

**EMGT 545/645  
Project Management**

**Time and Place:** Reference ETM Web Site  
<http://www.pdx.edu/engineering-technology-management/course-listing>

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**Teaching Assistant:** To be announced in class

**Textbook:**

- Meredith, Jack R., Samuel J. Mantel, and Jr. Scott M Shafer; *Project Management: A Managerial Approach*, John Wiley & Sons, Inc., 9th Edition, 2012 (MM)

**Supplementary book:**

- Cleland, David I. and Dunder F. Kocaoglu; *Engineering Management*, McGraw-Hill, 1981 (CK)  
(will be available to students in electronic format in D2L)

**Objective of the Course:** The objective of this course is to teach you management techniques and concepts for medium to large-sized projects. Projects are increasing in use to accomplish limited duration deliverables/tasks in the engineering and technology environment. Projects are used to develop a product, service or accomplish a result to improve a process. The course provides an in-depth understanding how people and organizational resources are managed and controlled using a set of tools and techniques. Project management is a field in itself and includes aspects of accounting, behavior, quantitative methods, and strategy. The project manager is vital to a successful project.

**Pedagogy:** The concepts of project management are taught using a combination of classroom lecture, text readings, homework questions, case studies. Furthermore, the course has a strong emphasis on team work. A significant amount of interaction is expected during lectures, discussions and in the development of “project proposal” (described below) as a team project. This allows the students to implement the concepts; thereby, giving students confidence in using the concepts taught in the course. Students may use Microsoft Project (MSP) software for your Project Proposal, but MSP is not required for the proposal. The cases and directed readings illustrate and extend the concepts for this course. If you are having trouble understanding the concepts, e-mail me, *but not within 24 hours of class*. I’ll be happy to respond, but please know I am not always immediately available because I am also a consultant and maybe traveling.

**NOTE:** The course does not teach MSP. There are many books available to help you learn, such as *MSP for Dummies*, etc.

### **General Policies:**

- *Recording:* I do allow audio-taping, but not visual recording of my classes.
- *Reaching me:* please use my PSU e-mail account and CC the TA and include 545/645 in subject line. Please allow a 2 day turn around to your email. Note: If you email the day of the class, do not expect a reply.
- *Attendance:* If you have registered for this course, I expect you to attend all the classes. If you miss a class, it is your responsibility to get the material we covered from a classmate.
- *Absences:* As an adult, I expect you will miss a class only when absolutely necessary (e.g., illness or traveling work assignment). However, I expect homework to be submitted by email. There is no makeup work.
- *Class discussion:* I expect everybody to participate and that you will respect others (see Computer/Smart Phones).
- *Coursework:* Late work is not accepted, and all graded work elements are required to pass the course.
- *Class materials:* Bring the text and all other materials to class on the days there are assignments on them, as well as any materials we were not able to cover in preceding classes.
- *Computers/Smart Phones:* If your computer is open, I will expect that you are using the computer for class purposes. If I see you surfing the internet or texting, I will stop teaching and ask you to close your computer for the remainder of the class. I also expect your phone to be on vibrate or off. If you have to take a call, then please remove yourself from the classroom to answer it. During breaks, you may use your technology devices as you wish.

### **Grading**

The elements of your final grade based on individual and team contributions, which are weighted. Use any source of information that is appropriate in analyzing your individual homework assignments or group projects. Such sources may include books, journal articles, conference presentations, Internet, interviews, questionnaires, etc. Make sure to acknowledge all of your information sources properly using the guidelines given in the document titled “Academic Honesty Policies and Procedures”, which can be found at the following:

([http://www.pdx.edu/sites/www.pdx.edu.education/files/gse\\_handbook\\_student\\_integrity.pdf](http://www.pdx.edu/sites/www.pdx.edu.education/files/gse_handbook_student_integrity.pdf))

***PSU takes plagiarism very seriously. If you are found plagiarizing, you will receive a zero on the assignment. In addition, you may receive an "F" for the course and/or be expelled from the university.***

**Individual Contribution (50%):** Credit is given based on each individual's understanding of the concepts taught in the course and their overall contribution to the class discussion. There are two elements that contribute to the individual's grade.

