

Spring 2025

## Systems Design

CRN 48418 CIS 43–64Z

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**Preferred contact method:** email

**Questions via email:** I will respond within 24 hours (longer on weekends or holidays)

**Office Hours:** I am available for Office Hours if you would like to join me in Zoom meetings for support as follows:

Monday April 7 - June 23, 2025 12:00 noon–1:00 pm (Zoom meeting online)  
<https://fhda-edu.zoom.us/j/81707182398>

Tuesday April 8 - June 24, 2025 4:00pm –5:00 pm (Zoom meeting online)  
<https://fhda-edu.zoom.us/j/82438478129>

If you cannot make it then, we can arrange other times by appointment (via Zoom meeting online).

Note: Nothing on campus.

**Course delivery:** Asynchronous online

**Course repository:** Canvas learning management system

### **Ways you will hear from me:**

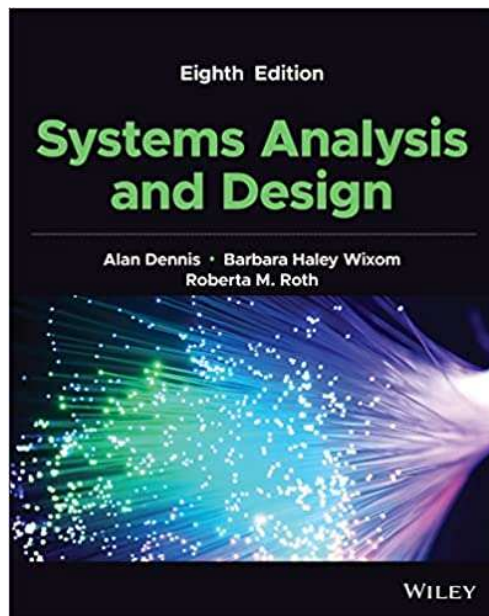
- Later in this syllabus you will see a week-by-week course plan. In Canvas, you will see a summary of what we will be covering each week at the beginning of each module, including assignments, quizzes, midterm and final exams.
- At the beginning of each week, I will be sending a Canvas Announcement reminding you of the work items (quiz, assignment) from the previous week that are due at the end of the day on Tuesday. I will provide feedback on your assignments submitted in Canvas within a few days of the due date. If you have not submitted your work, I will try to contact you to make arrangements to support you.

- If you have a question that you think may be of general interest, you can pose it in a discussion topic in Canvas and I will respond.
- I will send heads-up messages approximately two weeks prior to the midterm and final exams reminding you of the dates and request that you contact me to make alternate arrangements if the scheduled dates are a problem for you.

### **LEARNING MATERIALS:**

#### **1. TEXTBOOK:**

- a. Dennis, Alan; Wixom, Barbara Haley; and Roth, Roberta M. Systems Analysis and Design, Eighth edition. 2022. Wiley. Copies of this will be available in the De Anza Bookstore managed by Follett. There are options for eBook and rentals. See also the Wiley site.



2. Supplemental materials (not required; no cost):
  - a. UML: OMG® Unified Modeling Language® (OMG UML®) Version 2.5.1, December 2017. <https://www.omg.org/spec/UML/2.5.1/PDF>
  - b. SysML: download the latest version OMG SysML v. 1.6 [Dec 2019]. <https://sysml.org/sysml-specs/>

- c. Guide to the Systems Engineering Body of Knowledge (SEBoK), version 2.7. October 31, 2022. 1082 pages. [https://sebokwiki.org/w/images/sebokwiki-farm!w/9/9d/Guide\\_to\\_the\\_Systems\\_Engineering\\_Body\\_of\\_Knowledge\\_v.2.7.pdf](https://sebokwiki.org/w/images/sebokwiki-farm!w/9/9d/Guide_to_the_Systems_Engineering_Body_of_Knowledge_v.2.7.pdf)
3. Lecture materials are posted in the Canvas Learning Management System. Recordings of the lectures will be made available with captioning, with links to them posted in the Canvas Learning Management System.

