



Advanced Project Management I

An Online Continuing Education Course for Engineers

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Dominic Perrotta, P.E.

Introduction

This course in project management is intended to improve the prospects for existing project managers and would-be project managers to manage a successful project. The simple definition of “successful” has rarely been defined in specific terms of a given project, but a general definition usually encompasses “being on time and being under budget”. Nevertheless, while this definition may be too narrow to satisfy many PM’s and executives, the project is not “successful” unless you combine these two finite factors with a more than satisfactory end result.

The course is divided into two separate parts, each of which is intended to improve the capabilities of a Project Manager or a potential Project Manager. The first part describes the steps necessary to become a top quality PM. This part focuses on the background and education necessary to be considered for a project management role. Once an individual has been considered for this very important position, a PM should take advantage of training and experience opportunities that become available and must maintain a conscientious effort toward self-improvement. Other items in this first part concentrate on developing characteristics of leadership as well as motivational skills that will improve the PM’s efforts to ensure that your project team will work closely with you so that the project’s goals will be met.

The second part of this course deals with the actual fundamentals of managing a project so that a Project Manager and every team member are performing at an optimum level. This section of the course covers the multiple functions of the project, including the activities necessary to assure that engineering, equipment and construction meet the quality objectives of the project. In this portion of the course are many techniques which describe how to obtain optimum scope and design parameters as well as maintaining schedule and cost controls. Numerous examples are given of solutions to problems that are encountered as the project unfolds. The PM is made aware of the subtleties that are available to resolve seemingly difficult issues.

Advanced Project Management Techniques

A. Qualifications for a Project Manager

1. Background/Education
2. Experience/Training
3. Leadership Qualities
 - a. Direct Company representative
 - b. Indirect representative
4. Motivational skills
 - a. Maintain Unity
 - b. Maintain Integrity
 - c. Strive for Excellence

B. Direct Project Responsibilities and Functions

1. Scope of Work
 - a. Understanding Client Requirements and Goals
 - b. Assignments and Communications
 - c. Communicating with Executive Management
 - d. Preparing Executive Summaries
2. Developing a Budget
3. Scheduling – Understanding Time vs. Costs
4. Engineering and Design
5. Procurement
6. Construction
7. Cost Control and Cost Correction
8. Startup
9. Closing – Achieving Success and Avoiding Failure

A. Qualifications for a Project Manager

1. Background/Education

Having a college degree is certainly beneficial, but by no means mandatory, to your success as a Project Manager. Depending on the type of project in which you become involved and the overall responsibility that you are given, a specific college degree may or may not be a requirement. Not having a degree in this era, however, may hinder your prospects for future advancement, whether the degree is in engineering, engineering technology, science, or even a non-science degree such as business. This is particularly true if you are considering the role of project manager as a stepping stone within your company or primarily as a potential highlight on your resume.

If you had attended an engineering school, for instance, you may have been led to believe that there are four major engineering curriculums: Civil, Chemical, Mechanical, and Electrical. Possibly you have come to the conclusion that a Project Manager must have one of those major educational backgrounds in order to be considered for a project management position and to function successfully. As you gain in wisdom and maturity and your experience broadens, you may come to realize that there are many subordinate academic studies within the primary areas of study: Piping has become a very specialized and distinctive academic entity. Included in this very important area of formal study are pneumatics (compressed air, instrument air, etc.), hydraulics (lubricants and synthetic fluids, pumps, cylinders, drives and the like), and many variations of these two categories. Civil engineering can run the whole gamut from ground water intervention to architectural support for 100-story office buildings.

Petroleum engineering and chemical engineering are cousins. Chemical engineering and chemical engineering technology have now been sub-divided into numerous categories, many of which now fit into such social engineering parameters as petrochemicals, pharmaceuticals, and even cosmetics. Consider an electrical engineering graduate; electrical engineering can be sub-divided into several categories, including power generation, visible and solid-state motor controls, telecommunications, and electronics where transistors control everything from televisions and satellites to automobiles and airplanes. Items that are “state-of-the-art” one year are practically obsolete one year later. Today’s technology lists hand-helds of every variety, automobiles that potentially drive themselves, and a treasure-trove of automatic devices that weren’t even on the radar thirty years ago. If you are under thirty years of age, you are probably not aware of such names and terminology, for instance, as PC Junior, Commodore, and keypunch operators.

In addition to a background in engineering or computers or some other technical field, many PM’s today acknowledge that a background in business and/or finance is equally as important as engineering and technology in becoming a valuable project management tool. Whether or not

you have a degree in industrial management or business administration, your value to the project will become abundantly clear as you process the many cost factors involved throughout the project. Your ability to weigh the costs and expenses versus the timelines and calendar challenges of the project is a significant aspect of nearly all projects throughout their duration. While you may have to rely on so-called financial experts to provide you with many of the necessary details, this financial understanding will give you the wherewithal to make decisions in a timely manner. In addition, financial knowledge will also give you an edge in negotiations with team members, suppliers, contractors and many others who may be involved in the project.

2. Experience/Training

In my case, for example, I was transferred from the steelmaking plant where I had begun my career into the large corporate engineering group, and was placed in the Project Management section. Looking around that first morning at the others in that section, I was struck by their ages and seeming experience. Of the fifty or so men – no females among them – spread out over parts of two floors, less than a handful were under the age of fifty-five. Most had been at least division managers – I had been an Area Manager – and several had even been Plant Managers. I learned over the next few months that, not only had they been inexperienced when they had been transferred into this division as Project Managers, but also most of them were lacking in the fundamental skills and techniques of Project Management.

However, on the first day of my new career as a PM, at about 10:00 a.m., I was assigned to two projects that management believed would fit my background and qualifications. One was at a company plant in Salt Lake City, Utah, and the other was at a plant in Houston, Texas. Management suggested that I prepare to meet the project team in Salt Lake City on Tuesday morning, and that they would like me to meet with the project team in Houston on Thursday. I immediately learned three valuable lessons that all PM's should prove to find beneficial:

- a. Always have a suitcase ready.
- b. Have the ability to make your own travel accommodations, even if you have your own administrative assistant or the company has a travel department.
- c. Get a passport and always keep it in your possession. Even travel to Canada usually requires a passport.

My company gave me the opportunity in the second month at my new position to attend a two-week project management training program at a nearby university. The diversity of the people attending this program as well as the many types of company, institutional and organization projects that they were representing was a true revelation. There were men and women representing many different industries and organizations. Furthermore, some valuable project management concepts were presented and developed, and every attendee was asked to participate in the program discussions. While there didn't seem to be a major effort to explain

