Analysis, Modeling and Design

THE COURSE

Course Objective

Despite the “software crisis” recognized at a NATO conference in 1967 and the clarion call to develop methods and tools to overcome this crisis, the situation is not much different than it was four decades ago. While the information systems (IS) community has developed an impressive array of technologies and methodologies since that time, information systems continue to fail, both during the project and the post-project phases, at an alarmingly high rate.

The central objective of this course is, therefore, quite simple. It is to help participants develop some expertise in analyzing, modeling, and designing “successful” information systems using state-of-the-art methods and tools. Success in this context broadly means that the new system being analyzed and designed will meet organizational and user needs, both expressed and latent, and will create measurable organizational value through business process innovation and strategic business IT alignment.

Topic Coverage in Brief

The reasons behind the high rate of IS project failure and adaptive and customer-centric processes for systems development are covered in the course so participants can learn about the contemporary methods used for overcoming problems of IS project failure. Business IT alignment and service/process innovation are covered so participants can gain skills for creating measurable tangible and intangible organizational value through the development of new and innovative information technology (IT) applications. Substantial coverage in the course is provided to the Unified Modeling Language (UML) so students can develop some expertise in the modeling and design of information systems using state-of-the-art modeling methods and tools. Participants will also gain an understanding about the important issues of system controls and security so they can prepare systems requirements and designs that follow best practices in the systems control and security arena.

Required Course Materials

- Systems Analysis and Design in a Changing World, Sixth Edition; by John W. Satzinger, Robert B. Jackson, and Stephen D. Burd; Course Technology, Cengage Learning, 2012; ISBN: 1111534152. (Referred to as SJB hereafter).
- Other readings and cases will be provided by the program; a complete list is provided in Appendix "A"

Recommended Course Materials

- StarUML or Microsoft Visio Software. One of these software tools can be used for preparing system models for the course assignments. This is not required and a student can prepare system models using any graphical tool such as PowerPoint, etc.

The "Learning Contract"

The course design uses an active learning style with a significant amount of learning taking place in the classroom. The classroom, therefore, becomes the central and most significant learning place and resource in this course. To make this resource valuable, your full participation and engagement in the classroom is crucial. I will act mostly as a coach, and will share my knowledge and experience with you. But it is you, the individual participant, who is the real player in this learning game. So come fresh and come prepared to the classroom to present, discuss, debate, and learn. **Welcome aboard!!**

GRADING AND EVALUATION

Course Assignments and Grade Distribution

Individual Work	
Individual Homework Assignment #1 – a written assignment based on material covered during week 1	30%
Individual Homework Assignment #2 – written assignment based on material covered during week 2	30%
Class Contribution	10%
Team Work	
Team Assignment – Presentation prepared and made in class based on one assigned article, case, or problem	30%
Total	**100%**

Grading Criteria

Grading of all assignments in this course is **competitive** (i.e., all grades are assigned relative to the performance of other students in the class). The following criteria in the order of their importance are used for awarding a grade:

Differentiators

- Creativity and originality
- Stimulation of new ideas

Valued

- In-depth and accurate analysis of concepts and issues
- Application of concepts, methods, tools, and techniques in problem solving
- Conceptualization and effective communication in written work and oral presentations
- Display of knowledge about the relevant course content

Important

- Quality production of graphic material
- Effective utilization of technology

Required

- Time management during oral presentations
- Maintenance of schedule (late submission of assignments is not accepted)
- Performance on and completion of minimum assignment requirements

Final Grading Scale

Percentage Points	Grade
>=92.5	A
>=90 and <92.5	A-
>=87.5 and <90	B+
>=82.5 and <87.5	B
>=80 and <82.5	B-
>=77.5 and <80	C+
>=70 and <77.5	C
>=60 and <70	D
<60	F

Team Grades

Each team receives a single grade for a team assignment. Each team member in a team is expected to contribute equally to the team project. However, “free riders” will be penalized and will receive a much lower grade than the team grade.

ASSIGNMENT GUIDELINES

Individual Homework Assignments

- Goal: To help the participants develop individual hands-on skills in applying the concepts, tools, and techniques learned in this course to solve moderately complex problems.
- General guidelines for preparing individual assignments are given below under a separate heading.
- Specific issues that need to be addressed, questions that need to be answered, and any guidelines/hints for the assigned problems are provided in the assignments spreadsheet, provided separately.
- The due dates for these assignments are shown in the class schedule on the following pages.

