

BERGEN COMMUNITY COLLEGE  
Computer Science Department  
Course Syllabus

Instructor: \_\_\_\_\_ Phone: \_\_\_\_\_

Email: \_\_\_\_\_

**COURSE TITLE:** CIS-289 Systems Analysis and Design

**PRE OR CO-REQUISITE:** CIS-277

**CREDITS/HOURS:** 3 Credits / 3 Lecture Hours

**COURSE DESCRIPTION:** Systems Analysis and Design is an introduction to the terminology, concepts, and tools for these two phases of the systems development life cycle. Topics considered include preliminary investigation, information requirements analysis, project management, data specification, data flow diagrams, logical data modeling, process specification, structure charts, design techniques, design criteria, and packaging.

**STUDENT LEARNING OUTCOMES:** **Upon satisfactory completion of the course, the student will:**

1. know the stages and sub-stages in the systems development life cycle;
2. be able to apply PERT/CPM techniques to project management, monitoring and control: Gantt Charts
3. understand the tools and techniques for conducting a preliminary investigation of a systems project;
4. know the advantages and disadvantages of the various techniques for information requirements analysis;
5. be able to construct a conceptual model of a system using data flow diagrams, data specification tools, and process specification tools;
6. be able to construct a conceptual of a system database using the Entity-Relationship model of data;
7. know how to convert a conceptual database model into a relational database model;
8. Understand the fundamental concepts of systems design;
9. Be able to apply transform analysis and use design criteria to convert a data flow diagram to a system structure chart;
10. Know the various module specification techniques.

**COURSE GRADE/EVALUATION:** The student will be evaluated using a variety of methods which may include, but not limited to, some or all of the following: quizzes, exams, written assignments, programming assignments, and projects.

**TEXTBOOK:** Systems Analysis and Design 8th Edition, Kendall & Kendall, Pearson 2011, ISBN-10: 0-13-608916-x, ISBN-13: 978-13-608916-2

## COURSE CONTENT:

1. Foundations for systems Analysis and Design
  - a. Introduction to Systems and Information Systems
    - An organizational framework for information systems
    - Overview of systems analysis and systems design
    - The systems analyst
    - Overview of the systems development life cycle (SDLC)
    - General model of a system and system terminology
    - An alternative to SDLC: prototyping
  - b. Managing the Information Systems Project
    - Planning and scheduling: PERT / CPM
    - Monitoring and control: Gantt Charts
2. Identifying and Initiating Systems Projects
  - a. Problem Recognition
    - Sources of systems requests
    - Wetherbe's PIECES framework
  - b. Preliminary Investigation
    - The investigation process
    - Project feasibility
    - Cost / benefit analysis
3. System Analysis
  - a. Information Requirements Analysis
    - Document survey
    - Observation
    - Questionnaires
    - Interviews
  - b. Data Flow Diagrams
    - Components and standard symbols
    - Constructing a set of data flow diagrams
    - Evaluation and refinement of Data Flow Diagrams
  - c. Data Specification & Organization
    - Data hierarchy
    - Data dictionary
    - Techniques for expressing data composition
  - d. Conceptual Data Modeling
    - The process
    - The Entity-Relationship model
  - e. Process Specification
    - Decision tables
    - Decision trees
    - Structured English
    - Tool selection criteria
  - f. Selecting the Best Design Strategy
    - Boundary and scope of the system
    - Generating alternative designs
    - Evaluating alternative specifications

#### 4. Systems Design

##### a. Designing System Output

- Reports and forms
- Formatting guidelines
- Assessing usability

##### b. Designing Interfaces and Dialogues

- Methods of interacting
- Controlling user access

##### c. Designing Databases

- Relational model of data
- Normalization theory
- Transforming the ER model into the relational model

##### d. Designing Physical Files

- Controlling data integrity
- File organizations

##### e. Designing Processes & Programs

- Preliminary design using structured techniques
- Structure charts
- Transform analysis and transactions analysis
- Design criteria and guidelines
- Packaging modules

REFERENCES: Marekas, System Analysis & Design, Pearson Prentice Hall  
Hoffer, George, Vlacich, Modem Systems Analysis & Design, Pearson  
Prentice Hall

*The Department of Computer Science prohibits the use of any electronic devices, such as, but not limited to, calculators, cell-phones, PDAs, lap-tops, headphones, etc., in classes unless otherwise specified in writing in the course outline by the instructor.*