

IS/HCC 636

Structured Systems Analysis and Design

Syllabus

Instructor: Dr. Carolyn Seaman
Class meets: Thursdays 4:30-7pm in Fine Arts 014
Office: ITE Room 404B
Phone: 410-455-3937
Office hours: Mondays 10-12, Thursdays 2-4pm
Email: cseaman@umbc.edu
Website: <http://userpages.umbc.edu/~cseaman/>

Course Description

The intent of this course is to describe the analysis and design phases of an information systems development project. All of the activities required to progress from the initial identification of an organizational problem to the design of an IT-based solution are covered. Specific techniques are taught to carry out those activities using a structured approach. The emphasis will be on both learning the mechanics of the techniques and applying them to real projects. The student's competency with these skills will be assessed by a semester-long group project that involves the analysis and design of an actual information system and by their performance on individual activities such as exams, quizzes, and discussion. This is an introductory course, as such it does not cover advanced topics (e.g., object oriented SA&D) or late lifecycle stages (e.g., implementation or maintenance).

Course Content

Upon completion of this course, the student will be able to apply structured techniques for analyzing the information system needs and problems of an organization, and then design solutions to those problems.

1. Introduction to systems analysis and design

Objective: Describe the motivation behind structured systems analysis and design and the consequences of developing systems without this methodology, and the stages of the traditional waterfall and other systems development life cycle (SDLC) models, including iterative, agile, spiral, etc.

2. Problem definition

Objective: Explain how to define a systems analysis problem, given some informal description of an organizational situation, including problem and scope statements that clearly and unambiguously outline the implications and boundaries of the problem

3. Analysis

Objective: Conduct a complete systems analysis, given a well-defined systems analysis problem, correctly applying structured systems analysis techniques.

Specifically, the techniques learned and applied will include

- efficient and thorough collection of information on user requirements using techniques such as interviewing, observation, surveys, prototyping, and analysis of organizational documents.
- the construction and interpretation of the traditional products of structured systems analysis, including conceptual data models and data flow diagrams.
- application of these traditional structured systems analysis techniques to a given collection of unstructured information regarding user requirements, resulting in a correct and comprehensive model of the organization's current data management and processing.
- application of techniques (such as walkthroughs and reviews) to evaluate a set of structured user requirements.

4. Systems Proposal

Objective: Given a well-defined problem and a complete systems analysis, present to a customer a systems proposal that is judged (by the customer) sufficient to enable the customer's decision concerning the choice of system alternative.

Specifically, the following activities will be learned and demonstrated:

- generation of at least three alternative solutions to the problem that all represent feasible and realistic solutions from the customer's point of view.
- a complete and useful (from the point of view of the customer) feasibility analysis that addresses economic, technical, and organizational issues, that compares the system alternatives.
- a cost/benefit analysis that correctly and appropriately applies the following techniques: identification of tangible and intangible costs and benefits, identification of one-time and recurring costs and benefits, projection of costs and benefits over the expected lifetime of the system, calculation of net present value, quantification of risk reduction, cash flow analysis, return on investment, and break-even analysis.
- a schedule analysis that correctly and appropriately uses work breakdown structures, Gantt charts, and/or PERT charts.

5. Design

Objective: The student will learn how to correctly apply structured design techniques to produce a high-level design of an information system, given a complete systems analysis.

Specifically, the techniques covered will include structure charts, control flow diagramming, data flow diagramming, conceptual data modeling, and dialogue diagramming. The student will be able to use these techniques to

- produce a system architecture design and use the architecture to identify the components of the system to be designed.
- produce useful and usable (from the point of view of the customer) designs for the input and output interfaces of a system.

- design an appropriate and usable user interface paradigm for a system.
- plan an effective usability assessment to evaluate the design of a user interface.
- conduct a thorough design review.

Assignments and Grading

Grading standards

The University's Graduate Catalog states that grades of "A", "B", and "C" are passing and grades of "D" and "F" indicate failure. There is specifically no mention of any numerical scores associated with these letter grades. Consequently, there are no pre-defined numerical boundaries that determine final letter grades. These boundaries can only be defined at the end of the semester after all scores have been earned. At that point, boundaries for final letter grades can be defined such that they conform to the University's and IS's official guidelines. This means that it is not appropriate to assume that a given numerical score corresponds to a particular letter grade. It is also important to understand that final letter grades reflect academic achievement and not effort.

Grading details

IS 636 is a team-based, project course and is primarily evaluated as such. This is in-line with what you will experience as analysts in the workplace, where most SA&D efforts are evaluated solely on their final deliverables, regardless of individual contributions. (Some of you have already worked in teams and know that performance depends on skills in communicating, cooperating, and collaborating.) To ensure adequate representation of individual learning, however, the final course grades will comprise both group and individual components as weighted in the table below and reflected in the Blackboard grade center.

Group (45%)	Individual (55%)
Deliverable 1: Baseline Project Plan	10% Exam #1 15%
Deliverable 2: As-Is Model	10% Exam #2 15%
Deliverable 3: Systems Proposal	10% Quiz 10%
D3 Peer Review	5% In-class exercises 15%
Deliverable 4: System Design	10%
Team management activities	*

(*) The group score can be modified by up to 10% of its total value to accommodate for egregious lapses in either 1) *personal effort*, as shown by the two team-based peer-evaluations, or 2) *team management*, as shown by not fully completing all assignments on time. Early warnings on these two criteria will allow time for repair.

