ASIAN INSTITUTE OF TECHNOLOGY
SCHOOL OF ENGINEERING AND TECHNOLOGY
Engineering Leadership

ELP 1.5: PLANNING, SCHEDULING AND COST PLANNING OF PROJECTS 3(3-0)

Semester: JAN 2016

Rationale: Organizations involved in engineering or technical projects require proper planning and scheduling of all activities to minimize costs and optimize efficiency. Proper scheduling of all activities is essential to optimize the use of available resources. A proper plan tracks an organization's and project's resources as a project progresses allowing an organization to devote more (or less) resources as a project progresses and project demands require. Project planning provides an organization with a process to rationally allocate the organization's resources and, as a result, contributes to client satisfaction by increasing an organization's reputation as a professionally managed organization.

Catalogue Description: This course provides the participants with the concepts and application of: effective planning, scheduling and cost planning of a project's activities. Effective project planning takes into consideration all aspects of planning including stakeholder engagement, benefits mapping, risk assessment, as well as the actual plan (schedule) itself. Large engineering and technical projects require a proper plan to achieve the goals of the project. Proper project scheduling allows the team leader and team members to understand the true time commitment a project requires.

The course is intended to prepare professionals with an understanding of what needs to be considered while planning a project and the various phases of the project development life cycle. Adjustments to the project plan, as the project progresses, are also considered so that a plan can be modified to reflect the actual state of a project. The participants are expected to develop a good understanding of the project management methodology and be more familiar with project management tools.

Pre-requisite:

1. ELP 1.1 : Developing Leadership Capability
2. ELP 1.2 : Communication Skill for Leaders

Course Outline:

1. Project Planning as a component of Project Management
1.1. The relationship of Project Planning to Project Management
1.2. The use of Project Planning in making Project Management decisions

2. Project scheduling and planning
2.1. Understanding project scheduling and planning.

2.2. Difference between technical/engineering projects and other kinds of projects.
2.3. Understanding of Agile project methodologies within engineering/technical projects.
2.4. Demonstrate an ability to apply the right size project management system to the project.
2.5. Creating a project schedule sensitive to the inherent characteristics of an engineering/technical project.

3. Business Analysis in engineering/technical Projects
3.1. What is business analysis?
3.2. Understanding the use of Business Analysis in engineering/technical projects.
3.3. How Business Analysis in engineering/technical projects differ from non-technical projects.

4. Project Selection and Planning
4.1. Project selection approaches
4.2. Decision methodologies (decision trees, analytical hierarchy process)
4.3. Project evaluation techniques
4.4. Estimation (costs, schedule and requirements)
4.5. Project financing

5. Project Planning and Estimating
5.1. Work breakdown structure
5.2. Scheduling techniques (precedence diagrams, PERT/CPM, Gantt and milestone charts)
5.3. Understanding the differences between Critical Path and Critical Chain methodologies.
5.4. Budgeting techniques (S-curve, earned value)
5.5. Resource allocation techniques (resource loading and levelling)

Laboratory session: 15 hours of interactive session

Textbook: Lecture notes and selected papers

Reference books**:**

1. *Guide to Project Management: Getting it right and achieving lasting benefit,* by Paul Roberts, Publisher Wiley; 2 edition (February 4, 2013)
2. *Project Estimating and Cost Management*, by Parviz F. Rad, Publisher Management Concepts, 2002.
3. *A Guide to the Project Management Body of Knowledge: PMBOK(R) Guide 5th Edition*, by Project Management Institute, Publisher Project Management Institute; 5 edition (January 1, 2013).
4. *'Project Management: A Systems Approach to Planning, Scheduling and Controlling* by Harold R. Kerzner, Publisher: Wiley; 11 edition (February 18, 2013)
5. *Cost Management of Capital Projects,*, by Kurt Heinze*, Publisher:* CRC Press; 1 edition (August 28, 1996).

Journals and Magazines:

1. Project Management Journal
2. International Journal of Project Management
3. The ICEC Cost Management Journal
4. http://www.projecttimes.com/

Grading system:

1. Mid-semester exam (25%)
2. Final exam (25%),
3. Assignments/projects (30%).
4. Laboratory Sessions (20%).

Instructors:

Expected outcomes: Students, at the completion of this course, are expected to be:

1. Develop an understanding on how to acquire, manage and develop resources for a project.
2. Capable of planning and scheduling projects using a variety of techniques, such as Agile, critical chain, and other appropriate methodologies.
3. Capable of applying a variety of planning and scheduling techniques in practice through the use of case studies and applied project assignments.
4. Capable of applying effective tools and techniques that can allow project managers to translate specifications to realistic project plans that lead to resource-loaded schedule and baseline budget. These tools and techniques can be used to minimize bottlenecks and downtime, identify and plan for resource needs, develop contingencies, and manage risk and scope creep.
5. Able to create a work breakdown structure.
6. Develop a realistic cost estimate & schedule for project completion which is based on the WBS with due consideration of the impact of procurement, negotiation, and general cost containment.
7. Capable of the project scheduling to explore cost estimation methods, break-even analysis, earned value management, and to develop confidence levels.
8. Demonstrate ability aggregate the estimated costs & durations to establish a cost & schedule performance baseline with consideration given to the effects of funding limits & hard time constraints
9. Capable of managing the project budget and revise cost estimates.
10. Using the project planning team as part of the project management process.
11. Assessing the current state of a project, adjusting the project plan to reflect the current state, and adjust the plan, resources and finances to ensure that a project's schedule satisfies client and legal requirements.
12. Briefing (communicating to) clients and colleagues on project progress: current status, updated project planning; updated management decisions regarding client/colleague input or decisions.