## **STUDENT LEARNING OUTCOMES**

1. Describe and communicate system types and the system development life cycle.
2. Analyze system requirements and evaluate proposed solutions.

## **OBJECTIVES**

In this course, students will learn to:

- Describe system types and the system development life cycle.
- Analyze system requirements and evaluate proposed solutions.
- Implement structured design to create data flow diagrams, data structure/dictionaries, structure charts, HIPO charts, and VTOCs.
- Describe and evaluate a system design.
- Communicate problem specifications, alternative solutions, resultant design to both system designers and user.
- Examine prototyping, JAD, modeling tools, project management techniques, and CASE technologies.

## **ATTENDANCE**

This is a 4.5-unit course with a 4-hour lecture component and a 1.5 hour lab component. Please follow the course calendar/plan in order to complete reading, quizzes, assignments, midterm examination, final examination, and other work on time.

In order not to be dropped as a “no-show” you must complete the introductory survey “Quiz 0” by Tuesday, April 15, 2024. You will not be automatically dropped once you have completed the introductory survey assignment. Once you have completed the introductory survey, if you wish to drop the class, it is *your responsibility to drop the class before the deadline in the Schedule of Classes*. Otherwise, an appropriate grade will be assigned at the end of the quarter.

## **Scholarly Conduct**

Discussion and exchange of ideas on assignments are strongly encouraged. However, each person is expected to complete his/her own work. Identical solutions will be given a zero grade.

Copying or cheating during an exam will result in a zero being assigned to all the parties involved.

## **ASSIGNMENTS**

The assignments measure your ability to apply course concepts to hands-on skills by using commonly used software.

### **INCOMPLETE**

No Incomplete for Assignments - Keep up with Assignments and turn in whatever you have at the end of the quarter. Incompletes will only be granted for justifiable reasons for work not finished and 10% may be deducted from the assignment score.

### **ALL EXAMS ARE MANDATORY**

**MIDTERM EXAM** One midterm will be given during the quarter covering course terms and concepts during the first half of the course. There are usually 40 - 50 questions, mostly multiple choice, True/False, and perhaps with some fill-in the blanks. There may also be short “essay” questions. It will be held in Week 7 (starting between Thursday, May 22 8am California time and completed by Friday, May 23 11:59pm California time).

**FINAL EXAM** The final exam will be administered at the end of the quarter (Week 12, starting between Thursday, June 26 8am California time and completed by Friday, June 27 11:59pm California time). It will be a comprehensive exam, covering the entire course. There are usually on the order of 50 questions.

**POINTS** The following points can be obtained for various course activities:

| <b>ACTIVITY</b> | <b>Information</b>                                | <b>Weight/Points</b> |
|-----------------|---|----------------------|
| Quizzes         | Around 10,<br>approximately weekly<br>(in Canvas) | 100                  |
| Midterm Exam    | 40-50 questions<br>(in Canvas)                    | 100                  |
| Assignments     | Turned in as assigned<br>(in Canvas)              | 100                  |
| Final Exam      | ~50 questions<br>(in Canvas)                      | 100                  |
| Total Points    |   | 400                  |

### **SCORING/GRADES:**

Your total score will be normalized to 100 and indexed into the grading scale below:

**98%+=A+, 92-97=A, 90-91=A-, 88-89=B+, 82-87=B, 80-81=B-, 78-79=C+, 70-77=C, 60-69=D, <60=F**

Percentages are rounded to the nearest whole number.

