SYLLABUS [Harvard University Extension School]

MANAGEMENT OF TECHNOLOGY: PEOPLE AND ORGANIZATIONS

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Course Overview: Discusses the concepts, tools, and best-in-class practices for managing effectively in technology-based businesses. Examines contemporary organizational systems and processes. Suggests techniques for dealing with: innovation, organizational complexity, integrated work processes, risk, uncertainty, and change; technology transfer; cross-functional commitment; self-directed teams and leadership. Lectures, case studies, and group discussions are combined to prepare students for leadership positions in today's technology-based organizations.

Course Rationale. We live in a technological world. Managers in today's industrial, commercial, and governmental organizations must function in a business environment that uses technology for gaining competitive advantages. Such technology-based companies come from virtually every segment of industry and government. They include computer, pharmaceutical, automotive, health care, transportation, and financial businesses, just to name a few. New technologies, especially computers and communications have radically changed the workplace and transformed our global economy, with focus on effectiveness, value and speed. Every organization is under pressure to do more things faster, better and less costly. Especially speed has become one of the great equalizers to competitive performance. Traditional linear work processes and top-down controls are no longer sufficient, but are gradually being replaced with alternate organizational designs, new management techniques and business processes, such as concurrent engineering, design-build, and stage-gate protocols. These techniques offer more sophisticated capabilities for cross-functional integration, resources mobility, effectiveness, and market responsiveness, but they also require more sophisticated skills both technically and socially, including administrative techniques, strategy formulation and leadership. Critical success factors (CSF) span across a wide spectrum of technological, organizational and interpersonal issues that involve gaining and maintaining cohesiveness, commitment, technology transfer, self-directed teams, rapidly changing technology and requirements, resource limitations, innovation and demands for flexibility and speedy implementation. -- Professionals managing in these environments must understand the organizational concepts, methods, tools, and techniques which support modern project management. They require more sophisticated people and organizational skills, specific technical job knowledge, IT competency, and the ability to deal effectively with conflict, change, risks and uncertainty. This course presents an overview of the specific concepts, tools, and best-in-class practices for managing effectively in technology-based enterprises, and helps to prepare students for leadership positions in today's demanding business environment.

Learning Objectives. (1) Knowledge: Develops understanding of concepts, tools, techniques and business processes for managing effectively in today's technology-based organizations. **(2) Skills:** Helps to develop the behavioral capacities and skills needed for effective role performance in today's demanding business environment, including the use of modern techniques for designing work processes, formulating strategies and leading people. **(3) Attitudes & Values:** Develops awareness and sensitivity to the intricate, multidisciplinary nature of MOT, including an understanding of commitment, team-based performance norms and decision making, conflict management, power sharing, self-directed team work and organizational alliances.

Pedagogical Approach: The course employs a combination of lectures, case analyses, business/project simulations, videos, and group discussions to develop the conceptual understanding and operational skills needed for effective managerial role performance in technology-based business environments. By at al

Text Books: Hans Thamhain, *Management of Technology*, John Wiley & Sons, 2005 …available in Harvard Coop
(Both Required) Hans Thamhain, *Management of Technology* (Supplemental Course Notes and Readings), 2008 …Distributed during first session.

Resource / Reference Material:

Betz, F. *Managing Technological Innovaton*. New York: Wiley & Sons, 2003
Bugelman, Modesto, Wheelright. *Strategic Mgmt of Technology+Innovation*, Irvin 2003
Cairncross, F., *The Company of the Future*, Cambridge, MA: HBS Press, 2002
Cardullo, Mario; *Introduction to Managing Technology, New York:* Wiley/RSP, 1996
Dorf, Richard (ed). *The Engineering Handbook*, Boca Raton, FL: CRC Press, 2005.
Dorf, Richard (ed). *Technology Management Handbook*, Boca Raton: CRC, 2004
Gaynor, G. (ed), *Handbook of Technology Managing*, NY: McGraw-Hill, 1986
Gehani, R., *Management of Technology and Operations*, New York: Wiley, 1998
Haddad, C. *Managing Technological Change*, Thousand Oaks, CA: Sage, 2002
Jain & Triandis; Management of R&D Organizations, New York: Wiley, 1997
Khalil, T., *Management of Technology*, New York: McGraw-Hill, 2001.
Khan, K (ed). *PDMA Handbook of New Product Development.* New York: Wiley, 2005.
Morone, Joseph; *Winning in High-Tech Markets*, HBS Press, 1993
Narayanan, V. *Managing Technology & Innon f Compet Advantage*, Macmillan, 2001
Pool, R., *Beyond Engineering: How Society shapes Technology*, IT Press, 1997
Tesar, G, *Strategic Technology Management*, London: Imperial College Press, 2003
Thamhain, H. E*ngineering Management: Managg Technology-Based Orgs*, Wiley, 1996
Turban, E. et al, *Information Technology for Management*, New York: Wiley, 2006.
Tushman & Anderson; *Managing Strategic Innovation and Change*, Oxford Press, 1997.

