Course Description

A study of the methods used in analyzing needs for information and in specifying requirements for an application system. Implementation of the operational system, integration of computer technology, and aspects of organizational behavior in the design support system are examined. Topics include the concept of the system life cycle, the iterative nature of the processes of analysis and design, and the methodology for developing a logical specification and physical design for an operational system.

Course Introduction

The objective of this course is to teach you the state-of-the-art concepts, techniques, and skills that you will use in the development of new information systems for today's organizations, which are crucial to the success of the organization. The key to successful system development is systems analysis and design. **Systems analysis** *means understanding and specifying in detail what the information system should do.* **System design** *means specifying in detail how the many components of the information system should be physically implemented. This course is about systems analysis and design.*

The development of any new information system normally requires a set of activities. The concept of relating similar activities into phases and defining the steps is called **systems development life cycle (SDLC)***. This course introduces a generic SDLC, and emphasizes both traditional approaches and latest object-oriented approached to ystems analysis and design.*

This course covers the following topics:

	The Modern Systems Analyst	
1	*The World of the Modern Systems Analyst*	*Describes the world of the systems analyst - the nature of the work, the knowledge and skills that are important, and the types of systems and special projects an analyst works on.*
2	*The Analyst as a Project Manager*	*Introduces and explains the concept of the systems development life cycle, which provides a framework for the process of developing a new information system.*
3	*Approaches to Systems Development*	*Reviews three approaches to system development - the structured approach, the information engineering approach, and the object-oriented approach. Some variations of the SDLC and the computer support provided through computer-aided system engineering to an analyst are also described. Activities carried out during systems analysis and design no matter which approach to system development is used is also covered.*
	Systems Analysis Tasks	
4	*Investigating Systems Requirements*	*Focuses on the skills and the associated tasks that you (the systems analyst) will undertake in the analysis phase.*
5	*Modeling Systems Requirements: Events and Things*	*Presents techniques for documenting the functional requirements by creating a variety of models. Focuses on two key concepts that help define system requirements in both the traditional and the object-oriented approach: events and things.*
6	*The Traditional Approach to Requirements*	*Focuses to what the system does when an event occurs: activities and interactions. Describes the traditional structured approach to representing activities and interactions that are used to drive the development of the application requirements for the new system.*
7	*The Object-Oriented Approach to Requirements*	*Describes the object-oriented approach to representing activities and interactions that are used to drive the development of the application requirements for the new system.*
8	*Evaluating Alternatives for Requirements, Environment, and Implementation*	*This is about the last three activities of the analysis phase - that is the transitional activities that refocus the project from discovery and analysis to solutions and design. Topic gives a broad review of computer environments, which is an important consideration that affects the tasks associated with prioritizing requirements and considering alternatives. Various strategies for prioritizing and selecting a scope and level of automation is also discussed.*
	Systems Design Tasks	
9	*Moving to Design*	*Gives a general discussion of design to explain how it fits into the SDLC. Describes the detailed process of application program design, both for a structured program and an object oriented-program.*

10	*Designing Databases*	*To implement an information system a conceptual data model must be transformed into a more detailed database model and be implemented within a database management system. This topic describes the design of the relational and object-oriented data models and their implementation using database management systems.*
11	*Designing the User Interface*	*This is about integrity controls for the system and about designing the interfaces to the system.*
12	*Designing System Interfaces, Controls, and Security*	*Describes systems interfaces, with particular attention to system controls and system security.*
	Implementation and Support	
13	*Rapid Application Development and Component Based Development*	*This is about the tools and techniques that can be applied to speed up the development process. It describes new technologies and how they can be successfully integrated into the SDLC to speed software development.*

Course Goals/Objectives

Upon successful completion of the course, students will be able to explain:

- *The reasons for formal systems analysis and design.*
- *The processes and phases of IS development.*
- *Methods for requirements acquisition.*
- *The importance of structured logical analysis.*
- *The difference between data-centered and process-centered methodologies.*
- *Conventional and object-oriented design methodologies.*
- *The systems development life cycle.*
- *Systems prototyping and Rapid Application Development (RAD).*
- *Non-traditional systems development.*
- *Systems implementation, operations and maintenance.*
- *Systems security and controls.*
- *Ethical, organizational and behavioral issues.*

Course Materials

Satzinger J. W., Jackson R. B., Burd S. D. (2002), Systems Analysis and Design in a Changing World, Second Edition. Boston, Massachusetts: Course Technology.

