# BUS 464
# Senior Project Class
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***California Polytechnic State University***
***San Luis Obispo***
***Orfalea College of Business***

**Instructor:** Dr. Alison Mackey
**Office:** Bus 03-414
**Office Hours:** Wednesday, 10:00 am – 11:00 am
Friday 9:00 am – 10:00 am
and by appointment
**Office Phone:** (805) 756-1232
**Email:** professormackey@gmail.com

## Purpose of a Senior Project

What you get out of the senior project experience has a lot to do with your attitude and the energy you put into it. The purpose of the senior project is to provide students with an opportunity to learn new concepts, software, etc., independently, integrate this new knowledge with existing knowledge gained through formal coursework, and apply this knowledge to a problem or opportunity for a "client". The senior project provides an opportunity for students to learn to work independently, become resourceful, and manage a project from inception to completion.

## Deliverable of a Senior Project

Senior projects vary immensely in scope and application. However, each project should culminate in a "product" including documentation. For example, a Management student may develop a Business Plan for a targeted business. This would involve engaging in research to understand the industry, the competitors, the climate, etc., and developing an actual Business Plan including financial information that is submitted as the "product" for evaluation. An Information Systems student may develop a prototype information system after going through the steps of the system development life cycle. The "product" would be the prototype system along with its accompanying documentation. A Finance student may take the real estate exam and perform a real estate market analysis focusing on a particular area of interest within the real estate domain. The "product" would be a report based on the real estate market analysis with a copy of the accompanying exam completion certificate.

All documentation should include a "reflections" section on what you learned from the senior project experience.

## General Guidelines for the Senior Project

**Approximate time investment:** 120 - 160 hours of work per individual

**Team composition:** Either individual or team of students, depending on the scope of the project

**Time frame for completion:** 1 or 2 quarters (generally it takes 2 quarters to complete a good project unless you are highly motivated and are taking relatively few classes during the quarter in which you are working on the senior project)

**Success of senior project:** The senior project experience is generally most successful if you choose to work on something you have genuine interest in learning and doing. Therefore students are encouraged to find their own projects but may work on a project suggested by a faculty advisor.

## Initial Process

1. Students (or teams of students) should meet with me to discuss options for the senior project or to present ideas;

2. Students (or teams of students) should submit a one-page project proposal that outlines the following:
- The goal and objectives of the project
- The client (if there is one)
- A description of the project
- The expected benefits to the student as well as the client
- The target deliverable
- The target completion date;

3. Students should submit a Gantt Chart that specifies the activities that will be completed, the sequencing of activities, and a time estimate of each activity;

4. Periodically students may meet to discuss progress – appointments can be arranged during weekly office hours or by appointment;

5. Upon completion students (or teams of students) will submit the final deliverable for a grade.

# Project Management Tutorial

**Purpose:** To provide the basic skills and knowledge needed to effectively manage an individual or group project.

**Importance:** Project scheduling and understanding/handling risk is crucial to success in all disciplines.

**Goals:** After this activity, you will be able to:

- Break a complex project into manageable sub-projects
- Assign responsibility/ownership of project components
- Set reasonable milestones for the completion of major tasks
- Perform a risk analysis and integrate mitigation into your planning
- Develop and complete a project plan

**SECTION 1: INTRODUCTION TO PROJECT MANAGEMENT**

Project management is the art of matching a project's goals, tasks, and resources to accomplish a goal as needed. We say "as needed" because one has limited time, money, and resources (human and machinery) with which to accomplish a goal. One can think of a project as a process. Figure 1 shows this process as a simplified block diagram.

**Figure 1: Simple Project Management System**

The process involves inputs and outputs. Successful projects "do the right things, with the right tools and the right people, and in the right way".

