

**Saint Leo University**  
**COM 320**  
**Systems Analysis and Design**

**Course Description:**

Students will be provided with actual systems to design, implement, and document the system development cycle. The cycle includes an analysis of current systems, logical and physical systems design, program development, testing, implementation, maintenance, and documentation.

**Prerequisite:**

COM 203

**Textbooks:**

**The textbook information which appears on our Saint Leo Bookstore ordering site is as follows:**

Systems Analysis & Design (Loose Pgs)(w/MindTap Acc) ISBN: 9781337755955 or Systems Analysis & Design (MindTap Access Code) ISBN: 9781305945241

**Your custom textbook was created from the following National text(s):**

Tilley, S. R., & Rosenblatt, H. J. (2017). *Systems analysis and design* (11th ed.). (Text Only) Boston, MA: Course Technology Cengage Learning. ISBN: 9781305494602

Publisher: Cengage Custom Publishing \*Note the Cengage Subscription service will cover this title. \*MindTap is required

**Core Values:**

Personal Development: The Saint Leo Core Value emphasized in this course is personal development and it will be measured by the progress students make in their critical thinking and communication via the written assignments and the weekly discussions.

**Grading Scale:**

| Grade Score (%) |        |
|-----------------|--------|
| A               | 94-100 |
| A-              | 90-93  |
| B+              | 87-89  |
| B               | 84-86  |
| B-              | 80-83  |
| C+              | 77-79  |
| C               | 74-76  |
| C-              | 70-73  |
| D+              | 67-69  |
| D               | 60-66  |
| F               | 0-59   |

**Evaluation:**

Grading will be determined in the following manner:

|                               |             |
|-------------------------------|-------------|
| Exams (2 at 15% each)         | 30%         |
| Assignments (8 at 3.75% each) | 30%         |
| Course Project                | 30%         |
| Discussions (8 at 1.25% each) | 10%         |
| <b>Total</b>                  | <b>100%</b> |

**Examinations:**

There will be two exams in this course, a Midterm and a Final Exam. They will consist of multiple choice questions. Make-up exams will be solely at the discretion of the professor and will be permitted only for authorized excuses as determined by the professor. The professor may require written evidence be submitted to justify an authorized excuse.

**Assignments:**

You are expected to complete assigned problems in the text according to the course requirements. These 8 assignments are cumulative and failure to complete one could impact the success of subsequent assignments. All assignments will be professionally done, e.g., follow APA style manual. Class assignments showing the complete solution must be submitted to the appropriate Assignment folder **no later than Sunday 11:59 PM EST/EDT** of that module (these Assignment folders are linked to Turnitin). Material submitted must include all relevant material. Late submission will result in the deduction of 10 points from the overall grade per day. Unless approved by the professor, no homework will be accepted after three working days past the scheduled date.

**Course Project:**

You are required to perform a systems analysis and design on a business or operation as a part of the course requirements. Systems analysis and design topics for students can be any business or operation that needs computerization or upgrading of the existing computer system. The topic of the systems analysis and design will be selected by the student, emailed to the instructor by **Sunday 11:59 PM EST/EDT of Module 1**, and approved by the instructor.

For the project, select a business problem and then complete the first three steps of the system development life cycle (SDLC) process:

1. Analysis of the business case
2. Systems analysis
  - a. Requirements modeling
  - b. Data and procedures modeling
  - c. Object modeling
3. Systems design
  - a. Input design
  - b. Output design
  - c. User interface

Submit the Course Project to **Chalk and Wire** no later than **Sunday 11:59 PM EST/EDT of Module 7**. Submit the Course Project to Chalk and Wire using the link in the Module 7 folder. Students who do not submit the assignment to Chalk and Wire will receive a zero. This is a key program assessment; the results are used to ensure students are meeting program goals. Video and PDF instructions can be

found on the course home page. PDF instructions are also located in the Start Here folder. **(Chalk and Wire is linked to Turnitin.)**

**Software:** You may use Microsoft Word, trial versions of Visio or Microsoft Project, or another software of your choice as a tool to complete the course project. **When using Visio, MS Project, or similar software, ensure that you publish any work as either an image file (.jpeg, .png, etc.) or a pdf before incorporating it into your course project. This is to ensure that your instructor can view/grade your project.**

## **Module 1                      Introduction to Systems Analysis and Design**

**Objectives**                      At the conclusion of this module, you should be able to:

- ❑ Explain how profiles and models can represent business functions and operations.
- ❑ Define an information system and describe its components.
- ❑ Apply the five basic guidelines for system development.
- ❑ Conduct a SWOT analysis and describe the four factors involved.
- ❑ Explain the purpose of a mission statement.
- ❑ List reasons for systems projects and factors that affect such projects.
- ❑ Describe the internal and external factors that affect information systems.
- ❑ Discuss the role of the information technology department and the systems analysts that work there.