IMPORTANT: You are free to discuss with your team members or other participants in the MITS program the cases and your thoughts for answering the questions with respect to the individual assignments. However, all interaction and communication between you and all the other participants in the MITS program, in both the batches, with respect to the individual assignments **must** cease once you start preparing/writing answers to your individual assignments. Ethical behavior and honesty are the cornerstones of sound educational experience, and I hope and expect that all the participants will follow the highest standards of ethics and honesty in completing these assignments. Disciplinary Procedures for Academic infractions are discussed in the UB School of Management's MBA/MS handbook that is available at http://www.mgt.buffalo.edu/mba/handbook/MBA-MS%20HANDBOOK%202006-07.pdf.

Class Contribution

- This class primarily utilizes an active learning style with a lot of in-class discussion and problem-solving. There will be minimal time spent on formal lecturing.
- This active learning style requires participants to be engaged and to contribute to the discussion and learning in the class.
- This "class contribution" through meaningful engagement and participation in the class will strengthen and enrich your own understanding of the material as well as contribute to the learning of the entire class.
- Class participation and class contribution are not the same things. Remember that "hogging the air time" does not necessarily result in class contribution.
- The class contribution grade will be awarded based on your insightful contribution and value addition to class discussion, your voluntariness and preparedness in asking and answering questions, and your answers to specific questions asked during class discussion. The following schema will be used:

  A – is always prepared when asks or asked; demonstrates insight into the assigned material; adds value or insight to the discussion when volunteering to respond.
  B – is generally prepared when asks or asked; volunteers responses which are mostly on the mark and/or add some value to the discussion.
  C – is infrequently prepared and/or infrequently volunteers answers; is able to respond to questions without too much prompting when asked.
  D – is infrequently prepared; is not familiar with the material; rarely volunteers and/or volunteers information which is generally off the mark; is often absent.
  F – is frequently unprepared and/or is frequently absent.

Team Composition for Team Assignments

- The class will be divided into **16 teams** for all team assignments.

Team Classwork Assignment

- Goal: To help the participants develop hands-on skills in applying the concepts, tools, and techniques learned in this course to solve complex problems.
- Each team in the class will complete **one** team classwork assignment during this course as shown in the class schedule that follows.

- Each team is responsible for preparing a team classwork presentation on its assigned topic during the breakout session after the particular topic has been covered in the class, as shown in the class schedule on the following pages.
- All other students in the remaining teams are also expected to read the assigned case/topic carefully and prepare informal solutions so they can engage in meaningful class discussion following the team classwork presentations.
- The team working on a particular topic/case will make its team classwork presentation during the assigned LU as shown in the class schedule on the following pages.
- This presentation should be between **20-25 minutes** long. Presentations exceeding 25 minutes will be penalized.
- General guidelines for preparing team presentations are given below under a separate heading.
- Specific issues that need to be addressed, questions that need to be answered, and any guidelines/hints for the articles, cases, and problems are provided in the assignments spreadsheet, provided separately.

General Guidelines for Individual Assignments

- Please provide a **cover page on all assignments** that should include the participant's name. Please write **your full name exactly as it appears in your UB registration records**. **Short names, other names, initials, etc. are not acceptable.** Please also include on the **cover sheet your class, the title of the assignment, and the date of submission**.
- Individual assignments should be submitted in printed hardcopy. Assignment #1 should be submitted to the instructor on the due date and time. The printout for assignment #2 should be submitted to the MITS program office in Bangalore on the due date and time so it can send all hardcopy assignments to the instructor in the US for grading.
- Do not submit assignments in binders or folders.

General Guidelines for Team Presentations

- Your presentation should include the following elements:
  1. Introduce your team members briefly.
  2. Identify the important concepts, ideas, and issues raised in the article, case, or assigned chapter
  3. Identify and discuss **two** central ideas, concepts, frameworks, or issues in the assigned reading for this presentation; justify why you think these two are the most critical concepts in the reading.
  4. For articles and cases as assigned readings: Discuss how you can apply the ideas, concepts, and techniques learned from the assigned reading in your own work; give at least one example. For SJB chapters as assigned readings: Present your problem solution applying the concepts learned from the book chapter. Item #4 should take nearly the same amount of time as you spend totally on items #2 and #3 above.
  5. Takeaways: Summarize briefly the two or three major takeaways from this assignment.

