Course Syllabus: SCIN301 – IoT and Innovation

Mahidol University – Faculty of Science

Program: Bachelor of Science in Bioinnovation

Academic Year: 2025–2026

Campus: Salaya Campus

Credits: 3 (2-3-5) – (2 hours theory, 3 hours practice, 5 hours self-study per week)

Instructor Information

Course Coordinator & Lecturer: Dr. Narin Nuttavut
Department of Physics, Faculty of Science

Course Description

This course provides foundational knowledge and skills in Internet of Things (IoT) and innovation. Topics include the Internet, data processing, IoT architecture, programming basics, data analytics, innovation design, entrepreneurship, and the societal impact of IoT, including cybersecurity concerns.

Course Objectives

Students will gain knowledge and skills in:

- • Fundamentals of Internet and IoT
- • Digital data and its processing
- • Internet architecture and layers
- • Basic programming for IoT devices
- • Data analytics and big data concepts
- • IoT applications, innovation, and entrepreneurship
- • Ethical, social, and cybersecurity aspects of IoT

Course-Level Learning Outcomes (CLOs)

CLO1: Explain IoT fundamentals, including programming and data analytics.

CLO2: Solve practical problems involving IoT.

CLO3: Evaluate the impact of IoT on society and communities.

CLO4: Demonstrate creative thinking and innovation in IoT applications.

Class Schedule

Weekly Time: Tuesday, 09:00–12:00

Location: Salaya Campus

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Week	Date	Topic	Hours	Notes
1	05/08/2025	Overview of Internet and IoT	3	
	12/08/2025	(Holiday)	-	
2	19/08/2025	Digital data and processing	3	
3	26/08/2025	Internet structure and layers	3	
4	02/09/2025	IoT Programming Basics	3	
5	09/09/2025	IoT Programming Software	3	
6	16/09/2025	Coding for IoT	3	
7	23/09/2025	IoT Programming Integration	3	
				Midterm
8	7/09/2025	Sensors and Summary	3	
9	14/10/2025	Creative Thinking	3	
10	21/10/2025	Innovation for IoT	3	
11	28/10/2025	IoT Development (I)	3	
12	04/11/2025	IoT Development (II)	3	
13	11/11/2025	Entrepreneurship in IoT	3	
14	18/11/2025	Application of IoT	3	
15	25/11/2025	Social Impact of IoT	3	

Final Exam

Assessment and Evaluation

Learning outcomes are assessed through various means including quizzes, group work, individual assignments, and in-class activities.

Assessment Breakdown:

Assessment Method	CLO1	CLO2	CLO3	CLO4	Weight (%)
Multiple Choice Questions	15%	10%	10%	-	
Group Work	-	10%	-	15%	
Individual Work	10%	-	-	10%	
Presentations & Activities	5%	-	15%	-	
Total					100%

Course Materials

Suggested Texts:

• Marco Schwartz, Internet of Things with Arduino Cookbook

Resources:

• Lecture slides
• Online repositories
• Web-based tools and datasets

Course Policy

Attendance: Active participation is expected.
Late Submission: Penalties may apply unless valid reasons are provided.
Academic Integrity: Cheating or plagiarism results in disciplinary action.

Sustainable Development Goal (SDG) Alignment

✓ SDG 9: Industry, Innovation and Infrastructure