# REGISTRATION FORM

Name: .....

Title: .....

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Address: .....

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Telephone (hp): .....

(Office): .....

Email: .....

Signature :

Date

Fees : RM350.00 Student: RM300.00

Number of participants are limited to 40

Payments can be made either by cash/ research grant (provide the vote no)/bank draft/ cheque/ LO payable to BENDAHARI UPM. The payment can be made during registration but the registration form should be send prior to attending the workshop.

**PLEASE REGISTER BY FILLING OUT THE REGISTRATION FORM AND MAIL to yanuraqilah@upm.edu.my**


***For further information please contact:***

*Miss. Yanu/Miss Mira/Madam Ani*

*Phone : 03-89466811/6812,*

*Email: yanuraqilah@upm.edu.my*


## Resource Person:

1.Prof. Dr. Habshah Midi (Speaker)
*(Dept. of Mathematics, UPM)*

2. Dr. Mohd Shafie Mustafa and Prof Habshah's PhD students (Facilitators) – *Dept. of Mathematics, UPM*

**Professor Dr. Habshah Midi** completed her secondary education at Sekolah Menengah Sains Selangor and obtained *Bachelors Degree in Mathematics* from Drew University, USA. She received the *Master of Applied Statistics* from *The Ohio State University, USA*. She joined Universiti Putra Malaysia as a lecturer and pursued her PhD (Statistics) from Universiti Kebangsaan Malaysia where she was awarded her doctorate in 1995. Currently she is the Vice-President of Malaysia Institute of Statistics.

Her research interests focus on *robust statistics, regressions, experimental designs, quality control, sampling techniques, response surface methodology, panel data analysis, bootstrapping techniques* and *application of statistical methods to real life problems*. Dr. Habshah Midi has taught a wide variety of post-graduates and undergraduate courses such as design and analysis of experiments, regression analysis, robust statistics, mathematical statistics, quality control techniques, etc.

She has published more than 100 international and local citations indexed journals. In 2007, Dr. Habshah Midi was awarded the *Fellowship Naib Canselor (*Excellence in Teaching*)* and in 2016, she was nominated by UPM for the National Academic Award (Excellence in Teaching).

UPM UNIVERSITI PUTRA MALAYSIA BERILMU BERBAKTI **FACULTY OF SCIENCE** http://www.escience.upm.edu.my

*2 Days Workshop on*

# INTRODUCTION TO ROBUST STATISTICS AND ITS APPLICATION

*Organised by:*

**Department of Mathematics, Faculty of Science Universiti Putra Malaysia**

**14th – 15th Sept 2017**

Al-Khawarizmi Seminar Room and
Al-Khaitam Laboratory, Mathematics Building
Universiti Putra Malaysia
43400 UPM Serdang, Selangor

BERILMU BERBAKTI
WITH KNOWLEDGE WE SURVE I

# 2 DAYS WORKSHOP ON THE INTRODUCTION OF ROBUST STATISTICS AND ITS APPLICATIONS

In classical set setup, the assumptions that are common to almost all statistical tests are that the observations are random, independent and identically distributed, come from a normal distribution and equally reliable (there is no outlier in a data). Outliers are observations which are markedly different or far from the majority of observations. In statistical data analysis, there is only one type of outlier, but in a regression problem, extra care should be taken because in this situation, there are several versions of outliers exist such as residual outliers, vertical outliers and high leverage points. The classical methods heavily depend on assumptions and the most important assumption is that data are normally distributed. However, in practice those assumptions are difficult to be met. Violations of at least one of the assumptions may produce sub-optimal or even invalid inferential statements and inaccurate predictions. The immediate consequence of outlier is that it may cause apparent non-normality and the entire classical methods might breakdown. Even one single outlier can have arbitrarily large effect on the estimates.

Since outliers give bad consequences, the need for robust methods become essential to avoid misleading conclusion. Robust statistics are those statistics that do not breakdown easily. It is less affected by outliers by keeping its effect small.

In this workshop participants will be introduced to robust statistical methods as an alternative to the classical methods which are easily affected by outliers. Participants will have the opportunity to learn R programming language and will be guided on the

interpretation of the outputs obtained.
After attending this course, the participants should be able to use some identification methods for the detection of outliers and high leverage points and also able to employ robust methods to analyse a data set

Participants will also have the opportunity to obtain statistical consulting service/statistical advice on the last day of the workshop.

## Who Should Attend ?

Academicians, Researchers, Graduate Students and Researchers from various industries both public and private.

## DAY 1 14th Sept 2017

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|---|---|
| 8.30-9.00am | : Registration |
| 9.00-10.30am | : Introduction to Robust Statistics |
| 10.30-11.00am | : Tea Break |
| 11.00-12.30pm | : Robust Measures of Location, Scale. Test of Normality, Box-plot, QQ Plot. Outliers in Regression. |
| 12.30-1.15pm | : Introduction to R |
| 1.15-2.30pm | : Lunch Break |
| 2.30 -3.30pm | : Robust Methods: LMS, LTS, M, MM, GM Estimators |
| 3.30- 4.45pm | : Robust Methods Using R |
| 4.45-5.00pm | : Tea Break |

## DAY 1 15Sept 2017

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|---|---|
| 8.30-10.00am | : Robust Methods continue |
| 10.00-10.20am | : Tea Break |
| 10.20-11.15pm | : Identification of Outliers and High Leverage Points. |
| 11.15-12.15am | : Identification of Outliers and High Leverage Points Using R |
| 12.15-2.30pm | : Lunch/Prayers |
| 2.30—3.30pm | : Multicollinearity, Variance Inflation Factor. |
| 3.30-4.30pm | : Multicollinearity Using R |
| 4.30-4.40pm | : Closing Ceremony |