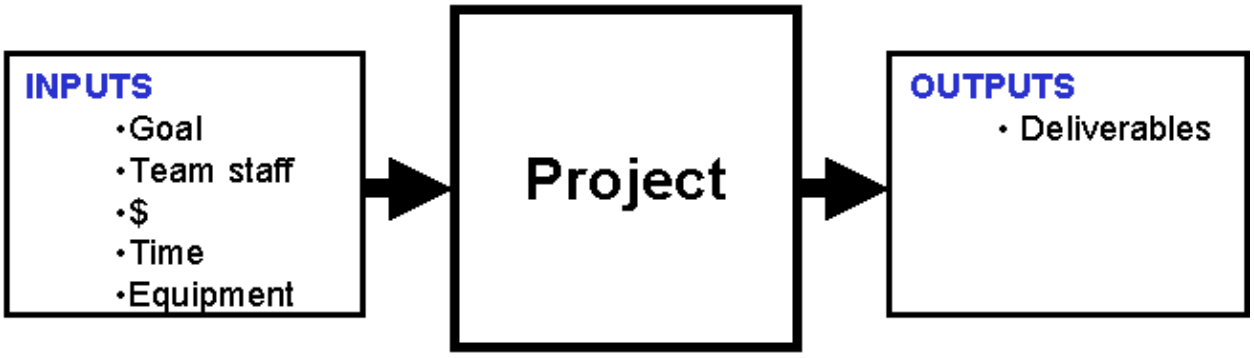


**Figure 1: Simple Project Management System**

## SECTION 2: STAGES OF A PROJECT AND HOW TO COMPLETE THEM

### Stage 1: Defining the goals of the project:

Garbage in equals garbage out. If you do not start a project with the correct goal(s), it is not likely you will accomplish the goal(s). This must be a team activity to ensure that everyone is given the opportunity to contribute and "buy-in" to what is going to happen. At the end of this stage, every team member should have an understanding of what must be accomplished.

This part of the project should end with a document that lists the goals with a short statement providing some detail. The statement should include a definition of success. This is a statement that provides a description of the vital few requirements that define the goal as accomplished. “Vital few” implies the minimum required to do a good job. Defining success is necessary to make sure there is no ambiguity as to whether the goal has been accomplished or not. It also prevents teams from performing unnecessary iteration and improvement on a goal, which has been sufficiently accomplished. The project goals should be accompanied by a set of project objectives. The objectives are aspects of the project that are measurable. For example, if my goal for the new year is to become “physically fit”, my measureable objectives might be (1) go to the gym a minimum of 3 times per week, (2) cut down on sugar and fatty foods, and (3) go to bed by 10:30 every night during the week.

### Stage 2: Define project tasks/activities:

Each goal or sub-set of goals should be matched to the tasks required to accomplish them. This is best done by listing the goals on the left side of a sheet of paper, then writing the tasks to their right. The group should agree that the specify task will accomplish the goals as per required in the definitions for success the team laid out in the previous stage. Simple tasks may be integrated to define an “activity”.

### Stage 3: Determine and verify resource requirements:

Resources are those things that are needed to accomplish the project goals. Resources may include, but are not limited to:

- People
- Time
- Money
- Space
- Computers
- Software
- Others.....

The most important component of determining resource requirements is to be realistic. One of the most common mistakes project managers make is to underestimate the number and type of resources required. This leads to projects that run over budget and fall behind schedule. DO NOT attempt to do any of the following:

- Squeeze a project into a shorter time frame to please your boss
- Cut corners to minimize resource requirements
- Plan on a best-case basis, i.e. "If everything goes correctly, we will finish on time."

Determine what you need to get the job done correctly, on time, and on budget. It is not a bad idea to build in a safety margin here. This is often referred to as "padding". For instance, one might multiply the estimated time to complete an activity/project by say 20% to allow for additional time to deal with unexpected occurrences. The amount of padding usually depends on the certainty one has as to how effectively the resources can be used. One should keep padding to a minimum.

Once the requirements have been set, it is important to verify that the team will have access to them. If not, then it is not likely the project will be accomplished as required. In some instances it may be necessary to acquire resources as the project progresses. This is risky business and should be avoided if possible. Speaking of risk...

**Stage 4: Identify risks and develop mitigation (backup) plans:**

Projects always involve a finite amount of uncertainty (risk) that may lead to problems and surprises during the project. Dealing with surprises requires more time, energy, and money than originally planned. Risk management can help reduce the likelihood and effects of risks. Risk management is important as it helps the team accomplish the project with as little trouble as possible.

As a professional, you will be required to help get the job done. Excuses (whether real or imaginary) generally don't buy any sympathy. For instance, in the event of a surprise problem, which causes project delays, it is all too easy to deflect responsibility with victim phrases such as, "I did my part, but the other guy did not." or "We had an unexpected problem which caused us to fall behind." Managers, professors, CEOs typically do not look favorably on people who invoke victim phrases. As a result, people who fall back on these types of phrases, even if they are true, typically do not go far in this world. You must learn how to deal with surprises and adversity, not be pushed around by them.

By becoming a member of a team, each member dedicates himself/herself to the success of the TEAM. If you are waiting on a team member to accomplish a task and he/she is behind, it is your responsibility to help your colleague in any way you can. If you cannot help them, you must make sure they get the help to accomplish their task. The victim phrase does not absolve you of any responsibility; rather it makes you look as if you are not a team player.

Risk management can be a complex process, for our purposes, we will use a simple management exercise for dealing with the risk. Identify and list the practical risks for your tasks in a column to the right of the tasks. For each risk, develop a back-up plan that when implemented will keep you on schedule. You may want to pay special attention to risks that are so great that they could "kill" the whole project. A member of the group should be responsible for monitoring this risk throughout the project.

