Teaching Plan

FAKULTI TEKNOLOGI MAKLUMAT DAN KOMUNIKASI
UNIVERSITI TEKNIKAL MALAYSIA MELAKA

STATISTICS AND PROBABILITY		
DITI 2233	**SEMESTER 2**	**SESSION 2021/2022**

DITI2233 STATISTICS AND PROBABILITY [3, 2, 2]
TYPE OF COURSE: P
EDITION: 1
UPDATED: 5/03/2021

1.0 LEARNING OUTCOMES

Upon completion this course, students will be able to:

i. Demonstrate understanding of the concept and fundamentals of statistics and probability. (C3)
ii. Reproduce solutions for application problems using statistical software. (P3, LL1)
iii. Complete application problems using appropriate statistical techniques. (A3, CTPS2,CTPS5)

2.0 SYNOPSIS

This course will provide a comprehensive introduction to statistics and probability for computer science students. Topics that will be covered in this course includes data description and numerical measures, probability, discrete random variables, continuous random variables and sampling distribution. Main topics for inferential statistics will start with estimation and will be followed by hypothesis testing, estimation and hypothesis testing for two populations, simple linear regression and correlation, and one-way ANOVA. In this course, students are guided to use statistical software to perform descriptive and inferential statistics analysis

3.0 PRE-REQUISITE

None

4.0 PRACTICAL

R Studio statistical software will be used as a tool for statistical analysis of some related problems.

5.0 REFERENCES

1. Navidi, W., (2014), “Statistics for Engineers and Scientists”, 4th Edition,McGraw-Hill Education.
2. Walpole R. E., Myers, R. H., Myers, S. L., Ye, K., (2012), “Probability and Statistics for Engineers & Scientist”, 9th Edition, Pearson Educational International.
3. Devore, J. L., (2011) “Probability and Statistics for Engineering and the Sciences”, 8th Edition, Thomson.
4. Montgomery, D. C., Runger, G. C.,(2011), “Applied Statistics and Probability for Engineers”, 3rd Edition, John Wiley.
5. Johnson, R., Freund, J., Miller, I., (2011), “Probability and Statistics for Engineers, 8th Edition”, Pearson Educational International.
6. Mann, P. S., (2013), “Introductory Statistics”, 8th Edition, Wiley.

7. Sh. Sara, Hanissah, Fauziah, Nortazi, Farah Shahnaz (2008), “Introduction to Statistics & Probability A Study Guide”, Pearson Educational International.

6.0 COURSE IMPLEMENTATION

i. Lecture
- 2 hours per week for 14 weeks (Total = 28 hours)

ii. Laboratory Activities
- 2 hours per week for 14 weeks (Total = 28 hours)

7.0 COURSE EVALUATION

Assessment Method	LO 1	LO 2	LO 3	Scheme, Rubric/ guideline
Quiz (3) = 15%	Quiz 1 (5%)		Quiz 2(5%) Quiz 3 (5%)	QuizScheme.doc
Assignment (2) = 25%		A1 (10%) A2 (15%)		Rubric1.doc Rubric2.doc
Tutorial = 10%		Tutorial (5%)	Tutorial (5%)	TutorialScheme.doc
Mid Term (1) = 20%	MT1 (10%)		MT2 (10%)	MTScheme.doc
Final (1) = 30%	F1 (15%)		F2 (15%)	FinalScheme.doc
Total	**30%**	**30%**	**40%**	

8.0 STUDENT LEARNING TIME (SLT)

LEARNING ACTIVITIES	STUDENT LEARNING TIME (DITI 2233)											
	GUIDED LEARNING TIME						INDEPENDENT LEARNING TIME					
	OFFICIAL CONTACT HOURS	FREQ	TOTAL	GUIDED LEARNING HOURS	FREQ	TOTAL	SELF STUDY HOURS	FREQ	TOTAL	ASSESSMENT TIME	FREQ	TOTAL
Lecture	2	14	28	-	-	-	2	14	28	-	-	-
Laboratory + Report	-	-	-	-	-	-	-	-	-	-	-	-
Tutorial	2	14	28	-	-	-	1	14	14	-	-	-
Quiz	-	-	-	-	-	-	1	3	3			
Theoretical Test (Midterm)	-	-	-	-	-	-	4	1	4	2	1	2
Lab Test	-	-	-	-	-	-	-	-	-	-	-	-
Mini Project - Group	-	-	-	-	-	-	-	-	-	-	-	-
Assignment - Group	-	-	-	-	-	-	4	2	8	-	-	-
Presentation - Group	-	-	-	-	-	-	-	-	-	-	-	-

