



Worcester Polytechnic Institute

Business Practices for Systems Engineers SYS 502: Fall 2018

Instructor:

Dr. Beth Wilson

ejwilson@wpi.edu

Textbooks:

There are 2 textbooks for this class:

- Anatomy of a Business Plan, 8th Edition
Linda Pinson
ISBN 978-0-944205-55-6
This is also available in PDF eBook form.
- Engineering Economy
William G. Sullivan, Elin M. Wicks, and C. Patrick Koelling
ISBN 978-0-13-255490-9 (15th edition)
ISBN 978-0-13-343927-4 (16th edition)
The 15th edition will work for this class and is probably cheaper. Reading assignments will provide page numbers for both editions.

There is also supplemental reading that is included in the Files tab.

Course Description:

This course introduces you to the business aspects of systems engineering. It will help you integrate systems engineering concepts into a professional business practice environment. It will improve your understanding of fundamental business practices and their relationship to systems engineering.

You will learn how to prepare and evaluate professional quality business plans, project budgets, financial proposals, timelines and technical outlines. You will learn about stakeholders, competitive advantage, systems engineering roles from a business practices perspective, and systems engineering impact on business decisions.

The course includes individual and team project assignments. There is significant interaction via the discussion board. The final class is a synchronous virtual online session where the project teams will present their business plans to a panel of investors simulating the TV show "Shark Tank."



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Prerequisite Courses:

There are no prerequisite courses. The prerequisite is an undergraduate degree in engineering or science.

Learning Outcomes:

By the completion of this course, learners will be able to:

1. Explain financial and accounting metrics and show how they are impacted by systems engineering decisions.
2. Explain sales and marketing aspects of businesses and how systems engineering integrates with them.
3. Describe the R & D and Operations aspects of businesses and explain how systems engineering impacts and is impacted by them.
4. Write and respond to RFPs with engineering and financial proposals.
5. Analyze and discuss how and why businesses succeed and fail and how success and failure are related to systems engineering.

Communication:

Here are the ways to contact me:

- Email – You can expect a response within 24 to 48 hours.
- Question and Answer Forum – Please post general questions to the Question and Answer Forum pinned on the Discussion tab. That is where I will respond to questions about the course material, lectures, assignments, and expectations.

There are no set office hours. I am open to scheduling a virtual live meeting if requested.

Course Approach:

This course is an asynchronous online course with the exception of the last class that is virtual online with "The Sharks":

- First class is Monday August 27, 2018
- Last class is Monday October 29, 2018 ("Shark Tank" session)
- Weeks begins on Monday and close Sunday at 11:59 PM
- All times are Worcester, MA time (East Cost Time)
- All material is on the WPI Canvas learning management system

The online material is organized to build on knowledge and skills throughout the course. There is a mix of lecture and reading to introduce the concepts. There are individual and team assignments to apply these concepts. Each week you are expected to spend between 15 and 20 hours completing the reading, lectures, and assignments.



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Schedule of Weekly Classes:

Week	Start MON	Content	Individual Homework	Team Project Sections	Due SUN 11:59pm
1	8/27	Course Introduction Business Plan Introduction	Introductions Rubric Exercise Exec Summary Critique		9/2
2	9/3	Marketing	Pricing Exercises Marketing Case Study Self-Select Teams	Identify Business	9/9
3	9/10	Sales RFPs & Proposals	Mark-up Exercise Shark Tank Analysis	Organizational Plan	9/16
4	9/17	Personnel Management	Personnel Case Study	Marketing Plan Sales Plan	9/23
5	9/24	Financial Reporting		Management Plan Sample RFP	9/30
6	10/1	Research & Development	R&D Case Studies	Financial Plan	10/7
7	10/8	Operations	Simulation Exercise Operations Case Study	Sample Proposal	10/14
8	10/15	Engineering Economics	Project Evaluation Exercise	Executive Summary Equity Financing Strategy	10/21
9	10/22	Quality Assurance	QA Case Studies Team Assessments	Final Report Final Presentation	10/28
10	10/29	<i>Shark Tank</i>			



