Course Code : Creativity, Problem solving and Innovation (2 1 0 3)

Abstract:

Psychology of problem solving, methods of questioning, methods of learning, analyzing, summarizing and communicating information as written report and oral presentation, visualizing thinking, thinking fluency, fishing of ideas, making novel combinations, looking into the other world for finding solutions. Importance of play and relaxation, allowing subconscious mind to figure out the solution. Awakening the collaborative spirit by brain storming and collaboration to facilitate innovation. Review strategies for creative problem solving methods, Stanford d.School design thinking process, divergent thinking and convergent thinking, lateral thinking and the decision making. Strategy of making - from idea to innovation.

Detailed Syllabus:

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Course Outcomes:

At the end of the course the students will be able to

CO1 Describe and apply various modes of thinking such as lateral, vertical, divergence, convergent, creative and critical thinking including collaborative brainstorming as required for creativity, problem solving and innovation.

CO 2: Apply various methods of learning and questioning including reversing technique for creativity and innovations.

CO3: Construct mind maps and fishbone diagrams as visualization for the given situations / problems and draw inference

CO4: Apply various methods and tools for acquiring fluency for generating new ideas and choose idea for implementation by following stages of creative problem solving and design thinking process.

CO5: Discuss the importance of play, relaxation and unstructured activities to utilize the power of subconscious mind for generating innovative solutions

1. Introduction to creativity, problem solving and innovation – **1 Hr.**
2. Psychology of problem solving, vertical versus lateral thinking. Method of questioning, importance of asking the right question, use of who, what when, where, why and how. - **5Hrs.**
3. Learning and its importance, sources of learning, methods of learning, purpose and value of education for nurturing creativity in real life. - **3Hrs.**

4. Knowing how to see, making the thought visible, visualizing thinking, mapping of mind and fishbone diagrams. Thinking Fluency, generating all possibilities, SCAMPER technique. Creative or divergent idea generating thinking versus Critical or convergent idea selection thinking. **- 6Hrs**
5. Fishing of ideas, making novel combinations and connecting the unconnected. Looking at the other side, looking in other world, finding what one is not looking for and following it up. **- 3Hrs**
6. Importance of play and relaxation: break and diversion. Unstructured activities, stop thinking and perform activities for Joy. Allowing subconscious mind to figure out the solutions. Various puzzles as play or fun. **- 3 Hrs**
7. Awakening the collaborative spirit, collaborative thinking, brain storming, brain writing to facilitate innovation. Review strategies for creative problem solving methods. Five building blocks as per Fogler & LeBlanc., Stanford d.School approach. **- 6Hrs.**
8. Critical thinking, creative or divergent thinking and Convergent thinking to choose the solution for implementation. Kepner-Tregoe (K.T.) method. Edward de Bono CoRT thinking process including PMI (Plus, Minus and Interesting), lateral thinking and the decision making, Edward de Bono Six thinking hats method of decision making. **-6Hrs.**
9. Strategy of making, from idea to innovation. **-3Hrs.**

Reference:

1. Zig Zag, the surprising path to greater creativity by R Keith Sawyer 2013
2. Crackling Creativity, The secrets of creative genius by Michael Michalko 2001
3. Thinkertoys by Michael Michalko second edition 2006
4. Strategies for creative problem solving by H Scott Fogler & Steven E LeBlanc. Second edition 2008
5. De Bono's Thinking Course by Edward De Bone, Revised Edition 1994
6. Six Thinking Hats by Edward De Bono Revised and updated edition 1999
7. How to mind map by Tony Buzan 2002
8. The Myths of Innovation by Scott Berkun. Expanded and revised edition 2010
9. They all laughed by Ira Flatow. 1992
10. 101 Creative problem solving techniques by James M Higgins 1994

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