1. Instructor: Rafael Lazimy
   Office: 4269 Grainger
   Phone #: 262-3950
   E-mail: rlazimy@bus.wisc.edu
   Office Hours: M, W, 2:30-3:45 PM or by appointment

2. Class Schedule: M, W, 11:00-12:15 PM, 2190 Grainger
   TA/Grader: Keehyung Kim
   Office Hours: Wednesday & Friday 3:00-4:00 PM
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3. Texts, readings:
   Required text:
   A reading package, available for purchase at the Business School Copy Center,
   1220 Grainger.
   Books for reference:
a. Analysis and Design Books:

   Whitten, Bentley, Systems Analysis and Design Methods, (seventh edition)
   George, Batra, Valacich, Hoffer, Object-Oriented Systems Analysis and Design,

   b. ASP.NET Books:
   Walther, ASP.NET 3.5 Unleashed, SAMS, 2008.
   Various resources on ASP.NET on the Web.

4. Assumptions and Prerequisites:
   The Analysis and Design of Information Systems is one of the major responsibilities of the IS (Information Systems) function and requires both technical and management competence. Students must have completed the prerequisite courses in order to gain the most benefit from this course.
5. Course goals and objectives:

- **Computer-based systems** and information technologies (IT) are critical for the successful and effective operation and management of modern businesses and organizations. The development of these systems is an essential business activity.
- The overall **objective** of this course is to teach students effective systems development, including:
  - The systems-development life-cycle: analysis, design, implementation processes.
  - Systems analysis and design methodologies:
    - Identify and analyze business problems and opportunities and determine systems requirements: business processes requirements, data and information requirements.
  - The information technologies for developing web-based, client-server, database-driven computer-based systems.
- This course trains students to become successful systems/business analysts and project managers.
- Client-based systems analysis, design and implementation **projects** (with real businesses), teamwork and project management are essential elements of this course.
- Students will apply the concepts and technologies they learn in the class in a **semester-long project** involving an actual business/company and obtain hands-on-experience in the following areas:
  - Analyzing business processes and information needs; identifying problems and opportunities for improving business operations, analysis, control and decision-making processes.
  - Doing data modeling and developing a database design.
  - Using state-of-the-art IT to build a web-based, client-server application for the client business.
- Project work will teach students how to apply project management, teamwork and conflict resolution skills in a realistic environment, as well as oral and written communication and presentation skills.

6. What is a systems/business analyst?

An appropriate **job description** might read as follows:

A systems analyst shall be responsible for studying the problems and needs set forth by an organization and determine how computer equipment, computer programs, files, business procedures, and people can best accomplish improvements.

Systems analysis and systems design are the primary activities of the systems analyst. Systems analysis is the study of a business problem or situation and the specification of business requirements for an improved system. Systems design is the detailed specification of a computer-based solution to the business requirements. Included in the
design specifications are the programming specifications with which you are already familiar.

The primary theme of the course is the use of systems analysis and design methodologies to develop and document effective computer-based information systems:

- We will expose you to the entire systems analysis and design process.
- You will learn how to use a wide variety of systems analysis and design tools and techniques. These tools and techniques are used to document information systems that are being built by systems analysts and programmers. These tools and the techniques for applying the tools are important. The tools allow the system analyst to communicate with business users to learn their problems and needs. The tools also help the systems analyst communicate the business needs to the computer programmers. Finally, the tools and techniques allow us to create intelligent and friendly computer-based solutions for business problems.

7. Information technologies: **Active Server Pages (ASP.NET)**

- You will learn (in a tutorial) ASP.NET, Microsoft’s .NET technology for developing web-based, database-driven, three-tier client-server applications.
- Your team will develop a web-based, three-tier client-server prototype implementation of some of the functionality of your systems analysis and design project (see below), using ASP.NET.

