## CIS 2331  
**System Analysis and Design Implementation**

**Course Description:**  
This course is designed for computer and information technology majors. Students learn to investigate, analyze, plan, design, implement and document an information system using the traditional Systems Development Life Cycle (SDLC). (4-hour lecture, 2-hour lab).

### Course Competency

**Competency 1:** The student will demonstrate an understanding of the role of the systems analyst by:

1. Identifying and listing the responsibilities of the systems analyst.
2. Identifying the information system stakeholders and users.
3. Creating an organizational chart of the business structure.
4. Creating an organizational chart of the IT department structure.
5. Describing the relationship of IT projects, mission statements and vision statements to the strategic plan.
6. Identifying key components of an information system.
7. Differentiating features of Request for Quotation (RFQ) and Request for Proposal (RFP).
8. Preparing a Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis and a Political, Environmental, Sociological and Technological (PEST) analysis for a business case.

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<th>Learning Outcomes</th>
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<tr>
<td>• Communication</td>
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<td>• Information Literacy</td>
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### Competency 2: The student will demonstrate knowledge of business processes by:

- Critical thinking
1. Developing a business process model (BPM) of key business processes.
2. Utilizing Unified Modeling Language (UML) tools, techniques and methods such as Functional Decomposition Diagrams (FDD), Data Flow Diagrams (DFD) and Use Case Diagrams to create models of system requirements and functionality.
3. Identifying classes and creating class diagrams for specific business processes.
5. Describing processes used to maintain organizational efficiencies and resources.
6. Selecting and using the appropriate business model for a given project.
7. Evaluating the viability of existing processes for the proposed information system.

**Competency 3:** The student will demonstrate an understanding of information system management methods by:

1. Creating and developing IT policies and procedures that support the IT project implementation.
2. Developing installation and training schedules.
3. Defining a system implementation plan using software tools.
4. Presenting findings and solutions using oral, written and slide presentation formats.
5. Using project management software such as MS Project and Workbench to assign and schedule resources for a business case.
6. Identifying tasks by creating a Work Breakdown Structure (WBS) for a business case.
7. Using project management software to schedule tasks, duration of tasks and critical path (PERT/CPM) for a business case.
8. Using project management software to create a Gantt Chart and Network Diagram for a business case.

**Competency 4:** The student will demonstrate understanding of system development and acquisition by:
1. Applying the SDLC structured analysis method to a business case.
2. Identifying the deliverables for each phase of the development cycle.
3. Creating a Requirements document of the deliverables from each phase.
4. Performing and submitting the results of selected activities for each phase of the cycle.
5. Developing questionnaires, surveys and interview questions for a business case.
6. Summarizing the results of the Make or Buy decision using a Candidate Matrix.

**Course Competency 5:** The student will demonstrate an understanding of candidate feasibility by:
1. Describing the types of feasibility.
2. Identifying and listing feasibility assessment questions by type for a business case.
3. Performing the steps required to conduct a feasibility study.
4. Using software tools to analyze candidates and prepare a candidate comparison matrix.
5. Selecting an appropriate grid for presenting candidate comparison.

**Course Competency 6:** The student will apply knowledge of cost-benefit analysis and economic feasibility by:
1. Identifying and listing discretionary and nondiscretionary costs for a business case.
2. Identifying initial development costs, operational costs and maintenance costs for a business case.
4. Using financial tools to perform Payback analysis for a business case.
5. Performing Net Present Value (NPV) analysis for a business case using financial tools.
6. Differentiating tangible costs from intangible costs.
7. Explaining the concept of Total Cost of Ownership (TCO).
8. Explaining the concept of benchmarking.

- Numbers / Data

*Updated Spring 2021*
9. Making a recommendation after evaluating the results of a Cost-Benefit Analysis.

**Course Competency 7**: The student will apply knowledge of user database design criteria by:

1. Identifying the components of a database.
2. Developing a data dictionary during the creation of DFD’s for a business case.
3. Using a data dictionary to design a data structure for a business case.
4. Designing a schema for a relational database design for a business case.
5. Applying third normal form to the design of tables in a database for a business case.
6. Creating initial Entity Relationship Diagrams (ERD) for a business case.
7. Defining logical relationships and interaction among entities using Crow’s Foot notation.

**Course Competency 8**: The student will demonstrate an understanding of system architecture by:

1. Differentiating between the physical topology and the logical topology of networks.
2. Describing the physical components of networks such as switches, servers and routers.
4. Listing the advantages and disadvantages of various topologies.
5. Describing client/server designs.
6. Describing the Open Systems Interconnectivity (OSI) model and the functions performed on each layer.

**Course Competency 9**: The student will demonstrate an understanding of testing by:

1. Developing a test plan and schedule.
2. Determining the type of testing to be performed such as unit, integration and system.
3. Deciding which change over method to use for a business case.
4. Determining the method of data conversion for a business case.

Updated Spring 2021
| 5. Developing a maintenance and reevaluation plan for a business case. |