



SYLLABUS

CS/MI258: Systems Analysis and Design

Spring 2014

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Prerequisite: CS/MI257 Database Systems and Applications

Overview

This course offers students an opportunity to gain familiarity and fluency with a set of widely used techniques for the design and improvement of information systems. The course may be of value both to students who intend to pursue careers in system development and to those who will be customers or managers of system development projects. The course may also be of interest to those engaged in the design of *business* architecture, who may wish to avail themselves of design techniques developed for information systems.

Central to the course is a semester long project in which students work in small teams to develop a set of requirements and a prototype for an information system which addresses business needs of an actual client. Through this project students have an opportunity to apply the techniques learned in the course as well as to develop important project management and organizational skills.

This class is different from most CSOM classes and perhaps CS classes as well, and that is intentional. It focuses on **experiential learning**. It is meant to be more **collaborative, process oriented, and self-directed than seems typical**. That is because the class is designed to be a microcosm of how systems organizations operate in the professional world – or at least as much as we can in an academic context. It **requires students to be more proactive** than in a theory oriented lecture class. **It also presumes that most of the work goes on outside of class as in organizations, where most of the work takes place outside of staff meetings**. Another presumption is that you already have mastered enough programming and data base theory and practice to focus on models of analysis and design. It is mostly **NOT about coding**. The system is implemented via code but it is less about code as a story is less about the language in which it is written. Finally, **it is extremely important for students to realize that systems analysis and design is not a subject to be studied only by those who intend to become professional systems developers or consultants. We will all likely be end users of information technology and therefore directly involved in creating systems requirements, if not analysis and design.**

Learning Objectives

Systems analysis and design is not primarily a technical process. It is more a human process, requiring technical, management, team development, and interpersonal skills. However systems analysis and design does require understanding technology and mastering certain technical skills. It follows that this course includes both technical and organizational learning objectives.

By participating actively in this course and completing the assignments you should expect to:

1. Learn how to identify an organization's information processing requirements.
2. Learn how to develop a detailed specification for an information system that can fulfill these requirements.
3. Understand that the successful systems analyst needs to have a broad understanding of organizations, organizational culture, organizational change, organizational operations,

and business processes.

4. Understand that IT strategy must be conceived in an interaction with overall organizational strategy.

In support of the more technical objectives (1 & 2 above), students will learn a set of specific techniques and methods that represent current best practice for systems analysis and design. These techniques are based on the Unified Modeling Language (UML), a visual language for describing information systems. UML is a set of diagramming techniques employed in both the analysis and design phases of object-oriented development projects. It has emerged as a critical competency for systems analysts in today's environment.

In support of the more organizational objectives (3 & 4 above), students will analyze business cases, engage with industry experts, and explore current thinking about agile development, organizational culture, and research on user interactions with information systems.

Course Materials

There are two required books for this course, along with a teaching case:

- *Applying UML and Patterns: An Introduction to Object-Oriented Analysis and Design and Iterative Development (3rd Edition)* by Craig Larman. Prentice-Hall, 2005. ISBN: 9780131489066
- *Making I/T Work: An Executive's Guide* by Severance and Passino. Jossey-Bass, 2002. ISBN: 9780470397831
- *1-888-Junk-Van* by Derrick Neufeld and Liliana Lopez Jimenez. Available [online](#) from Harvard Business Publishing.

The textbooks are available at the bookstore.

The teaching case must be purchased from the [Harvard Business Publishing website](#). The cost is \$3.95.

The Larman and Severance books have both been in print for a while and should also be available as used books for substantial savings.

We will be making extensive use of both books throughout the course. The Larman book is highly regarded as an excellent practical introduction to the Unified Modeling Language (UML), one of the key topics in this course. Previous MI258 students have found *Making I/T Work* to be an especially useful guide to the actual managerial work of developing and deploying information systems.

In addition there are a number of articles that will be made available through online course reserves.

Course Website

The course website is hosted on BC's new Canvas platform. Go to <https://bostoncollege.instructure.com/courses/1221069> and log in using your BC credentials. You can also access the Canvas website from My Courses in Agora. For a quick overview of Canvas, have a look at this [brief introductory video](#). More video tutorials can be found [here](#) and answers to frequently asked questions can be found [here](#).

Academic integrity

Academic dishonesty is a very serious offense. In this course many of the assignments will involve teamwork, and our learning process will hopefully be highly collaborative, but be sure that *individual* assignments including exams represent your own work. Any assignments or exams that are suspiciously similar or which give rise to any suspicion of plagiarism will trigger an unpleasant inquiry. Actual cases of cheating are generally dealt with severely. People have failed courses and been kicked out of school for this.

