



El Camino College
COURSE OUTLINE OF RECORD – Official

Course Acronym:	CIS
Course Number:	18
Descriptive Title:	Systems Analysis and Design
Division:	Business
Department:	Computer Information Systems
Course Disciplines:	Computer Information Systems
Catalog Description:	In this course the student will study systems analysis and design concepts as they are applied in business environments. Topics emphasize methodologies used by the analyst throughout the systems development life cycle to analyze business problems or opportunities, address user needs, perform feasibility studies, specify business requirements through process, data and logic modeling, consideration of development alternatives, and implementation and maintenance of systems.
Prerequisite:	
Co-requisite:	
Recommended Preparation:	Computer Information Systems 13 or equivalent experience
Enrollment Limitation:	
Hours Lecture (per week):	2
Hours Laboratory (per week):	3
Outside Study Hours:	4
Total Course Hours:	90
Course Units:	3
Grading Method:	Letter Grade only
Credit Status:	Credit, degree applicable
Transfer CSU:	Yes
Effective Date:	
Transfer UC:	No
Effective Date:	
General Education: ECC	
Term:	
Other:	
CSU GE:	
Term:	
Other:	
IGETC:	
Term:	
Other:	

CalGETC:	
Term:	
Other:	
Student Learning Outcomes:	SLO #1 Interview Techniques Use effective interview techniques to gain an understanding of the company computer system's current data inputs, outputs, and processes. SLO #2 Graphical Models Understand how 1) data flow diagrams visually illustrate the way data moves through a company's information system, and 2) entity-relationship diagrams serve as a graphical model that depict the relationships among the entities of a company's information system. SLO #3 Logical Design Documents Prepare logical design documentation for a company's new or modified computer system that includes a systems requirements document and a systems design specification.
Course Objectives:	1. Articulate the types of business needs that can be addressed using information technology-based solutions. 2. Initiate, specify, and prioritize information systems projects and determine the operational, technical, economic and schedule feasibilities of these projects. 3. Clearly define problems, opportunities, or mandates that initiate projects. 4. Analyze a business problem or opportunity using either the "structured" systems analysis and design method or "agile" methods. 5. Communicate effectively with various organizational stakeholders to collect information using a variety of techniques to clearly define system requirements. 6. Write clear and concise process, logic and data models that will define current business operations as well as the proposed system that provides a productive change in the way the business is conducted. 7. Manage information systems projects using formal project management methods. 8. Compare and contrast various systems acquisition and conversion alternatives. 9. Incorporate principles leading to high levels of security and user experience from the beginning of the systems development process. 10. Apply prototyping methods to input and output design. 11. Compare the advantages and disadvantages of different database models. 12. Apply normalization rules to database tables. 13. Evaluate different network topology methods. 14. Differentiate between corrective, adaptive, perfective and preventive maintenance. 15. Analyze and articulate ethical, cultural, and legal issues and their feasibilities among alternative solutions.
Major Topics:	I. Introduction (6 hours, lecture) A. The impact of information technology B. Causes of systems development projects C. Information systems components D. Systems development tools E. Systems development methods II. Strategic Planning for Systems Development (4 hours, lecture) A. Preliminary investigation

- B. Identification of opportunities for Information Technology enabled organizational change
- C. Operational, technical, economic, and schedule feasibility

III. Requirements Modeling (3 hours, lecture)

- A. Joint and rapid application development
- B. CASE (Computer Aided Software Engineering) tools
- C. Fact-finding

IV. Enterprise Modeling (1.5 hours, lecture)

- A. Data flow diagrams
- B. Data dictionaries
- C. Logic description using structured English, decision tables, and decision trees

V. Software Development Strategies (4 hours, lecture)

- A. Outsourcing vs. in-house development
- B. Web based software trends
- C. Prototyping

VI. Data Design (1.5 hours, lecture)

- A. Entity-relationship diagrams
- B. Normalization
- C. Database models

VII. Interface, Input, and Output Design (1 hour, lecture)

- A. Menu screens
- B. Data entry screens
- C. Data display screens
- D. Reports

VIII. System Architecture (4 hours, lecture)

- A. Web integration
- B. Client/server design
- C. Network models

IX. Systems Implementation (6 hours, lecture)

- A. Coding
- B. Data conversion
- C. System changeover options

X. Systems Operation and Support (5 hours, lecture)

- A. Corrective, adaptive, perfective and preventive maintenance
- B. System obsolescence

XI. Feasibility Study (5.5 hours, lab)

- A. Operational feasibility
- B. Technical feasibility
- C. Economic feasibility
- D. Schedule feasibility

XII. Fact Finding and Documentation (8.25 hours, lab)

- A. Identifying systemic problems
- B. Determining user requirements
- C. Systems requirements document
 - 1. Documenting findings/problems
 - 2. Recommendations