Instructor Biography: --- Dr. Hans Thamhain specializes in technology-oriented project management. He has combined a career of RD&E and business management with university teaching and research. Currently a Professor of Management and Director of *Technology and Project Management Programs* at Bentley College, his industrial experience includes twenty years of technology management positions with GTE/Verizon, General Electric, Westinghouse and ITT. Dr. Thamhain has PhD, MBA, MSEE and BSEE degrees. He has written over seventy research papers and five professional reference books in project and technology management. He is the recipient of the *Distinguished Contribution Award* from the Project Management Institute (PMI) in 1998, the Research Achievement Award from PMI in 2006 and the *IEEE Engineering Manager of the Year 2001 Award*. Dr. Thamhain is certified as *NPDP* and *PMP*.

Summary Schedule

Session	Date	Topic	Readings & Exercises in Preparation for Session (For details see syllabus)	Assignments *Due for Grading* (For details see syllabus)
1	09/16	#1: MOT Challenges	Read: Text Ch-1. -- Prepare for in-class discussion. See Text Ch-1, 1.10 Critical Thinking, #1, 2, 4, 6.	
2	09/23	#2: e-Business	Read: Text Ch-2	
3	9/30	#3: Organizing T-Work	Read: Text Ch-3 & Workbk Sec 3, "Rethinking the org" Case #1: Amazon.com (Text, pp. 32-37)	➢ Case #1, one-page analysis
4	10/07	#4: Concurrent Engineering & IPD	Read: Text Ch-4 Case #2: Pentagon Reconstruction (Text, pp. 61-63) Exercise: Prepare for in-class discussion-- See Syllabus, Topic #4, exercise #1.	➢ Case #2, one-page analysis
5	10/14	#4: Concurrent Engineering & IPD	Review: Text Ch-4 Exercise: Prepare for in-class discussion. See Text Ch-4, 4.11 Critical Thinking, #1, 2, 3, 6.	
6	10/21	#5: Managing People	Read: Text Ch-5 Case #3: Skills at GE (Text, pp. 86-87) Exercise: Prepare for in-class discussion. See Syllabus, Topic #5, exercise #1+2	➢ Case #3, one-page analysis
7	10/28	#5: Managing People	Review: Text Ch-5 Exercise: Prepare for in-class discussion. See Syllabus, Topic #5, exercise #3 See Text: Ch-5, 5.8 Critical Thinking, #5, 6.	
8	11/04	#5: Managing People	Review: Text Ch-5 Exercise: Prepare for in-class discussion. See Syllabus, Topic #5, exercise #4 See Text: Ch-5, 5.8 Critical Thinking, #7, 8. Case #4: Thermodyne (End of Workbook) □ Take-home exam, will be handed out 11/6	➢ Case #4, one-page analysis ➢ Take-Home Exam (handed out on 11/4)
9	11/11	#6: Leading Teams	Read: Text Ch-9 Exercise: Prepare for in-class discussion. See Syllabus, Topic #6, exercise #1 & 2.	
10	11/18	#6: Leading Teams	Review: Text Ch-9 Exercise: Prepare for in-class discussion. See Syllabus, Topic #6, exercise #1, 2 & 3. Case #5: Daimler-Chrysler (Text, pp. 224-225)	➢ Case #5, one-page analysis ➢ Take-Home Exam DUE
11	11/25	#6: Leading Teams	Review: Text Ch-9 Exercise: Prepare for in-class discussion. See Syllabus, Topic #6, exercise #3.	➢ Term paper synopsis
12	12/02	#7: Innovation	Read: Text Ch-10 Case #6: Reinventing Corp R&D (Text, pp. 254-255) Prep for discussion: See Syllabus, Topic #7, exercise #1+2.	➢ Case #6, one-page analysis ➢ Progress Report
13	12/9	#7: Innovation	Review: Text Ch-10 Exercise: Prepare for in-class discussion. See Text: Ch-10, 10.8 Critical Thinking, #1…7.	
14	12/16	#8: Managing Risk	Read: Text Ch-12 Exercise: Prepare for in-class discussion. See Text: Ch-12, 12.6 Critical Thinking, #1 & 3.	
12/23 & 12/30/08			---------- Winter Vacation …. No Class ----------	
15	1/06	#9: Course Summary, Career Issues, New Directions	Prepare for discussion on MOT trends and career issues --- LAST CLASS --- END OF COURSE ---	
16	1/13	No Class	Send final paper and team evaluations to Dr. Hans Thamhain, 25 Lanewood Ave, Framingham, MA 01701	➢ Term Paper & Team Evaluations