Presentation - Individual	-	-	-	-	-	-	-	-	-	-	-	-
Final	-	-	-	-	-	-	8	1	8	2	1	2
TOTAL	56			0			65			4		
GRAND TOTAL	**125**											
TOTAL CREDIT	**3.125**											

9.0 DETAILED SYLLABUS AND TEACHING PLAN

Week	Session	Contents	References	Delivery Method
1	Lecture 1	**CHAPTER 1: DATA DESCRIPTION AND NUMERICAL MEASURES** • Introduction • Basic Terms • Graphical Methods for Qualitative Data and Quantitative Data • Numerical measures for central tendency and dispersion	[1] [2][3][4][6] Chapter 1	Lecture
	Lab 1	Exercise on Chapter 1		Tutorial/ lab session
2	Lecture 2	**CHAPTER 2: PROBABILITY** • Concept of set • Concept of Probability • Marginal & Conditional Probability	[1] [2][3][4][6] Chapter 2 [5] Chapter 3	Lecture
	Lab 2	Exercise on Chapter 2		Tutorial/ lab session
3	Lecture 3	**CHAPTER 2: PROBABILITY** • Mutually Exclusive Events • Independent & Dependent Events • Total Probability Rule • Addition Rule • Bayes' Theorem	[1] [2][3][4] Chapter 2 [5] Chapter 3	Lecture
	Lab 3	Exercise on Chapter 2		Tutorial/ lab session
4	Lecture 4	**CHAPTER 3: DISCRETE RANDOM VARIABLES** • Concept of Random Variables • Probability Distribution Function • Cumulative Distribution Function • Expected Value And Variance	[1] [3][4] Chapter 3 [2] Chapter 5	Lecture
	Lab 4	Exercise on Chapter 3		Tutorial/ lab session
5	Lecture 5	**CHAPTER 3: DISCRETE RANDOM VARIABLES** • Binomial Probability Distribution • Hyper-geometry Probability Distribution • Poisson Probability Distribution	[1] [3][4] Chapter 3 [2] Chapter 5	Lecture
	Lab 5	Exercise on Chapter 3		Tutorial/ lab session

6	Lecture 6 Lab 6	**CHAPTER 4: CONTINUOUS RANDOM VARIABLES** • Probability Distribution Function • Cumulative Distribution Function • Expected Value and Variance • Normal Distribution • Standard Normal Distribution • Standardizing A Normal Distribution Exercise on Chapter 4	[1][3][4] Chapter 4 [2] Chapter 6	Lecture Tutorial/ lab session
7	Lecture 7 Lab 7	**CHAPTER 5: SAMPLING DISTRIBUTION** • Sampling Distribution of Sample Means • Sampling Distribution of Proportions Exercise on Chapter 5.	[1][3] Chapter 5 [2] Chapter 8 [4] Chapter 6	Lecture Tutorial/ lab session
8	Lecture 8 Lab 8	**CHAPTER 6: ESTIMATION** • Point and Interval Estimate • Interval Estimation of a Population Mean for Large Sample and Small Sample • Sample Size Determination for the Estimation of Mean • Interval Estimation of a Population Proportion for Large Sample • Sample Size Determination for the Estimation of Proportion Exercise on Chapter 6	[1][3] Chapter 6 [2] Chapter 9 [4] Chapter 7	Lecture Tutorial/ lab session
9		MIDTERM BREAK		
10	Lecture 9 Lab 9	**CHAPTER 7: HYPOTHESIS TESTING** • Null and Alternative Hypothesis • Type I and II Error • Hypothesis Test about a Population Mean for Large Samples and Small Samples • Hypothesis Test about a Population Proportion for Large Samples • Calculating p-values Exercise on Chapter 7	[1] Chapter 7 [2] Chapter 10 [3] Chapter 8 [4] Chapter 9	Lecture Tutorial/ lab session

