IT-2700: SYSTEMS ANALYSIS AND DESIGN

Cuyahoga Community College

Viewing: IT-2700 : Systems Analysis and Design

Board of Trustees:
June 2025

Academic Term:
Fall 2025

Subject Code
IT - Information Technology

Course Number:
2700

Title:
Systems Analysis and Design

Catalog Description:
Explore information technology solutions in addressing business needs while exploring methodologies for project initiation, prioritization, and feasibility assessment. Develop expertise in system analysis, design, and management, integrating ethical considerations and tools to ensure system functionality and stakeholder expectations are met.

Credit Hour(s):
3

Lecture Hour(s):
3

Requisites

Prerequisite and Corequisite
IT-1050 Programming Logic.

Outcomes

Course Outcome(s):
Describe the types of business needs that can be addressed using information technology-based solutions.

Objective(s):
1. Initiate, specify, and prioritize information systems projects and to determine various aspects of feasibility of these projects.
2. Clearly define problems, opportunities, or mandates that initiate projects.
3. Within the context of the methodologies they learn, write clear and concise business requirements documents, and convert them into technical specifications.
4. Communicate effectively with various stakeholders to collect information using a variety of techniques and to convey proposed solution characteristics.
5. Design high-level logical system characteristics (user interface design, design of data and information requirements).
6. Incorporate principles leading to high levels of security and user experience from the beginning of the systems development process.
7. Analyze and articulate ethical, cultural, and legal issues and their feasibility among alternative solutions.

Course Outcome(s):
Utilize both classical and modern tools & techniques to analyze and document process flow, data flows, data structures, file designs, input & output designs and program specifications in the systems development life cycle.

Objective(s):
1. Use at least one specific methodology for analyzing a business situation (a problem or opportunity), modeling it using a formal technique, and specifying requirements for a system that enables a productive change in a way the business is conducted.

2. Utilize project management methods to oversee systems projects.
3. Compare and articulate various systems acquisition alternatives, including the use of packaged systems (such as ERP, CRM, SCM, etc.) and outsourced design and development resources.
4. Use contemporary tools for process and data modeling.

Methods of Evaluation:

1. Class participation and discussion
2. Oral and/or written reports
3. Homework assignments
4. Hands-on computer lab projects
5. Comprehensive projects and documentation
6. Regular project status reports
7. Class presentation of projects
8. Quizzes
9. Objective examinations
10. Other methods deemed appropriate by the department

Course Content Outline:

1. System development life cycle review
    a. Systems planning phase
        i. Preliminary investigation
        ii. Feasibility study
    b. Systems Analysis
        i. Requirements modeling and types of requirements
        ii. Scalability
        iii. System requirements documents
    c. Systems Design
        i. Create a physical model
        ii. Develop system design specifications
    d. Systems implementation
        i. Programming
        ii. Testing
        iii. Documentation
        iv. Installation
    e. Systems operations
        i. System maintenance
        ii. Security concepts
        iii. Evaluation of scalability
2. Addressing the business case
    a. Proposal reasons and justification
    b. Develop and review mission statements
    c. SWOT Analysis
    d. Risk management
3. Feasibility study
    a. Analysis of the current system
    b. Analysis of alternative systems
    c. Economic, technical, and operational feasibility study
    d. Budget analysis
4. Data gathering techniques
    a. Questionnaires
    b. Interviews
    c. Observation
    d. Sampling
    e. Research
5. External considerations

   a. PESTEL framework (political, economic, social, technological, environmental and legal)
   b. Technology
      i. Electronic product code (EPC)
      ii. Electronic data interchange (EDI)
      iii. Customer Relationship Management (CRM)
6. Classical documentation tools and techniques
   a. Systems flowchart
   b. Systems narrative
7. Structured documentation tools and techniques
   a. Data flow diagram (DFD)
   b. Data dictionary
   c. Business process diagram (BPM)
   d. Functional decomposition diagrams (FDD)
   e. Validation and verification (V&V)
8. Methods in application development
   a. Structured
   b. Iterative
   c. Agile
   d. Prototypes
   e. Joint application development (JAD)
   f. Rapid application development (RAD)
9. Tools
   a. Application lifecycle management (ALM)
   b. Integrated development environments (IDE)
   c. Computer-Aided Systems Engineering (CASE)
10. Systems Support
   a. User support (help desk)
   b. Database administration
   c. Network administration
   d. Web support
   e. Quality assurance (QA)
      i. Acceptance criteria
      ii. Error reporting and handling
11. Careers
   a. System analyst
   b. Project manager
12. Object-oriented analysis
   a. Object-oriented terms and concepts
   b. Classes, attributes, methods
   c. Class diagrams
   d. Unified modeling language (UML)
13. User interface design
   a. Human-computer interaction
   b. Input and output security issues
   c. Input and output technology issues
14. Data design concepts
   a. Data structures
   b. Data terms
   c. Relational database model
   d. UI as it relates to data
   e. Entity-relationship diagrams
   f. Data normalization
   g. Data storage tools
15. System architecture
   a. Client/server and internet impacts
   b. Network topologies, devices, and standards
   c. Input
   d. Output
   e. Web-based systems development

16. Individual skills
    a. Taking initiative
    b. Working independently
    c. Problem solving
    d. Communication skills
17. Team building
    a. Building the team
    b. Managing the team
18. Project planning
    a. Traditional tools such as Microsoft excel
    b. Visualization tools and graphical models PERT/CPM Charts
    c. Gantt chart
    d. Critical path
19. Systems implementation
    a. Testing
    b. Training
    c. Conversion
20. Systems and testing evaluation
    a. Unit testing
    b. Training
    c. Conversion
21. Systems security
    a. Risk identification
    b. Security and backup policies
    c. Cyberethics and data protection laws
22. Ethics and emerging technologies in system design

Resources

Rosenblatt, S. C., Peltier, J. W., & Whitehead, K. A. (2023) *Systems Analysis and Design*, Cengage Learning.

Hoffer, J.A., George, J. F. & Valacich, J.S. (2024) *Modern Systems Analysis and Design*, Mindtap Courseware.

Satzinger, J. W., Jackson, R. B., & Burd, S. D. (2020) Systems Analysis and Design, Global edition. Cengage Learning.

Kleppmann, M. (2020) *Designing Data-Intensive Applications*, O'Reilly Media.

Tilley, S. (2025) *Systems Analysis and Design*, Cengage Learning.

Project Management Institute, Inc. *A Guide to the Project Management Body of Knowledge (PMBOK Guide)*. 7th ed. Newton Square: Project Management Institute, Inc., 2021.

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