For details on topics and assignments please see this syllabus, following pages

COURSE OUTLINE
Management of Technology

1. CHALLENGES OF MANAGING IN TECHNOLOGY

Managing in today's high-tech business environment. MOT scope and focus. Developing a formal definition of MOT. The special role of engineering management. Global dimensions. Technology and society. The unique nature of managing in technology. Measuring technology content and intensity. Future trends.

Textbook: Chapter 1
Workbook: Section 1
Video: Mars Exploration Rovers

Exercises- *Prepare for in-class discussion as assigned:*

1. Mars Exploration Rover (MER) -- *Workbook*, Section 1, p.4. Watch Mars video. Think through the issues. Group discussion. Document key points. Group presentation and in-class discussion.
2. Skill Requirements -- Think through the issues. Group discussion. Document key points. Group presentation and in-class discussion.
3. Careers in Technology -- What kind of jobs and career avenues do you see for a young college graduate with an MS (Business)/MBA, joining a technology or engineering-based company, such as Xerox, GE, Bristol-Meyers, or Microsoft. Think through the issues. Group discussion. Document key points. Group presentation and in-class discussion.
4. How many high-tech management situations can you identify on the front-page of the Boston Globe or the Wall Street Journal or your local newspaper.

Minicase: *Hughes and the Direct Broadcasting Business*;" *Textbook, Chapter 1, p.1-2.* What are the opportunities and challenges of managing technology-intensive businesses? What are the critical success factors (CSF)? Prepare for in-class discussion.

2. MANAGING IN AN e-BUSINESS WORLD

A changing environment. Managing in an e-business world. The unique nature of managing in technology. History of managing technology. Measuring technology content and intensity.

Textbook: Chapter 2
Workbook: Section 2
Video: Yahoo!

Exercises- *Prepare for in-class discussion as assigned:*

1. Dimensions of "technological intensity." Think through the issues. Prep for group discussion. See text, topic 2.5, pp.30-32.

Minicase: "Reprogramming Amazon), *Textbook*, Chapter 2, pp.32-37 and Workbook, Section 2, pp. 2-3.

3. ORGANIZING THE HIGH-TECH WORK ENVIRONMENT

Today's business processes. Requirements for flexibility, speed and efficiency. Organizational interdependence. Various organization designs for technology-based enterprises, strengths and weaknesses. Organizational layers and sub-systems. Organizational choices. Real-world hybrids. Criteria for effective work processes. The role of management charters. Tools and techniques for defining the high-tech organization.

Textbook: Chapter 3
Workbook: Section 3
Video: Daimler Chrysler

Exercises- *Prepare for in-class discussion as assigned:*

1. Managing in a Matrix Environment. After reading Chapter 3, prepare for group discussion (1) Why are functional managers sometimes reluctant to provide resources for company-wide projects? What conditions would reduce the reluctance of these managers, or make them even eager to

contribute? (2) What can project leaders do to create favorable conditions for obtaining and sustaining (functional) resources?

Minicase: GM's Advanced Vehicle Development; *Textbook, Chapter 3, pp. 40-41* and Workbook, Section 3, pp. 2-3.

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4. CONCURRENT ENGINEERING AND INTEGRATED PRODUCT DEVELOPMENT

The need for effective management processes. A spectrum of contemporary management systems. Concurrent engineering – a unique project management concept. criteria for success. Defining the process. Hidden challenges and benefits. Understanding the organizational components. Recommendations for effective management.

Textbook: Chapter 4
Workbook: Section 4
Video: Daimler Chrysler (II)

Exercises- *Prepare for in-class discussion as assigned:*

1. What are the challenges and benefits of concurrent project execution/management? What are the critical success factors of concurrent project execution/management? Think through the issues. Write down your thoughts. Prepare for group discussion.

