

INFORMATION SYSTEMS (INDE499B) Autumn 2000

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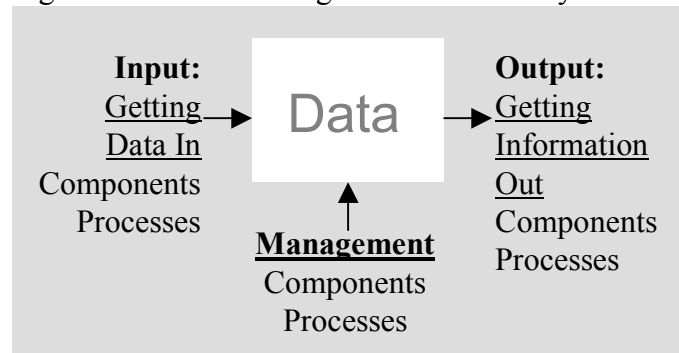
Instructor: Dr. Jennifer Turns
Office: 225 Engineering Annex
Phone: 206-221-3650
E-mail: jturns@engr.washington.edu
Office Hours: Tuesday, 4:00-5:00
Wednesday, 12:30-1:30

TA: Lixin Chen
Office: MEB 153
E-mail: lxchen@u.washington.edu
Office Hours: Monday, 9:10-10:10
Thursday, 9:10-10:10

COURSE DESCRIPTION:

An information system can be defined as a set of components and processes for aggregating, managing and using information toward some end. A simple model is given below in Figure 1. In this course, you will develop an understanding of information systems that will permit you to understand, use, and even design such systems in your future career as an industrial engineer. Because industrial engineering activities (e.g., plant layout, procurement, inventory mgmt,) typically require the management of large quantities of information, a working knowledge of information systems issues will enable you to more effectively accomplish your job as an Industrial Engineer and an engineering professional.

Figure 1. Characterizing an Information System



OBJECTIVES:

As a result of your participation in this course, you will be able to:

1. Use: Use an information system, specifically one using a relational database, to accomplish activities on the job.
2. Diagnose: Diagnose problems and issues that may arise in workplace and professional interaction with information systems.
3. Evaluate: Evaluate different alternatives & decisions in the configuration of an information system.
4. Relationship to IE: Describe the relationships between Information Systems and the Industrial engineering profession.
5. Ethics: Recognize and resolve ethical issues related to information systems.
6. Lifelong Learning: Develop plans for learning more about information systems issues.

TOPICS AND SCHEDULE

To ensure that students achieve the above objectives, we will cover the following topics across the term:

1. Scope and Design of Information Systems (Week 2-3): In order to have a class devoted to information systems, it is necessary for the class to develop a shared understanding of

the term “information systems”. In the first phase of the class, we will cover topics related to this goal. During this phase of the class, we will (a) define “information system,” (b) discuss a basic model for characterizing information systems and (c) use the model to describe information systems in terms of their components and flow of data among components. We will also (d) explore the types of decisions that underlie the development of an information system as well as (e) identify and discuss important design criteria for information systems development (e.g., security, integrity).

2. Describing and Managing Data - the Heart of the Information System (Week 4-6): Data is at the heart of an information system. In the second phase of the class, we will cover topics related to the representation and encoding of data in an information system. In the second phase of the class, we will focus on (a) different ways to describe and represent data, (b) strategies for determining the data requirements for an information system, and (c) strategies for storing data in an information system. We will focus specific attention on the (d) fundamentals and use of relational database systems.
3. Interacting with Data - Getting Data In and Out of an Information System (Week 7-10): In order for an information system to be useful, data must come in through some channels and leave through others. In the third phase of the class, we will cover topics related to this goal. Specifically, we will focus on (a) asking and answering data questions using SQL, (b) client server architecture, (c) “client diversity” – the range of components that can be used as clients in an information system (e.g., bar code reader, ATM machine, etc.), and the (d) issue of communication and communication protocols.

Woven throughout the term will be discussion of contemporary issues, ethical issues, and lifelong learning issues related to information system.

INSTRUCTIONAL MATERIALS:

1. Required Text:
 - McFadden, F.R., Hoffer, J.A., and Prescott, M.B. (1999). *Modern Database Management*. Addison Wesley, Reading:MA. This book has been ordered through the University Bookstore.
2. Supplemental Readings
 - “Access 2000 Quick Reference Software Guide” – This laminated guide is available in the bookstore for \$3.95. It may be useful when using Microsoft Access.
 - Additional supplemental readings will be distributed during the term.
3. Software
 - Microsoft Access 2000 – This software is widely available on PC machines across campus. You are not expected to have prior knowledge of this software. However, you will be expected to learn to gain basic proficiency of this software during the first week of class.

TEACHING PHILOSOPHY AND STYLE

My ultimate goal in designing a class is to create a successful learning experience for the students. My choices in the design of this class (and any I class I work with) are based on elements from my philosophy of teaching and beliefs about learning:

1. Use a variety of learning and assessment activities. Learning is an active process and also an individual process. In order to learn, students need to be engaged in activities – yet different learners benefit from different types of activities. Thus, I seek to identify

and use a variety of types of activities in my teaching, in order to provide many different opportunities for students to test and demonstrate their understanding. I consider lecturing to be one type of activity, and one that I prefer to not use exclusive. Rather, I prefer to stimulate a topic with some other type of activity and then use lecture and discussion to bring out important elements of activity.

