Proposal for New Course		
Course Number	**:**	MB519
Course Name	**:**	Creative Thinking, Problem Solving and Decision Making
Credits	**:**	2-0-0-2 (L-T-P-C)[1]
Prerequisites	**:**	None
Intended for	**:**	MBA
Distribution	**:**	Compulsory
Semester	**:**	Odd

Preamble
Normally, thinking skills are based on some structure such as critical thinking, constructive thinking, lateral thinking, creative thinking, vertical thinking, parallel thinking etc. However, all these approaches concentrate more on "talking about problems" rather than "solving problems." Thus, it becomes necessary for the students to connect thinking and problem-solving skills to tackle the complex, nonlinear and uncertain problems in the real-world. This course provides what, why and how of the thinking skill through various toolsets, proper mindsets and appropriate skillsets. This course includes discussions and brainstorming through a range of decision making tools & techniques, brain teasers, games and puzzles. Further, it consists of discussions on heuristics for tackling these types of problems, along with visualization of the contrasting nature of problem solving in humans and computers.

Objective
On completion of this course, the student should be able to: - acquire creative thinking and problem solving skills to solve managerial problems - to learn general problem solving strategies and heuristics - to distil domain independent transferable methodologies and heuristics for tackling various real world problems faced by today's managers

[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	**Introduction**	**(2)**
Understanding problem solving and decision making, Types of problems and decision making		
Module 2	**Human Heritage for Problem Solving and Decision Making**	**(5)**
Creativity and inspiration, Intuition, knowledge, intelligence, wisdom and creativity, empathy, Creativity and evolution. Thinking and its Types, Lean thinking, critical thinking, lateral thinking and design thinking methods, Divergent and convergent thinking.		
Module 3	**Reasoning with Data**	**(5)**
Types of reasoning, deductive vs. inductive reasoning, reasoning with data, role of assumptions and biases, evaluating assumptions, biases in inductive reasoning for handling data, avoiding deductive and inductive reasoning fallacies, abductive reasoning, abduction in the field of artificial intelligence, reasoning backwards; Logical, probabilistic and geometric reasoning, problem solving and thinking traps, and their avoidance.		
Module 4	**Analytical thinking and decision making**	**(3)**
Analytical Thinking and decision making, stages of analytical thinking, data analytic thinking, Analytic hierarchy and network process		
Module 5	**Problem framing and solution**	**(4)**
Identifying and defining problems, building a model, solving the problem through pattern finding, simplifying and eliminating, developing alternatives and evaluating options, what-if analysis, Complex problem solving, six thinking hats.		
Module 6	**Tools, Techniques and Skills**	**(5)**
Interpretation and Ideation techniques: Empathy mapping, mind mapping, journey maps, affinity and cause-effect diagram, pattern recognition; Brainstorming, brain dump, value proposition canvas, SCAMPER. Analysis Methods: Paired Comparison Analysis, Six Thinking Hats, Cost/Benefit Analysis, Decision Trees, Pareto Analysis, Grid Analysis, PMI, Force Field Analysis, Root-Cause Analysis, storyboarding.		
Module 7	Simulation and Optimization for Problem solving and decision making	**(4)**

Simulation and its types, importance of simulation and optimization for problem solving and decision making, role of data and model in simulations. physical simulation vs. computer simulation.

Lab Exercises (If 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.

Reference Book:	
1	T.H. Davenport and J. Kim (2013), Keeping up with the Quants, Harvard Business Review Press, Boston, MA (rs. 1,555)
2	Daniel Kahneman (2012), Thinking, Fast and Slow, Penguin Random House.
3	Robert J. Sternberg Ed. (1994), Thinking and Problem Solving, 2ed., Academic Press.
4	de Bono, E. (1999). *Six Thinking Hats*, New York: MICA Management Resources.
5	Eugene O'Loughlin (2009), An Introduction to Business System Analysis, The Liffey Press, Ireland
6	Gerald F. Smith (1998), Quality Problem Solving, ASQ Quality Press, Wisconsin
7	G. Polya (1988), How to Solve It, Princeton University Press
8	Edward B. Burger and Michael Starbird (2021), 5 Elements of Effective Thinking, Princeton University Press, Oxfordshire
9	Jeanne Liedtka, Andrew King and Kevin Bennett (2013), Solving Problems with Design Thinking, Columbia University Press.
10	Luc De Brabandere and Alan Iny (2013), Thinking in New Boxes, Random House, New York.
11	James L. Adams (2019), Conceptual Blockbusting-Basic Books
12	Tom Kelley and D. Kelley (2013), Creative Confidence, William Collins, London
13	J. Butterfield (2010), Problem Solving and Decision Making, Cengage Learning.
14	Saaty, T.L. (2008), *Creative Thinking Problem Solving and Decision Making*, RWS Publications

15	Paulos, J.A. *Innumeracy: Mathematical Illiteracy and Its Consequences*, New York: Hill and Wang.
16	Fisher, A. (2001). *Critical Thinking: An Introduction*, Cambridge, UK: Cambridge University Press