**Posting Grades**      At the end of the quarter you can view your grade in the course via MyPortal.

## Course Plan (Spring 2025)

The weekly reading assignments are shown for the textbook.

| Week   | WEEK STARTING DATE (Mon) | WEEK ENDING DATE (Sun) | ACTIVITIES/ASSIGNMENTS   |
|--------|--------------------------|------------------------|--|
| Week 1 | 4/7/2025                 | 4/13/2025              | <b>Week 1: Course Introduction; System Analysis and Design Basics</b>  |
|        |                          |                        | Reading Assignment: Systems Analysis and Design, 8th edition, Chapter 1 The Systems Analyst and Information System Development, pages 3-31.                  |
|        |                          |                        | Reading Assignment: Systems Analysis and Design, 8th edition, Chapter 13 Agile Development Methods, pages 418-437.   |
|        |                          |                        | <b>WEEK 1, LECTURE 1: Introduction</b>   |
|        |                          |                        | Introduction; Course Outline/Plan, Syllabus; Context in the De Anza CIS curriculum (Business Programming certificate, etc.)                                  |
|        |                          |                        | <b>WEEK 1, LECTURE 2: Definitions and basics</b>   |
|        |                          |                        | Definition of system, system analysis, system analyst, system design, system types   |
|        |                          |                        | Establishing scope: what systems will we cover in the course (information technology systems, information systems)   |
|        |                          |                        | <b>WEEK 1, LECTURE 3: Systems Development Life Cycle (SDLC)</b>  |
|        |                          |                        | Systems Development Life Cycle (SDLC): varies by textbook author (e.g., Planning, Analysis, Design, Implementation)  |
|        |                          |                        | <b>WEEK 1, LECTURE 4: Systems Development Methodologies</b>  |
|        |                          |                        | What is a Development Methodology?   |
|        |                          |                        | Structured Design: Waterfall, Parallel Development   |
|        |                          |                        | Rapid Application Development (RAD): Phased/incremental, Prototyping.  |
|        |                          |                        | Agile, Agile team roles  |
|        |                          |                        | RUP Unified Process  |
|        |                          |                        | Which methodology to use? Clarity of requirements; technology, system complexity, Reliability, Timelines   |
|        |                          |                        | Selecting a Methodology: Waterfall, Agile, Spiral, Hybrid  |
|        |                          |                        | <b>Lab Assignment "0":</b> Ensure you have access to a drawing program (for example, Microsoft Visio).   |
|        |                          |                        | See instructions for accessing Microsoft Visio (for Windows PCs).  |
|        |                          |                        | <b>Quiz #0:</b> Short essay/questionnaire on your system design background (no pressure, does not require the textbook or listening to any lecture material) |
|        |                          |                        | <b>Quiz #1:</b> Covering Week 1 lecture material (you do not need the textbook for this, recognizing that you may not have received it yet)                  |

| Week   | WEEK STARTING DATE (Mon) | WEEK ENDING DATE (Sun) | ACTIVITIES/ASSIGNMENTS  |
|--------|--------------------------|------------------------|---|
| Week 2 | 4/14/2025                | 4/20/2025              | <b>Week 2: Project Management</b>   |
|        |                          |                        | Reading Assignment: Systems Analysis and Design, 8th edition, Chapter 2 Project Selection and Management, pages 37-65.                              |
|        |                          |                        | <b>WEEK 2, LECTURE 1: Introduction to Project Management</b>  |
|        |                          |                        | Summary of classes in the De Anza project management program (for those interested in further study)  |
|        |                          |                        | Why are we covering project management?   |
|        |                          |                        | What is a project? Project Management Institute definition  |
|        |                          |                        | How organizations select which projects to pursue   |
|        |                          |                        | Needs Assessment: assess the internal and external environments, organizational capability and capacity, determine viable options                   |
|        |                          |                        | Identify business problem or opportunity to pursue: elicit information, create "situation statement"  |
|        |                          |                        | ...Tools: Benchmarking, competitive analysis, document analysis, interviews, market analysis, prototyping   |
|        |                          |                        | Assess the current state: analyze causes/reasons for a problem/opportunity  |
|        |                          |                        | ...Evaluate organizational capabilities: Capability framework; Capability table, SWOT analysis  |
|        |                          |                        | ...Look at organizational goals and objectives to ensure alignment  |
|        |                          |                        | ...Analyze problem and root causes in order to address the business need.   |
|        |                          |                        | Project identification, initiation, and feasibility analysis  |
|        |                          |                        | Determine viable options, make recommendation   |
|        |                          |                        | "System Request"  |
|        |                          |                        | Feasibility Analysis: Technical, Economic, Organizational feasibility   |
|        |                          |                        | Decision Analysis: use of decision tree   |
|        |                          |                        | <b>Economic feasibility:</b> Return on Investment (ROI), Net Present Value (NPV), Benefit Cost Ratio, Internal Rate of Return (IRR), Payback Period |
|        |                          |                        | Disciplines: Project management, requirements engineering, design/development, testing  |
|        |                          |                        | Product Life cycle versus a project life cycle versus Systems Development Life Cycle  |
|        |                          |                        | ...Project Life Cycle Phases: Concept, Planning/Spec, Design/Develop, Test, Release to GA   |
|        |                          |                        | ...Product Life Cycle   |