- **Before your presentation**: **Please provide a hard copy of your PowerPoint presentation to the professor with not more than two slides per printed page**.
- The hard copy of your PowerPoint presentation should contain a cover page on which you should include the team number/name, the names of all the members in the team (please write full names as on the class roster, not short forms or other names), and the batch (FMBA or EMBA), the title of the presentation (Team Homework Presentation or Team Classwork Presentation), and the date of submission.

CLASS SCHEDULE

Learning Unit (LU)	Topic	Class Activity	Readings/Cases	Team Classwork Presentations
WEEK 1				
Day 1 (D1): Systems Modeling 1				
D1-LU1	Course Introduction; Systems Modeling; Event List (EL); Use Cases (UC)	Lecture	SJB Chapter 1; and SJB Chapter 2 (pp. 35-46); SJB Chapter 3	
D1-LU2	ELs and UCs (contd.)	Hands-on work	The State Patrol Ticket-Processing System (SJB p. 87)	
D1-LU3	ELs and UCs (contd.)	Breakout session	"Call Center Design for Lion Financial Services" (LFS) Case	
D1-LU4	ELs and UCs (contd.)	Team presentation / class discussion		Team #1 and #2 - EL and UC Diagram for Andy Carr's Proposed System for LFS
Day 2 (D2): Systems Modeling 2				
D2-LU1	Activity Diagrams (AD); Systems Sequence Diagrams (SSD)	Lecture	SJB Chapter 5 (pp. 119-132)	
D2-LU2	ADs and SSDs (contd.)	Hands-on work	The State Patrol Ticket-Processing System (SJB p. 87)	
D2-LU3	ADs and SSDs (contd.)	Breakout session	"Call Center Design for Lion Financial Services" (LFS) Case	
D1-LU4	ADs and SSDs (contd.)	Team presentation / class discussion		Team #3 and #4 – AD and SSD for Andy Carr's Proposed System for LFS
Day 3 (D3): Systems Modeling 3				
D3-LU1	Class Diagrams (CD); Statecharts (SC); UML Model Integration	Lecture	SJB Chapter 4; SJB Chapter 5 (pp. 132-144)	
D3-LU2	CDs and SCs (contd.)	Hands-on work	The State Patrol Ticket-Processing System (SJB p. 87)	
D3-LU3	CDs and SCs (contd.)	Breakout session	"Call Center Design for Lion Financial Services" Case	
D3-LU4	CDs and SCs (contd.)	Team presentation / class discussion		Team #5 and #6 – CD and SMD for Andy Carr's

				Proposed System for LFS
WEEK 2				
Day 4 (D4): Business IT Alignment				
D4-LU1	Strategy Maps (SM)	Lecture		
D4-LU2	Information Capital Alignment (ICA)	Lecture		
D4-LU3	ICA (contd.)	Breakout session	"Meru Cabs - A Spectacular Growth Story" case	
D4-LU4	SM and ICA (contd.)	Team presentation / class discussion		Team #7 and #8 - ICA for Meru Cabs
Day 5 (D5): Service Innovation 1				
D5-LU1	Service Logic Innovations (SLI)	Lecture		
D5-LU2	SLI (contd.)	Breakout session	"Meru Cabs - A Spectacular Growth Story" case	
D5-LU3	SLI (contd.)	Team presentation / class discussion		Team #9 and #10 - SLI for Meru Cabs
D5-LU4	Service Blueprinting (SB)	Lecture		
Day 6 (D6): Service Innovation 2 + Design and Implementation				
D6-LU1	SB (contd.)	Breakout session	"Meru Cabs - A Spectacular Growth Story" case	
D6-LU2	SB (contd.)	Team presentation / class discussion		Team #11 and #12 - SB for Meru Cabs
D6-LU3	Design of User and System Interfaces	Lecture	SJB Chapter 7	
D6-LU4	Implementing Information Systems	Lecture	"Inside Ericsson: A Framework for the Practice of Leading Global IT-Enabled Change"	
Individual HW Assignment #1 on "On the Spot Courier Services" case (SJB, pp. 64-65, 88-89, 116-117, 148-149) Due on August 21, 2017 at 8:30 AM				
Individual HW Assignment #2 on "Airbnb (A)" and "Airbnb(B)" cases Due on August 28, 2017 at 8:30 AM				
Note: Team classwork presentations have to be prepared during breakout sessions and have to be presented in class on the assigned day/time shown above.				