2. Create a supportive learning environment. Learning is facilitated when learners have clarity about what is to be accomplished and what is required of them. Learning is facilitated when there exists an atmosphere of respect for different ideas and when students feel comfortable exchanging ideas. Given these issues, I seek to create a learning environment that supports student learning – one in which will ask questions, make connections, and feel comfortable contributing to discussion.
3. Tie topics to student interests. Learning is facilitated when learners are engaged in the subject matter and when they find the subject matter to be relevant to their needs. One way to promote engagement and relevance is to tie the materials to student interests. Because different students have different interests, I feel it is important to tie materials to a wide variety of interests.
4. Relate topics to a broader knowledge context. Learning of one topic is facilitated when one understands how the topic relates to a wide variety of other topics – making connections is important. In the context of engineering education, I believe it is important to relate specific class topics to (a) other topics in the engineering curriculum, (b) the practice of a particular engineering discipline (e.g., Industrial Engineering) and (c) issues of engineering practice in general (e.g., to ethical issues, to teamwork issues).

CLASS STRUCTURE, ACTIVITIES, AND GRADING:

Exam	20%	
Mid-term Tests	30%	(2 @ 15%;)
Project	35%	(4 deliverables, 1 @ 5%, 3 @ 10%)
Class Participation	5%	
Class Preparation Activities	10%	

Mid-term Tests and Final Exam (50%)

Tests and exams are important for learning – they provide many learners with motivation and educators with feedback about how well students are learning. During the term, we will have two non-cumulative mid-term tests. We will also have a cumulative exam.

Project (35%)

Projects are important for learning because they provide students with the opportunity to explore the application of class materials to an open-ended problem. In this class, you will work with a team to complete a term-long project. Specifically, your team will explore issues in the design and development of a frequent shopper information system for a selected retail environment.

You will fulfill the project requirements through the completion of four deliverables:

1. Deliverable 1 (5%) – Warm-up: In the first deliverable, you will perform a series of basic activities using Microsoft Access. The goal is for you to become familiar with Microsoft Access, to provide a basis for discussion during the second 2 weeks of class, and to set expectations about the level of technical knowledge required of you in this class.

2. Deliverable 2 (10%) – Describing the Information System Scope. In the second deliverable, you will describe the scope of the information system using concepts discussed during the second and third weeks of class.
3. Deliverable 3 (10%) – Designing the Database for the System. In the third deliverable, you will design and prototype the database to be at the heart of your information system, based on the concepts discussed during the fourth, fifth, and sixth weeks of class.
4. Deliverable 4 (10%) – Getting Information In and Out of the System. In the fourth project, you will focus on getting information into, and out of, the information system – based on concepts discussed during the final weeks of the class

Class Participation (5%)

In this course, we will use class time to introduce, elaborate, and/or supplement class topics. Although some time will be reserved for lecture, we will also complete a variety of other activities. For example, we will use class time to carry out discussions (including discussions of class preparation activities discussed below), to highlight and “unpack” important topics, and to analyze examples and case studies. You will be expected to come to class prepared and to participate in the in-class activities. Your participation will count 5% of your grade.

In order to help you prepare, you will receive a weekly “class preparation guide” indicating the readings for the week, questions to guide your readings, and any class preparation activities that you are required to complete (see below).

Class Preparation Activities (10%)

The fourth component of the design of this class are the “class preparation activities.” You will be asked to complete a variety of short “class preparation” activities (30-60 minutes to complete). Activities may include summarizing a reading, answering a thought question, or summarizing your observations about a particular issue. These activities will be designed to get you to think about topics before coming to class. We will frequently start class with a discussion of your responses. These activities are meant to be *completed* individually -- you are free to discuss the assignment with others, but I expect the write-up to be in your own words. All “good-faith” efforts to complete these activities will receive full credit.

Activities will either be due at 8:00 AM (of the day of class) or in-class. Activities due at 8:00 AM will involve electronic submission.

KEY DATES:

Wk	Date	Topic	Major Assignments Due
1	9/25	Building Community	
	9/27	Building Community	
	9/29	Building Community	
2	10/2	Scope and Design of Information Systems	Project Deliverable 1 Due
	10/4	Scope and Design of Information Systems	
	10/6	Scope and Design of Information Systems	
3	10/9	Scope and Design of Information Systems	
	10/11	Scope and Design of Information Systems	
	10/13	Mid Term 1	
4	10/16	Defining and Managing Data	
	10/18	Defining and Managing Data	Project Deliverable 2 Due
	10/20	Defining and Managing Data	
5	10/23	Defining and Managing Data	
	10/25	Defining and Managing Data	
	10/27	Defining and Managing Data	
6	10/30	Defining and Managing Data	
	11/1	Defining and Managing Data	
	11/3	Mid-term 2	
7	11/6	Interacting with Data - Getting Data In and Out	
	11/8	Interacting with Data - Getting Data In and Out	Project Deliverable 3 Due
	11/10	Holiday – Veteran’s Day	
8	11/13	Interacting with Data - Getting Data In and Out	
	11/15	Interacting with Data - Getting Data In and Out	
	11/17	Interacting with Data - Getting Data In and Out	
9	11/20	Interacting with Data - Getting Data In and Out	
	11/22	Interacting with Data - Getting Data In and Out	
	11/24	Holiday - Thanksgiving	
10	11/27	Interacting with Data - Getting Data In and Out	
	11/29	Interacting with Data - Getting Data In and Out	
	12/1	Interacting with Data - Getting Data In and Out	
11	12/4	To Be Decided	
	12/6	To Be Decided	Project Deliverable 4 Due