Department of Mathematics
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Course	**Course Name**	**: Introduction to Financial Mathematics**
	Course Code	**: KM184718**
	Credit	**: 2**
	Semester	**: 7**

Description of Course
This subject presents the discrete basics of Financial Mathematics covering basic probability theory and discrete random variables, Brownian geometric motion, and current concepts and value analysis. Furthermore, the discussion focused on two financial derivative products namely European and American options where the pricing option is done through arbitrage. The option pricing model discussed is the Black-Scholes model and the numerical method discussed is the binomial method. In addition, the implementation of Brownian geometric motion on stock prices and crude oil prices will be discussed as enrichment.

Learning Outcome	
PLO 2	[C3] Students are able to solve simple and practical problems by applying basic mathematical statements, methods and computations
PLO 3	[C4] Students are able to analyze simple and practical problems in at least one field of analysis, algebra, modeling, system optimizations and computing sciences
PLO 4	[C5] Students are able to work on a simple and clearly defined scientific task and explain the results, both written and verbally either on the area of pure mathematics or applied mathematics or computing sciences
PLO 5	[C3] Students are able to make use of the principles of long life learning to improve knowledge and current issues on mathematics

Course Learning Outcome
1. Understand the problems in finance through the Mathematics model, analyze and solve them 2. Be able to apply a mathematical thinking framework and identify financial problems in financial terms. To further model and solve problems analytically and empirically
Main Subject
The concept of probability and random variables, stochastic processes, Brownian geometric motion, interest concepts and present value analysis, European and American options, contract price through arbitrage, arbitrage theorem, binomial method, Black Scholes formula, optimization model, advanced geometric Brownian motion.
Prerequisites
Probability Theory
Reference
1. Ross, M. Sheldon, An Introduction to Mathematical Finance, Cambridge University Press, 1999
Supporting Reference
1. John C Hull, “Options, Futures, and Other Derivatives”, Pearson, 2009