FMIS 3222 System Analysis & Design

Class Information			
Term	Spring 2017	Days	TTH
Section	001	Time	2:00 p.m. - 3:15 pm
Location	LSBE 327		

Instructor	Nik R. Hassan
Office	LSBE 335Q
Email Address	nhassan@d.umn.edu
Course URL	Moodle (moodle.umn.edu). Enter your username and password on the left side (easiest way). Also available Via your MyU portal (www.myu.umn.edu) Personal webpage: www.d.umn.edu/~nhassan ;
Telephone	218-726-7453
Office Hours	1-3pm Mon/Wed or by appointment

Course Description

After successfully completing this course, you will have an appreciation of the issues surrounding systems development and an appreciation of how to plan, execute and manage a development project using well-known methodologies. The course will introduce you to object-oriented development methodologies and tools and will emphasize the use of standard Unified Modeling Language (UML) and a suitable development methodology. Despite the many tools and techniques available, systems analysis and design requires many skills, especially in communicating and documenting requirements and designs among stakeholders. This course is designed to shape those skills and to provide extra tools to those who wish to become effective system developers. Refer to the Course Roadmap for a detailed description of course goals

Teaching Philosophy

Systems Analysis and Design is probably Management Information System's single most important course. It is also perhaps one of the more enjoyable and fulfilling jobs (and pays well too!). What can be better than to watch what you've developed and built be used by hundreds, thousands if not millions of people. All of you are capable of accomplishing your goals as great systems or business analysts (that's the job title most of you will apply for). I'd like to replicate this excitement in the classroom. We will start with basic concepts and build on them to develop complex and impressive systems that will provide value to business and individuals. We'll work together to achieve that level of quality the MIS major is known for. A big part of this course is the group work because when you are on the job, you will most certainly be part of a development team. In this course, you will learn what it takes to become a good team member. My approach to teaching active learning—not just listening to lectures, but reading, writing, discussing, or being engaged in solving problems. You must find one or two more friends who will be your learning friend in the "learning cell" for the group. Two or three of these learning cells will make up one team. During every class session, there will be at least one problem that you will actively solve together in your learning cell. To encourage peer support, I will also be giving out extra credit to students who help other students on the Weekly Class Discussion Forum. I will do my best to remind any students if they are lagging behind so that they can make it up in future assignments or projects. I do like students to visit me individually or in a group if they have difficulty with any of the material. To open up further the communications in the class, I welcome Google Hangout sessions with learning cells or groups especially. Remember that working smart is better than working hard.

There will be no grading quota applied in this course. If you do exceptionally well on the exams, assignments and projects (and in all probability you will excel at your future employment), you will get an "A". If you just do well in exams, assignments and projects, you will get a "B". Although not impossible, no one should complete the course with a "C" because that means he or she has not "mastered" the skills or competencies required to make him or her an effective systems analyst. The assessment tools (exams, class exercises, and projects) have been designed to reflect your actual competencies. The few minutes you spend with me will probably save you many hours of frustration. NO QUESTION IS A BAD QUESTION. That little effort will not just benefit you but also the other students as well.

Textbook:	*Systems Analysis and Design in a Changing World by Satzinger, Jackson and Burd, 7th Edition,* Cengage, 2016, ISBN#978-1-305-11720-4 (Required – Check out the EBook option)
Reference Books (UMD Library)	Fast Track UML 2.0 by Kendall Scott (Available online from the UMD Library) Apress © 2004 ISBN:9781590593202 Hardcopy Reference Books in UMD Library *The Unified Modeling Language User Guide by Booch, Rumbaugh and Jacobson* *The Unified Modeling Language Reference Manual* by Rumbaugh, Jacobson and Booch
Course Prerequisites:	As specified in the Course Catalog, this course requires FMIS 2201 Management Information Systems/IT in Business This means that you must: 1. Understand general MIS concepts, comfortable with email and the Internet 2. Have worked with word processors, spreadsheets, charts, graphs and presentation software Although FMIS 3220 Database Management and Design is not strictly a prerequisite, it is advisable for students to take this course before taking FMIS 3222 Systems Analysis and Design. Students are assumed to have basic database knowledge in order to successfully complete this course.
Course Objectives	The student should be able to: 1. Describe the roles of a systems analyst in business, problem solving and communication skills and technologies required (BBA Learning Goal #1 Communicate ideas effectively in written and oral form) 2. Demonstrate the use of basic project management skills, specifically in the context of agile development (BBA Learning Goal #3 Be able to work effectively in a team). 3. Develop a feasibility report that includes economic, technical, cultural and organizational elements (BBA Learning Goal#4 Demonstrate appreciation of ethical and global issues in managerial decision-making) 4. Develop a project schedule using Gantt and PERT charts, a scope for a project and employ a cost/benefit analysis (BBA Learning Goal#2 Acquire quantitative analysis skills that can be used in managerial decision-making) 5. Demonstrate basic agile development management techniques (BBA Learning Goal#5 Demonstrate knowledge and understanding of core concepts in Organizational Management)

