

ILS, Indiana University  
**Z556: Systems Analysis and Design**

**Course Information:**

Semester: Fall 2015  
Class time: Thursdays, 9:30am-12:15pm, LI031  
Instructor: Tamy Chambers  
Office Hours: By appointment only  
Contact: [tischt@@indiana.edu](mailto:tischt@@indiana.edu)

**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 to 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:**

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]

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 **Session 10**.*

**Session Schedule:**

Date	Topic	Readings
Session 1. (08/27/2015)	<ul style="list-style-type: none"><li>▪ Introduction</li><li>▪ Overview of syllabus</li><li>▪ Team-building activity</li></ul>	Saddler
Session 2. (09/03/2015)	<ul style="list-style-type: none"><li>▪ Introduction to user-centered analysis and design</li><li>▪ The systems development life cycle</li><li>▪ Problem definition</li></ul>	Davis Ch 2 Garcia et al. Satzinger
Session 3. (09/10/2015)	<ul style="list-style-type: none"><li>▪ Contextual inquiry as systems analysis</li><li>▪ Interviews for collecting data</li><li>▪ Teamwork activity</li></ul>	HWW Ch 3 & 4 Lewis Ante Gertner HBR IdeaCast
Session 4. (09/17/2015)	<p><b>Individual assignment I due (problem definition)</b></p> <ul style="list-style-type: none"><li>▪ Organizing for team projects</li><li>▪ Project Management essential</li><li>▪ Information gathering</li></ul>	Lewis Sec 3 Valacich et al Block Ch 13 Williams

Session 5. (09/24/2015)	<ul style="list-style-type: none"> <li>▪ Modeling sequences of events; Detailed task modeling; Activity diagrams</li> <li>▪ Individual assignment II distributed</li> </ul>	Alter B&H Ch 5, Ch 6 (p.89-101) Schmuller Lejk & Leeks
<b>Team project draft due (Info gathering plan and scheduling)</b>		
Session 6. (10/01/2015)	<ul style="list-style-type: none"> <li>▪ UML overview</li> <li>▪ UML: Use Case diagrams</li> </ul>	Chitnis et al Bell B&H CH 7
<b>Individual assignment II due (Flow/sequence/task models)</b>		
Session 7. (10/08/2015)	<ul style="list-style-type: none"> <li>▪ Modeling physical layout, organizational culture, &amp; the artifacts used</li> <li>▪ Interpreting and integrating data from multiple perspectives</li> <li>▪ Individual assignment III distributed</li> </ul>	B&H Ch 6 (p.102-123) Monk & Howard Bell & Morse Case study
Session 8. (10/15/2015)	<ul style="list-style-type: none"> <li>▪ Data modeling: E-R diagrams</li> <li>▪ UML</li> </ul>	Teorey Ch 2 & Ch 3 Podeswa
<b>Individual assignment III due (Artifact/cultural physical models)</b>		
Session 9. (10/22/2015)	<ul style="list-style-type: none"> <li>▪ Consolidating the models</li> <li>▪ A consolidated view of the data</li> </ul>	Block Ch 9, 14, &15 B&H Ch 9 HWW Ch 8
Session 10. (10/29/2015)	<ul style="list-style-type: none"> <li>▪ User interface design; prototyping</li> <li>▪ Usability testing</li> </ul>	Buxton HWW Ch 11 Benford et al.
<b>Team project draft due: Integrated work models</b>		
Session 11. (11/05/2015)	<ul style="list-style-type: none"> <li>▪ Data-driven design</li> <li>▪ Evaluating design alternatives</li> <li>▪ Team work project time</li> </ul>	Shtub et al. Yen & Davis Satzinger et al Mind Tools
Session 12. (11/12/15)	<ul style="list-style-type: none"> <li>▪ Reports &amp; Presentation Style</li> </ul>	Ward
Session 13. (11/12/15)	<b>Teamwork Presentations</b>	
Session 14. (11/26/2015)	NO CLASS - THANKSGIVING BREAK	
Session 15. (12/03/2015)	<ul style="list-style-type: none"> <li>▪ Change Management</li> <li>▪ Wrap-up</li> </ul>	HWW Ch 16 Gibson
<b>Team project draft due (design ideas/usability testing/client feedback)</b>		
Session 16. (12/10/2015)	<b>Team Final Project Presentations</b>	
12/15/2015	<b>Final Project Due</b>	

## **Bibliographical References of Readings:**

### **Session 1:** Introduction

Saddler, H. J. (2001). Design: Understanding design representations. *Interactions*, 8(4), 17–24.

