

ILS, Indiana University
Z556: Systems Analysis and Design

Course Information

Semester: Spring 2014
Meetings: Mondays, 9:30am-12:15pm, LI031
Instructor: Dr. Noriko Hara
Office Hours: Mondays 12:15-1:00pm (LI019) or by appointment
Contact: nhara@indiana.edu

Note: Use Z556: _____ for a subject line
Please do not send me e-mail from Oncourse

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Co-instructor: Tamy Chambers
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Course Description:

Z556 is one of the core curriculum courses for the ILS Master of Information Science degree. This course will introduce the basic concepts underlying systems analysis and design, focusing on contextual inquiry/design and data modeling, as well as the application of those analytical techniques in the analysis and design of organizational information systems. We will work on the processes that project teams should follow to understand their users' work and then build information systems to enhance that work practice. The important philosophy introduced in this course focuses on the concept of user-centered design.

Upon completion of this course, you should be able to:

- Acquire a concept of systems analysis and design and its meaning in practice;
- Use a variety of information systems analysis and problem-solving tools and approaches;
- Acquire a concept of rapid-prototyping design and apply it to a problem;
- Become familiar with user-centered design and usability testing processes;
- Develop skills in analyzing and designing information systems from the socio-technical perspective;
- Describe the basic techniques of project estimating, writing detail specifications;
- Develop effective communication strategies with project stakeholders.

Textbooks:

Required textbook:

- Holtzblatt, K., Wendell, J. S., & Wood, S. (2005). *Rapid Contextual Design: A how-to guide to key techniques for user-centered design*. Morgan Kaufmann. [HWW] [available as an e-textbook via IUB Library]

Optional Textbook:

- Lencioni, P. (2002). *The five dysfunctions of a team: A leadership fable*. San Francisco, CA: Jossey-Bass. [available as an e-textbook via IU Library]

Note:

- Although Lencioni’s book does not appear in the reading schedule, you are expected to read a couple of chapters every week and finish reading the book by Week 12, March 31.
- You can find assigned articles on Oncourse or the course website.

Course Schedule and Readings by Week:

Date	Topic	Project due and Presentation	Readings
Week 1. Introduction (01/13/2014)	<ul style="list-style-type: none"> • Introduction • Overview of syllabus • Team-building activity 		Saddler
Week 2. (01/20/2014)	No Class- Martin Luther King Jr. Day		
Week 3. (01/27/2014)	<ul style="list-style-type: none"> • Introduction to user-centered analysis and design • The systems development life cycle • Problem definition 		Davis Ch 2 Garcia et al. Satzinger
Week 4. (02/03/2014)	<ul style="list-style-type: none"> • Contextual inquiry as systems analysis • Interviews for collecting data • Teamwork activity 	Individual assignment I due (problem definition)	HWW Ch 3 & 4 Lewis Ante Gertner HBR IdeaCast
Week 5. (02/10/2014)	<ul style="list-style-type: none"> • Organizing for team projects • Project Management essential • Information gathering 		Lewis Sec 3 Valacich et al Block Ch 13 Williams
Week 6. (02/17/2014)	<ul style="list-style-type: none"> • Modeling sequences of events; Detailed task modeling; Activity diagrams • Individual assignment II distributed 	Team project draft due (Info gathering plan and scheduling)	Alter B&H Ch 5 B&H Ch 6 (p.89-101) Schmuller Lejk & Leeks