Late work

All deliverables, peer reviews, exams, and quizzes are due by **class time (i.e. 4:30pm)** on the due date listed on the schedule. **Late submissions will NOT be accepted for evaluation.** If students are unable to fully complete an assignment by the deadline, they are strongly encouraged to submit the current state of their document as-is for partial credit. All four major project

deliverables have the option of resubmission to recoup up to 75% of the points lost. While there are no extra credit opportunities, the final course grade will likely reflect a slight upward curve.

Group Project

Each student will be required to participate in a group project that includes the analysis and design of a solution to a business problem for a real customer organization. Students will be assigned to a team and each team will choose their own project and customer, with the approval of the instructor. The project grade will be based on scores on four deliverables, each of which is described in the Project Deliverables subfolder under Assignments on the Blackboard site, as well as a peer review of another team's deliverable 3, peer evaluations at the middle and end of the semester and monthly status reports. Each project deliverable can be submitted twice, the second time incorporating feedback from the instructor on the first submission.

Peer Review

As part of the third project deliverable, drafts will be assigned between groups for peer review. That is, each project team will prepare their first submission of deliverable 3, which will then be given to another team to review. Each project team will receive another team's deliverable to review. Teams will be given a checklist to guide their review, and will receive a grade for the thoroughness and helpfulness of their review. Teams will be expected to incorporate feedback from the peer review of their deliverable into the final version.

Exams and quizzes

There are two exams and one quiz. One week before the date each exam or quiz is due, it will be made available to students on the Blackboard site. Each exam has two parts. The first part can be downloaded, completed off-line, and submitted via Blackboard when finished. The second part is timed and must be completed online on Blackboard. Students will have one week to complete the exam, during which they may consult any widely available non-human sources for help with the exam. Students may also contact the instructor at any time with questions about the exam. However, while taking the exam, students are not to discuss the exam with each other or with any other person besides the instructor. The quiz will be taken entirely online, on Blackboard.

In-class exercises

Most classes will include an interactive, hands-on exercise that results in some graded work at the end of class. Some exercises will be in small groups, some will be individual. In most cases, the graded work will be able to be made up for partial credit if the student is absent from class.

Course Materials and Resources

The required textbook for this course is Systems Analysis and Design, by Dennis, Wixom, and Roth, sixth edition, published by Wiley, 2015, ISBN 978-1-118-89784-3.

The textbook is an important, integral part of the course and should be considered one of the student's primary sources of information, along with the lectures.

The Blackboard site for the course is an essential tool for students to succeed in this course. All course materials, including assignments and lecture slides, will be posted there. All assignments must be submitted through the Blackboard site, and grades will be posted there. Students are responsible for being familiar with all information provided on the site.

Another resource for students is the online Discussion Board on the Blackboard site. Any questions about the logistics, assignments, or due dates related to the course can be posted to the Course Administration forum and will be answered promptly by the instructor. Similarly, the Projects forum can be used to pose questions related to the semester project, and the Stories & Insights forum can be used to ask general questions about the content of the course, as well as to share information with other students.

Statement on Academic Dishonesty

By enrolling in this course, each student assumes the responsibilities of an active participant in UMBC's scholarly community in which everyone's academic work and behavior are held to the highest standards of honesty. Cheating, fabricating, plagiarism, and helping others to commit these acts are all forms of academic dishonesty and they are wrong. Academic misconduct could result in disciplinary action that may range from a grade of 0 on the relevant assignment or failure of the entire course, to suspension or dismissal from the program.

In particular, for this course:

- No cheating will be tolerated on the exams or the quiz, including consulting any persons besides the instructor, or using any resources not available to all other students.
- Plagiarism (misrepresenting as your own work any part of the work performed by another person, including Internet sources) applies to the team project and the exams. The team must actually work with a real (not fabricated) customer organization and must not fabricate any information that should come from that organization. Material prepared for another course, or for this course in a previous semester, may not be used as part of any assignment without the instructor's permission. Responses to essay questions on the exams must be in the students' own words, and copied, wholly or partially, from any other source.
- Academic dishonesty also includes interfering with another student's work or aiding another student to commit academic dishonesty.

Schedule

All deliverables (D), peer reviews, exams, quizzes, and exercises are due by class time (4:30pm) on the day they are listed.

No extensions will be granted, and no credit will be given for late submissions.

NOTE: The schedule shown below is current as of 8/29/2016. It will be available as a separate Excel file on the Blackboard site, where any changes will be reflected.

Date	Topic/Activity	Reading	Assignments due
9/1/2016	Course introduction and Intro to SA&D		
9/8/2016	Project definition and problem definition	Chapters 1 and 2	D0
9/15/2016	Overview of analysis and Requirements gathering	Chapter 3	
9/22/2016	The Desk Set		D1
9/29/2016	Data Flow Diagrams and examples	Chapter 5	Status report
10/6/2016	Entity Relationship Diagrams, Data dictionary, and walkthroughs	Chapter 6	Exam 1; D1 resubmit
10/13/2016	Project check-in		D2
10/20/2016	Systems proposal	Chapter 7	Peer evaluations
10/27/2016	Object orientation	Chapter 4, 14	D2 resubmit; Status report
11/3/2016	Creativity exercises		D3
11/10/2016	User Interface Design	Chapter 9	D3 peer review
11/17/2016	Software design	Chapter 8, 10	Exam 2
11/24/2016	Thanksgiving – no class		D3 resubmit; D4
12/1/2016	The rest of the story	Chapters 12, 13	Status report
12/8/2016	Course wrap-up		Design Quiz; D4 resubmit; Peer evaluation (12/12)