

Module Plan: Visual Thinking 5WIP 2017

Faculty volunteers:

1. Kaustav Sarkar (Coordinator)
2. Arpan Gupta
3. Rajesh Ghosh
4. Sunny Zafar
5. Himanshu Pathak
6. Mohammad Talha
7. Amit Prasad
8. K. V. Uday
9. Sandip Saha
10. Shantanu Patra

Rationale: Visual thinking (the act of thinking in pictures) is a valuable strategy for problem solving and communication that involves an active interplay of seeing, imagining and drawing. The ability to think visually is essential to engineering profession wherein ideas/plans are frequently communicated in the form of drawings and sketches. Understanding how to present and grasp ideas through effective visual means is a step towards creating better designers.

Objectives: To nurture visual thinking skills in students to enable:

- Visual organization of work plans
- Effective use of sketches/diagrams (visuals) to convey and record ideas
- Expression of experiences through visuals

Execution Plan:

Week-1: Introduction (Duration - 1 hr)

Activities

- General interaction with students (**10 min**)
- Introduction to the concept of visual thinking. Change-blindness experiment

Learning goals

- To understand the way of thinking visually; To understand the

video and discussion on the skill of seeing
(50 min)

limitations of attention capacity,
non-uniformity of visual processing
power

Week-2: Mind mapping & Free hand drawing (Duration - 2 hr)

Activities

- Introduction to mind mapping and Free Mind software **(45 min)**
- Free hand sketching of simple objects **(15 min)**
- Drawing orthographic, Isometric and Perspective projections **(60 min)**

Learning goals

- To learn to systematically organize ideas using mind maps
- To appreciate the use of free hand sketching as a means to record new ideas
- To get an overview of formal drawing methods

Week-3: Representation of Motion (Duration - 2 hr)

Activities

- Representing motion using differential equations - A freely falling object; A freely vibrating system **(60 min)**
- Discussion on locomotion - Cases of Horse, Snake, Spider, Tiger, Leopard and Human movements **(60 min)**

Learning goals

- Understanding the utility of ODEs in representing motion
- To analyze locomotion as a visual thinking exercise

Week-4: Symbolic representations & Project (Duration - 2 hr)

Activities

- Introduction to engineering drawing symbols **(15 min)**
- Group Activity: To plan a project (railway

Learning goals

- Standard symbols (ME, CE and EE)
- Implementation of visual thinking skills

station/shopping mall etc.) and present it in the form of a drawing **(105 min)**

Week-5: Campus trek (Duration - 2 hr)

Activities

- Group Activity: Graphic recording of experience in groups; Group wise presentation of illustrations to test the level of representation achieved **(120 min)**

Learning goals

- Implementation of visual thinking skills to record and communicate observations