APPENDIX – A
List of Readings

Required Readings

Articles (Available Free of Charge from UB Libraries)

1. "Service Logic Innovations: How to Innovate Customers, Not Products," by Stefan Michel et al., California Management Review, Spring 2008.
2. "Service Blueprinting: A Practical Technique for Service Innovation," by Mary Jo Bitner et al., California Management Review, Spring 2008.
3. "Inside Ericsson: A Framework for the Practice of Leading Global IT-Enabled Change," by Einar Iverworth, California Management Review, Fall 2010.

Cases and Other Materials (To be Bought)

4. "Call Center Design for Lion Financial Services," Stanford Graduate School of Business Case OIT-29, October 16, 2003.
5. "Strategy Maps" (chapter) in Strategy Maps: Converting Intangible Assets into Tangible Outcomes (book), by Robert S. Kaplan and David P. Norton, Harvard Business School Press, 2006; ISBN-13: 978-1-4221-1583-1
6. "Information Capital Readiness" (chapter) in Strategy Maps: Converting Intangible Assets into Tangible Outcomes (book), by Robert S. Kaplan and David P. Norton, Harvard Business School Press, 2006; ISBN-13: 978-1-4221-1583-1.
7. "Meru Cabs - A Spectacular Growth Story," Indian School of Business Case ISB021, November 25, 2013.
8. "Airbnb (A)," Harvard Business School Case 9-912-019, March 28, 2012.
9. "Airbnb (B)," Harvard Business School Case 9-912-020, March 28, 2012.

APPENDIX – B
Class Policies Reiterated

- Late deliverables will not be accepted and graded in this course. This tilts the "balance of fairness" and violates the principle of distributive equity. I like to be fair in all my activities and dealings and would not be violating this fairness principle.

- Copying or cheating in any other way is unethical and constitutes academic dishonesty. You should refrain from engaging in this unethical activity. When you copy, you deprive yourself of an opportunity to learn the skill that you will develop if you were to do the assignment yourself. When you give others your work to copy, you deprive them of a learning opportunity. Instead help them understand the concepts and encourage them to do their own work.

- I am quite conscientious in my grading of assignments. Further, all grading is relative. Therefore, I do not negotiate and change individual grades on an assignment after the assignments have been graded. If there is a genuine grading error (e.g., a question was not graded), I will be happy to re-grade the assignment in question. Please let me know about any genuine mistakes within 24 hours of receiving your graded assignment.

- Extenuating Circumstances: If you are facing extreme hardship due to non-academic personal (e.g., health, bereavement in the family, etc.) or work-related (e.g., unforeseen business travel) reasons, I will work with you to help you . I will do my best to accommodate you to the maximum extent I can. However, you have to provide me evidence (documents needed) of extreme hardship.

- Again to be fair to all the participants and to maintain distributive equity, please resist asking me for favors that will provide you with an unfair advantage over other participants.

- Common Classroom Courtesies

  a. If you do have to leave early for good reason, you must inform the instructor before the beginning of the class and leave the classroom quietly.

  b. Please do not pursue any activity that is disturbing to the entire class.

     1. Do not eat in class making loud chewing noise. If you have to eat, do it quietly.

     2. Turn audible sounds off on your pagers, cell phones, and other electronic devices. If you do have to take a call, please step outside the class room and have your conversation in a way that you are not disrupting the class. The break between consecutive learning units is only one hour and twenty minutes. Please try to use the break period for personal needs of various kinds.

     3. You may leave the classroom temporarily to use the restroom. It is very disruptive for others when there is constant movement of participants walking in and out of the classroom while the lecture or discussion is in progress. Therefore, keep your movements it inconspicuous and to a minimum.

     4. Follow common communication courtesies. Only ONE person speaks at a time. This means that you should avoid engaging in cross conversations during a lecture by the professor or when another student is speaking. This is distracting for the entire class. It is also rude.

     5. Discuss any personal issues including your assignment grades, if needed, on a one-on-one basis and offline.