

# Optimization using MATLAB – A Hands-on Workshop

<https://goo.gl/m1kC3G>

Optimization is a procedure where every action is aimed toward best possible solution in terms of ‘SAVING’ of time, cost, resources, or effort. Optimization process is not restricted to engineering application but applicable to all discipline where ubiquitously the best solution to problem is desired. MATLAB/SIMULINK offers toolbox to perform optimization process in an efficient way. Due to diverse nature of the problems and their complexities, more than one optimization process is available to get the best solution.

This workshop first discusses the basic ideology behind the optimization processes and then gives insight to tools available in MATLAB/SIMULINK, followed by the hands-on problem solving session.

## COURSE OBJECTIVES

On the successful completion of this course, the participants should be able to

- use MATLAB to formulate the optimization problem,
- use MATLAB to optimize and analyze the problem solution, and
- use SIMULINK to optimize and analyze the problem solution.

## COURSE OUTLINE

1. Introduction to Non-linear optimization
  - Constrained, unconstrained optimization
  - Optimization Algorithms
  - Multivariable & Multivariable process
  - Global and local minimization problems
  - Genetic Algorithms, PSO, and SA.
2. MATLAB Optimization
  - Function optimization
  - Optimization toolbox
  - Routines/algorithms
  - Minimization/Maximization problems
  - Multi-objective problems
  - Hands-on examples and problem solving
3. Optimization Simulation with SIMULINK
  - Problem setup
  - Understanding Optimization parameters
  - Running and Simulation
  - PID controller Examples
4. Case Studies

## TARGET AUDIENCE

Undergraduate and Postgraduate students,  
Academicians and Researchers,  
Engineers and Scientists

## VENUE

BL-3-010, Control Systems Laboratory,  
College of Engineering,  
UNITEN, Putrajaya Campus.

<b>DATE:</b>	<b>Thursday November 23, 2017</b>
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<b>REGISTRATION</b>
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CONTACT:	mypsoc@ieee.org
DEADLINE:	Wednesday November 15, 2017
URL:	<a href="https://goo.gl/m1kC3G">https://goo.gl/m1kC3G</a>

## FEES

IEEE Member	RM 500
Non-IEEE Member	RM 600
Students (IEEE Member)	RM 400
Students (Non-IEEE Member)	RM 450

<p><i>Course materials provided</i>  <i>Certificate from IEEE Signal Processing Society (Malaysia Chapter)</i>  <i>Morning/afternoon refreshments and lunch included</i></p>
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## SPEAKER’S PROFILE

**Farrukh Nagi** is a retired professor from Universiti Tenaga Nasional (UNITEN) and has worked in area of Mechatronics. He is one of the most senior user of MATLAB and started using MATLAB in 1990 for his Phd work in array signal processing. He is actively involved in MATLAB activities in the country and had conducted numerous hands-on MATLAB/SIMULINK workshops and has supervised numerous undergraduate, postgraduate and phd projects/thesis using MATLAB/SIMULINK. He is an invited MATLAB speaker in seminars and is on panel of judges for TSS Engineering Design Challenge hold by TechSource Sdn Bhd and private training consultants QMS Management Consultant Sdn Bhd and Solution 4U Sdn Bhd.

He is currently undertaking many automation related projects with TNB-Distribution and TNB-Research, and is inclined toward real-time fuzzy control systems with TI TMS320F28xx DSP and MSP430 microcontroller series.