| <b>Items to be Completed:</b>                          | <b>Due No Later Than:</b> |
|--|---------------------------|
| Read Chapters the assigned materials                   |                           |
| Post an introduction to the class                      | Thursday 11:59 PM EST/EDT |
| View Publisher PowerPoints                             |                           |
| Post an initial response to the discussion question    | Thursday 11:59 PM EST/EDT |
| Post responses to at least two classmates              | Sunday 11:59 PM EST/EDT   |
| Complete the MindTap Unit 1 and Unit 2 Test            |                           |
| Complete the MindTap Unit 1 and Unit 2 Case Simulation | Sunday 11:59 PM EST/EDT   |
| Send Course Project topic to your instructor           | Sunday 11:59 PM EST/EDT   |

## **Module 2                      The Systems Analyst's Toolkit**

**Objectives**

At the conclusion of this module, you should be able to:

- ❑ List overall guidelines for successful communications.
- ❑ Write effective letters, memos, and email messages.
- ❑ Explain CASE tools and the concept of a CASE environment.
- ❑ Use payback analysis to calculate the length of time it takes a project to pay for itself.
- ❑ Use return on investment analysis to measure a project's profitability.
- ❑ Use search engines, subject directories, and the Web to locate information.
- ❑ Describe CASE tool trends and how they relate to object- oriented analysis and agile methods.

| Items to be Completed:                              | Due No Later Than:                  |
|---|-------------------------------------|
| Read Chapters the assigned materials                |                                     |
| View Publisher PowerPoints                          |                                     |
| Post an initial response to the discussion question | Thursday 11:59 PM EST/EDT           |
| Post responses to at least two classmates           | Sunday 11:59 PM EST/EDT             |
| Complete the Pre-Course Assessment                  |                                     |
| Submit Assignment 2                                 | Sunday 11:59 PM EST/EDT             |
| Begin working on the Course Project                 | Sunday 11:59 PM EST/EDT of Module 7 |

**Module 3 Managing Projects and Requirements Modeling****Objectives**

At the conclusion of this module, you should be able to:

- ❑ Explain project planning, scheduling, monitoring, and reporting.
- ❑ Describe work breakdown structures, task patterns, and critical path analysis.
- ❑ Explain techniques or estimating task completion times and cost.
- ❑ Analyze task dependencies, durations, start dates, and end dates.
- ❑ Utilize various scheduling tools, including Gantt chart and PERT/CPM charts.
- ❑ Use a functional decomposition diagram (FDD) to model business functions and processes.
- ❑ Explain the concept of scalability.
- ❑ Develop effective documentation methods to use during systems development.

- ❑ List and describe system requirements, including outputs, inputs, processes, performance, and controls.
- ❑ Use fact-finding techniques, including interviews, documentation review, observation, and questionnaires.

| Items to be Completed:                                 | Due No Later Than:        |
|--|---------------------------|
| Read Chapters the assigned materials                   |                           |
| View Publisher PowerPoints                             |                           |
| Post an initial response to the discussion question    | Thursday 11:59 PM EST/EDT |
| Post responses to at least two classmates              | Sunday 11:59 PM EST/EDT   |
| Complete the MindTap Unit 3 and Unit 4 Test            |                           |
| Complete the MindTap Unit 3 and Unit 4 Case Simulation | Sunday 11:59 PM EST/EDT   |
| Continue working on the Course Project                 | Sunday 11:59 PM EST/EDT   |

#### Module 4      Data, Process, and Object Modeling

- Objectives**      At the conclusion of this module, you should be able to:
- ❑ Describe data and process modeling concepts and tools, including data flow diagrams and process descriptions.
  - ❑ Describe the symbols used in data flow diagrams and explain the rules for their use.
  - ❑ Draw data flow diagrams in a sequence from general to specific.
  - ❑ Explain how to level and balance a set of data flow diagrams.
  - ❑ Explain how object-oriented analysis can be used to describe an information system.
  - ❑ Explain relationships among objects and the concept of inheritance.
  - ❑ Draw an object relationship diagram.
  - ❑ Describe UML tools and techniques including use cases, use case diagrams, class diagrams, state transition diagrams, and activity diagrams.

| Items to be Completed:      | Due No Later Than: |
|-----------------------------|--------------------|
| Read the assigned materials |                    |
| View Publisher PowerPoints  |                    |

|  |                           |
|--|---------------------------|
| Post initial response to the discussion question       | Thursday 11:59 PM EST/EDT |
| Post responses to at least two classmates              | Sunday 11:59 PM EST/EDT   |
| Complete the MindTap Unit 5 and Unit 6 Test            |                           |
| Complete the MindTap Unit 5 and Unit 6 Case Simulation | Sunday 11:59 PM EST/EDT   |
| Complete the Midterm Exam                              | Sunday 11:59 PM EST/EDT   |
| Continue working on the Course Project                 | Sunday 11:59 PM EST/EDT   |

