

Development of Products and Services

Course Syllabus

Course Information

Assessment

Policies

Course Expectations

Course Information

Course Description

The design of new products and services that exceed customer expectations with quality is a key competitive advantage in today's markets. The course Developing Products and Services will provide students with an overview of the Total Design Process Methodology, as well as an introduction to tools and techniques that enable the integration of marketing, design and other supply chain elements to develop successful projects. Students will apply the tools and ideas described in the course in the generation of a consumer product or service concept that will be developed throughout the term.

Course Learning Goals

After completing this course, you will be able to:

- Apply the Total Design Methodology for New Products and Services
- Capture and categorize Customer Requirements which will be translated into design attributes used to evaluate the design of a new product or service
- Describe the structure of the Quality Function Deployment first matrix to identify critical design attributes and their associated performance standards
- Transform the Product/Service Attribute information into a functional diagram
- Generate multiple design concepts, evaluate them and create additional ones by going through several iterations using the Pugh Concept Selection method
- Develop the selected design concept into lower level components for detailed design. Generate design alternatives associated with each component
- Construct detailed design specifications for each component as well as for the final design solution
- Describe the activities that the team needs to complete on the implementation stage of the development project, including outsourcing of components as appropriate

Course Competencies

In this course, you will develop the following competencies:

Competence	Competence Statement and Criteria
H2C	Can identify an organizational problem and design a plan for change based on an understanding of social science theories or models

FX	Understands the tools and techniques used for the design and development of new products and services that will consistently satisfy customer requirements
S1E	Can analyze inventions or technologies and can understand their underlying scientific principles. 1. Describes a complex invention or technology in terms of its component parts and functions. 2. Analyzes the parts and functions in terms of scientific principles

How the Competences will be Demonstrated in this Course

The H2C competency will be demonstrated by completing a competency paper in which an opportunity for improvement is identified in a product or service development oriented organization. The concepts outlined on the "Total Design" methodology will then be used to develop a plan of activities to address the problem.

The FX competency will be demonstrated by completing a competency paper in which students will reflect on their experience on the design or redesign of products and/or services and describe how they would approach the problem differently after having covered the course contents.

The S1E competency will be demonstrated by completing a competency paper in which the principles of functional decomposition will be used to analyze a physical product by associating each function to the physical principle used for implementation. Product innovation opportunities will be explored through application of alternative physical principles.

Course Resources

To buy your books, go to <http://www.mbsdirect.net>.

Hint: type DePaul for name of the school.

[Click here for help buying your books](#)

Required Reading:

Required textbook(s): There are two primary documents associated with this course:

The the course books and the course reference materials.

Book: *Design and Management of Service Processes* by Rohit Ramaswamy, (Addison Wesley 1996) Course Books – These are published books that will guide your learning experience.

This course **textbook** contains most of the theory covered in the course as well as many relevant case studies and Service related examples.

Book: *Product Design and Development* by Karl T. Ulrich and Steven D. Eppinger (McGraw-Hill 2004).

This **reference book** complements the material by focusing on the Design and Development of new Products. The reference book is not needed to successfully complete the class but is highly recommended specially for students with interest in Products vs. Services.

Course reference materials – These can be found within each module of the course web site. You will find a PowerPoint file for each Module, as well as additional

references. Please note that it is very important to refer to these presentations for every module since they are an integral part of the discussions.

Paper – "Is the Make—Buy Decision Process a Core Competency?" Charles E. Fine, Daniel E. Whitney, MIT Center for Technology, Policy and Industrial Development, February 1996.

URL: http://esd.mit.edu/esd_books/whitney/pdfs/make_buy.pdf

Course Grading Scale

A = 95 to 100	A- = 91 to 94	B+ = 88 to 90
B = 85 to 87	B- = 81 to 84	C+ = 77 to 80
C = 73 to 76	C- = 69 to 72	D+ = 65 to 68
D = 61 to 64	F = 60 or below	INC

For SNL courses taken for Pass/Fail, a "Pass" represents a grade of "A" for purposes of financial aid and employer reimbursement.

Students wishing to declare a Pass/Fail option must do so before the end of the 2nd week of the quarter.

Course Structure

This course consists of ten modules. The estimated time to complete each module is one week.

To see course due dates, click on the Checklist link on the top navigation bar. This page contains module-specific checklists and due dates for the work due in the course.

Course assignments

Instructions for each assignment may be found within each module description.