Minicase: The Pentagon Reconstruction Project, *Textbook,* Chapter 4, p. 61-62 and Workbook, Section 4, pp. 2-3.

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5. MANAGING PEOPLE AND ORGANIZATIONS

Changing roles of managerial leadership. Motivation and technological performance. Formal models of motivation. Leadership in technology. Effective role performance measurements for manager and team leaders. The power spectrum in technology management. Earned authority, trust, respect and commitment; IT-based decision making, conflict management, power and resource sharing. How to make it work: Best practices/suggestions for increasing effectiveness.

Textbook: Chapter 5
Workbook: Section 5
Video: W.B.Doner Advertising Company

Exercises- *Prepare for in-class discussion as assigned:*

1. *Influence Bases.* Project team leaders must often manage without much "formal" power. Using the table in your Workbook, Section 5, p. 10, as a framework, define the "elements" that support each of the five influence bases. What can project leaders do to develop these elements of influence? Record your thoughts: Workbook Section 5, p.10. Discuss in your group.
2. *How Do You Manage Without Authority?* How do you earn authority? Record your thoughts: Workbook Section 5, p.12. Discuss in your group.
3. *Barriers to Commitment*. What barriers do you anticipate in getting commitment from your team members. Are these barriers to commitment similar/different to the challenges of earning authority (previous item #3)? Record your thoughts.
4. *Commitment*. Make suggestions for gaining and maintaining commitment. Think of your work environment or situations published in the media, or cases discussed so far. Record your thoughts.

Minicase: Skills at GE. *Textbook*, Chapter 5 and Workbook, Section 5, pp. 2-3.

6. LEADING TECHNOLOGY TEAMS

The role of the team leader. What We Know About Technology-Oriented Teams. Toward Self-Direction and Virtual Teams. Measuring Project Team Performance. A Model for Team Building. Building High-Performing Teams. Authority and responsibility relationships. Alternative workgroup designs. Specific suggestions from field research.

Textbook: Chapter 9
Workbook: Section 6
Video: Daimler-Chrysler (III) or W.B.Doner Advertising Company (II)

Exercises- *Prepare for in-class discussion as assigned:*

1. *Team Leader/Member Expectations.* What do you expect (role) from an effective team leader? What do you expect from effective team members? Record your thoughts in the Workbook on p.9, Section 5.
2. *Influences of Work Environment.* How does the work environment influence project/team performance? Discuss in your group, your thoughts and suggestions.
3. *Building High*-Performing Teams. Select a case or your work situation. Analyze the type of barriers to effective team performance. Make Suggestions for developing a high-performing team. What kind of leadership and management actions could you suggest?

Minicase: Daimler-Chrysler's Changing Engineering Environment. *Textbook*, Chapter 10, p.254-255 and *Workbook*, Section 6, pp. 2-3.

7. THE ROLE OF TECHNOLOGICAL INNOVATION

The role of innovation in resource and time-limited environments: Changes and challenges. What we know about management of technical innovation. Traditional models and processes. Breakthrough versus incremental innovation. Lifecycle considerations. Drivers and barriers of successful innovation. Assessing innovative performances. Measuring R&D performance. Characteristics of an innovative work environment. Managing for innovative performance. Conclusions.

Textbook: Chapter 10
Workbook: Section 7
Video: Discovering the Future (The Business of Paradigms by J. Barker)

Exercises- *Prepare for in-class discussion as assigned:*

1. *Measures of Innovative Performance*. How would you measure innovative performance, for individuals and/or teams? Document your thoughts and suggestions for in-class group discussion.
2. *Drivers and Barriers to Innovation*. From your work experience (or from a case analysis) list the strongest drivers and barriers to innovative team performance.
3. *Building Innovative Work Teams.* Based on the analysis of item #2, make suggestions for developing innovative work/project teams. What kind of leadership and management actions could you suggest?
4. *Swiss Watch Industry Analysis* (Ref: Paradigms Video). Discuss in small groups (a) what promoted the status quo in the Swiss Watch Industry, (b) if you would have been a manager in a Swiss watch company during the early sixties, what leadership actions could you have taken to prepare your company for the upcoming changes in the business environment.

Minicase: Reinventing Corporate R&D. Textbook, Chapter 10, pp. 254-255 and *Workbook*, Section 7, p.2-3.

8. MANAGING RISKS IN HIGH-TECHNOLOGY

The high stakes of playing in technology. The spectrum of risk categories in high-tech business. Examining the way uncertainties impact high-tech business processes and results. Analyzing the root-cause of risk. The important front-end assessment. How managers deal with risks. Criteria for effective risk management. Going beyond statistical methods.