1. **Class Contribution (10%):** Each individual is responsible for reading the chapter material and answering the case study (CS), directed reading questions or problems assigned for the week. You may work with someone else; however, your answers should be completely your own. For the same reason, do not violate the honor code by giving your answers to anyone else or answering their questions for them. Class contribution is based on attendance and individual contributions the following:
  - Providing thoughtful insight, questions and awareness pertaining to the course text and selected readings.
  - Does the comment contribute to class process and participant understanding of the concept under discussion?
  - Making observations that integrate concepts and discussions.
  - Does the comment enlighten the instructor and/or class members?
  - Does the comment provide a new angle on the instructor's presentation of a concept that makes grasping the point easier?
  - Does an example provide a good demonstration of a concept and thus assist others to comprehend how things work?
  - Citing relevant personal examples.
  - Asking key questions not only of the Professor but also your colleagues that lead to learning discussions.
  - Asking short and concise questions that may provide concepts, issues, or practices from your experience, even if it challenges or disagrees with the course material and perspectives.
2. **Homework (40%):** Each assignment is based on individual understanding of the course material
  - By reading and answering the directed reading/case study questions/problems, which is turned in to the Professor each week.
  - The student is expected to provide an insightful analysis of the project management principle/topics being taught when answering the questions. In other words, just answering the questions is worthy of a "C". I want you to go beyond the answer and justify your answer with research from the text book or other references.

**Team Contributions (50%):** Credit is given based on each team's overall contribution to the class. Project management is all about leadership and functioning as a cohesive unit toward a common goal. Grading is based on three factors: evaluation 1) Presentation of the proposal, 2) Ability to answer questions and 3) the proposal itself. These factors will be evaluated by other students, peer evaluation by team members, and the Professor's evaluation

3. **Project Charter and Plan (50%):** A preliminary project proposal is due week two. It will consist of a one page document outlining the title of your project, project objective(s), and brief description of the business need or opportunity, such as market, profit, customer request, regulations, environmental and social considerations. The completed project proposal will be due the last class of the course and you should be prepared to formally present your project proposal and results in about 20 minutes with another 20 minutes for questions. The presentation will be evaluated by students and the Professor using the scoring procedure outline described latter. Teams are expected work together to foster other's ideas and cross-check all work, charts, writing, and tables. Warning, do not abuse the team process by dividing the work and each doing your work independently. This approach defeats the purpose of a cross-functional team and will put your project at risk because the appendices will most likely contradict each other thus, your grade will suffer.

You should select a *hypothetical* project that is loosely based on a real-world situation that you think “needs” a project at an organization that you have recently experienced, such as where you work, play, worship, volunteer, etc. A *hypothetical* project allows all team members to contribute without having to be dependent on one member’s knowledge of the project details. The project needs to be *rich enough* to apply all the project management concepts covered throughout this course, which are typical of real-world projects, but still be *small enough* to be planned for this short class! A rich project produces deliverable(s) that are tangible and verifiable, and provides value to the organization. Poor projects would be *designing a plan* where the project manager (usually, you) has *total control* over all elements and resources of the project. Examples include building a fence, taking a trip, having a wedding or party. The project should include a multi-disciplinary team with various roles and responsibilities. There should be about three to five deliverable with about 30-40 separate, but interdependent tasks to complete the project deliverables. The project should have no more than 3-4 milestones/stage gates. Scope must be clearly defined, a budget that supports labor and non-labor resources, and time requirements for each tasks that take into dependencies. In addition, the project proposal includes a risk analysis, the method(s) for monitoring project progress, method(s) for exercising control over the project if it is not meeting project constraints (i.e., scope, budget, and schedule) and a clear audit and termination plan.

The Project Proposal is the Project Charter (see pp. 209-210). It is supplemented weekly with appendices as the course proceeds. As noted earlier, you may find MSP useful in creating some of the exhibits for your proposal, but MSP is not required or even necessary. You may submit your appendices to me at each assignment for non-graded feedback the next week. The final project assignment will be pulling together all the tables and figures from the appendices, and integrate their content into main body of the project proposal. The final proposal must be professional written as if you were submitting to executive management – no bullet-points or outline format. The body of the report should run about 2000 words (3000 max) and must use every one of the Appendices (A-O— see description below) that you will be including in the back of the report. If you have landscape exhibits, always turn it to *read from* the right edge, not the spine where the binder-clip and top of the exhibit are. **I have posted some examples of past projects in D2; however, the appendices has changed over time and may not be exactly the same as the current set of appendices.**

#### **Guidelines:**

- The project does not have to reflect reality, be creative. The project is intentionally hypothetical so the team can go back and change the nature, schedule, due date, budget, performance expectations, etc. as needed to utilize the tools you will be learning. Do not skip or trivialize a tool or technique because you do not think your project needs it. When you make a RACI chart, put actual names of people (possibly fictitious) into the chart, not “Manager of XYZ.” If you are planning on outsourcing a task to another organization, specify the name of the company. However, do not plan on outsourcing very often because will defeat the need for monitoring and control of activities. If you do plan outsource, you will need to manage the risks associated with outsource.
- Do not spend too much effort describing the reality of someone other team member’s effort or problem. This needs to be a team project where each member contributes.
- If your project conceptually involves more than 40 activities, aggregate tasks to get the number down to 30+. More activities require more graphs, space, computation, drawing, etc. for no useful learning in the project. However, the project must have at least 30 activities that are interdependent on one another and can be executed sequentially as well as concurrently.
- For the material on Earned Value in Chapter 10, you will need to track the progress of the project activities. The can accomplished by using the 50-50 rule. That is giving “credit” for everyone of the 30+ activities 50% of its planned value when the project begins and 50%

when the task is completed. When task has been outsourced to another organization, the external organization represents an investment of resources to conduct and credit is given based on contractual terms. It is important to differentiate the different methods of investing and how it is calculated (e.g., internal hourly pay rate that includes a burden rate).

