# COURSE OUTLINE

| Course Number | Course Title | Credits |
|---|---|---|
| **IST256** | **Systems Analysis and Design** | **3** |
| **Hours: Lecture/Lab/Other** | **Co- or Pre-requisite** | **Implementation Semester & Year** |
| **2/2/0** | IST 109 | **Fall 2022** |

**Catalog description:**

An introduction to systems analysis and design, including analyzing the business case, requirements modeling, and development strategies. Additionally covers output and user interface design, data design, systems architecture and implementation, and systems operation, support, and security.

**General Education Category:**
Not GenEd

**Course coordinator:**
Dr. Queen Okike. (609)570 3464, okikeq@mccc.edu

**Required texts & Other materials:**
Textbook: Modern Systems Analysis 8Th Ed. By Joey F. George, Joseph S, Valacich.
ISBN-13: 978-0134204925
ISBN-10: 0134204921

Material: Flash drive

**Course Student Learning Outcomes (SLO):**
Upon successful completion of this course, the student will be able to:

1. Explain six sources of software.[ supports ILG #4, 10; PO #2, 8]
2. Manage Information System Project.[supports ILG #1, 4, 10, 11; PO #3, 4, 5, 6, 7]
3. Explain Foundations For Systems Development [ supports ILG #4, 10; PO #2, 4, 8]
4. Describe Outsourcing[ supports ILG #1, ,4, 10, 11; PO #2, 4, 8]
5. Identify and Select Systems Development Projects. [ supports ILG #1, 4, 10, 11; PO #4, 5, 6, 7]
6. Design Databases; create relational database, forms, queries, filter and reports[supports ILG #2, 4, 10, 11; PO #4, 5, 6, 7]
7. Designing Distributed and Internet Systems.[ supports ILG #2, 4, 10, 11; PO # 4, 5, 6, 7]
8. System Implementation [supports ILG #4, 9, 10, 11; PO #6]

**Course-specific Institutional Learning Goals (ILG):**

**Institutional Learning Goal 1** Written and Oral Communication in English: Students will communicate effectively in both speech and writing.
**Institutional Learning Goal 2** Mathematics: Students will use appropriate mathematical and statistical concepts and operations to interpret data and to solve problems.
**Institutional Learning Goal 4** Technology: Students will use computer systems or other appropriate forms of technology to achieve educational and personal goals.

**Institutional Learning Goal 9** Ethical Reasoning and Action: Students will understand ethical frameworks, issues, and situations.
**Institutional Learning Goal 10** Information Literacy: Students will recognize when information is needed and have the knowledge and skills to locate, evaluate, and effectively use information for college level work.
**Institutional Learning Goal 11** Critical Thinking: Students will use critical thinking skills understand, analyze, or apply information or solve problems.

**Program Learning Outcomes for Information Systems (A.S.) and Certificate of Proficiency: Database Administration Programs (PLO)**

1. Transfer to a four-year college as a junior;
2. Explain, interpret, and develop computer information policies and procedures;
3. Understand business organizations and practices, and the role of information technology in organizations;
4. Develop, describe, understand, and apply network protocols and technology;
5. Determine the feasibility of a computer information system, estimate its cost, and manage its implementation;
6. Design, program, implement, and document a computer application or website to install and implement computer systems;
7. Work effectively individually and in workgroups to install and implement information systems;
8. Communicate in written documents and in oral presentations in technical or business settings.

**Units of study in detail – Unit Student Learning Outcomes:**

**Unit I Foundations For Systems Development [Supports Course SLOs #1, 2, 3, 8]**
**Learning Objectives**
**The student will be able to:**

- Explain the Origins of Software
- Manage the Information Systems Project
- Explain outsourcing.
- Describe six different sources of software.
- Discuss how to evaluate off-the-shelf software.
- Explain reuse and its role in software development.

**Unit II Manage Information System Project [supports Course SLOs #1, 3]**
**Learning Objectives**
**The student will be able to:**

- Explain the process of managing an information systems project.
- Describe the skills required to be an effective project manage.
- List and describe the skills and activities of a project manager during project initiation, project planning, project execution, and project closedown.
- Explain what is meant by critical path scheduling and describe the process of creating Gantt charts and network diagrams.
- Explain how commercial project management software packages can be used to assist in representing and managing project schedules.

