Dr. Jean A. Pratt
IS 310: *Systems Analysis and Design*
2012 Fall Homework Assignments

IS 310 Learning Goals

After completing this course, learners will be able to

1. identify unique business processes and decompose them into correct inputs, processes, outputs and possible feedbacks;
2. define systems, name and describe system components, and explain system relationships;
3. name, describe and compare/contrast the various systems methodologies;
4. apply an appropriate systems methodology and corresponding techniques to analyze a client's information systems needs and design a system to meet those needs.

IS 310 Specific Learning Objectives

1. *Business Processes*
   a. Given various organizational scenarios, learner will be able to define given and implied business processes.
   b. Given typical and unique business processes, learner will be able to describe the input(s), process, output(s) and possible feedback for each.
2. *Systems, Systems Methodologies and Techniques*
   a. Given different organizational scenarios, learner will be able to identify systems, subsystems and corresponding interrelationships.
   b. Given different organizational and systems scenarios, learner will select the appropriate systems development life cycle methodology.
   c. Given different SDLC methodologies, learner will name and define corresponding phases.
   d. Given an SDLC methodology phase, learner will name, describe, and provide an example of inclusive tasks.
   e. Given an information systems analysis or design task within a specified scenario, learner will select and use the most appropriate techniques to complete that task.

You can use the following assignments to practice your skills before applying those skills on your client project. Assignments containing a "Uses Client Content? Yes" are associated with your community client.

See IS_310_Project _Tasks_Deliverables_and_Resources.pdf for details on the group project deliverables.

1. **Name:** Project Team Role Selection
   a. **Description:** Select and learn about an Information System team role.
   b. **Purpose:** To prepare you to search for career-related positions and be able to converse intelligently with a recruiter about the basic roles in a project team and the unique contribution that each role provides.
   c. **Resource:** Project Team Roles.pdf
   d. **Group/Individual:** Individual
   e. **Uses Client Content?** No
   f. **Directions:** Review the basic project team role descriptions. Select one that best fits your *future career* interests. Search employment-related websites (e.g., www.tech-centric.net/, dice.com, monster.com, careerbuilder.com) to find at least one position for the role you selected. *Note:* this is for your future career rather than your current class-based team.

g. **Deliverable:** Submit one file that includes the following criteria:
    i. Which role you selected and why you think that role best suits you;
    ii. the website you searched, the number of results returned from your search;
    iii. a copy/paste of the full job description;
    iv. identification of at least one of the job requirements/responsibilities from the job description that you hope to learn while in this *Systems Analysis and Design* course.

2. **Name:** Establish Team Protocol
    a. **Description:** Meet together as a team. Define the standard operating procedures for your group; select "Circle of 8" representative.
    b. **IS Learning Goal:** Collaborate effectively in a team environment
    c. **Resource:** Team_Protocol.docx
    d. **Group/Individual:** Group
    e. **Uses Client Content?** No
    f. **Directions:** Meet together as a team. Complete and upload the Team_Protocol.docx file.
    g. **Deliverable:** Completed Team_Protocol.docx file.

3. **Name:** Client Visit
    a. **Description:** Observe the processes that make an organization operate. Consider non-observable business processes.
    b. **Learning Objectives:**
        i. Given various organizational scenarios, learner will be able to define given and implied business processes.
        ii. Given typical and unique business processes, learner will be able to describe the input(s), process, output(s) and possible feedback for each.
    c. **Resource:** Lecture/PPTs/In-class Activity
    d. **Group/Individual:** Group
    e. **Uses Client Content?** Yes
    f. **Directions:** Visit the selected client organization. Visit with the staff (if it's not too busy) to clarify your perceptions. Create a document that includes the following:
        i. Make a list of all business processes required for this business to operate.
        ii. Define the Input, Process, Output and (if applicable) Feedback for each process. (A table might be most efficient means of communicating this information.)
        iii. Classify each process as automated or manual. Identify which manual processes would benefit from being automated.
        iv. Identify which automated processes could be made more efficient or effective.
        v. Identify which processes influence other processes: provide one example per influence.
    g. **Deliverable:** One file (*Word* or *Excel* would both work) that clearly identifies Items i through v above.