### **Session 2:** Introduction to user-centered analysis and design & Problem definition

Davis, W. S. (1994). *Business Systems Analysis and Design*. Belmont, CA: Wadsworth. Chapter 2, p. 25-57.

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.

Satzinger, J. W. (2009). *Systems analysis and design in a changing world* (5<sup>th</sup> ed.). Boston, MA: Course Technology. Chapter 1: p. 2-27.

### **Session 3:** Contextual Inquiry & Teamwork activity

Holtzblatt, Wendell, & Wood, Chapter 3, Planning your contextual interviews

Holtzblatt, Wendell, & Wood, Chapter 4, The contextual inquiry interview

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, p31-46.

Ante, S. E. (2006, June 5). The science of desire. *BusinessWeek*.  
Gertner, J. (2007, February 18). How Toyota conquered the car world: From 0 to 60 To World Domination. *New York Times Magazine*  
HBR IdeaCast (2010). Rebuilding trust at Toyota. HBR Blog Network.

*Additional reading:*

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

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

*Additional readings:*

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

**Session 5: 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.  
Beyer & Holtzblatt, Chapter 5, A language of work, p. 81-89.  
Beyer & Holtzblatt, Chapter 6, Work models – The flow model, p. 89-96; the sequence model, p. 96-101.  
Schmuller, J. (1999). SAMS Teaching yourself UML in 24 hours. Hour 11 Working with activity diagrams.  
Lejk, M., & Leeks, D. (1998). *An introduction to systems analysis techniques*. London: Prentice Hall. Chapter 5, Specifying processes, p58-73.

**Session 6: 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.

**Session 7: More on Models**

Beyer & Holtzblatt, Chapter 6, Work models – The artifact, physical, & cultural models, p102-123.  
Monk, A., & Howard, S. (1998). The rich picture: a tool for reasoning about work context. *Interactions*, 5(2), 21-30.  
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](http://oro.open.ac.uk/33145/2/Bell_Morse_Diagram_v6.pdf)  
Natural Best Health Food Stores Case study

*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).  
Holtzblatt, Wendell, & Wood, Chapter 6: Work modeling.  
Skok, W. (2003). Knowledge management: New York City taxi cab case study. *Knowledge and Process Management*, 10(2), 127-135.

**Session 8: Data modeling: Entity-relationship diagrams**

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

*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. **Note:** Read this if you are not familiar with E-R diagrams.

Carte, T. A., Jaspersen, J. S., & Cornelius, M. E. (2006). Integrating ERD and UML concepts when teaching data modeling. *Journal of Information Systems Education*

#### **Session 9: Consolidation process**

Block, P. (2011). *Flawless consulting: A guide to getting your expertise used*. (2<sup>nd</sup> ed.). San Diego, CA: Pfeiffer & Company. Chapter 9: Dealing with resistance, Chapter 14: Preparing for feedback, Chapter 15: Managing the meeting for action.

Beyer & Holtzblatt, Chapter 9, Creating one view of the customer.

Holtzblatt, Wendell, & Wood, Chapter 8, Building an affinity diagram

#### **Session 10: 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

Holtzblatt, Wendell, & Wood, Chapter 11, Visioning a new way to work

Benford, S., Greenhalgh, C., Giannachi, G., Walker, B., Marshall, J., & Rodden, T. (2013). Uncomfortable user experience. *Communications of the ACM*, 56(9), 66-73.

#### *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.

#### **Session 11: 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.

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.

Satzinger, J., Jackson, R., & Burd, S. (2009). *Systems analysis & design in a changing world* (5<sup>th</sup> ed.). Chapter 8 Evaluating alternatives for requirements, environment, and implementation.

Mind Tools. Force field analysis: Analyzing the pressures for and against change.  
[http://www.mindtools.com/pages/article/newTED\\_06.htm](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/>

#### **Session 12: Communicating Results: Reports and Presentations**

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

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

National Conference of State Legislatures. Tips for making effective powerpoint presentations.

<http://www.ncsl.org/legislators-staff/legislative-staff/legislative-staff-coordinating-committee/tips-for-making-effective-powerpoint-presentations.aspx>

Hartley, P. & Bruckmann, C.G. (2002). *Business communication*. London: Routledge. Chapter 9: Effective design and visual aids. Chapter 10: Effective business documents (pp.220-228 reports).