8. **Learning outcomes:** Listed at the end of the syllabus

9. **Course Topics:**

**Part I. The Context for Systems Development:**
1. A framework for information systems
2. Types of information systems
3. A framework for information systems architecture

**Part II. Systems Development:**
1. The systems development life cycle (SDLC)
2. Success/failure factors
3. The systems analyst
4. Managing information systems development projects

**Part III. Systems Analysis, Business Modeling, and Structured Methodologies:**
1. Determining systems requirements; problem/opportunity analysis; key success factors analysis
2. Process modeling with data flow diagrams (DFDs)
3. Structuring systems requirements with Use-Cases
4. Logic modeling: Structured English, Decision Tables, Decision Trees

**Part IV. Introduction to Data Warehousing, Business Intelligence, and Analytics**
Part V. Web-Based Client-Server Technologies:
1. Active Server Pages (ASP.NET) Tutorial

Part VI. Client-Based Systems Analysis and Design Project:
1. Project Management
2. Real World Systems Development Experience

10. Course Value:

Proper systems development processes and methodologies are essential for developing effective computer-based information systems and performing the required analysis and design activities. In fact, many IT projects fail because of poor project management and processes. This course will provide you with practical and valuable analysis and design tools, methodologies, and information technologies for developing effective information systems. From past experience, we know that most IS graduates’ first job is in the area of systems analysis, design, and project management. Therefore, the skills learned in this course can be immediately applied in industry.

But even if you don’t immediately apply the skills you will learn in this course, the value of this course includes:

- A much better understanding of the entire information system development process: from the identification of the business problem or needs to the design of an improved system to the writing of computer programs. Possibly for the first time, you will truly understand the whole process and where you might fit in.

- Improved programming skills. You should be a better programmer if you understand how to read and modify the design documentation prepared by a systems analyst. Programmers frequently find themselves redoing poorly prepared or incomplete design specifications.

- Improved technical communications skills. Your ability to communicate with both non-technical and technical people should be improved through the proper use of the tools. Your writing and speaking skills may also be enhanced as you learn how to present your documentation to your instructor.

- A background for continued study of systems analysis and design.

- A better understanding of information systems in general. You will learn many capabilities and characteristics of good information systems. This will help you design more effective systems during your career.

11. Client-based Systems Analysis and Design Project

A semester-long systems analysis and design project will dominate your activities during this-course. You will work in teams of 3 students. This is a client-based project: Your team will select a real-world company/organization in the Madison area and will define the project scope during the first two weeks. While you are defining your system project, you will be learning some of the fundamentals of systems analysis and design. You will study information system and learn the capabilities and characteristics of good
information systems. Study them well because you will have to apply them to your project. You will also learn the system development life cycle, the process used by analyst to build information systems. The remainder of the course will focus on practical tools and techniques.

Your team will select a business application from your collective work experiences. The system may come from a company or type of business with which you are familiar. Your team may get an idea from an acquaintance, friend, or relative. In some cases, the instructor will give you leads about businesses/organizations with opportunities for systems analysis and design projects. In any case, the system your team chooses will be refined with the help of your instructor so that all student projects are of the same size and all systems exhibit some important information system characteristics. Again, this project definition activity will occur during the first two to three weeks while you are studying the fundamental concepts unit.

During the remaining weeks of the semester, your team will apply the tools and techniques of systems analysis and design to your project. Even though your system may already exist, you will pretend that it doesn’t and that you are designing the system. You are encouraged to improve the system by designing features that you will learn are characteristic of better information systems. The value of this project should be apparent. You will learn the tools and techniques of analysis and design without having to deal with the process and people problems of analysis and design. And you will be applying the tools and techniques to a system that you have studied or that you are familiar with!

The project will be run very similar to a real world project. Your instructor will play the role of project manager and quality assurance manager. As project manager, he will continually review your progress on the project (although you are ultimately responsible for keeping up). As quality assurance manager, he will review your documentation for completeness and accuracy.

The project will be divided into milestones. Milestone reports are due, IN CLASS, on the dates indicated. Due dates for the milestone reports are included in the course schedule. There are late penalties for milestones.

The milestones are (tentative list):

0. Project Proposal

1. Business Analysis and Systems Study

   • The Existing System
   • The New System (DFD and Use-Case Description and Diagrams)

3. Data Modeling for the New System:
   • Entity-Relationship Diagrams
   • Relational Database Design
• Summary of the Analysis Work

4. Prototype Implementation:
• Web-based, three-tier client-server implementation with ASP.NET

Milestone reports must be typed. Professional presentation is important: this will be one of the criteria for evaluating your project work. You will submit your documentation in a three-ring, loose-leaf project workbook.

