

## 6. Capstone Project Planning

Students are supposed to find out a suitable project and prepare a detailed plan in fifth semester so that it can be executed smoothly in sixth semester. The main characteristic of any project whether small or big is that it requires simultaneous application of various types of skills in the different domains of learning. Moreover, project normally do not have a predefined single solution, in other words for the same problem different students may come up with different but acceptable solutions. Further, in the process of arriving at a particular solution, the student must be required to make a number of decisions after scrutiny of the information s/he has accumulated from experiments, analysis, survey and other sources.

The projects will have a detailed project proposal, which must be executed or implemented within the time allocated, simultaneously maintaining a logbook periodically monitored by the teacher. A detailed project report is to be prepared as project progresses, which has to be submitted after the project is over. For self assessment and reflection students have to also prepare a portfolio of learning.

During the guidance and supervision of the project work, teachers' should ensure that students acquire following **learning outcomes** (depending upon the nature of the project work some of these learning outcomes may not be applicable):

- a) Show the attitude of enquiry.
- b) Identify the problems in the area related to their programme.
- c) Identify the information suggesting the cause of the problem and possible solutions.
- d) Assess the feasibility of different solutions and the financial implications.
- e) Collect relevant data from different sources (books/internet/market/suppliers/experts etc. through surveys/interviews).
- f) Prepare required drawings and detailed plan for execution of the work.
- g) Work persistently and participate effectively in group work to achieve the targets.
- h) Work independently for the individual responsibility undertaken.
- i) Ask for help from others including guide, when required.
- j) Prepare portfolio to reflect (*chintan-manan*) on experiences during project work.
- k) Prepare seminar presentations to present findings/features of the project.
- l) Confidently answer the questions asked about the project.
- m) Acknowledge the help rendered by others in success of the project.

### d) Suggested Type of Capstone Projects

In general, the projects that the students can take up could be of the following types;

- i. Feasibility studies.
- ii. Design projects
- iii. Market surveys about raw material, components or finished products.
- iv. Prototype (design, make, test and evaluate).
- v. Advanced experimental work requiring the development of existing equipment to be used and developed.
- vi. Field works: This could include surveys, using equipment, charting data and information from visual observation.

- vii. Comparative Studies: Theoretical study of two systems/mechanisms/ processes in detail and comparing them on the basis of cost/energy conservation/impact on environment/technology used etc.
- viii. Application of Emerging technology: Theoretical study of some emerging technology and feasibility of its application in some real life situation in detail.
- ix. Fabrication of some equipment/machine etc.
- x. Construction of some structure.
- xi. Development of software or use of software for solving some broad-based problem.

## **8. GUIDELINES FOR UNDERTAKING A PROJECT**

The selection of the *Capstone Project title* must have emphasis to the Elective courses/ Elective Group taken for the study and exam for 5<sup>th</sup> and 6<sup>th</sup> semester. The students will then work on the identified problem/task through a rigorous process of understanding and analyzing the problem, conducting a literature search, deriving, discussing (monitored by the guide every fortnight) and designing the *Semester V 'Project Proposal'* with the following *sub-titles*:

- a) Rationale (one page)
- b) Introduction
- c) Literature Survey
- d) Problem Definition
- e) Proposed Methodology of solving Identified problem
- f) In-case some prototype has to be fabricated then its tentative design and procedure for making it should be part of the proposal.
- g) Resources and consumables required.
- h) Action Plan (sequential list of activities with probable dates of completion)