ADVANCED MATHEMATICS
Course Outline

Instructor:

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Lecture time: **Sundays, Tuesdays** **09:30-11:00**

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Mark Distribution:	**Exam I (Pt A)**	**3**
	Exam II (Pt B)	**4**
	Final Exam (Pt C)	**7**
	Class Assignments	**2**
	Take Home Assignments	**2**
	Class Performance	**2**

References:

1. **Kreyszig, E. (2011). *Advanced Engineering Mathematics*. 10th ed., John Wiley & Sons, Inc.**
2. **Asmar, N.H. (2005). *Partial Differential Equations with Fourier Series and Boundary Value Problems*. 2nd ed., Cengage Learning.**
3. **O'Neil, P.V. (2012). *Advanced Engineering Mathematics*. 7th ed., Cengage Learning.**

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Course Contents:

	Topics	Time (sessions)
PART A	**LINEAR ALGEBRA and VECTOR CALCULUS**	**(4)**
A1	**Matrices, Linear Systems, Determinants**	**1**
A2	**Vector Differential Calculus**	**1**
A3	**Vector Integral Calculus**	**2**
PART B	**ORDINARY DIFFERENTIAL EQUATIONS (*ODEs*)**	**(9)**
B1	**First-Order *ODEs***	**2**
B2	**Linear Second Order *ODEs***	**2**
B3	**Series Solutions of *ODEs***	**2**
B4	**Laplace Transforms**	**2**

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	Topics	Time (sessions)
	PART C PARTIAL DIFFERENTIAL EQUATIONS (*PDEs*)	**(15)**
C1	**Fourier Analysis**	**6**
C2	**Partial Differential Equations (*PDEs*)**	**9**
	PART D NUMERICAL SOLUTION OF *ODES* AND *PDES*	**(2)**
D1	**Methods for Elliptic *PDEs***	**1**
D2	**Methods for Parabolic *PDEs***	**1**