[Back to Top](#)

Assessment of Learning

Percentage distribution of Assessments

Discussions	30%
Weekly assignments	30%
Final Project submission	20%
Competency papers	10%
Timeliness and Participation	10%

Grading Policies and Practices

To complete the course, you must complete each of the assignments as described in the course and submit them to your instructor by the assigned deadline. In addition, you

must participate in the course discussion forum by responding to all instructor requests and by interacting with fellow classmates as necessary.

Points are deducted for late work.

Assessment Criteria for Each Competence

H2C: Can identify an organizational problem and design a plan for change based on an understanding of social science theories or models.

If you are taking this course for the H2C competency, you will demonstrate the competency through online interactive discussions with the instructor and other participants. You will also demonstrate this competency by applying the "Total Design" methodology learned in class to address a problem in a product or service development oriented organization. You will write a 3-4 page essay describing a plan of activities recommended to solve the problem. This paper is due one week after the final Module (Module 10).

FX: Understands the tools and techniques used for the design and development of new products and services that will consistently satisfy customer requirements.

If you are taking this course for the FX competency, you will demonstrate the competency through online interactive discussions with the instructor and other participants. You will also demonstrate this competency by identifying areas of opportunity for implementation on a practical situation to improve an existing product or process. You will write a 3-4 page essay describing the opportunity for improvement and the recommended tools to solve the problem. This paper is due one week after the final Module (Module 10).

S1E: Can analyze inventions or technologies and can understand their underlying scientific principles.

1. Describes a complex invention or technology in terms of its component parts and functions.
2. Analyzes the parts and functions in terms of scientific principles.

If you are taking this course for the S1E competency, you will demonstrate this competency by developing a functional decomposition of a product selected with the approval of your instructor. After the functional analysis is complete, you will then describe the physical principles implemented for each function, followed by a discussion on alternative principles that could have been utilized to implement two key functions of your choosing. This paper is due one week after the final Module (Module 10).

The following are criteria for receiving a passing grade:

- You participate consistently and constructively in the online class discussion forums.
- You complete all readings, project, and writing assignments by their due dates.
- You actively participate in all project activities.
- You submit your final paper competency papers by the due date.

Assessment Criteria for your Final Paper or Project

It is important that your final paper:

- Demonstrates that you can apply the principles of Total Design covered on his course to evaluate your past and present experiences in the design and development of products and services.
- Organizes your supportive evidence and examples into relevant paragraphs that address your subject.
- Contains proper APA or MLA citation form for in-text references as well as for

bibliography as appropriate.

General Assessment Criteria for All Writing Assignments

General criteria for evaluation of written work (papers and project exercises):

- **Completeness.** Make sure to address all points specifically described on the assignment.
- **Logical structure.** Make sure your argument is coherent from beginning to end and supported by data as required on the assignment
- **Be concise.** Most assignments can be completed in very few pages. One exception to this guideline is concept sketches, which should be formatted with one concept per page.
- **The process for submitting graphical information** needs to be agreed upon with the Instructor at the beginning of the term. (FAX, PDF files, etc.)

All writing assignments are expected to conform to basic college-level standards of mechanics and presentation.

Consider visiting the Writing Center to discuss your assignments for this course or any others. You may schedule appointments (30 or 50 minutes) on an as-needed or weekly basis, scheduling up to 3 hours worth of appointments per week. Online services include Feedback-by-Email and IM conferencing (with or without a webcam). All writing center services are free.

Writing Center tutors are specially selected and trained graduate and undergraduate students who can help you at almost any stage of your writing. They will not do your work for you, but they can help you focus and develop your ideas, review your drafts, and polish your writing. They can answer questions about grammar, mechanics, different kinds of writing styles, and documentation formats. They also can answer questions and provide feedback online, through IM/webcam chats and email.

Obviously, the tutors won't necessarily be familiar with every class or subject, but they are able to provide valuable help from the perspective of an interested and careful reader as well as a serious and experienced student-writer.

Schedule your appointments with enough time to think about and use the feedback you'll receive.

Quick Links:

- To schedule Real-time conversations with IM and/or webcam:
<http://condor.depaul.edu/writing/appointments/im.html>
- To request Feedback by Email:
<http://condor.depaul.edu/writing/appointments/fbe.html>
- For more information, visit:
<http://condor.depaul.edu/writing/>

[Back to Top](#)

Online Discussion

Discussion Boards

Discussion Boards are a forum for discussion and sharing information among students. Your instructor may create one or more discussion boards related to the topics you are studying each week.