Textbook: Chapter 12
Workbook: Section 8
Video: Boeing and Airbus

Exercises- *Prepare for in-class discussion as assigned:*

1. *Measures of Innovative Performance.* How would you measure innovative performance, for individuals and/or teams? Document your thoughts and suggestions for in-class group discussion.
2. *Drivers and Barriers to Innovation*. From your work experience (or from a case analysis) list the strongest drivers and barriers to innovative team performance.

3. *Building Innovative Work Teams*. Based on the analysis of item #2, make suggestions for developing innovative work/project teams. What kind of leadership and management actions could you suggest?

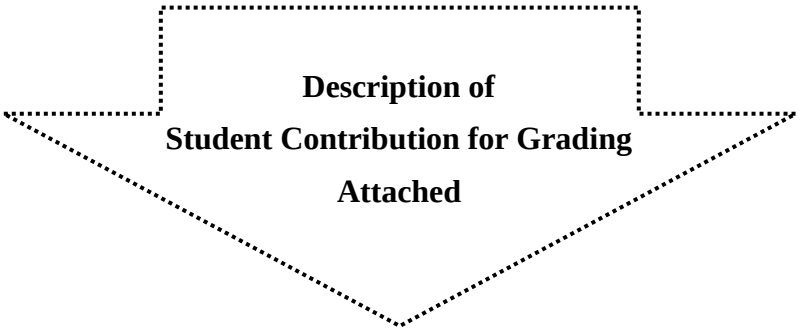
4. *Swiss Watch Industry Analysis* (Ref: Paradigms Video). Discuss in small groups (a) what promoted the status quo in the Swiss Watch Industry, (b) if you would have been a manager in a Swiss watch company during the early sixties, what leadership actions could you have taken to prepare your company for the upcoming changes in the business environment.

Minicase: Risk Taking is Part of Staying Competitive at Intel. *Textbook* Chap 12, p.306, *Workbook*, Section 8, p. 2-3.

9. NEW DIRECTIONS IN MANAGEMENT OF TECHNOLOGY

Challenges of the future. Trends in management of technology. New support systems. Career opportunities. Training and development for managers. Managing in a changing environment. Summary of key points and concepts.

…… End of Course Topics!…...



CASE ANALYSES AND PRESENTATIONS

1. Reprogramming Amazon.com	Textbook, pp. 30-32	Date: 09/30
2. The Pentagon Reconstruction Project	Textbook, pp. 61-63	Date: 10/07
3. Skills at GE	Textbook, pp. 86-87	Date: 10/21
4. Thermodyne	Workbook, End	Date: 11/04
5. Daimler-Chrysler	Textbook, pp. 224-225	Date: 11/18
6. Reinventing Corporate R&D	Textbook, p. 254-255	Date: 12/02

Team Formation Logistics. This is a team project. Up to six students can sign-up for one team. Each student should participate in *one* case presentation: (1) Scan cases and decide which one to sign-up for; (2) form case group, up to six students (this will also be your discussion group).

Case Presentation (***25 minutes total time:*** 10 min presentation & 15 minutes class involvement/discussion):

The primary objective of these case presentations is to help students in our class to better understand the concepts and project management processes discussed during the lectures and in the readings. Presenters should relate MOT concepts, tools and techniques from our course (lectures, text, videos, etc) to the case situation. Apply the concepts. Show how they can help and what the challenges are.

1. Analyze the case and prepare for a ***10-minute*** *in-class presentation of the case*.
2. The presentation should
   (i) Define, analyze and discuss issues such as ☐ The risks, challenges and problems ☐ What projects leaders have done to cope; management style ☐ The key elements of project success ☐ The management tools used ☐ Recommendations for future (similar) situations ☐ Lessons learned from the case, … *and*
   (ii) Address the specific focus question given for each case.
3. The presenters should stimulate class involvement***. At least 15 minutes*** of the case session should involve the students in the class with discussions, group work and exercises. Generate "critical thinking."

WRITTEN DOCUMENT. The presentation team should prepare and hand in to the instructor the *viewgraphs* used in the presentation. These viewgraphs must be handed in as a hard copy and sent electronically by email which will be posted on our course BlackBoard site, available to all students.

EVALUATION. The team presentation of each case will be evaluated by both the instructor and the students in the class in five primary areas: (1) analysis of the issues involved, challenges, problems, and risks [10%]; (2) MOT focus [20%]; (3) integration and application of concepts discussed in class [40%]; and (4) involvement of students in class discussions [30%].