4. **Name:** Systems Perspective and Me
    a. **Description:** Read Chapters 2-4 from the Senge_2006_5th_Discipline.pdf file. Consider the different systems of which you are a part. Select and respond to 3 of the 7 "learning disabilities" for each of the prompts in the "Deliverable" section. Think critically about how adopting one or more of the *Laws of the Fifth Discipline* could have resulted in a different outcome.
    b. **Learning Objective:** Given different organizational scenarios, learner will be able to identify systems, subsystems and corresponding interrelationships.
    c. **Resource:** Senge_2006_5th_Discipline.pdf
    d. **Group/Individual:** Individual
    e. **Uses Client Content?** No

f. **Directions:** Provide the following information *for each of the 3 selected* disabilities:
   i. Summarize in your own words and one sentence the main premise behind 3 selected learning disabilities described in *Does Your Organization have a Learning Disability* (Chapter 2).
   ii. For each learning disability identified above, provide an example from your own life where, in hindsight, you can see that your actions were aligned with that learning disability.
   iii. Select one of the *Laws of the Fifth Discipline* (Chapter 4) for each of the learning disabilities and examples summarized above. Provide the name of each law you selected for each of the three disabilities you selected. Describe how you could have applied the selected law to facilitate an overall better outcome for each situation.

g. **Deliverable:** One file that will look something like this:
   i. Name of first selected learning disability from Chapter 2
   ii. Your paraphrased definition/description of that learning disability
   iii. An example of that learning disability in your own life
   iv. Name of law of fifth discipline from Chapter 4 and how that law would have resulted in a different outcome for you if you'd applied it rather than the learning disability

   v. Name of second selected learning disability from Chapter 2
   vi. Your paraphrased definition/description of that learning disability
   vii. An example of that learning disability in your own life
   viii. Name of law of fifth discipline from Chapter 4 and how that law would have resulted in a different outcome for you if you'd applied it rather than the learning disability

   ix. Same thing for third selected learning disability

5. **Name:** System Request
   a. **Description:** Complete a system request form justifying your request for your group-selected system. If approved, then your group can continue with the system design.
   b. **Learning Objective:** Given an information systems analysis or design task within a specified scenario, learner will select and use the most appropriate techniques to complete that task.
   c. **Resource:** System_Request_Example.docx; System Service Request Form.pdf
   d. **Group/Individual:** Group
   e. **Uses Client Content?** Yes
   f. **Directions:** Meet as a group after visiting the client. Compare perceptions about observed and inferred business processes. Agree on *one* business process that you believe your group could improve via the design of an information system. Submit a one-two page system request form justifying your request for a proposed client system. Make sure you address how your system is aligned with organizational goals.
   g. **Deliverable:** Systems Service Request form for your client project

6. **Name:** Alternative Methodologies
   a. **Description:** Find out which systems development methodologies an organization is using and why.
   b. **Learning Objectives:**
      i. Given different organizational and systems scenarios, learner will select the appropriate systems development life cycle methodology.
   c. **Resource:** SelectingDevelopmentApproach.pdf; System Development Life Cycle Methodologies.pdf; SDLC_Phases_Techniques_Deliverables.pdf
   d. **Group/Individual:** Individual or group or pairs (identify name(s) on assignment submission)
   e. **Uses Client Content?** No
   f. **Description:** Read the resource materials for this assignment. Prepare a list of interview questions that would enable you to ask intelligent questions to determine what systems development life cycle

methodologies an organization is using. Schedule an appointment with an IT person in an organization for which you currently or previously work(ed). If you are not working outside school, then contact a previous employer or interview an IT person at a local organization of your choice. If you go in pairs, then trade off on asking questions: whoever is not currently interacting with the interviewee should be taking notes.

g. **Deliverable:** Submit 2 files including the following criteria:
    i. Document 1: Original list of interview questions you took to the interview. If more than one person completes this assignment together, then identify who asked which questions.
    ii. Document 2: Report based on interview. Include the following:
        (1) Name and title of the person you interviewed. Name of the organization.
        (2) Which systems development methodology(ies) the company is using and why.
        (3) Based on the SelectingDevelopmentApproach.pdf article, specify *why* the selected methodologies are (or are not) appropriate for the given situation.
        (4) If a) the organization uses no systems development methodology or b) is using a methodology you think is inappropriate for the situation, then recommend (also based on the SelectingDevelopmentApproach.pdf article) which methodology would be appropriate.

7. **Name:** Project Status Meetings (2) *Note:* your group must assume responsibility for scheduling each meeting far enough in advance of its corresponding iteration due date to enable you to make the suggested revisions to your deliverable(s).
    a. **Description:** Work with project manager to ensure high-quality deliverable and full understanding of concepts and skills required.
    b. **IS Learning Goal:** Collaborate effectively in a team environment
    c. **Resource:** Instructor
    d. **Group/Individual:** ENTIRE Group
    e. **Uses Client Content?** Yes
    f. **Directions:**
        i. Schedule 3 meeting with Instructor (complete early in the semester)
        ii. Upload to D2L at least 24 hours before scheduled meeting a project status report; email Instructor when you have uploaded it to D2L
        iii. Meet *as a full group* with Instructor
    g. **Deliverables:**
        i. Project Status Report
        ii. Face-to-face team report on project with Instructor

