INSTITUTE	**FACULTY OF TECHNOLOGY**
PROGRAM	**BACHELOR OF TECHNOLOGY (CIVIL ENGINEERING)**
SEMESTER	**4**
COURSE TITLE	**CREATIVITY, PROBLEM SOLVING AND INNOVATION**
COURSE CODE	**01CI0408**
COURSE CREDITS	**1**

Objective:

1 To develop creative thinking skill in the students using cone of learning components leading to understanding of various strategies for creativity, problem solving and innovation.

2 To develop creative thinking skill in the students using cone of learning components leading to understanding of various strategies for creativity, problem solving and innovation

3 To develop creative thinking skill in the students using cone of learning components leading to understanding of various strategies for creativity, problem solving and innovation.

Course Outcomes: After completion of this course, student will be able to:

1 Recognize importance of creativity, problem solving and innovation while addressing science, engineering and social issues.

2 Demonstrate the ability to contextualize knowledge related to professional engineering practices.

3 Demonstrate the functioning effectively as an individual and team member.

4 Extend life-long learning in the context of technological change.

Pre-requisite of course:NA

Teaching and Examination Scheme

Theory Hours	Tutorial Hours	Practical Hours	ESE	IA	CSE	Viva	Term Work
0	0	2	0	30	0	20	0

Contents : Unit	Topics	Contact Hours
Total Hours		

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Suggested List of Experiments:

Contents : Unit	Topics	Contact Hours
1	**Phase-1** To introduce the subject of the course: this course as a needed skill for your future. Psychology of problem solving; Vertical versus Lateral thinking	2
2	**Phase-2** Strategy of Questioning; Method of questioning; Importance of asking the right question. Who, what, when, where, why, how?	2
3	**Phase-3** Learning and its importance; Sources of learning; Methods of learning. Purpose and value of education in future creativity in real life	2
4	**Phase-4** Strategy of Knowing how to see; Making your thought visible; Visualizing thinking; Mapping of mind, Fishbone diagram	2
5	**Phase-5** Strategy of Thinking Fluency; Generating all possibilities; more the better; Quantity without screening is helpful; SCAMPER technique; Creative or divergent idea generating thinking versus Critical or convergent idea selection thinking	2
6	**Phase-6** Strategy of Fusing of ideas; Making novel combinations; Connecting the unconnected	2
7	**Phase-7** Strategy of Looking at the other side, looking in other world, finding what you are not looking for and following it up	2
8	**Phase-8** Strategy of Play, Importance of play; Diversion; Unstructured activities for sheer joy, Activities for joy, Let subconscious figure it out, Various puzzles as play or fun	2
9	**Phase-9** Strategy of Awakening the collaborative spirit, Collaborative thinking, brain storming, Innovation requires collaboration to make it happen	2
10	**Phase-10** Review Strategies for Creative problem solving methods, Five building blocks as per Fogler & LeBlanc, Stanford D school approach	2
11	**Phase-11** Strategy for critical thinking for Choosing, Creative or divergent thinking needs follow up by Critical thinking or Convergent thinking in order to choose the solution for implementation, Kepner-Tregoe (K.T.) method with an example, Edward De Bono CoRT thinking process including PMI (Plus, Minus and Interesting), Also Edward de Bono method of decision making called Six thinking hats	2

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Suggested List of Experiments:

Contents : Unit	Topics	Contact Hours
12	**Phase-12** Edward de Bono explaining and teaching his ideas having evolved many years ago consisting as CoRT thinking tool, Lateral thinking and the decision making by Six thinking hats method	2
13	**Phase-13** Strategy for Making; From idea to innovation	2
14	**Phase-14** Individual presentation for 75 minutes by 15 students (5 minutes per student).	2
Total Hours		**28**

Textbook :

1 The surprising path to greater creativity , The surprising path to greater creativity , Zig Zag, 2013

References:

1 Group Genius, Group Genius, Keith Sawyer, zigzag, 2007

Suggested Theory Distribution:

The suggested theory distribution as per Bloom's taxonomy is as follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery					
Remember / Knowledge	**Understand**	**Apply**	**Analyze**	**Evaluate**	**Higher order Thinking / Creative**
5.00	10.00	20.00	20.00	30.00	15.00

Supplementary Resources:

1 https://nptel.ac.in/courses/107108010

2 https://www.coursera.org/learn/creative-problem-solving?utm_source=gg&utm_medium=sem&utm_campaign=B2C_INDIA_google-it-support_FTCOF_professional-certificates_PMax-arte-non-NRL_within_14D&utm_content=B2C&campaignid=19009590676&adgroupid=&device=c&keyword=&matchtype=&network=x&devicemodel=&adpostion=&creativeid=&hide_mobile_promo&gclid=Cj0KCQjwnMWkBhDLARIsAHBOftpUuncfC9vEslgSZtWIA1NUOEgRnY84RbMSM3IOfGLE_gr0HFqwp9oaAnR5EALw_wcB

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