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Course Requirements:

Grade Determination Breakdown

Assignments are weighted by group:

Type	Assignments	Percentage of Grade
Individual	Homework and Exercises	25%
	Discussion Board	20%
	Knowledge Check Quizzes	15%
	Team Assessment of Contribution to Team Project	5%
Team	Interim Products	25%
	Final Products	10%
Total		100%

Assignments

All assignments are represented in Canvas in multiple locations:

- Module tab: assignments are organized in preferred order of completion
- Assignments tab: assignments are organized by grading groups
- Syllabus tab: assignments are organized by due dates

Rubrics have been prepared for each assignment and will be used to determine the grade for the completed work.

All due dates shown are Worcester time (East Coast).

Assessment and Feedback Plan

Knowledge check quizzes and exercises using the Canvas quiz tool provide immediate feedback. All assignments will be graded within a week.

Late Work Policy

Knowledge check quizzes and discussion boards will close at the deadline and no late work is accepted. Individual homework problems and team submissions will be closed at the deadline unless an extension has been discussed with the instructor in advance of the deadline and authorized by the instructor in the form of a revised deadline.



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Discussion Board Expectations and Criteria

The rubric for the discussion board participation is as follows:

Original post by Sunday	5: Explores several aspects of material, offers meaningful connections, and shows critical thinking	4: Shows understanding of material and offers meaningful connections	3: Summarizes material	2: Post addresses some of question	0: No post by Sunday
Conversation Enabler	1: Original post by Friday (11:59 Eastern time) OR another student replies before Sunday			0: Original post after Friday AND no other student replies	
Replies (to different threads)	4: Replies to at least 2 other students with meaningful discussion	3: Replies to at least 2 other students		2: Replies to 1 other student	0: No replies by Sunday

Technical Requirements:

All material is accessible by Canvas through a web browser. If you experience technical difficulties with Canvas, you can use the “help” button to access 24x7 help resources. The final “Shark Tank” session, will use Zoom.

If you require further assistance, you can contact the Help Desk at helpdesk@wpi.edu or 508.831.5888.

Library Access:

As a student at WPI, you have access to a variety of resources through the library. Use the link [here](#) to access databases, e-journals, and/or e-books. You will be required to log in with your WPI username and password to access materials.

Policies

Academic Integrity:

You are expected to be familiar with the *Student Guide to Academic Integrity at WPI* that is downloadable from [here](#). Consequences for violating the Academic Honest Policy range from earning a zero on the assignment, failing the course, or being suspended or expelled from WPI.

Common examples of violations include:

- Copying and pasting text directly from a source without providing appropriately cited credit
- Paraphrasing, summarizing, or rephrasing from a source without providing appropriate citations
- Collaborating on individual assignments
- Turning in work where a good portion of the work is someone else’s, even if properly cited



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Academic Accommodations:

We at WPI strive to create an inclusive environment where all students are valued members of the class community.

If you need course adaptations or accommodations because of a disability, or if you have medical information to share with us that may impact your performance or participation in this course, please make an appointment with us as soon as possible. If you have approved accommodations, please request your accommodation letters online through the Office of Disability Services student portal.

If you have not already done so, students with disabilities who need to utilize accommodations for this course are encouraged to contact the Office of Disability Services as soon as possible to ensure that such accommodations are implemented in a timely fashion.

Email – DisabilityServices@wpi.edu

Phone – (508) 831-4908

On Campus – Daniels Hall, First Floor 124

Grading Policy:

Final course grades are based on a student's performance as follows:

Letter Grade	Percentage
A	90 - 100
B	80 - 89
C	70 - 79
D	60 - 69
F	< 60

Course incompletes may be granted if the major part of the course is completed; however, no additional credit can be given for missed class discussions or teamwork beyond the end of the course. In addition, in the case of an incomplete, the student is responsible for handing in the final work within the WPI required timeframe of one (1) year. After this time, an incomplete grade changes to a failing (F) grade.