8. **Name:** Use-Case
    a. **Description:** Create a business use-case model to illustrate how your client will interact with your proposed system.
    b. **Learning Objective:** Given an information systems analysis or design task within a specified scenario, learner will select and use the most appropriate techniques to complete that task.
    c. **Resource:** Lecture/PPTs/In-class Activity
    d. **Group/Individual:** Group
    e. **Uses Client Content?** Yes
    f. **Directions:** Use *Visio*. Specify the boundary, actors, end-users' uses of the system, and relationships. Focus on what users will do with the system to obtain value. Create the business use case first, then copy/paste it to a second tab in the same *Visio* file and add the major system functionality.
    g. **Deliverables:** 2 files: One *Visio* file and one *Word file:*
        i. Business use-case model illustrating the proposed system
        ii. System use-case model illustrating the proposed system

iii. Written use case for *each* use case within the business use-case model

9. **Name:** User and Functional Requirements (Sections 1 through 2.2 and 2.4)
   a. **Description:** *As a GROUP,* define the user ~~and operation, revision, transition)~~ requirements for the selected system. Note that this is an iterative process. Although you would likely conduct, validate and update requirements repeatedly in a full-project environment, we will perform only two iterations of requirements analysis.
   b. **Learning Objectives:**
      i. Given various organizational scenarios, learner will be able to define given and implied business processes.
      ii. Given an information systems analysis or design task within a specified scenario, learner will select and use the most appropriate techniques to complete that task.
   c. **Resources:** Miller_2009_Quest.pdf; Requirements_Definition_Template.doc
   d. **Group/Individual:** Group
   e. **Uses Client Content?** Yes
   f. **Directions:** Read through the resources. Analyze the organization's business goals as they relate to your proposed system. Interview the client, if possible, to determine what they need from the proposed system. Complete the specified sections of the Requirements_Definition_Template.doc.
   g. **Deliverable:** Submit a completed copy of the Requirements_Definition_Template.doc file. Ensure you have addressed the data, roles, purpose, timing, logistics and process requirements for ~~each of the four categories of~~ **user and system** requirements~~: functional, operation, revision and transition~~.

10. **Name:** Nonfunctional Requirements (Sections 2.3 and 3.1)
    a. **Description:** *As a GROUP,* define the functional and nonfunctional (operation, revision, transition) requirements for the selected system (i.e., *all* use cases). Given your new knowledge of both the client and the system processes, update the requirements analysis.
    b. **Learning Objectives:**
       i. Given various organizational scenarios, learner will be able to define given and implied business processes.
       ii. Given an information systems analysis or design task within a specified scenario, learner will select and use the most appropriate techniques to complete that task.
    c. **Resources:** Miller_2009_Quest.pdf; Requirements_Definition_Template.doc
    d. **Group/Individual:** Group
    e. **Uses Client Content?** Yes
    f. **Directions:** Review with the client the User and Functional requirements. Check for accuracy. Obtain the desired/required performance specifications. Update the User and Functional Requirements. Complete the specified sections of the Requirements_Definition_Template.doc.
    g. **Deliverable:** Submit a completed copy of the Requirements_Worksheet.docx file. Ensure you have addressed the data, roles, purpose, timing, logistics and process requirements for each of the four categories of requirements: functional, operation, revision and transition.

11. **Name:** Data Flow Diagram (DFD)
    a. **Description:** Create a data flow diagram (DFD) to illustrate data flowing through your proposed system.
    b. **Learning Objective:** Given an information systems analysis or design task within a specified scenario, learner will select and use the most appropriate techniques to complete that task.
    c. **Resource:** Lecture/PPTs/In-class Activity
    d. **Group/Individual:** Group
    e. **Uses Client Content?** Yes

f. **Directions:** Start with one use case in your use case model. Create in *Visio* a complete data flow diagram to track data input, processing and output for that use case. Expand the DFD to incorporate all uses of the proposed system. Each process must be decomposed to a primitive process (i.e., it can't be decomposed further). Strive for no more than 7 or so processes on any level.
g. **Deliverables:** *ONE Visio* file representing a full DFD: use tabs for each decomposed level. You must have a Context level, then—on a separate tab—a Level 0 and then a separate tab for every other level.

12. **Name:** Entity Relationship Diagram (ERD)
    a. **Description:** Create business rules and a full enterprise relationship diagram (ERD) to model a data-collection/storage represented by the data stores on your DFD.
    b. **Learning Objective:** Given an information systems analysis or design task within a specified scenario, learner will select and use the most appropriate techniques to complete that task.
    c. **Resource:** Lecture/PPTs/In-class Activity
    d. **Group/Individual:** Group
    e. **Uses Client Content?** Yes
    f. **Description:** Use *Visio* to develop an ERD. Pay close attention to what data is needed for your client to make operational and strategic decisions. Ensure the data model will enable you to provide the reports specified or implied by your client. Ensure the ERD is in 3NF. Leave comments/notes in the ERD to justify any assumptions you are making that impact your data design.
    g. **Deliverables:**
        i. One *Word* file with business rules
        ii. One *Visio* file with full ERD implementing those business rules