CASE ANALYSES FOR ALL STUDENTS WHO ARE *NOT* PRESENTING

Each student (not presenting the case) is required to prepare an analysis of the case (typically ½-page, single line-spaced; *not to exceed one page*), demonstrating the understanding of the issues and ability of applying some of the course material to the case. The case analysis is needed in preparation for in-class discussion and will be collected for grading. Evaluating of your one-page Case Analysis will be in the following categories: (i) summary of case issues & management challenges and (ii) connection to course material & in-class discussions.

PROGRESS REPORTS

This is a brief *Readings Appreciation Essay & Progress Report*, required at the specified date (see Summary Schedule, p. 2).
Content and Format: Not to exceed 1 page, single-line spacing, covering the following points:

(1) ***State what you have learned*** from the course so far and why this new knowledge is important to you, your career or to business in general. As part of your essay you might want to highlight certain readings, cases and videos, and discuss the tools, techniques, methods, models or concepts which were particularly significant to your learning or are especially applicable in your professional field of activities.

(2) ***Evaluate your progress*** in this course against your learning objectives on a scale from 1–5 (5=best), coupled with a brief explanation.

(3) ***State any problems*** that you experience in this course. If there are none, simply indicate "NONE" in this section.

(4) ***Rate your overall satisfaction with this course so far:*** Very Good; Good; Satisfactory; Disappointing. Provide brief explanation.

(5) ***Questions, comments, suggestions to instructor.*** If you have none, simply write "NONE" in this category.

Grading: Each Report will be graded between 'A' and 'B', or incomplete. *All incomplete reports must be resubmitted within one week of receipt of your incomplete notice.* Your essay (part 1 of Report) will be evaluated in the following categories: Sophistication of analysis, depth and management flair; sophistication of expressing what you learned; integration of thoughts and concepts; significance of *your* findings. The feedback requested on question 2 through 5 is designed to serve as a feedback to the instructor, it will *not* affect the grade of your Progress Report.

MIDTERM EXAM

This take-home assignment contains several essay-type questions testing the understanding of the material covered up to this point. As part of your essays you might want to integrate readings, cases and exercises, and discuss their contributions to the field of technology management. ***Evaluation.*** Your essays will be evaluated in the following categories, each with equal weight: (a) specific answer to the question, (b) subject knowledge, sophistication, depth and management flair; (c) analysis of issues, impact, significance; (d) formal application of mot/mg concepts, tools & techniques.

GRADABLE TEAMWORK

This course will include specific in-class teamwork which will be given in class with the request for specific deliverables, based on the assigned readings and homework. These team assignments are open book/ open notes. They are either like a quiz or a reflection on the readings and concepts or an application of the tools and concepts studied. The resulting team paper will be graded and returned the following week. The same grade is being issued to all participating members of the team. Each team has the option of using a laptop for quizzes and handing in a disk or emailing the quiz to me immediately after the quiz is completed. The time allowed for these team assignments will vary depending on scope, but might typically be in the range of 10-25 minutes.

Unprepared or Missing Students. If a student does not bring written notes on the assigned readings and exercises to class, that student is considered unprepared and should not be given credit for the group assignment. In this case, the student should not sign the teamwork (hence no credit), but write a summary of the assignment (due the next class). Specifically, students not prepared for a team assignment, not helping in the assignment, or missing the class, will be required to write a summary of the readings or the assignment for that class (no min/max, but typically 1 page, single spaced). This summary will be graded on a pass/fail basis and is due the next class. If the summary is graded as a "pass," you will receive a B-grade (85%) grade for the assignment. If the summary is graded as a "fail," you will receive a score of zero. I will grade the summary based on its clarity and comprehensiveness.

CLASS PREPARATION AND PARTICIPATION

Early in the semester, the class will be divided into small groups of approximately 7 students apiece. The primary purposes of the groups are to prepare for class discussion of cases and to answer specific questions addressed to the groups during class. Individual members of each group may be called upon to answer questions.

Class Preparation and Participation Grade will be determined in two components.

Component A: Instructor Judgment - Instructor will evaluate students on the basis of quality and frequency of in-class contributions to the discussions. Extra weight will be given to students who can share a particular ***example of management practice*** from work experience or the media, and relate it to the concepts discussed in class.