**Stage 5: Develop a schedule**

A Gantt chart is a schedule that plots the tasks, people responsible for these tasks, and a timeline. Gantt charts are useful as they allow the team to look at the architecture (structure) of the project and easily identify responsibilities. The Gantt chart can serve as a document that people use in their planning as a visualization tool to see how tasks depend on each other. The basic format of a Gantt chart consists of a listing of tasks on the left hand side, followed by the start date, number of days to complete, and a finish date. Each task should be assigned one or more owners. To the right of the text listing is a graphical representation of the task duration in the context of the project time line. A sample Gantt chart is shown in Figure 2.

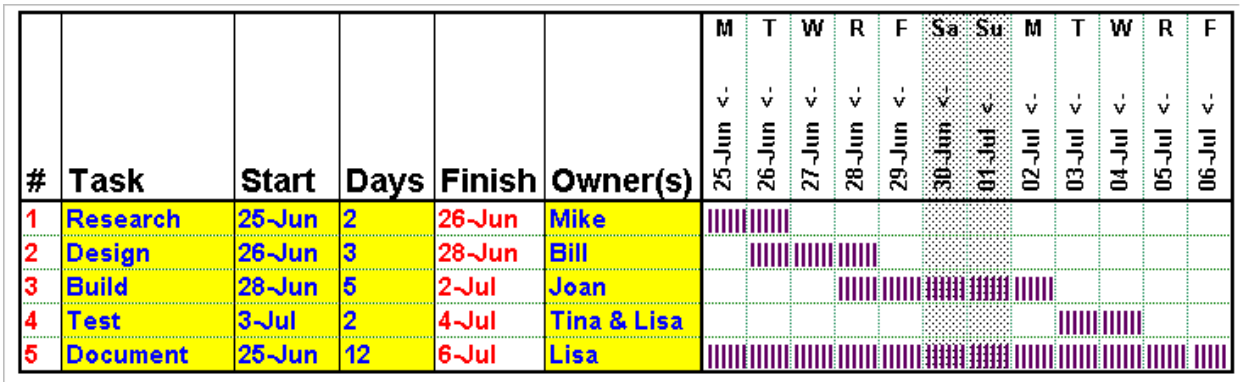


**Figure 2: Sample Gantt Chart**

After the chart is made, look for conflicts of resources. For instance, make sure that team members are not assigned too many tasks during a given time period. For instance, in the schedule above, Lisa appears to be busier than her teammates on July 02nd and 03rd. Also make sure that different tasks that require the same machines or rooms are not scheduled for use at the same time. Make the changes and obtain agreement from the group that this is the schedule that is to be followed. It might be wise to review the risks during this time and adjust parts of the schedule if it would help.

**Stage 6: Execute the schedule**

Just do it! All team members should know what they have to do and should have the right resources to get the job done. They should know what the risks are and have back up plans in case of trouble. During this stage, the project manager is responsible for coordinating, though group members should communicate among themselves as required. If a group member feels he is going to go over time/budget, it is his/her responsibility to bring it up to the group as soon as possible. This way, resources can temporarily be shifted to help keep the team member on schedule.

Each group member should document his/her activities. This is important as human memory is shaky at best and it is likely that all team members will be required to recall details of their activities. There is nothing more frustrating to a manager than to hear an employee say, "I can't remember what I did." If one can't remember, how can the team trust that what they did was correct? Documentation is the responsibility of the team members and will often be a saving grace for them.

It is likely that surprises and conflicts may occur during the course of the project. It is important to remember that it is the team's responsibility to make the project happen. If there are problems, the team should help figure them out. If there are conflicts, the team should act together to resolve them. This can be facilitated by regular meetings (daily, weekly, monthly, whatever is practical) of the team. At the meetings the team should review the schedule and the status (complete or not complete) of the project goals. Once the goals are accomplished, the project is complete.

**Stage 7: Finish the project and assess performance**

After the goals have been achieved, it is good practice to evaluate the performance of the project team. In the last group meeting the team should discuss ways in which the experience could have been improved. This is where a good deal of learning and experience is gained. It will help prevent similar problems in future projects.

## SECTION 3: PROJECT MANAGEMENT IN OUR ACTIVITIES.

Project management is in large part about being responsible. Today's high school and college programs rarely force young people to exert their discipline. Most people say it is impossible for young adults to manage themselves. I do not agree. Consider World War II. People between the ages of 17 and 22 formed the bulk of the force that fought in the war. They were responsible for flying fighter planes, bombers, driving tanks, and steering ships. These are huge responsibilities. If they can do this so can you.

You will be responsible for developing, implementing, and executing your own project schedule. There will be no "mercy" for falling behind, except in the most extreme of circumstances. Basically, it is your turn to step up to the plate and get the job done.

## SECTION 4: ACTIVITY - START YOUR PROJECT

This is an incredibly open ended task. You are now charged with developing your project plan. Follow the steps above and proceed as best you can.