At the beginning of the quarter, your instructor will set up two discussion boards. These

two discussions will help you and your classmates get off to an immediate start on the course, by providing conversational spaces for necessary, ongoing social and administrative activities. These discussions are:

- Introductions
- Course Q&A

The Q&A discussion is where the management and administrative tasks of the course are conducted, and where you can ask 'process' questions and receive answers. Your instructor will add additional discussion boards as you move through the modules.

Assessment Criteria for Online Discussion Participation

You are expected to actively participate in online discussions with your classmates and the instructor every week. "Active participation" means that you read and contribute to the online discussions. This discussion is "informal" in the sense that it is meant to encourage interested discussion. It is expected that you follow accepted standards of English spelling, grammar and usage, although you will not be assessed for these particular characteristics when you are on the discussion board. These discussions are a place for you to exchange your reflections with the others in the class about what you are learning. The discussions will be organized into forums around the particular Modules you are studying each week. Please note that Module participation is limited to the week in which the material is being covered. Late participation will not be credited. Please note that Modules are open for participation only during the week in which the topic is being discussed in class.

You should contribute your responses to the particular assignment for that particular discussion heading which will be posted. Directions are provided with each assignment. They must be followed according to the due dates given. Principles of good practice for participating in online discussions should be adhered to when it comes to responding to the contributions of other people in the class.

In the online discussions you are moving the discussion along if you are:

1. Offering up ideas or resources and inviting a critique of them
2. Asking challenging questions
3. Articulating, explaining and supporting positions on ideas
4. Exploring and supporting issues by adding explanations and examples
5. Reflecting on and re-evaluating personal opinions
6. Offering a critique, challenging, discussing and expanding ideas of others
7. Negotiating interpretations, definitions and meanings
8. Summarizing previous contributions and asking the next question
9. Proposing actions based on ideas that have been developed

The above list was adapted from Gilly Simpson's book *E-Moderating: The key to teaching and learning online*. London: Kogan Page: p.143 (2000).

Discussion Assessment Rubric

Lead contributions to the weekly discussion board should be posted by opening a new discussion topic that will be used by the class to provide response comments. Lead contributions will be graded as follows:

- 0: No lead contribution posted.
- 1: Content level insufficient or not relevant to the Module discussion guideline.
- 2: Relevant and insightful content posted after the third day of the Module.
- 3: Relevant and insightful content posted during the first 3 days of the Module.

Overall grading for contributions will also be based on the overall presence in the

discussion demonstrated through your responses to other postings.

Online Participation Guidelines

- A significant part of your online learning experience involves learning *with* and *from* your classmates and the instructor in the online discussions and group assignments.
- Active participation means sharing information and resources and posting your ideas and critiquing and expanding on the ideas of others in a collegial fashion. This discussion is informal in the sense that it is meant to encourage interested discussion. You are expected to follow accepted standards of English spelling, grammar and usage, although you will not be assessed for these particular characteristics when you are participating in the online discussions.
- These discussions are for you to exchange your reflections with your classmates and instructor about what you are learning. The discussions will be organized into forums around the particular topic you are studying each week.
- You may be asked by the instructor to take leadership in a certain group for a certain time of the course. You will receive further instructions from your instructor if this occurs.
- You should contribute your responses to the particular assignment for that particular discussion heading which will be posted.
- For each Discussion Forum, you are required to make at least one original contribution to each topic and respond to one classmate's contribution.

Additional Information

Projects

Your challenge in the project portion of this course is to develop the concept of a new product or service. The goal of this exercise is to learn principles and methods of product and service development. Guidelines for reasonable projects are given below. The project proposal process is explained in the Module 2 section of the study guide.

Guidelines for Projects

While special cases will be considered, you are strongly encouraged to choose a project satisfying all of the following constraints:

- There should be a demonstrable market for the product or service. One good way to verify a market need is to identify existing products or services that attempt to meet the need. Your idea should not necessarily be a variant of an existing product or service, but the market need should be clearly evident. The product or service does not need to have a tremendous economic potential, but should at least be an attractive opportunity for an established firm with related interests and/or skills.
- It is recommended that projects developed in this class relate to either material goods and service endeavors. While many of the ideas in the course apply to software products (for example, customer needs and product architecture), it is recommended that IT and software projects are considered to be outside the scope of this course.
- Product concepts should have a high likelihood of containing fewer than 10 parts. Although you cannot anticipate the design details, it is easy to anticipate that an electric drill will have more than 10 parts and that a manual press to squeeze oranges can have fewer than 10.
- If a Service project is chosen, it should be possible to represent its implementation with fewer than 20 process steps.
- Given the remote nature of the course, physical product prototypes will not be required although graphical representations of the concept solution are expected.

