IDEATION AND PRODUCT DEVELOPMENT

VI Semester: Common for all branches								
Course Code	**Category**	**Hours / Week**			**Credits**	**Maximum Marks**		
AAE201	**Skill**	**L**	**T**	**P**	**C**	**CIA**	**SEE**	**Total**
		0	**0**	**2**	**1**	**30**	**70**	**100**
Contact Classes:	**Tutorial Classes:**	**Practical Classes: 28**				**Total Classes: 28**		

I. COURSE OVERVIEW:

Ideation and product development lab mainly focuses on the creation of concrete solutions to specific problems. This is particularly challenging when the solution and its elements are entirely unknown. In so-called top-down approaches, the development focus is on the desired features of the new product rather than on already existing solutions or their elements. Both methods from product development, such as creativity techniques, and methods from lightweight design, such as physical surrogate model-ing, help to explore the unknown and find a way to new solutions to complex problems. For complex problems, it is often important to consider the entire system by adopting a holistic and interdisci- plinary view. In both lightweight design and in product development, all relevant requirements on a product, all aspects of feasibility and constraints on realization, and all interactions of all system components have to be taken into account.

II. OBJECTIVES:

The course should enable the students:
  I. To develop next generation Entrepreneurs and Creative Leaders to resolve live challenges.
  II. To understand about the future needs of industries.
  III. To transform innovative ideas into successful businesses.
  IV. To use a range of creative thinking tools to develop Out of the Box Ideas.
  V. To develop Breakthrough Innovators and Dynamic Thinkers.

III. COURSE OUTCOMES:

After successful completion of the course, students should be able to:

CO 1	**Develop** knowledge and skills from various areas through more complex and multidisciplinary projects to select a research topic. .	Apply
CO 2	**Organize** the collected evidences to make quantitative, qualitative and statistical analysis for finding the research problem.	Apply
CO 3	**Solve** unstructured problems that need research as an individual or as a member/leader in diverse teams to discern which information is reliable and which is not.	Apply
CO 4	**Make use of** a software tool by running simulations rigorously to get the desired output for the research problem found.	Apply
CO 5	**Assess** the outputs achieved by making judgments about information and validity of ideas for confirming the quality of work based on a set of criteria.	Evaluate
CO 6	**Build** a hardware prototype to test and analyze the product designed for an application.	Apply

IV. SYLLABUS:

- Successful team formation and management
- Introduction to user-centred design
- Ideation and use of personas and POVs
- Need finding
- Embedded Microcontrollers for consumer products
- Human factors in engineering design
- Critical Experience and Critical Function Prototyping
- Dark Horse and 'Funky' prototyping
- Rapid prototyping and manufacturing
- Design for manufacture

- User testing
- Use of video/electronic media for communication
- Start-ups and entrepreneurship
- Intellectual Property

Text Books:

1. Product Design: Techniques in Reverse engineering & New Product development. K Otto & K Wood. Prentice Hall, 2001. ISBN 0-13-0212271-7 TCD Shelf Mark. HL-236-568.
2. Invention by design: how engineers get from thought to thing, Petroski H. Cambridge, Mass., London, Harvard University Press, 1996. ISBN 0674463676. TCD Shelf Mark. HL-201-280.
3. Change by Design: How Design Thinking Transforms Organizations and Inspires Innovation, Tim Brown, Harper Business, 2009, ISBN 978-0061766084.
4. Creative Confidence: Unleashing the Creative Potential Within Us All, Tom & David Kelley, Crown Business, 2013, ISBN 978-0385349369.