**Unit III Identifying and Selecting Systems Development Projects [Supports Course SLO #5, 8]**
**Learning Objectives**
**The student will be able to:**

- Describe corporate strategic planning and information systems planning process
- Explain the relationship between corporate strategic planning and information systems planning
- Initiating and Planning Systems Development Projects
- Perform cost-benefit analysis and describe what is meant by the time value of money Determining System Requirements
- Describe options for designing and conducting interviews and develop a plan for conducting an interview to determine system requirements

**Unit IV Structuring System Process Requirements [Supports Course SLO #3]**
**Learning Objectives**
**The student will be able to:**

- Describe options for designing and conducting interviews and develop a plan for conducting an interview to determine system requirements.
- Explain the advantages and pitfalls of observing workers and analyzing business documents to determine system requirements.
- Explain how computing can provide support or requirements determination.
- Participate in and help plan a Joint Application Design session.
- Structuring System Data Requirements
- Concisely define each of the following key data modeling terms: entity type, attribute, multivalued attribute, relationship, degree, cardinality, business rule, associative entity, trigger, supertype, subtype.
- Draw an entity-relationship (E-R) diagram to represent common business situations.
- Explain the role of conceptual data modeling in the overall analysis and design of an information system

**Unit V Designing Databases [Supports Course SLO #7]**
**Learning Objectives**
**The student will be able to:**

- Concisely define each of the following key database design terms: relation, primary key, normalization, functional dependency, foreign key, referential integrity, field, data type, null value, demoralization, file organization, index, and secondary key.
- Explain the role of designing databases in the analysis and design of an information system.
- Transform an entity-relationship (E-R) diagram into an equivalent set of well-structured (normalized) relations.
- Explain the process of designing forms and reports and the deliverables for their creation.
- Apply the general guidelines for formatting forms and reports.
- Use color and know when color improves the usability of information.
- Format text, tables, and lists effectively.
- Explain how to assess usability and describe how variations in users, tasks, technology, and environmental characteristics influence the usability of forms and reports.
- Discuss guidelines for the design of forms and reports for Internet-based electronic commerce systems.

**Unit VI Designing Forms and Reports [Supports Course SLO #6]**
**Learning Objectives**
**The student will be able to:**

- Explain the process of designing forms and reports and the deliverables for their creation.
- Designing Interfaces and Dialogues
- Explain the process of designing interfaces and dialogues and the deliverables for their creation.
- Contrast and apply several methods for interacting with a system.
- List and describe various input devices and discuss usability issues for each in relation to performing different tasks.
- Describe and apply the general guidelines for designing interfaces and specific guidelines for layout design, structuring data entry fields, providing feedback, and system help.
- Design human-computer dialogues and understand how dialogue diagramming can be used to design dialogues.
- Design graphical user interfaces.
- Discuss guidelines for the design of interfaces and dialogues for Internet-based electronic commerce systems.

**Unit VII Designing Interfaces and Dialogues [Supports Course SLO #8]**
**Learning Objectives**
**The student will be able to:**

- Explain the process of designing interfaces and dialogues and the deliverables for their creation.
- Contrast and apply several methods for interacting with a system.
- List and describe various input devices and discuss usability issues for each in relation to performing different tasks.
- Describe and apply the general guidelines for designing interfaces and specific guidelines for layout design, structuring data entry fields, providing feedback, and system help.
- Design human-computer dialogues and understand how dialogue diagramming can be used to design dialogues.
- Design graphical user interfaces.
- Discuss guidelines for the design of interfaces and dialogues for Internet-based electronic commerce system.

**Unit VIII Designing Distributed and Internet Systems [Supports Course SLO #4, 8]**
**Learning Objectives**
**The student will be able to:**

- Define the key terms: client/server architecture, local area network LAN, distributed database, and middleware.
- Distinguish between file server and client/server environments and contrast how each is used in a LAN.
- Describe alternative designs for distributed systems and their trade-offs.
- Describe how standards shape the design of Internet-based systems.
- Describe options for ensuring Internet design consistency.
- Describe how site management issues can influence customer loyalty and trustworthiness as well as system security.
- Discuss issues related to managing online data, including context development, online transaction processing (OLTP), online analytical processing

**Unit IX System Implementation and Maintaining Information Systems [Supports Course SLO #8]**
**Learning Objectives**
**The student will be able to:**

- Describe the process of coding, testing, and converting an organizational information system and outline the deliverables and outcomes of the process.
- Prepare a test plan for an information system.
- Apply four installation strategies: direct, parallel, single-location, and phased installation.
- List the deliverables for documenting the system and for training and supporting users.
- Compare the many modes available for organizational information system training, including self-training and electronic performance support systems.
- Discuss the issues of providing support for end-users.
- Explain why system implementation sometimes fails.
- Describe the threats to system security and remedies that can be applied.
- Show how traditional implementation issues apply to electronic commerce applications.

**Evaluation of student learning:**

| | |
|---|---|
| Assigned chapters online tests | 30% |
| Projects, laboratory assignments and homework | 30% |
| Midterm performance examination | 20% |
| Final performance examination | 20% |
| | |
| Total | 100% |