Hands-on exercises highlighting concepts covered in lectures. 2. Programming team project

Course Outcomes:	Students will be able to:	
	Assessed for Student Outcomes	2-d. Develop software to meet design requirements. 3-a. Write project reports following format requirements. 3-b. Deliver well-prepared presentations. 5-a. Develop Agile project management board jointly with team members. 5-b. Share responsibilities on project tasks with other members of the team.
	Other	7-a. Use resources effectively to learn new material not taught in class.
Required or Elective Course:		Elective
Relationship of Course to Program:		Meets: Educational Objectives <u>1, 2, 3</u> Student Outcomes <u>2, 3, 5</u>

Prepared by:	Prof. H. Gurocak	Date:	May 1, 2018 (4.6.18 mb) Revised 08.05.18 HG, 5/9/23 (HG)
Approved by USC:	5/11/2023		