Proposal for New Course		
Course Number	**:**	MB518
Course Name	**:**	Decision analysis
Credits	**:**	2-0-0-2 (L-T-P-C)[1]
Prerequisites	**:**	None
Intended for	**:**	MBA
Distribution	**:**	Compulsory
Semester	**:**	Even

Preamble
The Primary job of a manger is to arrive at a decision in any given situation. The complex nature of the situation would decide the tools and techniques used in finding a solution. Often decision making requires combining data rationality and intuition. This course focusses on structured approach to decision making.

Objective
To help students to structure a decision-making contest Enable them to generate alternate choices Identify a criterion to make a choice ' Measure the consequence associated with various alternates Identify an optimal/appropriate choice for execution Understand the sensitivity of the choice made to the context(Sensitivity Analysis)

[1] L= Lectures per week, T=Tutorials per week – P = Practical/Lab session per week – C = Credits for course

Course Modules with Quantitative lecture hours		
Module 1		**(3 hours)**
This module would set the context for decision analysis course. It would discuss a few illustrative examples in details (Eg Bidding problem, Pricing decision, Investment decision, outsourcing decision, Decision under uncertainty)		
Module 2	**Mathematical/Formal representation of consequences**	**(4 hours)**
This module introduces a formal need and ways to measure the consequence of a decision alternate. In specific context explore the use of Linear functions, Piecewise Linear function, Loss functions, Quadratic functions and their relevance, roots of a Quadratic equation, Breakeven Price, exponential and logarithmic functions, Sequences (Geometric and Arithmetic) and functions of many variables		
Module 3	**Review of Probability (Rapid)**	**(6 hours)**
Introduction to Probability and Random variables, Conditional probability, expected value, Summary measures, Fractiles, Measures of dispersion, Chebyshev's inequality, functions of random variables, Joint distribution of random variables, Covariance, Conditional expectations, Binominal, Poisson, and normal Distributions.		
Module 4	**Decision theory**	**(12 hours)**
Method of sensitivity analysis**,** Method of breakeven analysis**,** Decision Problems under uncertainty, Decision trees, expected monetary value as a criterion, expected value of perfect information (EVPI), Structuring and solving sequential decision problem, case studies (2), sampling information, value of sample, optimal sample size to update prior probabilities. expected net gain in sampling, Case studies (2). Cash Equivalent, risk preference		
Module 5	**Loss functions and special structures**	**(3 hours)**
News boy problem and its variations		

Lab Exercises (If applicable): **Not applicable**

Lab to be conducted on a 2-hour slot. It will be conducted in tandem with the theory course so the topics for problems given in the lab are already initiated in the theory class. The topics taught in the theory course should appropriately be sequenced for synchronization with the laboratory.

Textbooks:	
1.	VL Mote and T Madhavan (2016) Operations research, Wiley Indian
2.	PG Moore and HM Thomas (1971) Anatomy of decisions, Penguin Business