- The product or service implementation should require no basic technological breakthroughs. (Yes, a heat generating pizza bag would help to improve our pizza delivery service, but can you do it without inventing a new heat source concept?) You do not have time to deal with large technological uncertainties.
- You should have access to at least five potential users of the product or service.

A few more hints:

- Most successful projects are a result of strong personal interest in the target market.
- Many products and services are really not optimally designed. The experience in this class is that if you pick almost any product or service satisfying the above project guidelines, you will be able to develop one that is superior to everything currently on the market.
- Just because you have used a lousy product or suffered a bad service experience doesn't mean that a better one doesn't exist. Do some thorough research to identify competitive products and solutions.

Project Schedule

All assignments must be submitted at the end of the Module in which they are due. Note that these assignments are intended to pace the development process for your product or service. There is virtually no slack in this schedule and so assignments must be completed on or before the scheduled due date in order to maintain the project schedule.

- This is not an independent study course, but a paced online group learning experience. This study guide indicates 6 to 11 hours per week of your time to be spent on this course of ten weeks.
- Please accept the challenge to work with others, to construct knowledge in negotiation with others. Working individually on the assignments and just posting them might not lead to significant knowledge and skills.
- Some difficulties at the beginning of an online course are quite normal, solving them is part of every distance learning experience.

[Back to Top](#)

Policies

Academic Integrity

DePaul University is a learning community that fosters the pursuit of knowledge and the transmission of ideas within a context that emphasizes a sense of responsibility for oneself, for others and for society at large. Violations of academic integrity, in any of their forms, are, therefore, detrimental to the values of DePaul, to the students' own development as responsible members of society, and to the pursuit of knowledge and the transmission of ideas.

Violations include but are not limited to the following categories: cheating; plagiarism; fabrication; falsification or sabotage of research data; destruction or misuse of the university's academic resources; alteration or falsification of academic records; and academic misconduct. Conduct that is punishable under the Academic Integrity Policy could result in additional disciplinary actions by other university officials and possible civil or criminal prosecution. Please refer to your Student Handbook or visit <http://studentaffairs.depaul.edu/homehandbook.html> for further details.

Plagiarism:

Plagiarism is a major form of academic dishonesty involving the presentation of the work of another as one's own. Plagiarism includes but is not limited to the following:

- The direct copying of any source, such as written and verbal material, computer files, audio disks, video programs or musical scores, whether published or unpublished, in whole or part, without proper acknowledgement that it is someone else's.
- Copying of any source in whole or part with only minor changes in wording or syntax, even with acknowledgement.
- Submitting as one's own work a report, examination paper, computer file, lab report or other assignment that has been prepared by someone else. This includes research papers purchased from any other person or agency.
- The paraphrasing of another's work or ideas without proper acknowledgement.

Plagiarism, like other forms of academic dishonesty, is always a serious matter. If a instructor finds that a student has plagiarized, the appropriate penalty is at the instructor's discretion.

[Back to Top](#)

Disability Accommodations

Reasonable accommodations will be provided for students with disabilities on an individualized and flexible basis. The Office of Students with Disabilities (OSD) determines appropriate accommodations through consultation with the student. For certain learning disabilities and/or attention deficit disorders, the Productive Learning Strategies Program (PLuS) determines the appropriate accommodations. See the instructor for more information or call OSD at 773-325-7290 (phone) or 773-325-7296 (TTY); or call PLuS at 773-325-1677.

Incomplete Grades

The intent of the Incomplete grade is to allow students extra time to complete their final assignments. This need arises because, in the closing weeks of the course, they have an event of significant magnitude that adversely affects their ability to complete the course, e.g. serious illness, death in the family, overseas deployment, or natural disaster.

You must request an incomplete grade in writing two weeks before the end of the quarter. Incomplete grades will be considered only after you have satisfactorily completed at least 75 percent of the coursework, and you have such an unexpected, uncontrollable event that prevents you from completing your course. Do not assume that you will qualify for an incomplete. Students who are failing the course at the point where they request an incomplete will not receive one, nor will they be granted after the end of the quarter. Incomplete grades are given at the discretion of the instructor.