	6. Demonstrate how to work in an effective team (BBA Learning Goal #3 Be able to work effectively in a team)
	7. BBA Learning Goal#5 Demonstrate knowledge and understanding of core concepts in Information Technology
	   7.1. Understand the relationship between writing a software program and how it is to be analyzed and designed
	   7.2. Differentiate between a model, a tool and a methodology, and apply all the above to a project
	   7.3. Describe different application architectures and how they impact systems development
	   7.4. Understand the difference between system analysis and system design
	   7.5. Design relational and object-oriented data layers
	   7.6. Apply UML to design usable view layers, system interfaces, controls and security layers
	   7.7. Describe implementation and support activities
	   7.8. Understand the significance of quality assurance and testing, and develop a testing plan
	8. BBA Learning Goal #1 Communicate ideas effectively in written and oral form
	   8.1. Develop a business process diagram
	   8.2. Employ event modeling and the object approach in requirements analysis
	   8.3. Develop a detailed object-oriented model using the Unified Modeling Language (UML) to analyze system requirements
	   8.4. Describe alternative systems development methodologies and system procurement activities
	   8.5. Develop detailed design models using UML

Instructional Technology	The course will be conducted with the help of Moodle. These technologies keep an audit trail your online activities. Since all materials and assignments are administered through them, I can check to see if you have been accessing the materials or trying out the assignments. If you run into problems with these technologies, you must inform me well before the deadline so that I can help you with the problem. If you inform me of your problems too close to the deadline (e.g. you can't get access to the assignment or your quiz did not work an hour before it is due) I cannot guarantee that I can help you and you may risk losing points from your assignments or quizzes. So, it is a good idea to start with assignments as soon as they are available to you.

	All deadlines are recorded online in the Calendar tool, so if you submitted it late, you may lose points. Most assignments will take at least 1 to 2 hours to complete. So, don't procrastinate and start on them early in case you have questions on how to complete them. If the system records that you had missed an assignment or quiz, you will not get any points, so make sure to check that they have been submitted.
Lab and Software Resources	We will be using Microsoft Project 2016, Microsoft Visio, and IBM Rational Software Architect Designer Ver. 9.6 for all our course activities. Microsoft Project is available from the Microsoft Imagine (Formerly Dreamspark) Program (Check with Vickie Almquist LSBE 213 valmquis@d.umn.edu for access). IBM Rational Software Designer is available from your instructor who will provide instructions on how to download and install.
Grading Policy:	### Exams 2 Exams, 150 pts each, Total 300 pts The goal of exams is to individually assess how well you have learnt the knowledge and skills covered in the course. Exams are a combination of closed-book multiple choice and diagramming tests to be taken in class ### Quizzes 10 points each, total 100 points Online quizzes are to encourage students to read the text and the slides before coming to class. Quizzes will be administered using Moodle. They are usually (but not always) given after completing a chapter. PLEASE DO NOT ASK WHEN THESE EXERCISES WILL BE GIVEN. ### Projects 1 individual project assignment 100 pts 4 group projects with 500 total points consisting of: I: Project Charter 70 points II: Project Management 60 pts III: Analysis Specifications 120 pts IV: Design Specifications 100 pts V: Final Project 150 points The goal of projects is to ensure that students have working experience of the models, tools and methodologies taught in class individually and as a group, and are progressively working towards the completion of the Final Project. Except for the one individual project assignment, all projects will be presented as a

group and graded in class by the instructor. Students need to be well prepared for each presentation.

Beginning with Project#2, each team member will be peer reviewed by other members for up to 100% of the project grade. In addition, teams can vote non-performing members out (based on majority vote) beginning from Project#2, in which case, that team member will need to complete a different project individually.

