



TEACHING PLAN
MSS414 Topics in Pure Mathematics
Semester II 2019/2020

Lecture Time	Monday 2-4 PM, Wednesday 9-10 AM
Tutorial Time	Wednesday 8-9 AM

No.	Lecturer	Email Address	Teaching Load
1	Norazrizal Aswad Abdul Rahman	aswad.rahman@usm.my	4 units

No.	CO	PO	LT
CO1	describe basic concepts of the chosen special topic in mathematics	PO1	C2
CO2	solve problems related to the chosen special topic in mathematics	PO6	C3
CO3	show detail written and oral arguments in establishing facts related to the chosen special topic in mathematics	PO6	C5
CO4	demonstrate appropriate techniques related to the chosen special topic in mathematics	PO2	P5

Week	Date	Lecturer	Topics	Assessments	CO
1	9-15 Sept 2019	NAAR	Introduction to Fuzzy Set Theory: From classical set theory and Boolean logic to fuzzy set theory and fuzzy logic.		CLO1
2	16-22 Sept 2019	NAAR	Motivation: Students are exposed to the origin of fuzzy set theory and developments of fuzzy set theory in several field. They are asked the possible areas that uncertainty arise.		CLO1
3	23-29 Sept 2019	NAAR	Fundamental: How to identify uncertainty environments that can be modelled using fuzzy set theory?		CLO1
4	30 Sept-6 Oct 2019	NAAR	Extending Knowledge: What other types of set can be derived from classical (Type-1) fuzzy set? What are the differences and what is the possibility in hybridizing them?		CLO1, CLO3

5	7-13 Oct 2019	NAAR	Exploring: What are the algebraic and set theoretic operations in fuzzy set? Are there any differences between them?	Assignment 1	CLO1, CLO
6	14-20 Oct 2019	NAAR	Expressing: What can be said about the non-uniqueness in the interpretation of fuzzy aggregation operators?		CLO1
7	21-27 Oct 2019	NAAR	Extending: How can operations in Type-1 fuzzy set can be extended to Type-2 and further?	Test 1	CLO1, CLO3
8	28 Oct-3 Nov 2019	SEMESTER BREAK			
9	4-10 Nov 2019	NAAR	Further Extension: How do special extended operation effect Type-2 fuzzy set?		CLO1, CLO2
10	11-17 Nov 2019	NAAR	Research Related: What kind of fuzzy set used to replace numbers in research? What is the definition of fuzzy number previously and recently?		CLO1, CLO3
11	18-24 Nov 2019	NAAR	Exploring: What can be concluded and derived from parametric form of fuzzy number? How to construct Triangular, Trapezoidal fuzzy number?	Assignment 2	CLO1, CLO3
12	25 Nov-1 Dec 2019	NAAR	Connecting: How relations are defined in fuzzy settings? How to visualize fuzzy relations?		CLO1, CLO3
13	2-8 Dec 2019	NAAR	Connecting: How can real life fuzzy relations be modelled? What is the concept from graph theory can be used? Are there special relations in fuzzy set theory?	Test 2	CLO1, CLO3
14	9-15 Dec 2019	NAAR	Calculus: What is extremum from the concept of fuzzy set theory?		CLO1, CLO2
15	16-22 Dec 2019	NAAR	Calculus: How is differentiation and integration are interpreted in fuzzy set theory? What are the possible types of integration and differentiation in fuzzy setting?	Presentation	CLO1, CLO2
16	23-29 Dec 2019	REVISION WEEK			
		EXAMINATION			
		SEMESTER BREAK			

Final Examination (60%) (Answer 4 questions)

Question	Topics	CO	Lecturer
1	Fuzzy sets: basic definition and basic set theoretic operations	CLO1	NAAR
2	Extensions of fuzzy sets: Algebraic and theoretic operations	CLO3	NAAR
3	Extension Principle	CLO2	NAAR
4	Fuzzy number	CLO1, CLO3	NAAR
5	1.Measure of fuzziness, 2. Fuzzy relations and fuzzy graphs	CLO3	NAAR
6	Fuzzy Analysis (Calculus of fuzzy set theory)	CLO2	NAAR

Coursework Assessment (40%) :

Type	Marks
Test	20
Assignment	10
Quiz	-
Presentation	10