Week 7. (02/24/2014)	<ul style="list-style-type: none"> • UML overview • UML: Use Case diagrams Individual assignment II due (Flow/sequence/task models)	Chitnis et al Bell B&H CH 7
Week 8. (03/03/2014)	<ul style="list-style-type: none"> • Modeling physical layout, organizational culture, & the artifacts used • Interpreting and integrating data from multiple perspectives • Individual assignment III distributed 	B&H Ch 6 (p.102-123) Monk & Howard Bell & Morse Case study
Week 9. (03/10/2014)	<ul style="list-style-type: none"> • Data modeling: E-R diagrams • UML Individual assignment III due (Artifact/cultural physical models)	Teorey Ch 2 & Ch 3 Podeswa
Week 10. (03/17/2014)	No Class- Spring Break	
Week 11. (03/24/2014)	<ul style="list-style-type: none"> • Consolidating the models • A consolidated view of the data 	Block Ch 9, 14, &15 B&H Ch 9 HWW Ch 8
Week 12. (03/31/2014)	<ul style="list-style-type: none"> • User interface design; prototyping • Usability testing Team project draft due: Integrated work models	Buxton HWW Ch 11 Benford et al.
Week 13. (04/07/2014)	<ul style="list-style-type: none"> • Data-driven design • Evaluating design alternatives • Team work project time 	Shtub et al. Yen & Davis Satzinger et al Mind Tools
Week 14. (04/14/2014)	Team presentations on teamwork	
Week 15. (04/21/2014)	<ul style="list-style-type: none"> • Change Management • Wrap-up Team project draft due (Ideas for design/Usability testing/client feedback report)	HWW Ch 16 Ward Gibson Jacobson
Week 16. (04/28/2013)	Team presentations	
04/30/2014	Final Project Due	

Bibliographical References of Readings:
BASIC CONCEPTS IN SYSTEMS ANALYSIS

Week 1: Introduction

Saddler, H. J. (2001). Design: Understanding design representations. *Interactions*, 8(4), 17–24. [available via Oncourse—Resource page]

DEFINING THE PROBLEM

Week 3: Introduction to user-centered analysis and design & Problem definition

Davis, W. S. (1994). *Business Systems Analysis and Design*. Belmont, CA: Wadsworth. Chapter 2, Recognizing and defining the problem, p. 25-57. [Oncourse]

Garcia, M, Gelbard, J., Huston, B, et al. (2002). The perils of ignoring “systems 101”: Recovering from mishaps at two small companies. *Communications of the Association for Information Systems*, 8, Article 24. [online]

Satzinger, J. W. (2009). *Systems analysis and design in a changing world* (5th ed.). Boston, MA: Course Technology. Chapter 1: The world of the information systems analyst. Read p. 2-27. [e-reserves]

Week 4: Contextual Inquiry & Teamwork activity

Holtzblatt, Wendell, & Wood, Chapter 3, Planning your contextual interviews [e-book]

Holtzblatt, Wendell, & Wood, Chapter 4, The contextual inquiry interview [e-book]

Lewis, J. P. (2006). *The project manager’s desk reference: A comprehensive guide to project planning, scheduling, evaluation, and systems*. New York: McGraw-Hill. Chapter 2, A model for managing projects, p31-46. [Oncourse]

Ante, S. E. (2006, June 5). The science of desire. *BusinessWeek*. [online]

Gertner, J. (2007, February 18). How Toyota conquered the car world: From 0 to 60 To World Domination. *New York Times Magazine*. [Oncourse]

HBR IdeaCast (2010). Rebuilding trust at Toyota. HBR Blog Network. [Oncourse]

Additional reading:

Anderson, K. (2009). Ethnographic research: A key to strategy. *Harvard Business review*, 87(3), 24. [Oncourse]

Week 5: Project Management & Information gathering

Lewis, J. P. (2006). *The project manager’s desk reference: A comprehensive guide to project planning, scheduling, evaluation, and systems*. New York: McGraw-Hill. Section 3, Project scheduling, 123-160. [Oncourse]

Valacich, J. S., George, J. F., & Hoffer, J. A. (2012). *Essentials of Systems Analysis & Design*. Upper Saddle River, NJ: Prentice Hall. Chapter 5, Determining system requirements, pp. 122-146. [Oncourse]

- Block, P. (2011). *Flawless consulting: A guide to getting your expertise used*. (2nd ed.). San Diego, CA: Pfeiffer & Company. Chapter 13 Get the Picture. [Oncourse]
- Williams, L. (2012). What agile teams think of agile principles. *Communications of the ACM*, 55(4), 71-76. [Oncourse]