Extra Credit Opportunities

Class contribution and participation—up to 30 pts. Depending on the quality of the assistance or contribution, up to 3 points per week (up to a cap of 30 points for the semester) will be given to students for every posting per week that help other students online in the Discussion Forum. The extra credit forum is not offered every week. To encourage timely participation, the Forum will be closed at on Saturday every week but students can post in future forums if that week's forum is closed.

External Client involvement: up to 20 pts. Only projects that involve a real-life client are eligible for this extra credit Prototype for extra credit: up to 30 points.

Project Deliverables

At the beginning of the semester, you will be organized into teams of 5 students. You will work on a software development project as a team and the grades given for the project will be reflected in your individual project grades. Group projects will help incrementally build your team's Semester Project. Detailed requirements for each project are provided online on the course web page. Follow closely the requirements written in that template and you should do fine.

The Semester Project is divided into five deliverables (1) the Project Charter, (2) the Project Management Report, (3) Analysis Specifications document, (4) the Design Specifications document, and (5) Final Project document. All deliverables need to be submitted in a three-ring binder (with pockets) that is neatly organized into sections using tabbed inserts and presented in class on the dates specified in the syllabus. DO NOT USE ANY page protectors because I will grade on your paper. Tabbed inserts to the table of contents is required to help the reader quickly find a section without paging through the whole binder. Each group will present each deliverable in class and at the end of the semester, if the group has an external client, the client should be invited for the final presentation. The client should be encouraged to attend

	the other presentations (e.g. analysis and design presentations) to ensure that the deliverable meets the client's requirements. Because documentation is a critical component of any project, up to 25% of the total credit for a project may be deducted if the submission is poorly written, formatted, or organized. The "output" of someone who is doing analysis and design work for an organization consists entirely of documentation. If you want full credit for an assignment, you must submit a quality document. A quality document is one that not only has good grammar and spelling but also is easy to read and understand. Remember that the user always determines quality. Documentation must be appropriate to the intended audience. ### *Extra Credit for Prototype* Up to 30 points Extra Credit will be added to each team members individual score taking into consideration peer reviews for the team that manages to produce an impressive prototype for the client. A prototype is a mock-up of the intended system showing key user interfaces to demonstrate the workings of intended system to the user, without actually coding the whole system. Prototypes will be evaluated by the instructor.
Scoring Elements:	91.5-100 = A 89.5-91.4 = A- 86.5-89.4 = B+ 82.5-86.4 = B 79.5-82.4 = B- 76.5-79.4 = C+ 72.5-76.4 = C 69.5-72.4 = C- 66.5-69.4 = D+ 60-66.4 = D Less than 60 = F
Make-up Policy	To encourage class attendance (and enhance your learning experience), there will be no make up for quizzes. Make up on assignments or tests are possible only under extreme circumstances. All make-up exams must be scheduled and completed within one week after returning to class.

Grade Appeal	<u>Must be written in standard business format</u> and submitted within one week after test grades have been handed out to class. Verbal discussions <u>will not</u> substitute for this required method of requesting grade review or recomputation.	
Responsibility of student:	If the student misses class, it is her or his responsibility to get copies of any material handed out in class from student colleagues, not from the instructor. The instructor can only assume responsibility for the initial distribution of material, and cannot inevitably ensure each student's ultimate receipt of each class handout or returned test grade sheets. Attendance: Students are expected to attend all scheduled class meetings, unless excused by the instructor. Excessive absence will result in lowered grades from original test results. Students may NOT expect to pass the course merely by achieving passing test grades without complete class attendance, except for excused absences. The instructor will not use class time to discuss problems or grades, tests, papers, or discussions. These subjects should be treated more thoroughly in written documentation. These written communications should be respectful, professionally constructed, and should reflect clearly the integrity and ethics of the student.	
Academic Dishonesty	Although the structure of the course provides few opportunities for academic dishonesty, any behavior that can be construed as such may result in a course grade of Failure (F).	