12. Grading and Assignments:
The final grade will be based on the following:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>Midterm 1 (in mid semester)</td>
<td>20%</td>
</tr>
<tr>
<td>Midterm 2 (during Finals week)</td>
<td>15%</td>
</tr>
<tr>
<td>Projects:</td>
<td>45%</td>
</tr>
<tr>
<td>Homework:</td>
<td>20%</td>
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</tbody>
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DONE IN TEAMS MUST BE DONE INDIVIDUALLY!

The purpose of the homework is to practice theory and concepts covered in the class and prepare you for the project work and the exam. Midterm 2 is not cumulative (it covers material not covered in Midterm 1).
The schedule for the tests, projects, and homework assignments appear in the course schedule.

13. Work Load:
The workload in this course is greater than average. It consists of readings, written assignments, systems analysis and design project (including milestone reports), and computer work. Students must take this into account in their management of time, since special considerations will not be given to any student because of the student’s course load.

14. Class attendance
It is mandatory to attend all classes. Not attending two or more classes will result in a penalty: If you otherwise deserve, say, a grade of AB but missed two classes, your grade will drop to B. Penalties will increase if you miss more than two classes. Of course, if you have special justification for not attending a class (for example, illness, family/personal emergencies) there will be no penalty. It is your responsibility to notify me of these circumstances.

15. Code of conduct
Students are expected to adhere to the University and the School of Business student codes of conduct.

16. Peer Evaluations:
The prospect of working in teams carries with it the possibility that not all team members will pull their fair share of the load. For this reason, there will be anonymous peer evaluations during finals week, after the project has been completed. Students will be seated for the evaluations (to separate team members). Individual evaluations are the
property of the instructor and will not be divulged to other team members—your confidentiality is assured! The average of the peer evaluation score given to each team member will be used as a weight in determining the member’s grade for the project work.

17. The use of lap tops in the lectures in not allowed (School policy).

LEARNING OUTCOMES

KNOWING:

- Students will understand and explain:
  - The architecture for information systems development, including stake-holders and other “players;” processes and activities; business drivers; IT drivers; and systems analysis and design methodologies.
  - The different types of information systems in a business and the relationships between them.
  - The role of systems/business analysts in developing information systems.
- Students will develop a deep understanding of the Systems Development Life Cycle (SDLC) as a comprehensive project management framework for the analysis, design, and implementation of computer-based solutions.
- Students will develop a thorough understanding of systems analysis, business modeling, and structured methodologies for:
  - Determining systems requirements; problems and opportunities analysis; cause/effect analysis; key success factors analysis; business process modeling; data modeling; evaluating alternative systems designs; designing and implementing an information system.
- Students will understand the differences between structured (traditional) methodologies and object-oriented methodologies for business process modeling and data modeling.
- Students will understand the importance of:
  - Data warehousing and business intelligence systems.
- Students will develop a deep understanding of ASP.NET, a system for developing web-based applications.
- Students will gain good understanding of project management, teamwork, conflict resolution and time management, and oral and written communication and presentation skills, as well as consulting experience and skills.

DOING:

- Students will apply concepts and methodologies learned in class to:
  - Documents and model the hierarchical structure of business processes and activities and the flow of data and information using Data Flow Diagrams (DFD).
  - Develop structured systems requirements using the Use-Case methodology.
- Analyze business processes (work flow, data flow) to identify opportunities for incremental or radical improvements of business processes.
- Analyze data and information requirements and develop a conceptual and relational database design for business applications.
- Perform economic, operational, risk, and technical feasibility analyses of a proposed systems design.
- Students will demonstrate the application of processes, methodologies, and information technologies learned in class in a semester-long, client-based team project:
  - Analyze business processes, problems and opportunities in the client business; use cause/effect analysis and key success factors analysis to develop an information systems plan.
  - Document and analyze business processes and the flow of data and information in the client business using the Data Flow Diagram methodology. Document the systems requirements using the Use-Case methodology.
  - Develop a conceptual database model and map it into a relational database design.
  - Use ASP.NET and other information technologies to develop a prototype web-based, client-server computer-based application for the client business.
- Students will apply skills learned in class and gain real-world, hands-on experience in:
  - Project management.
  - Team work and time management.
  - Oral and written communication and presentation.
  - Consulting.