

TTMG 5101 Integrated Product Development (formerly 96.511)

Summer 2002

Department of Systems and Computer Engineering
Carleton University

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Monday and Wednesday, 6 to 9 p.m.
310 Dunton Tower

Office Hours

Office hours are from 5 to 6 p.m. on Monday. The instructor is also available via e-mail any time.

Calendar Description

TTMG 5101 [0.5 credit] (formerly 96.511) Integrated Product Development

The new product introduction process and time-based competition, basic concepts of integrated product development (concurrent engineering), the voice of the customer, quality function deployment, cross-functional teams, integrating information systems and technical tools, organizational support, manufacturing and design, cost estimation, implementation problems.

Prerequisite: TTMG 5001 and TTMG 5002 (formerly 96.501 and 96.502 respectively).

Course Objectives

The objective of *TTMG 5101 Integrated Product Development* is to examine how to profitably develop products fast in large and small technology-businesses.

Problem definition, hypotheses formulation, methods to collect and examine data, and the identification of insights relevant to academics and practitioners are key components of this course.

Rationale

This course addresses the needs of students in the M.Eng. in Telecommunications Technology Management program (thesis and project options). We will make best efforts to address the needs of special students and students enrolled in other programs.

Key research questions to be addressed in this course are:

1. what do you need to know and do to lead fast-to-market product teams?
2. what are the exemplary practices that are available to reduce cycle time?
3. what issues are key to fast-to-market product development?

Benefits

Students will benefit from:

- learning how to formulate testable hypotheses
- understanding the literature on fast-to-market product development
- developing skills in making, assessing and communicating recommendations on how to reduce cycle-time so as to introduce products profitably

Class Sessions

Class sessions will be conducted as research seminars. All students must be ready to present in each class.

Readings

An excellent textbook on fast-to-market product development does not exist. This field of research is relatively new. Practitioners have written books on product development with a fast-to-market spin. Academic research on how to accelerate product development has not yet made a significant contribution in

industry. Typically, research papers focus on silver bullets (e.g., concurrent engineering). The best I can do is to ask that you read the books and articles that follow.

Books you need to read

1. Baghai, Mehrdad, Stephen Coley and David White (2000) *The Alchemy of Growth*, Perseus Publishing; ISBN 0-7382-0309-2
2. Cooper, Robert G. (2001) *Winning at New Products: Accelerating the Process from Idea to Launch*, 3rd edition, Perseus Publishing; ISBN: 0738204633
3. Fine, Charles (1998) *Clock Speed: Winning Industry Control in the Age of Temporary Advantage*, Perseus Books; ISBN: 0738201537
4. Flicker, Barry (2002) *Working at Warp Speed: The New Rules for Project Success in a Sped-Up World*, Berrett-Koehler Publishers; ISBN: 1576751465
5. Pande, Peter S, Robert P. Neuman, and Roland R. Cavanagh (2002) *The Six Sigma Way: An Implementation Guide for Process Improvement Teams*, McGraw Hill; ISBN: 0071373144
6. Smith, Preston G. and Donald Reinertsen (1998) *Developing Products in Half the Time, New Rules New Tools*, 2nd edition, John Wiley & Sons; ISBN: 0471292524.

Articles you need to read

- BE Brown, Shona L. and Kathleen M. Eisenhardt (1995) "Product Development: Past research, present findings and future directions", *Academy of Management Review*, 20(2), 343-378.
- ET Eisenhardt, Kathleen M. and Behnam N. Tabrizi (1995) "Accelerating Adaptive Processes: Product innovation in the global computer industry", *Administrative Science Quarterly*, 40 (1), March, 84-110.
- GP Griffin, Abbie and Albert L. Page (1996) "PDMA Success Measurement Project: Recommended measures for product development success and failure", *The Journal of Product Development Management*, 13(6), November, http://www-east.elsevier.com/pim/sample/sample_13_6.htm

Books on Product Development

What we need to do to develop products quickly is not well known. However, good books on product development do exist. Examples include:

1. Clark, Kim B. and Steven C. Wheelwright (1992) *Managing New Product and Process Development: Text and Cases*. Free Press; ISBN: 0029055172.
2. Downes, Larry and Chunka Mui (1998) *Unleashing the Killer App*, Harvard Business School Press; ISBN: 087584801X
3. Ulrich, Karl and Steven D. Eppinger (1995) *Product Design and Development*. McGraw Hill College Div; ISBN: 0070658110.
4. Patterson, Marvin L. and Sam Lightman (1997) *Accelerating Innovation: Improving the Process of Product Development*, John Wiley & Sons; ISBN: 0471285463.
5. Jolly, Vijay K. (1997) *Commercializing New Technologies*, Harvard Business School Press, ISBN: 0875847609.
6. Pittiglio, Rabin, Todd and McGrath Setting the PACE in Product Development: A Guide to Product and Cycle-time Excellence, Revised Edition, Michael E. McGrath, Editor

Books on Time Management

Good book on how to do things faster and manage time better do exist. My favorite is Gleick, James (1999) *Faster: The Acceleration of Just About Everything*, Pantheon Books; ISBN: 0679408371.

Better Journals

Management Science

Organization Science

Journal of Product innovation Management

Academy of Management Journal
Academy of Management Review
Administrative Science Quarterly
IEEE Transactions on Engineering Management
R&D Management

Student Evaluation

Course participants are required to complete two individual assignments and write a final examination. To determine the course grade, these weights apply:

Assignment One 30%	Assignment Two 35%	Examination 35%
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In addition, students must make class presentations and actively participate in class.

Assignment One (Max: 20 pages)

1. Identify a target market defined by key problems/opportunities faced by a product development manager
2. Identify the set of Web-based tools and resources you deem to be most helpful to this target market

Due dates:

Presentation of version 1: Monday July 29

Presentation of final version and submission of final version: Monday, August 5, 6 p.m.

Assignment Two (Max: 25 pages)

Write a literature review on profitable fast-to-market product development. Your literature review should contain:

1. 100-500 word summary of each research paper or book read
2. your view of a map of research efforts (e.g., segments, trends)
3. key empirical findings
4. three most significant contributions to small company managers
5. three most significant contributions to large company managers
6. your conclusions
7. three hypotheses you wish to recommend for future research

Due dates:

Presentation of version 1: Monday July 29

Presentation of final version and submission of final version: Wednesday, August 14, 6 p.m.

Examination

Handed out: July 8, via e-mail

Due: Monday, August 12, 6 p.m.

Class by Class Schedule and Due Dates

	Day	Due	Baghai, Coley & White	Cooper	Fine	Flicker	Pande, Neuman & Cavanagh	Smith & Reinertsen	Articles
1	W, Jul 3					1-9			
2	M, Jul 8		1-4		1-7	1-9			
3	W, Jul 10		5-7	12	8-12				BE
4	M, Jul 15		8-9	12	1-12				BE
5	W, Jul 17			1-4				1-4	
6	M, Jul 22							5-15	
7	W, Jul 24			5-11					ET & GP
8	M, Jul 29	Present							
9	W, Jul 31						1-11		
10	M, Aug 5	Assig 1							
11	W, Aug 7						12-21		
12	M, Aug 12	Exam							
13	W, Aug 14	Assig 2							

Day 1, Wednesday July 3

Getting started

- Course outline and expectations
- Common problems

Day 2, Monday July 8, Day 3, Wednesday July 10 and Day 4 July 15

Big picture

- Review of product development literature
- Growth, Industry control, Strategy for Business

Day 5, Wednesday July 17, Day 6, Monday July 22 and Day 7, Wednesday July 24

Ground floor

- Tools, Stage-gate processes, Skills
- Review of empirical results and success metrics

Day 8, Monday July 29

Presentations

- Present version 1 of Assignment 1 and Assignment 2 (submit slides presented, not the deliverable)

Day 9, Wednesday July 31

- Six Sigma

Day 10, Monday August 5

- Assignment 1 is due; make Assignment 1 presentations
- Prepare lessons learned inventory

Day 11, Wednesday August 7

- Six Sigma

Day 12, Monday August 12

- Exam is due
- Prepare lessons learned inventory

Day 13, Wednesday August 14

- Assignment 2 is due; make assignment 2 presentations
- Prepare lessons learned inventory