



HANYANG UNIVERSITY

2019 HISS Syllabus (Microprocessor and IoT)

Professor: **Nyoman B. Karna**
E-mail: aditya@telkomuniversity.ac.id
Home Univ.: Telkom University
Dept.: Electrical Engineering

Description: This course discusses about how microprocessor works, using x86 and RISC architectures as case studies, followed by its usage on microcontroller (case study: ARM and ATmega) to Arduino and Raspberry. The last 2 classes discuss about future research and enhancement possibilities in microprocessor world including IoT and its supporting technologies.

Objective: - Students should be able to explain how microprocessor works by comparing x86 and RISC architecture
- Students should be able to design and program an Arduino system using emulator such as TinkerCAD.com
- Students should be able to explain the future trends of microprocessor technologies

Preparations: - Textbook: Computer Architecture: A Quantitative Approach, by John L. Hennessy and David A. Patterson
- Pre-requisite knowledge: Understanding on Logic Circuit and C Programming is needed

Schedule:	Week 1	Computer Organization and History of Microprocessor
	Week 2	Microprocessor and Memory Interaction
	Week 3	Machine Instruction part 1 (case study: x86 and RISC)
	Week 4	Machine Instruction part 2 (case study: x86 and RISC)
	Week 5	Memory Management (case study: IBM PC and Apple Mac)
	Week 6	Pipeline (case study: DLX architecture)
	Week 7	Microcontroller (case study: ARM and ATmega)
	Week 8	Designing an Arduino system and Raspberry system

Hanyang International Summer School

Office of International Affairs, Hanyang University
222 Wangsimni-ro, Seongdong-gu, Seoul, 04763, Korea
Tel. +82-2-2220-2456 | iss@hanyang.ac.kr



Week 9	Project (Assignment) Discussion (using TinkerCAD.com)
Week 10	Presentation for the Best Arduino System Design
Week 11	Future Research on Microprocessor: Quantum Computing
Week 12	Future Research on Microprocessor: Intelligent Internet of Things

Evaluation:	Midterm (%)	Final (%)	Attendance (%)	Assignments (%)	Participation (%)	Pop Quiz. (%)
	30	30	0	20	10	10