

STATISTICAL SHORT COURSES

FOR LIFE SCIENCES & ENGINEERING

MULTIVARIATE DATA ANALYSIS

Venue: School of Mathematical Sciences, Universiti Sains Malaysia, Penang.

8 (Thu) & 9 (Fri) APRIL 2021

EXPERIMENTAL DATA ANALYSIS

Venue: School of Mathematical Sciences, Universiti Sains Malaysia, Penang.

31 MARCH (Wed) & 1 APRIL (Thu) 2021

COURSES SUITABLE FOR (TARGET AUDIENCE)

* Lecturers * Postgraduate Students * Engineers * Researchers * Analysts * Biologist

COURSE CONTENT / OBJECTIVES

- * Multivariate Data Analysis.
 - ❖ Be able to describe fundamental principles of hypothesis testing such as type of tails and p-value
 - ❖ Be able to perform appropriate test in different situations, to interpret the results and make decision
 - ❖ Be able to apply technique for reducing dimension of multivariate data
- ** Experimental Data Analysis
 - ❖ Be able to identify different design of experiment and explain the procedures of designing those experiments
 - ❖ Able to perform ANOVA for data obtained from different experimental designs
 - ❖ Able to interpret the results and write conclusions for different experimental designs

Starting with fundamental concepts and basic statistical hypothesis, the courses intend to provide basic theory and guidance on performing analysis and interpretation of computer outputs. **Highlights of the courses will be Factor and Cluster Analysis as well as Fractional Experimental Design**

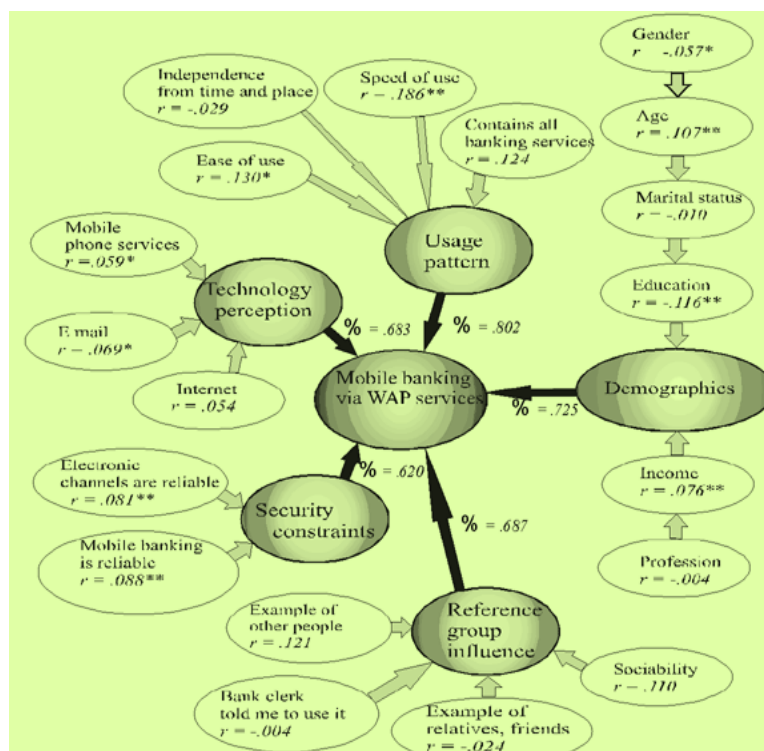
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School of Mathematical Sciences



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MULTIVARIATE DATA ANALYSIS

DAY 1 : THURSDAY, 8 APRIL 2021

8:15 AM	REGISTRATION
8:45 AM	SESSION 1 – INTRODUCTION TO HYPOTHESIS TESTING (Dr. Zainudin) <ul style="list-style-type: none">▪ Null and Alternative, p-value, 1-sample: t-test, 2-sample Independent and Paired test
10:45 AM	TEA BREAK
11:00 AM	SESSION 2 – INTRODUCTION TO ANOVA (Dr. Zainudin) <ul style="list-style-type: none">▪ Replicates and treatment level, Source of variation: within & between
12:45 PM	Q & A (SESSIONS 1 & 2)
1:00 PM	LUNCH
2:00 PM	SESSION 3 – 1-WAY ANOVA (Mrs. Zalila) <ul style="list-style-type: none">▪ Fixed effect model, Normality & equal variance assumptions, Multiple Comparison
3:45 PM	TEA BREAK
4:00 PM	SESSION 4 – 2-WAY ANOVA (Mrs. Zalila) <ul style="list-style-type: none">▪ Factorial design, Profile plot, Test of interaction effect
5:30 PM	Q & A (SESSIONS 3 & 4)