XIII. Process Modeling (9.75 hours, lab)

- A. Context diagram
- B. Level zero data flow diagram
- C. Functional primitives

XIV. Software Development (4.5 hours, lab)

- A. In-house
- B. Outsourcing

	C. Pre-packaged D. Cloud (Web) based XV. Data Modeling (9.75 hours, lab) A. Entity relationship diagram B. Normalization C. Physical development/implementation XVI. User Interfaces (8 hours, lab) A. Navigational menu interfaces B. Data entry and display screens C. Reports XVII. System Architecture (4.5 hours, lab) A. Client-server B. Peer-to-peer XVIII. System Implementation and Changeover (3.75 hours, lab) A. Direct cutover B. Parallel operation C. Pilot operation D. Phased operation
Total Lecture Hours:	36
Total Laboratory Hours:	54
Total Hours:	90
A.1. Primary Methods of Evaluation (Part 1 - CCN courses only):	
A.2. Primary Method of Evaluation (Part 2 - all courses; choose one):	2) Problem solving demonstrations (computational or non-computational)
Typical Assignment Using Primary Method of Evaluation:	You have received a systems request from the management of the Acme Corporation to automate their inventory control process. For each type of feasibility, prepare at least two questions that will help you evaluate the feasibility of the request.
Critical Thinking Assignment 1:	Analyze the current inventory control processes at the Acme Corporation. Construct a series of data flow diagrams of those processes until they are decomposed into functional primitives.
Critical Thinking Assignment 2:	Examine the data attribute needs of the inventory control workers at the Acme Corporation. Design a fully normalized entity-relationship diagram that exhibits only controlled data redundancies.
Other Evaluation Methods:	Multiple Choice, True/False
Instructional Methods:	Lab, Lecture, Multimedia presentations
If other:	
Work Outside of Class:	Problem solving activity, Study, Written work (such as essay/composition/report/analysis/research)
If Other:	
Up-To-Date Representative Texts:	Scott Tilley. Systems Analysis and Design. 13 th ed. Cengage, 2025
Alternative Texts:	

Required Supplementary Readings:	
Other Required Materials:	
Requisite:	
Category:	
Requisite course(s): List both prerequisites and corequisites in this box.	
Requisite and Matching skill(s):Bold the requisite skill. List the corresponding course objective under each skill(s).	
Requisite Skill:	
Requisite Skill and Matching Skill(s): Bold the requisite skill(s). If applicable	
Requisite course:	Computer Information Systems-13
Requisite and Matching skill(s):Bold the requisite skill. List the corresponding course objective under each skill(s).	Successful completion of this course requires a fundamental knowledge of the development and use of various information systems, and the ability to use application software. Demonstrate an understanding of the development and use of information systems in business. CIS 13 - Explain the development and use of information systems in business. Solve common business problems using appropriate information technology applications and systems. CIS 13 - Solve common business problems using appropriate information technology applications and systems. Identify the impact of the expanding scope of digital technology including career opportunities, privacy, security, ethics, global relationships, and perceptions of reality. CIS 13 - Summarize the impact of the expanding scope of digital technology including career opportunities, privacy, security, ethics, global relationships, and perceptions of reality. Identify and analyze existing and emerging technologies and their impact on organizations and society including computer, communication and information systems, privacy, security, crime, ethics, global relationships, and career opportunities. CIS 13 - Identify and analyze existing and emerging technologies and their impact on organizations and society including computer, communication and information systems, privacy, security, crime, ethics, global relationships, and career opportunities.
Requisite Skill:	Equivalent experience

Requisite Skill and Matching skill(s): Bold the requisite skill. List the corresponding course objective under each skill(s). If applicable	Successful completion of this course requires a fundamental knowledge of the development and use of various information systems, and the ability to use application software. Demonstrate an understanding of the development and use of information systems in business. Explain the development and use of information systems in business. Solve common business problems using appropriate information technology applications and systems. Solve common business problems using appropriate information technology applications and systems. Identify the impact of the expanding scope of digital technology including career opportunities, privacy, security, ethics, global relationships, and perceptions of reality. Summarize the impact of the expanding scope of digital technology including career opportunities, privacy, security, ethics, global relationships, and perceptions of reality. Identify and analyze existing and emerging technologies and their impact on organizations and society including computer, communication and information systems, privacy, security, crime, ethics, global relationships, and career opportunities. Identify and analyze existing and emerging technologies and their impact on organizations and society including computer, communication and information systems, privacy, security, crime, ethics, global relationships, and career opportunities.
Enrollment Limitations and Category:	
Enrollment Limitations Impact:	
Course Created by:	Pat Vacca
Date:	04/01/1988
Original Board Approval Date:	
Last Reviewed and/or Revised by:	Richard Perkins
Date:	11/04/2025
Last Board Approval Date:	01/21/2026
Effective Term:	FA 2026