Component B: Team Judgment - *At the end of the semester, I ask each student to write a self-evaluation and an evaluation of each member of his/her group. The written evaluations of other students are considered confidential and will not be released by me to other students. I will carefully consider these student evaluations before making a final determination of a student's participation/involvement grade.* Specifically, students will be asked to evaluate class participation of members of their "discussion team" regarding the quality and sophistication of contributions made to the discussion group and the class. These student evaluations will serve as an important part for determining the class participation grade. Specifically, at the end of the semester, you will be asked to grade yourself and your group members on this dimension: (1) *a self-evaluation* and (2) *an evaluation of each team member in your "discussion group."* These evaluations are considered confidential and will not be released by me to others. I will carefully consider these student evaluations of group discussions before making a final determination of a student's "class participation grade."

> ***Format for Component B Evaluations.*** The evaluations can be in any format as well as qualitative or quantitative. However, for your guidance, a typical evaluation consists of a narrative of about 60 word (5 lines) for each student on your team, addressing the following dimensions of group/class participation, involvement and contribution:
>
> - Contribution/benefit to the ***group discussion***, critical thinking and learning
> - Contribution/benefit to the ***class discussion***, critical thinking and learning
> - Preparation on assignments (HW, cases, readings, etc.)
> - Attitude, enthusiasm and help toward the group; promptness at scheduled meetings
> - Attendance, both at class and scheduled group meetings.

Class Participation Evaluations are due to me together with the term paper. Please attach the *Evaluation* to your term paper, or send by email (hthamhain@bentley.edu), or regular mail (Thamhain, Department of Management AAC 313, Bentley College, Waltham, MA 02452-4705).

Any student who feels uncomfortable with this team self-evaluation should see me to request an exemption from this assignment.

EXTRA CREDIT

Students can hand in any work relevant to the course as "extra credit." Examples are assigned homework not required for grading or any work that a student has completed in preparation for a class. Extra credit work will be graded "o.k., – good, or – excellent." Extra credit work cannot lower the student's course grade. However, to raise the grade level, it should be better than the average grade earned by the student for his/her regular assigned work. Extra credit work will be considered for final grading on a judgment basis.

TERM PAPER IN MANAGEMENT OF TECHNOLOGY (THREE OPTIONS)

Option A: Term Project with Emphasis on Investigating Managerial Practices

I encourage you ***to investigate an area of interest to you*** with the *objective* to identify potential improvements or to provide an insight into the b-environment or operations that you are investigating. The resulting Term Paper could follow the format of (a) an exploratory field investigation or (b) a case study. This investigation should be especially attractive to students who either work (or did work) in a project-oriented business environment, *or* are willing to investigate a project-related situation reported in the media (e.g. Big Dig, Boeing, Mars exploration, presidential election, product development, a company merger, etc).

PLEASE NOTE, YOU DON'T HAVE TO BE EMPLOYED OR HAVE WORKED FOR AN ORGANIZATION TO USE THIS OPTION.

Option B: Survey Paper

If you have no access to project work situations, you can select a topic that interests you, sample the literature to investigate the topic you selected, and then write a ***survey paper*** on your topic. You must attach copies of the key articles which you used in your survey. The structure of your *survey term paper* would be similar to that suggested for Option A, except it would focus on analyzing the literature in more depth to substitute for the missing interview data/information.

Option C: Case-Based Take-Home Exam

This is an option for students who are unable to complete the regular Term Project Paper. The exam is based on a business case or newspaper article with specific essay questions. While the assignment is *equally weighted* to the other option, it provides less flexibility to students, and less opportunity for self-directed learning and creativity. The take-home exam will be handed out during the last class.

Examples of *MOT Term Paper Topics* from previous courses (Option A):

- ☐ An investigation of the technology planning process at the xyz company
- ☐ Barriers to teamwork in technology-based work environments
- ☐ Building multinational project teams
- ☐ Examining technology tools for implementing new financial services
- ☐ Gaining and sustaining commitment in new product developments
- ☐ Implementing a project management maturity model at xyz
- ☐ Investigating enterprise-wide systems for linking management data
- ☐ Lessons learned for managing conflict effectively in high-technology situations
- ☐ Maintaining commitment high-tech project team members
- ☐ The role of technology in managing an organizational merger
- ☐ Organizing a hi-tech project office
- ☐ Management of the Alpha product development
- ☐ Techniques to control R&D projects
- ☐ Using MOT concepts for improving an accounting system.
- ☐ Risk management practices at the abc corporation
- ☐ Managing innovation and creativity.

