



**Introduction**  
**To**  
**Embedded Robotics with Arduino**

Training Programme  
by  
Faculty of Engineering  
Multimedia University  
10 - 12 November 2020  
Faculty of Engineering

## Overview

Robotic is a technical domain that requires the practitioner to master multiple skills, such as mathematical analysis, computer programming, understanding low-level computer interfacing methods, electronics engineering, mechanical engineering. This short course provides the participants with a basic review of the above topics so that you can build your own mobile robots using Arduino controller boards. Once completed this course, the participants can then proceed to more advanced robot building courses.

## Objective

To provide the participants with an overview of the computing coding skills and hardware building skills in robotics and industrial automation.

## Target Audience

Makers, engineering and science enthusiasts.

## Prerequisite

1. At least a high school diploma with basic understanding of computer coding such as C/C++ and Python.
2. Familiarity with Arduino boards.

## Training Methodology

Hands-on lab work.

## Course Duration

3 days.

## Content/Outline

DAY 1

Operating principle of common sensors.

Interfacing Arduino with sensors: direct analog approach, using UART, SPI and I2C bus.

Calibration and trouble-shooting.

## DAY 2

Electro-mechanical actuators.

Introducing different types of electric motors: brushed, coreless, brushless.

Torque and force transmission mechanisms: gear systems, lead screw, bearing and coupling.

RC servos and smart servos.

Basic electric motor controls using Arduino boards.

A review of other actuation methods: pneumatic and hydraulic.

## DAY 3

Integration – combining codes for sensor interfacing and actuator controls, some best practice and programming paradigm.

## Course Instructors

Fabian Kung Wai Lee received his B.Eng (Hons) and M.EngSc in Electrical Engineering from University Malaya, Malaysia in 1994 and 1998 respectively. He later obtained his PhD in Electrical Engineering from Multimedia University (MMU) in 2003. He worked as PCB design engineer with Intel Microelectronics Sdn Bhd (Penang) from 1994-1996, and subsequently as embedded system design engineer with GMS Technologies Sdn Bhd (Selangor) from 1997 to 1999. He joined MMU as a faculty member in 1999 and currently holds the position of Professor. His area of interests are analog electronics, applied electromagnetics, RF/Microwave circuit design, embedded systems and robotics. He has many years of experience in hardware and software development.

## Administrative Details

### Programme Logistics

Duration: 3 days

Date: 10 -12 November 2020

Venue: Faculty of Engineering, Multimedia University

Registration Deadline: 20 October 2020

### Your Investment

Condition		Price per Pax
Regular Fee (After 29 Sep)	Students / MMU Alumni	RM1,050
	Public	RM1,800
	Public (Group >5 pax)	RM1,500
Early Bird Fee (Before 29 Sep)	Students / MMU Alumni	RM750
	Public	RM1,500
	Public (Group >5 pax)	N/A

### Method of Payment

Please make payment via bank transfer only. Account details is as below:

Account name: Unitele Multimedia Sdn Bhd

Account number: 86-0090180-2

Bank: CIMB Islamic Bank Berhad

Payment must be made by the registration deadline.

### Refund and Cancellation

Any refunds will be processed in 60 days. Should there be any cancellation, it may be due to the organizer not getting the minimum participants or the participant failing to attend the workshop due to unavoidable reason.

### Disclaimer

Faculty of Engineering, Multimedia University reserves the right to change the instructors, date and to vary/cancel the programme should unavoidable circumstances arise. All effort will be taken to inform participants of the changes. Upon submission of the registration form, you are deemed to have read and accepted the terms.

### Enquiries

Dr. Zubaida Yusoff: [zubaida@mmu.edu.my](mailto:zubaida@mmu.edu.my)

Dr. Katrina D. Dambul: [katrina@mmu.edu.my](mailto:katrina@mmu.edu.my)

## Registration Form

To register, please visit this link: <https://forms.gle/AADx5DPNZcAY6Hhu7>