Additional readings:

- Simonsen, J., & Kensing, F. (1997). Using ethnography in contextual design. *Communications of the ACM*, 40 (7), 82-88. [online]
- Wood, L.E. (1997). Semi-structured interviewing for user-centered design. *Interactions*, 4(2), 48-61. [online]

MODELS OF WORK IN ORGANIZATIONS

Week 6: Work Models

- Alter, S. (2003). Customer service, responsibility, and systems in international e-commerce: Should a major airline reissue a stolen ticket? *Communications of the AIS*, 12(10), 146-154. [online]
- Beyer & Holtzblatt, Chapter 5, A language of work, p. 81-89. [Oncourse]
- Beyer & Holtzblatt, Chapter 6, Work models – The flow model, p. 89-96; the sequence model, p. 96-101. [Oncourse]
- Schmuller, J. (1999). SAMS Teaching yourself UML in 24 hours. Hour 11 Working with activity diagrams. [Oncourse]
- Lejk, M., & Leeks, D. (1998). *An introduction to systems analysis techniques*. London: Prentice Hall. Chapter 5, Specifying processes, p58-73. [Oncourse]

Week 7: UML Overview

- Chitnis, M., Tiwari, P., & Anathamuthy, L. (2003). Creating UML use case diagrams. <http://www.developer.com/design/article.php/2109801/Creating-Use-Case-Diagrams.htm>
- Bell, D. (2003). UML basics: An introduction to the Unified Modeling Language. <http://www.ibm.com/developerworks/rational/library/769.html>
- Beyer & Holtzblatt, Chapter 7, The Interpretation Session. [Oncourse]

Week 8: More on Models

- Beyer & Holtzblatt, Chapter 6, Work models – The artifact, physical, & cultural models, p102-123. [Oncourse]
- Monk, A., & Howard, S. (1998). The rich picture: a tool for reasoning about work context. *Interactions*, 5(2), 21-30. [online]
- Bell, S., & Morse, S. (2012). How people use rich pictures to help them think and act. The Open University. http://oro.open.ac.uk/33145/2/Bell_Morse_Diagram_v6.pdf
- Natural Best Health Food Stores Case study [Oncourse]

Additional readings:

- Huang, K., & Deng, Y. (2008). Social interaction design in cultural context: A case study of a traditional social activity. *International Journal of Design*, 2(2). [online]
- Holtzblatt, Wendell, & Wood, Chapter 6: Work modeling. [e-book]
- Skok, W. (2003). Knowledge management: New York City taxi cab case study. *Knowledge and Process Management*, 10(2), 127-135. [online]

DATA MODELING

Week 9: Data modeling; Entity-relationship diagrams

- Teorey, T. J. (2011). *Database modeling & design*. Morgan Kaufmann Publishers.
Chapter 2, The Entity-Relationship model, p.13-32. [e-book]
Chapter 3, The Unified Modeling Language (UML), p.33-52. [e-book]
- Podeswa, H. (2010). UML for the IT business analyst: A practical guide to requirements gathering using the unified modeling language (2nd ed.). Chapter 2: The BA's Perspective on Object Orientation? [Oncourse]

Additional readings:

- Harrington, J. L. (2002). *Relational database design clearly explained* (2nd ed.). Amsterdam: Morgan Kaufmann. Chapter 2: Entities and data relationships, p.11-45. [Oncourse]
- Note:** Read this if you are not familiar with E-R diagrams.
- Carte, T. A., Jasperson, J. S., & Cornelius, M. E. (2006). Integrating ERD and UML concepts when teaching data modeling. *Journal of Information Systems Education* [online]

