

**STATE UNIVERSITY OF NEW YORK  
COLLEGE OF TECHNOLOGY  
CANTON, NEW YORK**



**MASTER SYLLABUS**

**CITA204 – SYSTEM ANALYSIS AND DESIGN**

**Created by: Eric Cheng  
Updated by: Eric Cheng**

**Canino School of Engineering Technology  
Department of Decision & Graphic Media Systems  
Fall/2022**

- A. **TITLE:** SYSTEMS ANALYSIS AND DESIGN
- B. **COURSE NUMBER:** CITA 204
- C. **CREDIT HOURS:** 3 lecture hours per week for 15 weeks
- D. **WRITING INTENSIVE COURSE:** Yes
- E. **GER CATEGORY:** No
- F. **SEMESTER(S) OFFERED:** Spring
- G. **COURSE DESCRIPTION:** A course designed to guide the student through the evolution of a system, an analysis of the present flow of information and the specifications, selection and implementation of information processing systems. The scope of a system development study will transcend mere knowledge of specific systems to include a study of the total management system.
- H. **PRE-REQUISITES/CO-REQUISITES:**
- a. Pre-requisite(s): Database Applications and Concepts (CITA 215), or Introduction to Programming (CITA 180)
- b. Co-requisite(s): None

I. **STUDENT LEARNING OUTCOMES:**

<b><u>Course Student Learning Outcome [SLO]</u></b>	<b><u>PSLO</u></b>	<b><u>GER</u></b>	<b><u>ISLO</u></b>
a. Identify the role of information technology in supporting operational and business requirements, and management decision-making	2. Identify issues and collaborate on solutions concerning IT in an effective and professional manner		2 [CA]
b. Apply the systems development life cycle model to a computer-based information system	3. Demonstrate a solid understanding of the methodologies and foundations of IT		2 [IA, PS] 5
c. Use the tools and techniques of systems analysis and design professionals	3. Demonstrate a solid understanding of the methodologies and foundations of IT		2 [CA] 5
d. Understand and use the terminology associated with information systems development	3. Demonstrate a solid understanding of the methodologies and foundations of IT		5
e. Demonstrate the ability to interact with clients, users, and management, as well as with team members in promoting a successful project outcome	1. Communicate effectively both verbally and in writing		1 [O, W] 4 [T, GL]
f. Employ project management and/or team leadership skills in planning, coordinating, and ensuring quality of the assigned tasks.	1. Communicate effectively both verbally and in writing		1 [O] 4 [T] 5

	3. Demonstrate a solid understanding of the methodologies and foundations of IT 4. Apply problem solving and troubleshooting skills	
--	--	--

KEY	<u>Institutional Student Learning Outcomes [ISLO]</u> <u>1 – 5]</u>
ISLO #	ISLO & Subsets
1	<b>Communication Skills</b> Oral [O], Written [W]
2	<b>Critical Thinking</b> <i>Critical Analysis [CA], Inquiry &amp; Analysis [IA], Problem Solving [PS]</i>
3	<b>Foundational Skills</b> <i>Information Management [IM], Quantitative Lit./Reasoning [QTR]</i>
4	<b>Social Responsibility</b> <i>Ethical Reasoning [ER], Global Learning [GL], Intercultural Knowledge [IK], Teamwork [T]</i>
5	<b>Industry, Professional, Discipline Specific Knowledge and Skills</b>

J. **APPLIED LEARNING COMPONENT:** Yes   X   No       

- Classroom/Lab
- Creative Works/Project

K. **TEXTS:**

Systems Analysis and Design, by Scott Tilley, Course Technology; 12th edition, 2020; ISBN: 978-0357117811

L. **REFERENCES:** None

M. **EQUIPMENT:** Computer classroom

N. **GRADING METHOD:** A-F

O. **SUGGESTED MEASUREMENT CRITERIA/METHODS:**

- Assignments
- Examinations
- Project

P. **DETAILED COURSE OUTLINE:**

I. The Role of System Analysis and Design at the Enterprise Level

## II. Systems Planning – Analyzing the Business Case

- A. An introduction to systems analysis and design by describing the role of information technology in today's dynamic business environment.
  - 1. Information systems, Internet business strategies, modeling business operations
  - 2. Business information systems, organizational information models, systems development,
  - 3. The information technology department, and the role of the systems analyst.
- B. Analyzing the business case, explains how systems projects get started, and describes how to evaluate a project proposal to determine its feasibility.
  - 1. Strategic planning and strategic planning tools, the business case, systems requests,
  - 2. Factors affecting systems projects, processing systems requests,
  - 3. Assessing request feasibility, setting priorities, and the preliminary investigation.
- C. Managing systems projects.
  - 1. An overview of project management, creating a work breakdown structure, task patterns, the critical path,
  - 2. Project monitoring and control, reporting, project management software,
  - 3. Risk management, and managing for success.

## III. Systems Analysis

- A. The requirements engineering process.
  - 1. System requirements, team-based techniques,
  - 2. Gathering requirements through interviews and other methods, gathering requirements in agile projects,
  - 3. Representing requirements, validating and verifying requirements, and requirements tools.
- B. Data and process modeling techniques that analysts use to show how the system transforms data into useful information.
  - 1. Logical versus physical models, data flow diagrams and symbols,
  - 2. Drawing data flow diagrams, drawing context diagrams, drawing diagram 0 DFDs, drawing lower-level DFDs,
  - 3. Data dictionaries, and process descriptions.
- C. Object modeling techniques that analysts use to create a logical model.
  - 1. Object-oriented analysis, objects, attributes, methods, messages, classes,
  - 2. Relationships among objects and classes,
  - 3. The Unified Modeling Language (UML), and tools.
- D. Development strategies for the new system and plans for the transition to the systems design phase.
  - 1. Traditional versus web-based systems development, evolving trends,
  - 2. in-house software development options, outsourcing, offshoring, Software as a Service (SaaS), selecting a development strategy,
  - 3. the software acquisition process, and completion of systems analysis tasks.

## IV. System Design

- A. User interface design.
  - 1. This includes human-computer interaction, seven habits of successful interface designers, guidelines for user interface design,
  - 2. Source document and form design, printed output, technology issues,
  - 3. Security and control issues, and emerging trends.
- B. The data design skills that are necessary for a systems analyst to construct the physical model of the information system.
  - 1. DBMS components, web-based design, data design terms, entity-relationship diagrams,
  - 2. Data normalization, codes, data storage and access, and data control.

- C. System architecture, which translates the logical design of an information system into a physical blueprint.
  - 1. This includes an architecture checklist, the evolution of system architecture, client/server architecture,
  - 2. The impact of the Internet, e-commerce architecture, processing methods,
  - 3. Network models, wireless networks, and systems design completion.
- V. Systems Implementation
  - A. Managing systems implementation throughout the useful life of the system.
  - B. Quality assurance, application development (structured, object-oriented, and agile), coding, testing, documentation, and system installation.
- VI. Systems Support and Security
  - A. Managing systems support and security throughout the useful life of the system.
  - B. User support, maintenance tasks, maintenance management, performance management, security levels, backup and recovery, system retirement, and future challenges and opportunities.

Q. **LABORATORY OUTLINE:** Not applicable