The Structure of Your Term Paper (Option A) could follow *any format*, but the text should be subdivided into sections for ease of readability. A typical format for an exploratory study, such as Option 'A', is suggested below (however, this is just a suggestion, and your topical breakdown might be more suitable for your type of an investigation/reporting):

- *Introduction.* Broad description of topic. Objective, significance and scope of your investigation. What is known about the challenges and problems.
- *Situation.* Briefly describe/document the situation that you are investigating
- *Method of Investigation.* Briefly state how you investigated the situation or subject area, and how you evaluated the data.
- *Subject Knowledge.* What do you know about the subject area of your investigation? Relate to course material. Integrate some additional material from the literature, including internet and media. => Depending on the investigation, you might *integrate* this section with the *Introduction* and/or *Analysis Section*.
- *Analysis.* State your findings and discuss their significance and application to project management.
- *Recommendations · Conclusion · References · Appendix (e.g. support material, reference articles, etc.).*

Reference Articles. If your investigation is based on media reporting (i.e. Mars exploration), please attach copies of key articles used as information sources in your investigation.

Evaluation. The term paper will be evaluated in the following three categories: *Subject knowledge*, relevancy to course material and literature references (30%), sophistication, significance, depth and logic of *analysis, results, findings, recommendations & conclusions* (30%), a*pplication of course material*, concepts, tools & techniques…showing what you have learned (30%), overall style and structure of paper, including clearly stated, objectives, scope, method, citations, bibliography, section headings, page numbers (10%).

Paper Length *(No page limitation, max or min)*: The length of your paper may vary depending on the topic and support material included. However, as a guideline, the average length of a *typical term paper has been10 pages* in the past (single line-spaced.). The Term Paper must be ***typewritten.***

Teamwork is Encouraged. Students are encouraged to cooperate during the term paper investigation. However, each student has to submit his/her own paper.

Term Paper Synopsis, Storyboards, and Instructor Feedback.

A one-page *synopsis* of your term paper is required from all students who plan to do the Field Investigation or Survey Paper (Option A or B). Instructor will provide feedback and suggestions. Help sessions will be scheduled if needed. ***Storyboard Format:***

Title of Term Paper
Student Name(s). E-mail Address, Telephone Number

Synopsis: Describe in less than 70 words, *what* (scope) and ***how*** (method) you want to investigate and what you intend to ***learn*** from your term paper study.
Significance: Describe in less than 25 words why your proposed study is significant (of value/ imporce) to you, mg practitioners and researchers.
Results: Describe in less than 25 words what type of results and/or conclusions you try to aim for in your term paper project.
References: List your information sources, such as literature, work experience or media, which will form the basis for your term paper investigation.

All student synopses will be displayed in our classroom, providing a "storyboard" for students, to share and enhance ideas for their term paper development.

STUDENT CONTRIBUTIONS FOR GRADING

1. Take-home exam	15%
2. Case presentation (team project)	10%
3. One-page case analysis (2.0 points each case)	10%
4. Progress report	10%
5. In-class team assignments, class preparation and participation[#]	20%
6. Term project	35%
Total Points Available	**100%**

The team score is weighted 67% and class preparation & participation is weighted 33% toward the "in class grade of 20%."

Grade Designation as defined by Harvard Extension School :
[A=4.0=95%; A^-=3.7=90%; B^+= 3.3=87%; B=3.0=83%; etc.]

Bentley MOT Course Website

How to access MOT course website at Bentley College:

To find the site the first time--

1. www.bentley.edu
2. Left panel: Click on "Faculty/Staff"
3. Right panel: Click on "Quick Links >> Blackboard." Go to Bb @ Bentley Site.
4. Right side: Log in under "Guest Access" (just click "guest")
5. Top index tab: Click "courses"
6. Under "course search," type "thamhain," click "go"
7. You found the window "Browse Course Catalog"
8. Click on "Research MG646.Thamhain"
9. You reached our course site MGMT E-117. Earmark the course site's URL and save this URL (e.g. on clipboard). *URL=* …http://blackboard.bentley.edu/webapps/portal/frameset.jsp?tab=courses&url=%2Fbin%2Fcommon%2Fcourse.pl%3Fcourse_id%3D_4175_1

To access the site after you earmarked it--

1. Use save URL (see item #9 above) to sign on www
2. Go to right side of Blackboard: Log in under "Guest Access"
3. Use saved URL again in www line (item #9 above) to reach our course website MGMT E-117 (= Research MG646.Thamhain)