FROM ANALYSIS TO DESIGN

Week 11: Consolidation process

- Block, P. (2011). *Flawless consulting: A guide to getting your expertise used*. (2nd ed.). San Diego, CA: Pfeiffer & Company. Chapter 9: Dealing with resistance, Chapter 14: Preparing for feedback, Chapter 15: Managing the meeting for action. [Oncourse]
- Beyer & Holtzblatt, Chapter 9, Creating one view of the customer. [Oncourse]
- Holtzblatt, Wendell, & Wood, Chapter 8, Building an affinity diagram [e-book]

Week 12: User interface design & Usability testing

- Buxton, B. (2007). Sketching user experiences: Getting the design right and the right design. Chapter on "127 Experience design vs. interface design," "135 Sketching Interaction," "139 Sketches are not prototypes," "143 Where is the User in All of This?," "145 You Make That Sound Like a Negative Thing," and "371 Interacting with paper [Oncourse]
- Holtzblatt, Wendell, & Wood, Chapter 11, Visioning a new way to work [e-book]
- Benford, S., Greenhalgh, C., Giannachi, G., Walker, B., Marshall, J., & Rodden, T. (2013). Uncomfortable user experience. *Communications of the ACM*, 56(9), 66-73. [online]

Additional reading:

Holtzblatt, Wendell, & Wood, Chapter 13, Testing with paper prototypes [e-book]
Schmettow, M. (2012). Sample size in usability studies. *Communications of ACM*, 55(4), 64-70.
[Oncourse]

IMPLEMENTATION ISSUES

Week 13: Data-driven design & Evaluating design alternatives

Shtub, A., Bard, J. F., & Globerson, S. (1994). *Project Management: Engineering, Technology, and Implementation*. Englewood Cliffs, NJ: Prentice Hall.

Section 3.4, 3.5, & 3.6. [Oncourse]

Yen, D. C., & Davis, W. S. (1999). Risk-payoff analysis. In Davis, W. C., & Yen, D. C., *The Information System Consultant's Handbook: Systems Analysis and Design*. Boca Raton: CRC Press, 301-305. [Oncourse]

Satzinger, J., Jackson, R., & Burd, S. (2009). Systems analysis & design in a changing world (5th ed.). Chapter 8 Evaluating alternatives for requirements, environment, and implementation. [Oncourse]

Mind Tools. Force field analysis: Analyzing the pressures for and against change.

http://www.mindtools.com/pages/article/newTED_06.htm

Additional readings:

Stevens, L. (2009, May 11). In defense of data-driven design. Design 2.0. <http://design2-0.com/articles/in-defense-of-data-driven-design/>

Week 15: Change management

Holtzblatt, Wendell, & Wood, Chapter 16, Issues of organizational adoption [e-book]

Ward, S. Writing the executive summary of the business plan.

<http://sbinfoCanada.about.com/od/businessplans/a/execsummary.htm>

Gibson, J. E., Scherer, W. T., & Gibson, W. F. (2007). *How to do systems analysis*. Hoboken, NJ: Wiley. Chapter 10: The 10 golden rules of systems analysis.

Jacobson, I., Spence, I., & NG, P. (2013). Agile and SEMAT—Perfect partners. *Communications of the ACM*, 56(11), 53-59.

Course Deliverables and Grading:

Readings are assigned for each class period, and the latest information about readings will be listed on the class website. Please come prepared. Class discussions are important, and I expect all students to participate. Your grade will be based on individual assignments (45%), a team project (45%), and class and team participation (10%).

Individual work

Problem definition: 15%

Flow/sequence/task model: 15%

Artifact/cultural/physical model: 15%

Team project work

Presentation on teamwork: 10%

Presentation to class/client: 5%

Final specifications: 30%

Participation (class and team): 10%

The class will be conducted in a participative manner, with members of the class having significant control over the content of each class session.

To receive a passing grade in this course, you must turn in all of the assignments and the term project and complete all presentations. You cannot pass this course without doing all of the assigned work (which includes the final presentation), however, turning in all of the work is not a guarantee that you will pass the course.