	Date	Roadmap Item	Topics	Readings (S= Satzinger Text Book)	Class Exercise/Assignments/ Projects Due
1	1/12	Define systems development and understand its objectives and goals	Introduction & Course overview Chapter 1: From Beginning to End-An Overview of Systems Analysis and Design	Syllabus S – 1 (1 hr) S – App A (on Moodle)	Introduction to syllabus and Moodle Introduction to all students

2	1/17	Explain the roles for and skills required by a systems analyst; Appreciate the complexity of the systems development life cycle	Chapter 10 Approaches to Systems Development Online Chapter B Introduction to Data Flow Diagrams	S – 10 (1 hr) S – Online Chapter B (on Moodle)	Set up laptop with MS Project, Visio 2016 and Rational Software Architect Start forming groups
	1/19	Explain the roles for and skills required by a systems analyst; Appreciate the complexity of the systems development life cycle	Online Chapter B Introduction to Data Flow Diagrams	S – Online Chapter B (on Moodle)	Start initiating meetings with clients
3	1/24	Explain the major elements of project management in the context of Agile Development methodologies	Chapter 11 Project Planning and Project Management	S – 11 (1 hr) S – Online Chapter C	
	1/26	Explain the major elements of project management in the context of Agile Development methodologies	Online Chapter C Activity diagram using RSAD	S - 11 (1 hr) S – Online Chapter C (on Moodle)	Set up Rational Software Team Accounts
4	1/31	Describe all the activities in systems analysis	Chapter 2: Investigating System Requirements	S - 2 (1 hr)	
	2/2	Describe all the activities in systems analysis	Chapter 2: Investigating System Requirements	S - 2 (1 hr)	**Project#1 Project Charter: Due at start of class**
5	2/7	Draw and describe complete business process/activity diagrams	Chapter 2: Investigating System Requirements	S – 3 (1-2 hrs)	
	2/9	Draw and describe complete use cases	Chapter 3: Use Cases	S – 3 (1-2 hrs)	
6	2/14	Draw and describe complete use cases	Chapter 3: Use Cases	S – 3 (1 hr)	
	2/16		**Midterms** Review and diagramming exercises		**Project#2 Project Management Plan: Due at start of class**

7	2/21		**Midterms Multiple Choice**		
	2/23		**Midterms Design Exam**		
8	2/28	Understand methodologies and the differences between structured and object-oriented approaches	Chapter 4 Domain Modeling and Class Diagrams Building Classes and Associations	S – 8, 4 (1 hr)	
	3/2	Describe things using attributes and relationships to build a domain model	Chapter 4 Domain Modeling and Class Diagrams Building Classes and Associations	S – 4 (1hr)	**Individual Project Due by midnight Friday on Moodle**
9	3/6-3/10	**SPRING BREAK**			
10	3/14	Understand how to encapsulate data and behaviors into the object	Chapter 5 Use case modeling Sequence and State Machine Diagrams	S – 5 (1-2hr)	
	3/16	Understand how to encapsulate data and behaviors into the object	Chapter 5 Use case modeling Sequence and State Machine Diagrams	S – 5 (1 hr)	
11	3/21	Develop a design model using object-oriented principles Developing the System Architecture	Chapter 6 Foundations for System Design Principles Chapter 7 Designing the System Architecture	S - 6(1-2 hours)	
	3/23		Chapter 8 Designing the User Interface		
12	3/28	Understand basic elements of HCI & Usability	Project#3 Presentations	S-8 (1-2 hours)	
	3/30	Develop a design model using object-oriented principles	Chapter 12 Object-oriented Design Fundamentals	S-12 (1-2 hours)	
13	4/4	Develop a design model using object-oriented principles	Chapter 13 Object-oriented Design Use case realization	S-13 (1-2 hours)	**Project#3 Requirements**

					Specifications Due at start of class
	4/6		Chapter 13 Object-oriented Design Use case realization		
14	4/11	Develop a design model using object-oriented principles	Project#4 Presentations	S-13 (1-2 hours)	**Project#4 Design Specifications Due at start of class**
	4/13	Understand the significance of quality assurance and testing and develop a testing plan Understand how to manage construction & managing source code	Chapter 14 Deploying the new system	S-14 (1-2 hours)	
15	4/18	Mock presentation			
	4/20	Project Presentations			
16	4/25	Project Presentations			
	4/27	Final Exam Review			**PROJECT #5 (FINAL PROJECT) DUE** *by class time*
17	5/2	**FINALS WEEK**	**FINAL EXAMS Tue, May 2, 2:00-3:55pm**		

**This schedule is subject to change without notice at the instructor's discretion. Check the online schedule often.