Grading

The course grade will be based on the following items, each of which will be explained below:

Class reflections	10%
Reading responses	10%
Class participation	10%
Midterm	10%
Final	10%
<u>Project</u>	<u>50%</u>
Total	100%

Class reflections. The purpose of the reflections is to give you an opportunity to reflect on the material being covered in the course as you encounter it. Each reflection is to be completed while the class is still fresh in your mind and thus is due by midnight on the Tuesday following each class. Reflections are meant to be short and sweet – one paragraph (at least 50 words) – and should not take you long to write. In your reflection you should address what was covered in class from one of three perspectives: a practical take away for your work or career, an important unanswered question, or an interesting connection or insight. Reflections will be posted using Canvas and will be graded on a 5 point scale.

Reflections are due for all classes except the very last. Your lowest 3 reflection grades will be dropped when calculating your final grade. A detailed grading rubric for class reflections is available on Canvas.

Reading responses. The purpose of the reading responses is to give you a chance to demonstrate your mastery of the assigned reading and to help you prepare to bring your best to the class discussion, which will be an important part of nearly every class. Each reading response is due 15 minutes before the start of class. Reading responses should be at least 200 words in length and should address at least one issue from the required reading for the week. Responses will be posted using Canvas and will be graded on a 5 point scale. Responses are due for classes 2 through 10. Your lowest 3 reading response grades will be dropped when calculating your final grade. A detailed grading rubric for reading responses is available on Canvas.

Class participation. Your class participation grade reflects your contribution to class discussion. I keep track of contributions on a weekly basis and am happy to give you feedback about your participation at any point in the semester and talk about strategies for increasing your class participation. I will also count as class participation any contributions to the reading response and class reflection discussions over and above the required postings.

Midterm. The purpose of the midterm is both to assess your learning of course topics and to provide you with some constructive feedback on where you need to go deeper into the material. Note that the midterm accounts for a smaller percentage of the course grade than in most classes; this is reflective of the focus in MI258 on project-based, experiential learning. The midterm will be a take home exam and will be made available the week of March 10 and will be due on March 18. The midterm will cover all topics presented up through the introduction to Class Diagrams on 3/10. More details about the midterm and how to prepare for it will be provided as the date approaches.

Final. The purpose of the final exam is to provide one final assessment of your learning of course topics. As with the midterm, the percentage of the grade is smaller than in many courses because of the unique focus of MI258 on project-based, experiential learning. The final is cumulative in that it may include all topics covered in the course. The final will be a take home exam and will be made available on May 6 and will be due on May 9.

Project. The team project is the keystone of the course and this is reflected in the large weight given to the project grade. The project grade is based on two key components: a final in-class presentation of the project and a set of project deliverables consisting of design documents, planning documents, and a business case. The presentation counts as 30% of the project grade and the deliverables 70%.

Team Evaluations

Given that the project represents a team effort, a team evaluation will be completed by each student at the end of the semester assessing the relative contributions of all team members both to the team's product and its process. The evaluation form and instructions on how to complete it will be provided later in the semester. I will, if necessary, adjust individual project grades up or down to reflect the consensus of each team on members who contributed significantly more or less than expected.

- Attempts to game the evaluation system (e.g. punishing another team member because of a personal issue) are generally very easy to detect and are not rewarded.
- Small differences in contribution will not affect your grade. Adjustments are reserved for big differences.
- Downward adjustments are reserved only for cases in which someone did not carry their share of the team project to a significant extent. In the case of a team where everyone was "all in" but some people worked even harder, then no one would receive a lower grade, but some team member(s) might receive an even higher grade.
- I consider the evaluations to be confidential and will treat them as such.

If at any point in the semester you have concerns about team issues, please bring them to my attention.

All that said, it is worth bearing in mind that students in MI258 are generally very favorable about the team project as a key learning experience, and learning to work effectively on a system development team will be an important and positive part of our learning this semester.

Privacy, Confidentiality, Civility, and Reasonableness

As a reminder, it is an essential part of this learning environment to have respect for individual and client privacy and confidentiality when it comes to sharing and discussing participants' "out of class" organizational/personal experiences. This class should provide everyone with a safe environment to test their assumptions and to try new behaviors and roles. I am confident that we will develop a nurturing and challenging learning community that is invested in the growth and development of all its members. Confidentiality would also apply to interactions with clients and information about client organizations.

The duty of civility is simply the obligation to be reasonable. This involves the obligation to be able to explain to one another how the ideas, principles, and policies they advocate can be supported. It also involves the willingness to listen to others and a fairmindedness in deciding when accommodations to their views should reasonably be made.

