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## ISSC 473 Internet of Things (IoT)

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### Course Summary

**Course:** ISSC 473                      **Title:** Internet of Things  
**Length of Course:** 8 weeks      **Credit Hours:** 3  
**Prerequisites:** None

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### Description

#### Course Description:

This course will examine the first generation of Internet of Things (IoT) devices, how IoT devices have evolved, along with the future progression of IoT devices and user implementation. The course will observe how IoT devices can be beneficial to the patients of those who work in the healthcare industry. Furthermore, the observation of how IoT devices could provide a means of self-surveillance for companies who observe a customer's activity for future financial profit will be discussed as well.

#### Course Scope:

This course observes how digital technologies have progressed into what is now IoT devices. The course will advise past and current companies that have implemented IoT devices into their product lines. Benefits of IoT devices such as health monitoring will be observed in the course, while the disadvantages of IoT devices such as self-surveillance and organizational data mining tactics will be observed. The scope of the course criterion will be observed via scholarly literature from the APUS Library database, the National Institute of Standards and Technology (NIST), along with supplemental materials that will provide an overview of the course content.

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### Objectives

After successful completion of this course, you will be able to:

1. Evaluate the previous and current implementation methods of IoT devices.
2. Evaluate the previous and current utilization methods of IoT devices.
3. Analyze the data collection methods used by organizations that create, sell, and support IoT devices.
4. Analyze the implementation of IoT homes and vehicles.
5. Analyze how users of IoT devices are providing companies with personal data.
6. Evaluate the cybersecurity vulnerabilities of IoT devices.
7. Observe the various IoT device privacy violations.
8. Analyze how cybersecurity frameworks are used to protect users of IoT devices.

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### Outline

#### Week 1: Introduction of IoT devices

#### Reading

Please see the Readings and Resources under Learning Material for your required readings each week

- Collaborative internet of things (C-IoT): For future smart connected life and business: Chapter One
- Constraints in the IoT: The World in 2020 and Beyond.

#### Supplemental Reading:

- Federated learning for malware detection in IoT devices

#### Learning Objectives

- Evaluate the previous and current implementation methods of IoT devices.
- Evaluate the previous and current utilization methods of IoT devices.
- Analyze the data collection methods used by an organization that creates, sells, and supports IoT devices.

#### Assignment

Discussion: For this week's discussion question, please introduce yourself and advise your current everyday use of IoT devices. Although your professor does not want you to expose any Personal Identifiable Information (PII),

you will need to advise how you perceive the organization that supports your IoT device(s) collects and utilizes your data

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## **Week 2: Implementation of IoT devices**

### **Reading**

Please see the Readings and Resources under Learning Material for your required readings each week

- Smart Nuclear Power Plants Operating System Through IoTs.
- IoT-enabled smart cities: A review of concepts, frameworks, and key technologies.
- Using a smart city IoT to incentivise and target shifts in mobility behaviour—is it a piece of pie?

### **Learning Objectives**

- Evaluate the previous and current implementation methods of IoT devices.
- Analyze the data collection methods used by organizations that create, sell, and support IoT devices.
- Analyze the implementation of IoT homes and vehicles.

### **Assignment**

Discussion: from the reading and the lecture, advise how IoT devices are modifying our everyday activity and behaviors.

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## **Week 3: Utilization Tactics of IoT devices**

### **Reading**

Please see the Readings and Resources under Learning Material for your required readings each week.

- Health trackers and how technology is helping us monitor and improve our health: Chapter Two
- Health trackers and how technology is helping us monitor and improve our health: Chapter Three

### **Learning Objectives**

- Analyze the previous and current utilization methods of IoT devices.
- Analyze how users of IoT devices are providing companies with personal data.
- Observe the various IoT device privacy violations.

### **Assignment**

Lab: The movements and data that are obtained automatically from your IoT devices and the data you insert manually in your IoT devices

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## **Week 4: IoT Self-Surveillance and Malicious Surveillance**

### **Reading**

Please see the Readings and Resources under Learning Material for your required readings each week.

- Demystifying internet of things security successful IoT device/edge and platform security deployment: Chapter One
- Demystifying internet of things security successful IoT device/edge and platform security deployment: Chapter Two
- Wearables and the internet of things for health: Wearable, interconnected devices promise more efficient and comprehensive health care.

### **Learning Objectives**

- Analyze the previous and current utilization methods of IoT devices.
- Analyze how users of IoT devices are providing companies with personal data.
- Analyze the various IoT device privacy violations.

### **Assignment**

Midterm Exam

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## **Week 5: Benefits of IoT Devices**

### **Reading**

Please see the Readings and Resources under Learning Material for your required readings each week.