To earn a B in this course your work must consistently demonstrate and/or include:

- a base line level of competence
- an understanding of lecture content and reading assignments
- correct and complete answers

Your work must also meet all of the requirements of the assignments. To earn a higher grade you must surpass the criteria and expectations for a B; to do so your work should consistently demonstrate and include:

- **Enthusiasm** - exhibited both in class and in assigned course work
- **Synthesis** - demonstrated by identifying connections between and crossover in the various topics relevant to systems analysis and design
- **Investigation** - exploring readings and experiences relevant to the class beyond those which are assigned

Your work should also demonstrate the ability to see the relationship between coursework and the larger issues regarding systems analysis and design.

Please also refer to DILS Grading Policy at
<http://ils.indiana.edu/courses/forms/grades.html>

Academic Dishonesty:

There is extensive documentation and discussion of the issue of academic dishonesty here in the Indiana University “Code of Student Rights, Responsibilities and Conduct.” Of particular relevance is the section on plagiarism:

3. Plagiarism

A student must not adopt or reproduce ideas, words, or statements of another person without appropriate acknowledgment. A student must give credit to the originality of others and acknowledge an indebtedness whenever he or she does any of the following:

- a. A student must not adopt or reproduce ideas, opinions, theories, formulas, graphics, or pictures of another person without acknowledgment.
- b. A student must give credit to the originality of others and acknowledge indebtedness whenever:
 1. Directly quoting another person’s actual words, whether oral or written;
 2. Using another person’s ideas, opinions, or theories;
 3. Paraphrasing the words, ideas, opinions, or theories of others, whether oral or written;
 4. Borrowing facts, statistics, or illustrative material; or
 5. Offering materials assembled or collected by others in the form of projects or collections without acknowledgment.

From: <http://www.iu.edu/~code/code/responsibilities/academic/index.shtml>

Indiana University and the Department of Information and Library Science policies on academic dishonesty will be followed. Students found to be engaging in plagiarism, cheating, and other types of dishonesty could receive an **F** for the course. As a rule of thumb, when in doubt, cite the source!

Course Policies:

On honor and collaboration:

Course assignments are designed to help you build a professional portfolio and gain practical experiences. Most of the class time will be used for discussions and exercises, and you are expected to spend outside of class time each week to practice your skills, work on assignments, and complete readings. You are encouraged to help each other throughout this course. However, the work you submit must be your own. Any student who submits work completed by someone else will receive a 0 score for that assignment, and may receive an F for the course.

On attendance:

I expect you to attend all class meetings. If you cannot attend class, you must notify the instructor in advance (preferably more than 24 hours prior to the class). Attendance will factor into your final grade. Unexcused absences will not be tolerated; numerous absences are frowned upon, and if you foresee yourself missing multiple classes, be sure to see the instructor the first day after class. Make-up work may be negotiated only in cases of documented, excused absences. If you do not come to the class on time, it will affect the participation grade.

On personal technologies:

Please turn off your cell phone before each class starts. It is rude for class activities to be interrupted by a ringing cell phone. Similarly, text messaging will not be tolerated in class; any student found to be sending or checking text messages during class will be invited to make a choice either to cease the texting or leave the classroom.

You are welcome to bring your laptop to class and use it to take notes, access readings we are discussing, etc. You are *not* welcome to surf the web, check e-mail, or otherwise perform non-class-related activities during class. If I find you using it not to perform a task specifically related to what we are doing in class at that very moment, it will affect your participation grade.

Assignment Turn-in Policy:

Unless otherwise noted, due dates are at the beginning of class time on the due date. If you come to the class late and submit an assignment after the class begins, it will be considered as a late submission. Due times for non-class days are 5 PM. Unexcused late work may be penalized. Assignments that are over 6 days late will **not** be accepted unless arrangements have been made with me. If you have unexpected events and need to submit the assignments late, please contact me beforehand.

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact IU Disability Services for Students <<http://www2.dsa.indiana.edu/dss/>>.

The instructor reserves the right to change, omit, or append the Course Syllabus whenever she deems it appropriate to do so.

Syllabus last updated: January 2, 2014
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