| Week   | WEEK STARTING DATE (Mon) | WEEK ENDING DATE (Sun) | ACTIVITIES/ASSIGNMENTS  |
|--------|--------------------------|------------------------|---|
| Week 2 | 4/14/2025                | 4/20/2025              | <b>Week 2: Project Management</b>   |
|        |                          |                        | <b>WEEK 2, LECTURE 2: Project Management Essential Concepts</b>   |
|        |                          |                        | Work Breakdown Structure  |
|        |                          |                        | Creating the project schedule: Sequencing tasks; Estimating task resources, durations, and costs  |
|        |                          |                        | Allocating resources: people, equipment   |
|        |                          |                        | Critical path   |
|        |                          |                        | <b>WEEK 2, LECTURE 3: Project Management-Budget</b>   |
|        |                          |                        | Creating and managing the project budget  |
|        |                          |                        | Managing risks  |
|        |                          |                        | Project manager's triangle  |
|        |                          |                        | <b>WEEK 2, LECTURE 4: Project Management-Risk Management</b>  |
|        |                          |                        | Definitions of risk, risk appetite, risk attitude, risk threshold   |
|        |                          |                        | Individual and organizational risk types (risk-averse, risk-taking)   |
|        |                          |                        | Managing risks, risk strategies   |
|        |                          |                        | <b>Assignment #1:</b> Calculate the critical path for a project.  |
|        |                          |                        | <b>Quiz #2:</b> Covering Week 2 lecture material (you do not need the textbook for this, recognizing that you may not have received it yet) |

| Week   | WEEK STARTING DATE (Mon) | WEEK ENDING DATE (Sun) | ACTIVITIES/ASSIGNMENTS  |
|--------|--------------------------|------------------------|---|
| Week 3 | 4/21/2025                | 4/27/2025              | <b>WEEK 3: SDLC Analysis: Determining Requirements and Managing Requirements</b>  |
|        |                          |                        | Reading Assignment: Systems Analysis and Design, 8th edition, Chapter 3 Requirements Determination, pages 71-107.                 |
|        |                          |                        | <b>WEEK 3, LECTURE 1: Overview of Requirements</b>  |
|        |                          |                        | Definition of a requirement. Agile epic, user story.  |
|        |                          |                        | Types of requirements: business, stakeholder, solution, transition; project and quality; functional & non-functional              |
|        |                          |                        | Product requirement versus project requirement  |
|        |                          |                        | Kano model  |
|        |                          |                        | <b>WEEK 3, LECTURE 2: Requirements Elicitation (aka Requirements Gathering)</b>   |
|        |                          |                        | Determine elicitation approach: what information is needed; how to conduct elicitation; which stakeholders; tools/techniques      |
|        |                          |                        | Techniques: Interviews, Questionnaires, Document Analysis, Observation  |
|        |                          |                        | Prepare for elicitation: objective, participants, questions to ask, agenda, schedule meeting                                      |
|        |                          |                        | Conduct elicitation: brainstorming, collaborative games, workshops, focus groups, interviews, prototyping, questionnaires/surveys |
|        |                          |                        | Joint Application Development for requirements (JAD).   |
|        |                          |                        | Customer Visit: A focused meeting on gathering customer requirements: not a sales call.   |
|        |                          |                        | Confirm elicitation results: confirm accuracy, achieve common understanding   |