## Module 5

## Development Strategies and User Interface Design

### Objectives

At the conclusion of this module, you should be able to:

- ❑ Describe the concept of Software as a Service.
- ❑ Explain software acquisition alternatives, including traditional and Web-based software development strategies.
- ❑ Discuss cost-benefit analysis and financial analysis tools.
- ❑ Describe the system requirements document.
- ❑ Discuss systems design guidelines.
- ❑ Explain the concept of user interface design and human-computer interaction.
- ❑ List user interface design guidelines.
- ❑ Explain input design and technology issues.
- ❑ Use input masks and validation rules to reduce input errors.
- ❑ Describe output and input controls and security.

| Items to be Completed:                                 | Due No Later Than:        |
|--|---------------------------|
| Read the assigned materials                            |                           |
| View Publisher PowerPoints                             |                           |
| Post initial response to the discussion question       | Thursday 11:59 PM EST/EDT |
| Post responses to at least two classmates              | Sunday 11:59 PM EST/EDT   |
| Complete the MindTap Unit 7 and Unit 8 Test            |                           |
| Complete the MindTap Unit 7 and Unit 8 Case Simulation | Sunday 11:59 PM EST/EDT   |

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|--|-------------------------------------|
| Continue working on the Course Project | Sunday 11:59 PM EST/EDT of Module 7 |
|--|-------------------------------------|

## Module 6 Data Design

**Objectives** At the conclusion of this module, you should be able to:

- 🔗 Explain file-oriented systems and how they differ from database management systems.
- 🔗 Explain data design terminology, including entities, fields, common fields, records, files, tables, and key fields.
- 🔗 Describe data relationships, draw an entity-relationship diagram, define cardinality, and use cardinality notation.
- 🔗 Explain the concept of normalization.
- 🔗 Differentiate between logical and physical storage and records.
- 🔗 Explain data control measures.

| Items to be Completed:                              | Due No Later Than:                  |
|---|-------------------------------------|
| Read the assigned materials                         |                                     |
| View Publisher PowerPoints                          |                                     |
| Post an initial response to the discussion question | Thursday 11:59 PM EST/EDT           |
| Post responses to at least two classmates           | Sunday 11:59 PM EST/EDT             |
| Complete the MindTap Unit 9 Test                    |                                     |
| Complete the MindTap Unit 9 Case Simulation         | Sunday 11:59 PM EST/EDT             |
| Continue working on the Course Project              | Sunday 11:59 PM EST/EDT of Module 7 |

## Module 7 System Architecture

**Objectives** At the conclusion of this module, you should be able to:

- ❑ Provide a checklist of issues to consider when selecting a system architecture.
- ❑ Describe servers, server-based processing, clients, and client-based processing.
- ❑ Explain client/server architecture, including tiers, cost-benefit issues, and performance.
- ❑ Describe wireless networking, including wireless standards, topologies, and trends.
- ❑ Describe the system design specification.
- ❑ Explain network protocols and licensing issues.

| Items to be Completed:                              | Due No Later Than:        |
|---|---------------------------|
| Read the assigned materials                         |                           |
| View Publisher PowerPoints                          |                           |
| Post an initial response to the discussion question | Thursday 11:59 PM EST/EDT |
| Post responses to at least two classmates           | Sunday 11:59 PM EST/EDT   |
| Complete the MindTap Unit 10 Test                   |                           |
| Complete the MindTap Unit 10 Case Simulation        | Sunday 11:59 PM EST/EDT   |
| Submit Course Project to Chalk and Wire             | Sunday 11:59 PM EST/EDT   |

## Module 8 Systems Implementation, Support, and Security

**Objectives** At the conclusion of this module, you should be able to:

- ❑ Explain unit, integration, and system testing.
- ❑ List the main steps in system installation and evaluation.
- ❑ Develop training plans for various user groups, compare in-house and outside training, and describe effective training techniques.
- ❑ Describe data conversion and changeover methods.
- ❑ Explain post-implementation evaluation and the final report to management.
- ❑ Explain the systems support and security phase.
- ❑ Describe user support activities, including user training and help desks.
- ❑ Describe the four types of maintenance.
- ❑ Assess system security at six levels.
- ❑ List factors that a system has reached the end of its useful life.

| Items to be Completed:                           | Due No Later Than:        |
|--|---------------------------|
| Read the assigned materials                      |                           |
| View Publisher PowerPoints                       |                           |
| Post initial response to the discussion question | Thursday 11:59 PM EST/EDT |

|  |                         |
|--|-------------------------|
| Post responses to at least two classmates                | Sunday 11:59 PM EST/EDT |
| Complete the MindTap Unit 11 and Unit 12 Test            |                         |
| Complete the MindTap Unit 11 and Unit 12 Case Simulation | Sunday 11:59 PM EST/EDT |
| Complete Final Exam (Post-Course Assessment)             | Sunday 11:59 PM EST/EDT |