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CSCI 221.50: Systems Analysis and Design

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CSCI 221 Systems Analysis
Spring, 2015

Course Developed By: Penny Jakes, Ed.D, Professor, Interim Assistant Dean **Spring 2015 Instructor**: Rhonda Tabish	**Class Dates & Location**: January 26, 2015 to May 14, 2015. It is taught online through Moodle. http://www.umt.edu/umonline/default.aspx
Contact Information: Office Phone: 243-7808 Email: rhonda.tabish@umontana.edu	**On-campus office hours**: 10 - 11 MW and 12 – 12:30 TR in office AD14D or by appt. Questions can also be handled using e-mail, or phone as needed. I check my e-mail frequently so you will get a quicker response than by phone, as I only check that when in my office.
Tech Support: UMOnline: 406.243.6367; courseware-support@umontana.edu; or http://umonline.umt.edu (Contact Us tab)	**Required Textbook:** *Essentials of System Analysis & Design,* Valacich, 5th Edition, Prentice-Hall, 2012. ISBN: 0137067119

Course Overview: Just as the title suggests, this course is an analysis of an information system using the structured System Development Life Cycle to design and implement the new system. You will use a structured process to plan, analyze, design, implement, and support information systems that meet business requirements. Feasibility studies, time and cost estimates, modeling tools, design tools, implementation, and support strategies will be covered. You will learn the techniques using a simulated business design project. The best part of this class is you have the opportunity to design and develop a REAL-LIFE project which will be your final "capstone project" with a multi-media virtual business presentation to your classmates.

This course is entirely on-line and presentations will be handled virtually with a variety of software. There is a lot of material to cover in this course so it is imperative that you be an active learner with the self-discipline to keep current with the readings and assignments. A textbook (see above) is required; there are also many on-line supplements, videos, modeling tools, and on-line quizzes used to track your progress with the subject matter.

Target Student: This course is a capstone course for the Information Technology Program students. It will incorporate content from several courses (see prerequisite skills below) to culminate in a "capstone design project" that is not only real-life, but is representative of the type of work students will do in this career field.

Prerequisite Skills and Knowledge: Knowledge of web page design, database design, and programming is absolutely necessary. You should know visual basic, visual studio (.NET), SQL or Access, and web design concepts.

Course Importance and Relevance: This course is representative of what you will find on the job. Especially with smaller businesses like we have in Montana, the IT person needs to be able to manage the network, help the users, maintain the web page, maintain the database, and use programming skills to accomplish all these tasks. By doing a real project, you will get to work directly with a business person and gain valuable experience working with their business and meeting their expectations for this project.

Expected Student Learning Outcomes:

Learning Outcomes:	Standards:	Assessments:
Demonstrate knowledge of the role an analyst plays in an organization: responsibilities, skills, and career opportunities	Create/determine the following: *Organizational Chart *Gantt Chart *Preliminary Investigation *Identify Problems/Solutions *Feasibility *Tangible vs. intangible benefits *Budget	Key Points Review Key Terms Checkpoint Field Exercises On-going case study Diagramming software
Analyze business organizational structure and factors that influence business information technology strategy	Create the following: *System Requirements Checklist *Context Diagram	Key Points Review Key Terms Checkpoint Field Exercises On-going case study Diagramming software
Evaluate the flow of data in a business enterprise and design a database solution	Create the following: *Diagram 0, DFD *Lower Level Diagrams DFD *Structured English/flowchart *Sample Data Population and Standard Record Format *Normalization, ERD with Cardinality, and Sample Data *Data Store Schema *Referential Integrity	Key Points Review Key Terms Checkpoint Field Exercises On-going case study Diagramming software SQL or Access software
Analyze business operation and design a technology infrastructure to facilitate efficiency	Create the following: *Input Forms design with sample data *Output Forms/Reports design with sample data *Web page(s) design/screen shots *Storyboard or Site Map *Data Entry Controls *Security *N-tier Computing *Model/network diagram	Key Points Review Key Terms Checkpoint Field Exercises On-going case study Diagramming software SQL or Access software .NET Programming
Manipulate software tools to diagram information technology resources	Create the following: *Diagram 0, DFD *Lower Level Diagrams DFD *Structured English/flowchart	On-going case study Diagramming software
Analyze and design technical support for business information technology	Create the following: *Evaluation of existing support for the Case Study	Key Points Review Key Terms Checkpoint Field Exercises

		On-going case study
Prepare and present a virtual business presentation with working prototype	Create the following: *Formal presentation *Working model (prototype)	**Virtual presentation** **Working prototype**

Participation and Grading Criteria: Assignments will be graded on a point system; total points possible will be announced at the start of each project. Quizzes and tests will also be on a point system. Total points earned will be divided by total points possible to get a percentage with grade conversion as follows:

90–100	**A**
80-89	**B**
70-79	**C**
60-69	**D**

There is **NO OPPORTUNITY** for make-ups for any homework, quizzes, or projects because of the speed with which this course moves and the fact that each chapter builds on itself to the conclusion of the project. The Moodle assignment spaces will be set to **not allow** late submissions.