| Week   | WEEK STARTING DATE (Mon) | WEEK ENDING DATE (Sun) | ACTIVITIES/ASSIGNMENTS   |
|--------|--------------------------|------------------------|--|
| Week 3 | 4/21/2025                | 4/27/2025              | <b>WEEK 3: SDLC Analysis: Determining Requirements and Managing Requirements</b>   |
|        |                          |                        | <b>WEEK 3, LECTURE 3: Select and Approve Requirements</b>  |
|        |                          |                        | Define scope: narrowing the list of requirements to those that will be implemented; Establishing the requirements baseline                           |
|        |                          |                        | Constraints: resources, cost, time   |
|        |                          |                        | Use a product roadmap or story map to show how requirements will be implemented over a period of time  |
|        |                          |                        | Tools for deciding which requirements to include   |
|        |                          |                        | Prioritizing requirements  |
|        |                          |                        | Purpose Alignment Model: placing product features in a matrix according to their criticality and market differentiation to support decision making   |
|        |                          |                        | <b>WEEK 3, LECTURE 4: Requirement Traceability</b>   |
|        |                          |                        | Determine Traceability (bi-directional: forward and backward) and Monitoring Approach (change management). Adhere to compliance/regulatory standards |
|        |                          |                        | ...Forward traceability: requirements->design-> test->product  |
|        |                          |                        | ...Backward traceability: Requirements-> scope-> business goals and objectives   |
|        |                          |                        | Establish Relationships and Dependencies   |
|        |                          |                        | ...Linkages between requirements; ensure adding business value, meet customer needs  |
|        |                          |                        | ...Requirement subsets; implementation dependencies; benefit dependency  |
|        |                          |                        | ...Tools: feature model, story mapping, story slicing, traceability matrix   |
|        |                          |                        | Gold-plating   |
|        |                          |                        | <b>Assignment #2: An exercise in crafting requirements for a project.</b>  |
|        |                          |                        | Quiz #3 covering Week 3 lecture material   |



| Week   | WEEK STARTING DATE (Mon) | WEEK ENDING DATE (Sun) | ACTIVITIES/ASSIGNMENTS  |
|--------|--------------------------|------------------------|---|
| Week 4 | 4/28/2025                | 5/4/2025               | <b>Week 4: ANALYSIS MODELING: Modeling Business Processes, Modeling Functionality</b>   |
|        |                          |                        | Reading Assignment: Systems Analysis and Design, 8th edition, Chapter 4 Understanding Processes with Use Cases and Process Models, pages 111-162. |
|        |                          |                        | <b>WEEK 4, LECTURE 1: Overview of Modeling</b>  |
|        |                          |                        | Definition of model   |
|        |                          |                        | Modeling frameworks, languages (BPMN, SysML, UML)   |
|        |                          |                        | Modeling stages   |
|        |                          |                        | Types of models (Scope, Process, Rule, Data, Interface)   |
|        |                          |                        | Business Process Modeling Notation (BPMN) overview and examples   |
|        |                          |                        | <b>WEEK 4, LECTURE 2: Modeling with SysML and UML</b>   |
|        |                          |                        | SysML (System Modeling Language)  |
|        |                          |                        | UML (Unified Modeling Language)   |
|        |                          |                        | <b>WEEK 4, LECTURE 3: Use Cases and Use Case Diagrams</b>   |
|        |                          |                        | Identifying the important (major) system use cases  |
|        |                          |                        | What is in a Use Case Diagram? How to Create a Use Case Diagram   |
|        |                          |                        | Use Case Description; How to Create a Use Case Description  |
|        |                          |                        | Use Case template: Use case name; Actor; Description; Trigger; Preconditions; Normal Course; Postconditions; alternative flows (exceptions)       |
|        |                          |                        | Types of Use cases  |