- In the real world, projects conduct activities in parallel, even if they are dependent on each other. Therefore, be careful that your project isn't a purely sequential with every task simply waiting for the preceding task to be done.
- Maintain continuity between the WBS and task in the schedule. For example, if "procuring equipment" is task #17 in the proposal's Work Breakdown Structure, do not call it "purchase tools," or #22 in the schedule.
- The final schedule needs to show all of the 30-40 tasks, as well as all the milestones or phase/stage gates, not at the subproject or summary level.
- Do not try to assume some level of actual progress has been made and that you are charting the project's progress when monitoring and controlling the execution of the project activities. Instead, create an earned value chart with the "planned value" and develop control charts with the mean, and upper and lower control limits drawn on them.
- You will need to show the "organizational arrangement" of the project relative to the parent organization (if there is one) and describe whether it is a functional, matrix, weak, projectized, composite, or whatever project and who it reports to and why. If there is no parent organization, then just present the organization chart for your project.
- Your final submission will include the Project Proposal write-up (include page numbers on the text pages) for the project as well as the 15 multiple weekly detailed tools and techniques appendices. The project proposal must include a termination description and short checklist to finish the project.
- A hardcopy and softcopy of the project proposal is required. In addition, if you used MSP or other software tools in creation of the appendices, please provide a copy of the files in the Zip File that will be uploaded to the project directory using DropBox (or some other vehicle).

## Appendices

- A. A figure of the positioning of your project relative to the rest of the organization (see Fig. 5.2—5.5), if there is one, and state the project's type (e.g., functional, matrix, projectized) relative to the organization.
- B. Stakeholder analysis and personnel requirements. List communication and engagement activities to stakeholders and list and special training for team members. Include these activities in the WBS and project schedule.
- C. A hierarchical 3-tier deliverables based Work Breakdown Structure (WBS) see (slides 6-16 & shown in class). Top level is the project, second level are the deliverables, and the third level are the tasks for the deliverable. Each deliverable must have more than 2 tasks, but no more than 15 tasks. If you find that you have more tasks, break the deliverable into two deliverables or aggregate tasks into to another deliverable. The WBS should not have more than 40 tasks, but at least 30 tasks.
- D. The Responsible Accountable Consult and Inform (RACI) Matrix (see Fig. 6.7)
- E. Detail risk assessment that includes a risk impact statement, risk response strategy, risk costs for actions taken to mitigate or transfer risk, and risk reserve for contingency of risks accepted. Include EMV decision trees with probabilities of the risk occurring.
- F. A table of all the 30+ detailed tasks (subdivided by summary/aggregate activities) along with their estimated PERT effort (see Tables 8.1 and 8.2). Include variances (use 2 significant digits), predecessors, and any material costs. Include a burden rate of labor. Also, do not forget planned risk transfer/mitigation activities.

- G. A solved Activity on Node (AON) network diagram including the critical path (see Fig. 8-16) and slack times (see Table 8.3).
- H. The probability diagram (see Fig. 8.25) of completing the critical path in App. I (including the probability of meeting a special date if there is one).
- I. A baseline schedule for the deliverables, including milestones/phase gates (see Fig 6.6 and Fig 8-24). Tasks greater than 3 weeks need to be broken down in sub-tasks. Include risk activities identified in Appendix G. Include a schedule reserve based on the Appendix G.
- J. The summary level Gantt chart (see Fig. 8-21) based on the expected task times from Appendix H. This should be at the level 2 of WBS (i.e., Deliverables).
- K. A resource (including personnel) load table (see Fig. 9.3). If there is resource utilization issue, (i.e., a resource is assigned to more than they are capable of performing), be sure to discuss in your final proposal how you will address this.
- L. A time phased budget using the planned-value for all activities assuming the 50-50 rule (see Fig. 10-8), with Total values in rows (i.e. activity) and at the bottom (i.e., time period).
- M. Be sure to address control system, and measures for monitoring and controlling the project (see Table 13.1 and pages 525 and 557-8 for additional suggestions - always want to monitor the quantitative variances, performance indexes, and/or critical ratios). Describe in your report the specific items or measures you will be monitoring for control purposes and the frequency for collecting the data. Furthermore, provide the justification for using these measures.
- N. You will want to use control charts as quantitative measures of project progress for schedule, and cost (see Fig 11.7 and Fig 11.8; note that 11.8 is a chart of the cost variance,  $CV=EV-AC$  and will be used over the entire project, not just for particular tasks) but without any data already plotted on them. Discuss what the charts are indicting and justify your control limits—why these values? Are the same limits over the project life cycle reasonable or should they change over time as the project progresses?
- O. The type of termination you expect for your project and a list of the tasks required to terminate the project (see pages 552-5 and Fig. 13.3b).