If you do receive permission from the instructor to take an incomplete in the course, you will be required to complete a contract with the instructor, specifying how you will finish the missing work within the next two quarters (excluding summer). Incompletes not finished by the end of the second quarter (excluding summer) will automatically become an F grade on your transcript.

Instructors may not change incomplete grades after the end of the grace period without the permission of a college-based Exceptions Committee.

NOTE: In the case of a student who has applied for graduation and who has been approved for an Incomplete in his or her final term, the incomplete must be resolved within the four week grace period before final degree certification.

[Back to Top](#)

Protection of Human Subjects

For more information see: <http://research.depaul.edu/>

Demonstrating the acquisition of competencies in this course can involve "interactions"—interviewing and or observing other people—discussing those interviews or observations with other class members and writing them up in one or more final report(s). As such, these activities qualify as "research" with "human subjects" and are subject to University and Federal guidelines. Because it takes place in the context of this course, your research is exempt from approval by the School for New Learning's Local Review Board only under the following conditions:

- The information you collect is EXCLUSIVELY for the purpose of classroom discussion and will NOT be used after the term is over. If there is any possibility that you will EVER use it in further research or for publication, you must obtain approval from the Local Review Board before you begin.
- You assess and ensure that no "harm"—physical, mental, or social—does or could result from either your interviews and/or observations or your discussion and/or reports.
- The privacy and confidentiality of those that you interview or observe must be protected. Unless you receive specific permission, in writing, from the person(s) you interview or observe, please change their names, and make sure that their identity cannot be readily ascertained from the information you provide.
- If you want to use real names and relationships, they must sign an "informed consent" document. For information on creating an "informed consent document" see, for example, <http://www.research.umn.edu/consent>

[Back to Top](#)

Course Expectations

Time Management and Attendance

SNL's online courses are not self-paced and require a regular time commitment EACH week throughout the quarter.

You are required to log in to your course at least four times a week so that you can participate in the ongoing course discussions.

Online courses are no less time consuming than "face to face" courses. You will have to dedicate some time every day or at least every second day to your studies. A typical four credit hour "face to face" course at SNL involves three hours of classroom meeting per week, plus at least three to six hours of study and homework per week.

This course will require at least the same time commitment, but your learning activities will be spread out through the week. If you have any problems with your technology, or if you need to improve your reading or writing skills, it may take even longer.

The instructor should be notified if your life events do not allow you to participate in the course and the online discussions for more than one week. This is particularly important when there are group discussions or you are working as part of a team.

If you find yourself getting behind, please contact the instructor immediately.

Your Instructor's Role

Your instructor's role in this course is that of a discussion facilitator and learning advisor. It is not their responsibility to make sure you log in regularly and submit your assignments. As instructor, s/he will read all postings to the general discussion forums on a daily basis but may not choose to respond to each posting. You will receive feedback to assignments.

The instructor may choose to designate "office hours" when s/he will be online and

available and will immediately respond to questions. Depending on the instructor, this response may be by e-mail, instant messenger or telephone. Otherwise, you will generally receive a response to emailed or posted queries within 48 hours.

Your Role as a Student

As an online student, you will be taking a proactive approach to your learning. As the course instructor's role is that of a learning guide, your role is that of the leader in your own learning.

You will be managing your own time so that you can complete the readings, activities and assignments for the course, and you will also be expected to take a more active role in peer learning.

How To Do Well In This Class

This section provides a few hints on how to do well in this class:

1. Participate in class discussions. The class discussions and homework exercises are worth a large percentage of your grade. Most modules ask you to post an opinion and include a follow-up. Don't miss the follow-up posting.
2. Don't fall behind – In general once a discussion is graded its over. Don't think you can post discussion items several weeks after they are graded and expect credit. The class has moved on and it is difficult for course instructors to find your postings after it has been graded.
3. Read the assignments carefully. If the assignment says answer three questions, then answer three. If it says use APA research paper style then find out what that style is and use it.
4. Email questions. When you have any questions, email your instructor. If your instructor emails a question to you then answer it (it often means your instructor cannot find an assignment of yours).
5. Post all assignments by the specified Due Date.

Credits

This course was designed and produced by Eduardo Bascaran and staff at SNL Online of the School for New Learning of DePaul University.

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[Back to Top](#)