- Artificial Intelligence-inspired comprehensive framework for Covid-19 Outbreak Control.
- Who owns the data? Open Data for Healthcare.

### **Learning Objectives**

- Evaluate the previous and current implementation methods of IoT devices.
- Evaluate the previous and current utilization methods of IoT devices.
- Analyze the data collection methods used by organization that create, sell, and support IoT devices.

### **Assignment**

Week Five Discussion Forum – Due Sunday

Lab: Analyzing the data to perform regression analysis of IoT device user's future health and future behaviors and who has/had access to that data

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### **Week 6: Vulnerabilities of IoT**

#### **Reading**

- Please see the Readings and Resources under Learning Material for your required readings each week. A two-layer attack-robust protocol for IoT healthcare security
- Demystifying internet of things security successful IoT device/edge and platform security deployment: Chapter Six
- OWASP Internet of Things Project

#### **Learning Objectives**

- Analyze how users of IoT devices are providing companies with personal data.
- Evaluate the cybersecurity vulnerabilities of IoT devices.
- Observe the various IoT device privacy violations.

#### **Assignment**

Discussion: The possible vulnerabilities in your IoT devices and how to recognize said vulnerabilities before the vulnerabilities are exploited

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### **Week 7: Cybersecurity Frameworks Regarding IoT Devices**

#### **Reading**

Please see the Readings and Resources under Learning Material for your required readings each week.

- Demystifying internet of things security successful IoT device/edge and platform security deployment: Chapter Three
- Demystifying internet of things security successful IoT device/edge and platform security deployment: Chapter Four
- Demystifying internet of things security successful IoT device/edge and platform security deployment: Chapter Five

#### **Supplemental Reading:**

- IoT security: Advances in authentication: Chapter 1
- IoT security: Advances in authentication: Chapter 2
- Wireless Communications Security: Solutions for the internet of things: Chapter 3
- Wireless Communications Security: Solutions for the internet of things: Chapter 5
- AAA Identity Management Security: Chapter One

#### **Learning Objectives**

- Evaluate the cybersecurity vulnerabilities of IoT devices.
- Observe the various IoT device privacy violations.
- Analyze how cybersecurity frameworks are used to protect users of IoT devices.

#### **Assignment**

Discussion: As you focus on the security frameworks of IoT devices, how do you utilize all of the knowledge you have learned currently and apply it to security methods such as authentication? Furthermore, do you find some of the authentication methods that are used by IoT devices, such as biometric authentication, to be faulty? Lastly, advise how you will utilize the content taught in this course for your next course.

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### **Week 8: The Future of IoT Devices**

#### **Reading**

Please see the Readings and Resources under Learning Material for your required readings each week.

- Demystifying internet of things security successful IoT device/edge and platform security deployment: Chapter Five.

#### **Learning Objectives**

- Evaluate the previous and current implementation methods of IoT devices.
- Evaluate the previous and current utilization methods of IoT devices.
- Analyze the implementation of IoT homes and vehicles

#### **Assignment**

Week Eight Discussion Forum – Due Sunday

Final Exam

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**Grading:**

Name	Grade %
Discussions	25 %
Assignments	50%
Exams	25%

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**Online Library**

The Online Library is available to enrolled students and faculty from inside the electronic campus. This is your starting point for access to online books, subscription periodicals, and Web resources that are designed to support your classes and generally not available through search engines on the open Web. In addition, the Online Library provides access to special learning resources, which the University has contracted to assist with your studies. Questions can be directed to [librarian@apus.edu](mailto:librarian@apus.edu).

Charles Town Library and Inter Library Loan: The University maintains a special library with a limited number of supporting volumes, collection of our professors' publication, and services to search and borrow research books and articles from other libraries.

Electronic Books: You can use the online library to uncover and download over 50,000 titles, which have been scanned and made available in electronic format.

Electronic Journals: The University provides access to over 12,000 journals, which are available in electronic form and only through limited subscription services.

Tutor.com: AMU and APU Civilian & Coast Guard students are eligible for 10 free hours of tutoring provided by APUS. Tutor.com connects you with a professional tutor online 24/7 to provide help with assignments, studying, test prep, resume writing, and more. Tutor.com is tutoring the way it was meant to be. You get expert tutoring whenever you need help, and you work one-to-one with your tutor in your online classroom on your specific problem until it is done.

Legal Studies Program Guide: This should be your starting point as you explore the resources available to you: <https://www.apus.edu/apus-library/online-research/research/research-guides/school-of-security-global-studies/legal-studies-paralegal-studies>.

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**University Policies**

[Student Handbook](#)

[Drop/Withdrawal policy Extension Requests Academic Probation Appeals](#)

[Disability Accommodations](#)

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