> **FINAL GRADE**: 50% Projects, homework, quizzes, presentations
> 20% Mid-Term Exam
> 30% Final Presentation/System Prototype

Because of nature of this course, and the fact that this is your final semester in the program, this course is not eligible for awarding "incompletes" (I).

Accommodation: Eligible students with disabilities will receive appropriate accommodations in this course when requested in a timely way. Please contact me and be prepared to provide a letter from your DSS Coordinator. http://www.umt.edu/dss/

Student Conduct Code: Students are expected to follow The University of Montana Student Code. Academic honesty is expected of all students. In the case of misconduct, offending students will be subject to a penalty determined by the instructor and/or disciplinary action by the University. Student Code copies are available at www.umt.edu/studentaffairs/.

Course Policies and Procedures:

1. **Submitting Assignments:** Graded assignments will be submitted via the Moodle link. I will not accept assignments submitted via e-mail; be aware of deadlines as Moodle will not allow late submissions.

2. **Specification for papers:** All papers should be written in "technical writing" style; i.e. third person, clear, concise, logical top/down step-by-step progression of topic with good sentence structure and grammatically correct. No assignment will receive full credit if there are omissions, spelling errors, or format errors. A grading rubric is included in Learning Unit 6 and is used for all production work related to the capstone project.

3. **Turn-around time for grading assignments, providing feedback, etc.** After each assignment, I will grade, provide feedback, or provide suggestions within three days after submission. Please check the Moodle gradebook often. Be sure to submit BEFORE or by the due date. It is your responsibility to keep copies of all e-mail and assignments until the end of the semester.

4. **Technical Requirement**s: The menu of the Moodle course site, by default, includes a link to Technical Support. We will also use Moodle web conferencing for lectures, reviews, and group office hours. Links to those will be provided when scheduled. You will need to have a webcam, microphone, Java, and Flash installed. In addition, you need Microsoft Office Suite 2010, Visio, Project Management, programming languages and/or web design software or equivalent open source products. MSDNAA will send you an e-mail at beginning of semester for free Visio, Visual Studio .NET, and Project Management.

5. **Readiness for Online Learning:**   If this is the first on-line course you have taken, please refer to the Moodle tutorials for details.

Course Schedule:

Unit 1 Jan. 26-Feb. 6	**Introduction/Syllabus/Procedures Materials/Expectations Unit1: Foundations for Systems Development**	**Read Chapters 1, 2, 3**	**Matching Exercises (on own) Chapter questions (on own) Due Feb. 6 at midnight:** • **Ch1 Review Questions - 15 pts. p. 23** • **Ch2 Review Questions - 15 pts. p. 40** • **Ch3 Hoosier Burger Case parts b and c - 20 pts. p. 79**
Unit 2 Feb. 6 - 13	Systems Planning and Selection	Read Chapter 4	Matching Exercises (on own) Chapter questions (on own) **Due Feb. 13** at midnight: • Pine Valley Case parts b,c,d - 45 pts. p. 117
Unit 3 Feb. 13-Feb. 27	**Systems Analysis**	**Read Chapters 5, 6, 7**	**Matching Exercises (on own) Chapter questions (on own) Due Feb. 27 at midnight:** • **Ch5 Clothing Shack Case, a – d, 10 pts. p. 149 - 150** • **Ch6 Problems/Exercise # 5, 8, 9 – 30 pts. p. 179** • **Ch7 Corporate Technology, a,b,c,d – 30 pts. p. 226**
Unit 4 Feb. 27-Mar. 13	Systems Design	Read Chapters 8, 9	Matching Exercises (on own) Chapter questions (on own) **Due Mar. 13** at midnight: • Ch8 Pet Nanny Case a,b,c,d – 20 pts. p. 269 - 270 • Ch9 Problems/Exercises #4, a, b – 10 pts. p. 312
Unit 5 Mar. 13-18	**Systems Implementation/Operation**	**Read Chapter 10**	**No Assignment due**
Mar. 19	Midterm Review	Chapters 1-10	Review Chapters 1 – 10 for multiple choice Midterm exam.
Mar. 20 (all day)	**MIDTERM**		100 pts. set for 2 hr. limit once started Assessment online; can use notes; one try ***Must have passing grade average at this point to continue with Capstone Project***
Capstone Project Mar. 21-May 14	Foundations for Systems Development	Review Unit 1 Peer Reviews by group	Preliminary Investigation Project **Due Mar. 27** at midnight *Title Page *Organizational Chart *Gantt Chart *Executive Memo: Introduction to project, Problems, Solutions, Feasibility, Tangible benefits, intangible benefits, initial budget