DAY 2 : FRIDAY, 9 APRIL 2021

8:30 AM	SESSION 5 – Multivariate ANOVA (Mrs. Zalila) <ul style="list-style-type: none">▪ 1-way and 2-way MANOVA, Wilks' lambda, Partial eta-squared
10:30 AM	TEA BREAK
10:45 AM	SESSION 6 – PRINCIPAL COMPONENT & FACTOR ANALYSIS (Assoc. Prof. Ahmad Shukri) <ul style="list-style-type: none">▪ Eigenvalues & scree plots, Communality, Factor Rotation, Cronbach-alpha
12:45 PM	Q & A (SESSIONS 5 & 6)
1:00 PM	LUNCH
2:00 PM	SESSION 7 – CLUSTER ANALYSIS (Assoc. Prof. Ahmad Shukri) <ul style="list-style-type: none">• Dendogram, Hierarchical Procedures, Nearest Neighbor Method, Wald's Method
4.15 PM	TEA BREAK
4.30 PM	SESSION 8 – CASE STUDY <ul style="list-style-type: none">• More examples and hands-on: ANOVA and Factor Analysis
5:15 PM	Q & A (followed by CERTIFICATE PRESENTATION at 5.30pm)

COURSE FACILITATORS

DR. ZAINUDIN ARSAD has successfully conducted more than 100 short courses since 2009. He is a senior lecturer, obtaining his BSc. in 1994 (Heriot-Watt, Edinburgh), MSc in 1995 (Sheffield) and PhD. in 2002 (Heriot-Watt). In addition to having a degree in Actuarial Maths. and Statistics, his areas of research interests are Time Series Analysis and Econometric Modeling with main topic of interest in the Applications of Kalman Filter Technique in various Financial Issues. He is a member of Sustainable Tourism Research Cluster (STRC) in USM that receives RM4.2million research grant.

MRS. ZALILA ALI is a senior lecturer and has been teaching in USM for over 20 years. She obtained her BSc. and MSc. from University of West Michigan, USA. She has taught many subjects including Elementary Statistics, Design and Analysis of Experiments, and Multivariate Analysis. She has supervised many projects and dissertations on the application of Principal Components and Discriminant Analysis.

ASSOC. PROF. AHMAD SHUKRI YAHAYA is a senior lecturer at the School of Civil Engineering, USM Engineering Campus. He obtained his MSc. from the University of Aston, Birmingham - UK in Industrial Mathematics. His area of research is in air pollution modelling, simulation and data analysis. He is a principle researcher for the Clean Air Research Group, USM. He has conducted various workshops in SPSS and has written 10 books in Engineering Statistics.

DR. NUZLINDA ABDUL RAHMAN obtained her MSc. from USM in 2002 and PhD from UKM in 2008. Her main research area is Spatial Statistics, particularly in disease/crime mapping, analysis of infant/neonatal mortality Since 2009, Dr Nuzlinda has been teaching the Design of Experiment degree course and facilitating DOE sessions of short courses.

EXPERIMENTAL DATA ANALYSIS

DAY 1 : WEDNESDAY, 31 MARCH 2021

8:30 AM	REGISTRATION
8:45 AM	SESSION 1 – EXPLORATORY ANALYSIS (by Dr. Zainudin) <ul style="list-style-type: none">▪ Descriptive Statistics; Boxplot and Stem-and-Leaf
10:30 AM	TEA BREAK
10:45 AM	SESSION 2 – PRINCIPLES & HYPOTHESIS TESTING FOR 1 SAMPLE (by Dr. Zainudin) <ul style="list-style-type: none">▪ Null and alternative; p-value and confidence interval approaches; t-test and z-test
12:45 NOON	Q & A (SESSIONS 1 & 2)
12:45 PM	LUNCH
2:00 PM	SESSION 3 – HYPOTHESIS TESTING INVOLVING 2 SAMPLES (by Dr. Zainudin) <ul style="list-style-type: none">▪ Test for Equality of Variances, Independent and Paired t-tests
3:45 PM	TEA BREAK
4:00 PM	SESSION 4 – ANALYSIS OF VARIANCE (by Dr. Zainudin) <ul style="list-style-type: none">▪ 1-way and 2-way ANOVA, Fixed effect, Interactions, Post-hoc
5:45 PM	Q & A (SESSIONS 3 & 4)

DAY 2 : THURSDAY, 1 APRIL 2021

8:30 AM	SESSION 5 – INTRODUCTION TO EXPERIMENTAL DESIGNS (by Dr. Nuzlinda) <ul style="list-style-type: none">▪ A few Terminology, Completely Randomized Design, Blocking
10:30 AM	TEA BREAK
10:45 AM	SESSION 6 – FACTORIAL DESIGN (by Dr. Nuzlinda) <ul style="list-style-type: none">▪ 2^k Design, Effect Estimates, Analysis for Single Replicate
12:45 NOON	Q & A (SESSIONS 5 & 6)
1:00 PM	LUNCH
2:00 PM	SESSION 7 – FRACTIONAL DESIGN (by Dr. Nuzlinda) <ul style="list-style-type: none">• 2-level Fractional Design, Generator, Alias Structure, Design Resolution
4:00 PM	TEA BREAK
4:15 PM	SESSION 8 – CASE STUDY (Dr. Zainudin) <ul style="list-style-type: none">• More practices on hypothesis testing for 2 samples and ANOVA
5:15 PM	Q & A (followed by CERTIFICATE PRESENTATION at 5.30pm)