### **Team Project Proposal Presentation**

Visualize you have been requested by senior management to prepare a presentation depicting the business case and proposed implementation of your recommended project. Keep in mind this is a project management course and your proposal needs to be aligned strategically to the organization and that money still does not grow on trees. In other words, how does the project meet the stated objectives, what resources are required and how will the project manage these and utilize these resources to maximize return on investment.

Each team will be responsible for delivering its team project presentation in the classroom as if it were the organization you have described in the report. The performance is limited to up to 40 minutes including a 20 minute (maximum) question and answer period. The point is we want you to tap your potential and present something valuable to this class. You are to choose the format of the presentation. Innovative and creative presentation formats are encouraged. Keep in mind that you are presenting to senior executives that you work for and you may not want to jeopardize your career potential with that corporation. Every team member shall take part in the presentation.

### **Professor's Evaluation**

The professor will evaluate the project proposal based on the merits of the proposal. Meaning, would the executive sponsor(s) in the organization invest the time, resources, and money into your team's proposal. Factors for evaluation include strategic fit, financial benefits, thoroughness

and accuracy in the team's research and analysis. 30% is attributed to content of the Charter Section using the data from your Appendices and 70% of your grade is attributed to the details in your Appendices.

**Schedule:**

WK	Date	Topic	Readings	Individual Homework	Team Work Due/Guidelines After Class
1		Projects in Contemporary Organization and The Project Manager	MM 1, 3 CK 3	DR - El-Sabaa, S. (2001). The skills and career path of an effective project manager. <i>International Journal of Project Management</i> , 19(1), 1-7 and Posner - What is take to be a good project manager. (10%) see D2L for Article and questions	Pick Teams and prepare your project proposal
2		Conflict Management and the Art of Negotiation, and the Project in the Organizational Structure	MM 4,5 CK: 2,4,	CS - Oilwell Cable Co, Inc. (10%) see D2L for Case Study and questions	Project Proposal due for review and approval. Prepare for your project: Modified Project Charter and Appendix A and B
3		Project Activity and Risk Planning	MM 6	CS- Heubelein: Planning a Project Management and Control System (pp 253-261) (10%)	Prepare Appendices C and D,
4		Risk Planning (cont) and Budget Estimating Costs	MM 6, 7		Updates on Group Project
5		Scheduling	MM 8	CS- Sharon Construction Company (20%) see D2L for Case Study and questions	Prepare for your project: Appendices E, F, G, H, I, and J
6		Resource Allocation	MM 9	CS6-D.U. Modified version of the Singer Hospital Products Corp. pp. 430-433 - see D2L for questions (20%) Note: Task J should be 3 weeks, not 3 quarters.(20%) see D2Lfor questions	Prepare for your project: Appendices K and L
7		Monitoring and Project Control	MM 10, 11	Problems - CH10 and CH11 - Control System (20%) see D2L for problems	Updates on Group Project Prepare for your project: Appendices M and N
8		The Strategic Management and Project Selection	MM 2 CK 11	CS-Pan Europa Foods S.A. (pp. 71-78 (10%) See D2L for questions	
9		Project Auditing and Termination	MM 12, 13	Extra Credit....TBD	Prepare for your project: Appendix O



10		Guest Lecture/Group Project Workshop			Prepare for your Project Presentation
11		Project Presentations			Project Presentation Hard and Electronic Soft Copy of the Charter and Project Plan, which includes all files used in the development of the Appendices e.g. Excel spreadsheets.
		Grades available online			

**EVALUATION OF TEAM MEMBERS for Group Team Project**

Team Number: \_\_\_\_\_

Date: \_\_\_\_\_

Evaluator

\_\_\_\_\_

Level of Team Member Contribution	Primary Contribution	

Instructions:

- 1) Team members fill out the above form for each member of the team, except themselves.
- 2) The following numerical values are used for the level of contribution:

- 5 - Very High = 100%
- 4 - High = 90%
- 3 - Medium = 80%
- 2 - Low = 70%
- 1 - Very Low = 60%
- 0 - None = 0%