	Project Planning & Selection	Review Unit 2 Peer Reviews by group	Systems Requirements **Due April 10** at midnight *System Requirements *Context Diagram *Diagram 0, DFD *Lower Level Diagrams DFD *Structured English/flowchart
	Systems Analysis	Review Unit 3 Peer Reviews	Webpage Design **Due April 24** at midnight *Input Forms design with sample data *Output Forms/Reports design with sample data *Web page(s) design/screen shots *Storyboard or Site Map *Data Entry Controls *Security *N-tier Computing Model/network diagram
	Systems Design	Review Unit 4 Peer Reviews	Database Design **Due May 8** at midnight *Sample Data Population and Standard Record Format *Normalization, ERD with Cardinality, and Sample Data *Data Store Schema *Referential Integrity
May 14	**Presentations** **Time to be announced**		**Prototype Due May 14** *Prototype Presentation

*SUBJECT TO CHANGE AT DISCRETION OF INSTRUCTOR

Summary of Assignments:

Unit 1	Total Possible Points	Due Dates (midnight)
• Ch1 Review Questions - 15 pts. • Ch2 Review Questions - 15 pts. • Ch3 Hoosier Case b,c - 20 pts.	50	February 6
Unit 2 • Ch4 Pine Valley Furniture a,b,c - 40 pts.	40	February 13
Unit 3 • Ch5 Clothing Shack #9 – 10 pts. • Ch6 Problems/Exercise # 5, 8, 9 – 30 pts. • Ch7 Hoosier Case, a,b,c,d – 30 pts.	70	February 27
Unit 4 • Ch8 Pet Nanny a,b,c,d – 20 pts. • Ch9 Problems/Exercises #4, a – 10 pts.	30	March 13
Preliminary Investigation • Peer Evaluations by group in Forum	25	March 27

Systems Requirements • Peer Evaluations by group in Forum	25	April 10
Webpage Design • Peer Evaluations by group in Forum	25	April 24
Database Design • Peer Evaluations by group in Forum	25	May 8
Prototype **Business Presentation**	100	May 14 To be announced

Required Textbook: *Essentials of System Analysis & Design,* Valacich, Fifth Edition, Prentice-Hall, 2012. ISBN: 0137067119.

Required Software: You will use Microsoft Office Suite 2007 or 2010 for most of the work. You should have a computer capable of multimedia applications, video, audio, and web conferencing. Built in speakers and microphone or a headset will be required. You will also need an Internet connection to access Moodle materials and access publisher student site for support materials. There will be a "key" supplied with the textbook that you will need for initial logon to publisher site.

Microsoft Visio Software, Microsoft Project Management, and *Visual Studio .NET* (all available free of charge through the Campus MSDNAA).

Course Outline:

I. Introduction
  A. Impact of Information Technology
  B. Information System Components
  C. Understanding the Business
  D. Impact of the Internet
  E. How Business Uses Information Systems
  F. Information System Users and Their Needs
  G. Systems Development Tools and Techniques
  H. Systems Development Methods
  I. Systems Development Life Cycle
  J. Information Technology Department
  K. Systems Analyst Position
II. Systems Planning
  A. Strategic Planning for IT Systems Development
  B. Evaluation of Systems Requests
  C. Evaluating Feasibility
  D. Setting Priorities
  E. Preliminary Investigation
III. Systems Analysis
  A. Joint Application Development
  B. Rapid Application Development
  C. Modeling Tools and Techniques
    1. CASE Tools
    2. Functional Decomposition Diagrams
  D. Systems Requirements
    1. Outputs
    2. Inputs
    3. Processes
    4. Performance
    5. Control
  E. Growth, Costs, Benefits
  F. Fact-finding
  G. Documentation
  H. Enterprise Modeling

I. Development Strategies
    1. Web-Based Software
    2. Outsourcing
    3. In-house Software Development
  J. Cost-Benefit Analysis
  K. Software Acquisition
  L. Prototyping
IV. Systems Design
  A. Data Design Concepts
    1. Data Structures
    2. File Processing
  B. DBMS Components
    1. User interface
    2. Data Manipulation Language
    3. Schema
    4. Physical Data Repository
  C. Web-Based Design
  D. Data Relationships
  E. Normalization
    1. Standard notation format
    2. Repeating groups and un-normalized designs
    3. First, Second, Third normal form
  F. Database Models
  G. Data Storage
  H. Data Control
  I. User Interface Design
  J. Input Design
  K. Output Design
  L. System Architecture
    1. Servers
    2. Clients
    3. Initial Cost and TCO
    4. Scalability
    5. Web Integration