** The Organiser reserves the right to make any amendments and change the programme if warranted by circumstances beyond its control

For more information on content of courses and brochures, kindly contact:

Dr. Zainudin Arsad (013-5159571 or zainudin.arsad@usm.my) or Ms. Noor Farhana Fazil (nfarhana.stat17@gmail.com)

Course Fee (include SST)

Multivariate Data Analysis:	RM450 per participant (Group 3-6: RM405 per participant)
Experimental Data Analysis:	RM450 per participant (Group 3-6: RM405 per participant)

The fees cover course materials/handouts, luncheons & morning refreshments, and a Certificate of Attendance.

Postgraduate student : RM350 for EACH course, requires proof of status (Group 3-6: RM315 per student)

Accommodation

Recommended nearby hotel is U Hotel (RM175 - RM225, reservation at 04-658-1000, only 300m walk from USM). Alternatively, stay at Vistana Hotel (RM225 - RM350, reservation at 04-646-8000, 3km from USM, 10mins by taxi). Muslims can try to get a room at the USM Pusat Islam (only RM70 per night, limited rooms, enquiry at 04-653-3753). For other listings of accommodation please visit www.penang-hotels.com (please make your own reservation).

REGISTRATION FORM (Closing Date: 6 April & 29 March 2021)
MULTIVARIATE DATA ANALYSIS (8 & 9 APRIL 2021)
EXPERIMENTAL DATA ANALYSIS (31 MARCH & 1 APRIL 2021)

Please scan and email this registration form (together with a copy of LO/PO, if applicable) to :

Noor Farhana Fazil

School of Mathematical Sciences,
 Universiti Sains Malaysia, 11800 USM PENANG.
 Email: nfarhana.stat17@gmail.com

NAME OF SHORT COURSE (Please tick (✓) short course(s) to be attended)

Multivariate Data Analysis (8 & 9 April 2021)	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
Experimental Data Analysis (31 March & 1 April 2021)	<input type="checkbox"/>	Yes	<input type="checkbox"/>	No

Please register the following name/names: (Please use separate sheet, if required)

Item	Name	Designation
*1.		

Industry Sector:

Company:

Address:

Postcode:

*Primary Person:

*Mobile Phone:

*Telephone No.:

*Fax No.

*Email:

"I hereby agree that the personal data that I have provided to USAINS, whether now or in future, may be used, recorded, stored, disclosed, or otherwise processed by or on behalf of USAINS in accordance with the Personal Data Protection Act 2010 and USAINS' data protection policy (available at USAINS' website - www.usainsgroup.com), for the purpose of facilitation and organisation of this event, research and audit, and maintenance of a participant database for the promotion of this event, and such ancillary services as may be relevant."

MODE OF PAYMENT (Fill in or Tick when necessary)

I enclose	<input type="checkbox"/>	Crossed Cheque	Number	Bank	No. of Participants:	
	<input type="checkbox"/>	Cash on Day			Postgraduate Student:	
	<input type="checkbox"/>	Bank Transfer			Group Discount:	
	<input type="checkbox"/>	LO/PO			Total Sum:	RM
	Payment must be made payable to 'Usains Holding Sdn. Bhd.'					

1. Telegraphic Transfer. Please note the following:

Payee Name: Usains Holding Sdn. Bhd.

Details: Short Course on Multivariate Data Analysis OR Experimental Data Analysis

Name of Bank: AmBank (M) Berhad, Level 21, Menara Dion, Jalan Sultan Ismail, 50250 Kuala Lumpur.

Account Number: 888 – 100 – 985 – 0380

Swift Code: ARBKMYYKL

(Please SCAN & EMAIL your Bank-in Slip (write name and contact no) with Registration form to nfarhana.stat17@gmail.com)

2. Proof of **Local Order (LO) or Purchase Order (PO)** must be scan/emailed to Dr. Zainudin/ Ms. Noor Farhana for confirmation and secure of place, and it must be presented during morning registration.

The organizer reserves the right to refrain a registered participant from taking part in the event if no proof of payment can be presented. This only applies to registered participants who have NOT paid the registration fee PRIOR to the event date.

Cancellation / Refunds/ Substitution

Cancellation must be made in writing through fax, e-mail or post **at least 10 working days** before the course. No refunds are available after this period. In the case of cancellation, **an administration charge of RM150** will be applied. However, substitute participants are welcomed at no extra charge provided written notice is given to the organizer at **least 5 working days** before the event.

Date:	Company's Official Stamp
Signature:	