**Project based learning**

In this type of learning, students are encouraged to carry out a project in a few courses they study. Project is designed to introduce students to engineering in a global context. Specific emphasis is on:

1. Understanding and applying the basic design process by applying theoretical concepts to solve a real-world problem.
2. Awareness of cultural, ethical, economic and social needs
3. Critical and Creative thinking
4. Project planning execution
5. Written communication
6. Oral Presentation

* The knowledge gained in first year engineering/science courses is expected to be applied within the project - particularly in demonstrating the fundamental principles underpinning problem solving.
* Students are encouraged to get engaged in design-based learning, build their competencies in the application of engineering theory to a real-time problem, along with communication, teamwork and time management skills.
* These skills are strengthened alongside their learning of the engineering principles and theory, and it has been found that students benefit most from this form of learning.
* This has been found to also support students’ motivation and interest in their field of engineering study.
* As a result of doing these courses, students have stated that there is an increase in their confidence in making design decisions and a better understanding of how engineering principles relate to real-world problem solving.

**Criteria for Project Selection in Problem/Project Based Learning**

1. The key design and professional practice concepts are learnt over time and evolve with every opportunity through projects applied for learning various concepts, particularly complex concepts.
2. The projects are first designed and selected based on the learning outcomes desired at each level.
3. The projects chosen allow for open-ended problem solving and application of theoretical concepts to real-time problems.
4. The most important criterion is that the problem should allow for multiple solutions.
5. A design problem is chosen, which usually has many solutions, and students learn to evaluate these solutions and select the most appropriate as per the situation.
6. The projects give students the freedom to explore the context, define boundaries, research various sources and come up with a range of alternative solutions. In other words, the project brief or aim does not narrowly specify the solution or what should be built.
7. Projects allow for some freedom of expression and some experimentation in order for students to select the most appropriate solution.
8. Some projects allow for the consideration of not only technical aspects, but also economic, socio-cultural and ethical factors.
9. We try to emphasize that the closer the projects are to commercial reality the better, as it trains students to handle real-world problems that they may face in their professional careers.
10. Through project-work experiences, students learn to combine knowledge and experiences in new ways, and build a broader base of knowledge and skills to draw from, leading to innovative solutions.
11. The projects encourage team-work.
12. The projects usually require a number of tasks to be carried out within a tight deadline, requiring students to share the workload in order to achieve an acceptable outcome.
13. The projects require students to apply relevant theory, and encourage students to integrate the knowledge gained from all their courses.
14. Most real-world problems and their solutions are not restricted to mono-disciplines, so that students learn to draw information from multi disciplinary areas.

Example of projects:

* Develop an environmentally friendly, durable and low-cost power generation .
* Design and develop a water filtration system that filters the ground water for use by the villagers in their households in Cheeryal Village near the college.