11	Lecture 10 Lab 10	**CHAPTER 8: ESTIMATION AND HYPOTHESIS TESTING: TWO POPULATIONS** • Inferences about the Difference Between Two Population Means for Large and Independent Samples • Inferences about the Difference Between Two Population Means for Small and Independent Samples: Equal Standard Deviations Exercise on Chapter 8	[1] Chapter 8 [2] Chapter 10 [3] Chapter 9	Lecture Tutorial/ lab session
12	Lecture 11 Lab 11	**CHAPTER 8: ESTIMATION AND HYPOTHESIS TESTING: TWO POPULATIONS** • Inferences about the Differences between Two Population Means for Small and Independent Samples: Unequal Standard Deviations • Inferences about the Difference between Two Population Proportions for Large and Independent Samples Exercise on Chapter 8	[1] Chapter 8 [2] Chapter 10 [3] Chapter 9	Lecture, Tutorial/ lab session
13	Lecture 12 Lab 12	**CHAPTER 9: ANOVA** • The F distribution • One-way Analysis of Variance • Calculating the value of the test statistic • One way ANOVA Testing Exercise on Chapter 9	[1] Chapter 9 [2] Chapter 11 [3] Chapter 12 [4][5][6] Chapter 11	Lecture Tutorial/ lab session
14	Lecture 13 Lab 13	**CHAPTER 9: SIMPLE LINEAR REGRESSION AND CORRELATION** • Linear Correlation • Linear Regression Model • Least Squares Line Exercise on Chapter 9	Chapter 12 [4][5] Chapter 11 [2][6] Chapter 13 [3] Chapter 10	Lecture Tutorial/ lab session
15	Lecture 14 Lab 14	**CHAPTER 9: SIMPLE LINEAR REGRESSION AND CORRELATION** • Estimated Regression Model • Hypothesis Test on Slope of Regression Line Exercise on Chapter 10	[5] Chapter 12	Lecture Tutorial/lab session
16		REVISION WEEK		
17-18		FINAL EXAMINATION WEEK		

10.0 MATRIX OF LEARNING OUTCOMES

SUBJECT vs PROGRAM OUTCOME (PO)

Subject	PROGRAM OUTCOME (PO)								
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9
DITI 2233	X	X			X				

LEARNING OUTCOME (LO)

LO1	Demonstrate understanding of the concept and fundamentals of statistics and probability. (C3)
LO2	Reproduce solutions for application problems using statistical software. (P3, LL1)
LO3	Complete application problems using appropriate statistical techniques. (A3, CTPS2, CTPS5)

LEARNING OUTCOME (LO) vs PROGRAM OUTCOME (PO)

LO	PROGRAM OUTCOME (PO)								
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9
LO1	X								
LO2		X							
LO3					X				

SUBJECT vs SOFT SKILLS

Subject	SOFT SKILLS																							
	communication skill					critical thinking & problem solving					team work			lifelong learning			entrepreneurship skills			ethics&moral professionalism			leadership skills		
	CS 1	CS 2	CS 3	CS 4	CS 5	CTPS 1	CTPS 2	CTPS 3	CTPS 4	CTPS5	TS 1	TS 2	TS 3	LL1	LL2	LL3	ES 1	ES 2	ES 3	EM 1	EM 2	EM 3	LS 1	LS 2	
DITI 2233							X			X				X											

LEARNING OUTCOME (LO) vs SOFT SKILLS

LO	SOFT SKILLS																							
	communication skill					critical thinking & problem solving					team work			lifelong learning			entrepreneurship skills			ethics & moral professionalism			leadership skills		
	CS 1	CS 2	CS 3	CS 4	CS 5	CTPS 1	CTPS 2	CTPS 3	CTPS 4	CTPS5	TS 1	TS 2	TS 3	LL1	LL2	LL3	ES 1	ES 2	ES 3	EM 1	EM 2	EM 3	LS 1	LS 2	
LO1																								

LO2														X											
LO3							X			X															

SUBJECT vs TAXONOMY

Subject	Taxonomy																	
	Affective					Cognitive						Psychomotor						
	A1	A2	A3	A4	A5	C1	C2	C3	C4	C5	C6	P1	P2	P3	P4	P5	P6	P7
DITI 2233	X	X	X			X	X	X				X	X	X				

LEARNING OUTCOME (LO) vs TAXONOMY

LO	Taxonomy																	
	Affective					Cognitive						Psychomotor						
	A1	A2	A3	A4	A5	C1	C2	C3	C4	C5	C6	P1	P2	P3	P4	P5	P6	P7
LO1	X	X	X															
LO2												X	X	X				
LO3						X	X	X										

TEACHING PLAN APPROVAL

Prepared by;

……
Name:

Stamp:

Date: _____

Approved by;

……
Dean/Deputy Dean (Academic)/HOD

Stamp:

Date: _____

TEACHING PLAN IMPLEMENTATION (MID SEMESTER BREAK)

Comment :

Checked by;

……..
Dean/Deputy Dean (Academic)/HOD

Stamp :

Date: _____

TEACHING PLAN IMPLEMENTATION (WEEK 16)

Comment :

Checked by;

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Dean/Deputy Dean (Academic)/HOD

Stamp :

Date: _____