Snyder, J.L. (2014) *Today's business communication: A how-to guide for the modern professional*. Chapter 6: Why must I remember the four “F” words?

#### **Session 15: Change management**

Holtzblatt, Wendell, & Wood, Chapter 16, Issues of organizational adoption

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.

### **Course Assignments & Grading:**

**Participation:** Readings are assigned for each class period, and the latest information about readings will be listed on the canvas site. Please come prepared. Class discussions are important, and I expect all students to participate. The class will

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

### **Grade Distribution:**

Your grade will be based on individual assignments (45%), a team project (45%), and warm-up questions (10%).

Individual Assignments will consist of three exercises (15 % each) that it is expected you will complete individually without the assistance of other in the class or elsewhere.

The team project will consist of seven components: three drafts of your works submitted throughout the semester for which you will receive feedback but no grade, a final project report (25%) and presentation (5%) which will be due at the end of the semester, and two teamwork evaluations. The first teamwork evaluation will be a presentation by your team near the end of the semester regarding the team's workstyle and roles (5%). The second teamwork evaluation will be submitted by each member of the team rating the participation of all members (10%).

Warm-up questions will be available for most lecture sections of the course. They will be open directly after the previous class and will close Sunday evening at 5p.m. You will receive one point for each session question up to ten (10%). In total there will be twelve questions, therefore you will have the option of not doing two questions.

**Grading Explanation:** To earn a B in this course your work must meet all of the requirements of the assignment and consistently demonstrate and/or include a base line level of competence, an understanding of lecture content and reading assignments, and the correct and complete answers.

To earn a higher grade you must surpass the criteria and expectations for a B. To do so your work should demonstrate the ability to see the relationship between coursework and the larger issues regarding systems analysis and design and consistently demonstrate the following traits.

- **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

The ILS Grading Policy can be found at <http://ils.indiana.edu/courses/forms/grades.html>.

**Deadlines:** Unless otherwise noted, due dates are at the beginning of class time on the due date. Copies of the assignment should be submitted via Canvas and presented in hard copy. 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.

### **Course Policies:**

**Incompletes:** Each student is expected to complete all coursework by the end of the course. A grade of incomplete will be assigned only when exceptional circumstances warrant.

**Academic Dishonesty:** There is extensive documentation and discussion of this issue in the Indiana University Code of Student Ethics. Of particular relevance is the following section on plagiarism.

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

1. A student must not adopt or reproduce ideas, opinions, theories, formulas, graphics, or pictures of another person without acknowledgement.
2. A student must give credit to the originality of others and acknowledge indebtedness whenever.
  - a. Directly quoting another person's actual words, whether oral or written;
  - b. Using another person's ideas, opinions, or theories;
  - c. Paraphrasing the words, ideas, opinions, or theories or others whether oral or written;
  - d. Borrowing facts, statistics, or illustrative material; or

e. Offering materials assembled or collected by others in the form of projects or collections without acknowledgment.

The Student Code of Conduct can be found at: <http://www.iu.edu/~code/code/responsibilities/academic/index.shtml> ([Links to an external site.](#))

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.

**Collaboration:** Individual course assignments are designed to assess your understanding of specific concepts. They are not to be completed as a group or with help from others. Any student who submits work completed by someone else or in conjunction with someone else will receive a **0** score for that assignment and may receive an **F** for the course.

**Attendance:** It is expected you will attend all class sessions. If you cannot attend class, you must notify the instructor in advance. Attendance will factor into your final grade. Please notify the instructor at the beginning of the course if you know you will not be able to attend a given session because of prior commitments or religious observation. Unexcused absence will factor into the participation part of your final grade and make-up assignments will negotiated only for excused absences.

**Personal Technologies:** You are welcome to bring laptops to class and use them instead of the computers in the lab if that is more comfortable for you. However, it is not appropriate to surf the web, check email, or otherwise perform non-course related activities during class on either you own computer or lab computers. This also applies to the use of cell phones, tablets or other personal technologies. Students engaged in either email, texting, or other activities not related to the class will be asked to either stop or leave the class session.

**Student with Disabilities:** Students who believe they have a disability that requires an accommodation for full participation in this course are encouraged to talk with the instructor and/or contact IU Disability Services for Students at <http://studentaffairs.iub.edu/dss/>.

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

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Syllabus last updated: August 11, 2015  
Tamy Chambers