Use of Laptops and Other Devices

This class meets once a week and our class time is a precious resource. The success of the class depends on all of us being fully engaged in the class. I ask that you treat your electronic devices as you would in an important business meeting in which you are highly visible. Laptops should be used only for note taking or other class related matters. If you don't absolutely need your laptop I suggest you keep it closed. Cell phones and tablets should ideally be shut off during class or at least silenced. If you are going to be distracted by a vibrating phone, please turn it off completely. If you have an urgent need to use your device during class time, please be discrete about it and respect those around you. If you need to briefly leave the class in order to attend to urgent business, that would be preferable to staying in class and distracting others. I reserve the right to adjust the class participation grade in response to classroom use of devices that creates a distraction for me or other students. If you have any questions or concerns about this policy please bring them up.

There is another side to this issue, however, for which I must take primary responsibility. My goal and my intention is to keep the class as engaging as possible, to offer adequate breaks and changes in pace and activity to allow us all to stay engaged through what is a big chunk of time at a late hour in the day. If you ever have concerns, feedback, or suggestions about the pace and energy level of the class, please bring them up.

Disability Services

If you are a student with a documented disability seeking reasonable accommodations in this course, please contact Kathy Duggan, (617) 552-8093, dugganka@bc.edu, at the Connors Family Learning Center regarding learning disabilities and ADHD, or Paulette Durrett, (617) 552-3470, paulette.durrett@bc.edu, in the Disability Services Office regarding all other types of disabilities, including temporary disabilities. Advance notice and appropriate documentation are required for accommodations.

CS/MI 258 – Spring 2014 Schedule

What follows is a preliminary course schedule. The actual schedule, including detailed reading assignments and deadlines is available on Canvas.

The *Project* column describes in class presentation or discussion by teams about team projects (details about what to prepare will be provided on Canvas).

The *Reading* column lists assigned readings. Larman and Severance refer to the two textbooks. Other names refer to online readings (links in Canvas). A small number of additional online readings may be assigned (advance notice will be given via Canvas).

Date	Topic	Agenda	Project	Reading
1/13	<u>Introduction</u>	Lecture: Course Overview Discuss: What is SD; why do we need it?	Team Formation	Why Software Fails No Silver Bullet Severance Ch. 1 Infamous Software Bugs
1/17	<u>Mandatory Friday 3pm Meeting with Deloitte Mentors</u>	<i>Note that this is on a Friday (not usual class time) due to mentor schedules. Please mark this on your calendars!</i>	<i>Details and location to be announced.</i>	
1/27	<u>The Development Process</u> United Health Group Presentation	Lecture: development process, UML, UP Discuss: Beck and Agile Development Severance Model	Find a client	Aegis Case Beck pp. 17-34 Larman pp. 11-40 Severance 2
2/3	<u>Use Cases</u> EY Presentation	Lecture: Use Cases Use Case Exercise Discuss: Zen & the art of systems analysis Technostress	Proposed project description	Cockburn pp. 1-31 Technostress reading Pirsig pp. 84-93 Larman pp. 61-93, 493-500

Date	Topic	Agenda	Project	Reading
2/10	<u>Requirements Gathering</u> Deloitte Presentation	Lecture: Requirements Gathering Requirements Discussion	First use case	Weinberg pp. 53-59, 63-84 Schein pp. 15-20, 65-68 Larman pp. 101-120
2/17	<u>Process Modeling</u>	Lecture: Activity Diagrams Junk Van Case	Use case diagram	Fowler pp. 117-130 1-888-Junk-Van Case Junk Van Activity Diagram
2/24	<u>System Sequence Diagrams</u>	Lecture: System Sequence Diagrams Discuss: GMI case introduction	Process Model	Larman pp. 173-180 Severance 3
3/10	<u>Class Diagrams</u>	Lecture: Class Diagrams Discuss: GMI implementation	System Sequence Diagrams	Larman pp. 131-171 Severance 4
3/17	<u>Interface Design</u>	Lecture: Interface Design Discuss: Good & bad interfaces Discuss: GMI Changing Priorities	Class Diagram	Norman pp. 1-33 Severance 5
3/24	<u>Interaction Diagrams</u>	Lecture: Interaction diagrams Discuss: GMI case conclusion Discuss: Mythical Man Month	Business Case	Severance 6 & 7 Brooks pp. 12-26 Larman pp. 221-247, 249-266
3/31	<u>Other Diagrams</u> <u>Unified Process Revisited</u>	Lecture: Other Diagrams, Unified Process Discuss: Value of diagrams and UP	APEX demo	Larman pp. 197-203, 485-492, 651-654
4/7	<u>Dress Rehearsal</u>		Dress Rehearsal	
4/14	<u>Peter Salvitti</u> <u>(Chief Technologist, BC),</u> <u>Working Session</u>		Working Session	
4/28	<u>Final Presentations</u>		Final Presentation	