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Grading Information

Grades for this course will be based on:

Item	%	Points Each	Total
Participation	10	40	40
Assignments	30	20	120
Term Project	20	80	80
Midterm Exam (Proctored)	20	80	80
Final Exam (Online, take-home, 48 hours)	20	80	80
TOTAL	100		400

and will be assigned as follows:

A	*90-100*
B	*80-89*
C	*70-79*
D	*60-69*
F(a)	*0-59*

Course Schedule

Week	Session Dates	Readings, Assignments, and Due Dates
1	*09 Feb – 15 Feb*	*Chp. 1: The World of the Modern Systems Analyst.*
2	*16 Feb – 22 Feb*	*Chp. 2: The Analyst as a Project Manager.* *Appendix A: Principles of Project Management.* *Assignment 1 (Due: 22 Feb).*
3	*23 Feb – 29 Feb*	*Chp. 3: Approaches to System Development.*
4	*01 Mar – 07 Mar*	*Chp. 4: Investigating System Requirements.* *Assignment 2 (Due: 07 Mar).* *Project proposals are submitted.*
5	*08 Mar – 14 Mar*	*Chp. 5: Modelling System Requirements: Events and Things.* *Appendix B: Project Schedules with PERT/CPM Charts.*
6	*15 Mar – 21 Mar*	*Chp. 6: The Traditional Approach to Requirements.* *Appendix C: Calculating Net Present Value, Payback Period, and Return on Investment.* *Assignment 3 (Due: 21 Mar).*
7	*22 Mar – 28 Mar*	*Chp. 7: The Object-Oriented Approach to Requirements.* *Draft Projects are submitted.*
8	*29 Mar – 04 Apr*	*Midterm exam week (Proctored).*
9	*05 Apr – 11 Apr*	*Chp. 8: Environments, Alternatives, and Decisions.*
10	*12 Apr – 18 Apr*	*Chp. 9: Moving to Design.* *Assignment 4 (Due: 18 Apr).*
11	*19 Apr – 25 Apr*	*Chp. 10: Designing Databases.*
12	*26 Apr – 02 May*	*Chp. 11: Designing Inputs, Outputs, and Controls.* *Assignment 5 (Due: 02 May).*
13	*03 May – 09 May*	*Project presentation week.*
14	*10 May – 16 May*	*Chp. 12: Designing System Interfaces, Controls, and Security*
15	*17 May – 23 May*	*Chp. 13: Rapid Application Development and Component Based Development.* *Assignment 6 (Due: 23 May).*
16	*24 May – 30 May*	*Final exam week (online)*

Project Descriptions

*The purpose of the project is to perform some of the **planning** and **analysis** phase activities of our SDLC on a **real life** or **hypothetical** system. Here are the rules to follow:*

1. **Project Team:** *Besides being able to do a solo project, students are allowed (and are encouraged) to form project teams. A project team may have two to four members, depending on the complexity of the project work. It is the responsibility of the team members to propose the team to the instructor and request permission (see project schedule for timing).*
2. **Project Subject:** *It is the responsibility of the project team to propose a system on which planning and analysis activities will be performed. Proposed system might have existing problems to be solved or opportunities to improve capabilities with an information system developed.*
3. **Project Activities:** *Project team will perform basically one planning phase activity and two analysis phase activities of our SDLC. These are:*
    a. *Define the problem (Planning phase).*
    b. *Gather information (Analysis phase).*
    c. *Define systems requirements (Analysis phase).*

    *Project team may choose either the **traditional** or the **object-oriented** approach to perform the required activities. Following table describes deliverables needed in each alternative approach, grade assigned to each deliverable, and corresponding chapters of our text book.*

Activity	Deliverable	Grading (Traditional)	Grading (Object-Oriented)	Related chapter
Define the problem	*Problem definition*	*3 points*	*3 points*	*Chapter 2*
Gather information	*Project team determines*	*2 points*	*2 points*	*Chapter 4*
Define system requirements	*Event table*	*5 points*	*5 points*	*Chapter 5*
	ERD	*5 points*	*---*	
	Class diagram	*---*	*5 points*	
	Logical DFD (with process descriptions and data flow definitions)	*5 points*	*---*	*Chapter 6*
	Use case diagram *Sequence diagrams* *Statechart diagrams*	*---*	*5 points*	*Chapter 7*

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	Class diagram	---	5 points	
	Logical DFD (with process descriptions and data flow definitions)	5 points	---	Chapter 6
	Use case diagram Sequence diagrams Statechart diagrams	---	5 points	Chapter 7

4. **Project Schedule:** *Following table shows the schedule for the project activities.*

Activity	Date
Project teams and proposals are submitted for approval.	*01 Mar – 07 Mar*
Draft projects are submitted	*22 Mar – 28 Mar*
Final projects are presented	*03 May – 09 May*

5. **Project Presentation:** *Project team will present the project work as an online conference that will be created for the purpose. Owners will be responsible from moderating the discussions on their own conferences.*
6. **Project Participation:** *Simply means, reading the project work of the others and providing feedback. Although not explicitly assigned a grade, project participation is mandatory. Failure in participation will be reflected to the project grade as 10 percent degradation.*
7. **Academic Integrity and Documentation:** *Project work must satisfy the rules of academic integrity and proper documentation of resources. Any attempt of academic dishonesty or plagiarism will result in receiving no grade from the project work and failure in the course.*