| Week   | WEEK STARTING DATE (Mon) | WEEK ENDING DATE (Sun) | ACTIVITIES/ASSIGNMENTS   |
|--------|--------------------------|------------------------|--|
| Week 4 | 4/28/2025                | 5/4/2025               | <b>Week 4: ANALYSIS MODELING: Modeling Business Processes, Modeling Functionality</b>      |
|        |                          |                        | <b>WEEK 4, LECTURE 4: Modeling with Activity Diagrams</b>                                  |
|        |                          |                        | What is an Activity Diagram?   |
|        |                          |                        | Elements of an Activity Diagram  |
|        |                          |                        | How to Create an Activity Diagram  |
|        |                          |                        | Using walkthroughs to validate the diagrams (functional model verification and validation) |
|        |                          |                        | <b>WEEK 4, LECTURE 5: Process Modeling with Data Flow Diagrams</b>                         |
|        |                          |                        | What is a Data Flow Diagram (DFD)?   |
|        |                          |                        | DFD Diagram Hierarchy (Context Diagram is top level)                                       |
|        |                          |                        | DFD elements, symbols, and components  |
|        |                          |                        | DFD balancing  |
|        |                          |                        | <b>Assignment #3:</b> Create a Data Flow Diagram.  |
|        |                          |                        | Quiz #4 covering Week 4 lecture material   |

| Week   | WEEK STARTING DATE (Mon) | WEEK ENDING DATE (Sun) | ACTIVITIES/ASSIGNMENTS  |
|--------|--------------------------|------------------------|---|
| Week 5 | 5/5/2025                 | 5/11/2025              | <b>Week 5: Data Modeling, Structural Modeling, and Behavioral Modeling</b>                            |
|        |                          |                        | Reading Assignment: Systems Analysis and Design, 8th edition, Chapter 5 Data Modeling, pages 169-200. |
|        |                          |                        | <b>WEEK 5, LECTURE 1: Data Modeling with Entity Relationship Diagrams</b>                             |
|        |                          |                        | What is an Entity Relationship Diagram (ERD)?   |
|        |                          |                        | Elements (entity, attribute, relationship) and symbols. Cardinality, modality.                        |
|        |                          |                        | Building an ERD: Identify entities, Add Attributes, Identify entity relationships                     |
|        |                          |                        | ERD Normalization   |
|        |                          |                        | Balancing ERD and DFD   |
|        |                          |                        | CRUD (Create, Read, Update, Delete) matrix  |
|        |                          |                        | <b>WEEK 5, LECTURE 2: Introduction to Structural Models</b>   |
|        |                          |                        | What is a Structural Model?   |
|        |                          |                        | Classes, attributes, operations, object identification  |
|        |                          |                        | Generalization, Aggregation, Association, Polymorphism  |
|        |                          |                        | Structure charts. Afferent, Central, and Efferent processes.  |

| Week   | WEEK STARTING DATE (Mon) | WEEK ENDING DATE (Sun) | ACTIVITIES/ASSIGNMENTS  |
|--------|--------------------------|------------------------|---|
| Week 5 | 5/5/2025                 | 5/11/2025              | <b>Week 5: Data Modeling, Structural Modeling, and Behavioral Modeling</b>                      |
|        |                          |                        | <b>WEEK 5, LECTURE 3: Modeling with CRC Cards and Class Diagrams</b>                            |
|        |                          |                        | What are CRC Cards?   |
|        |                          |                        | What are Class Diagrams?  |
|        |                          |                        | <b>WEEK 5, LECTURE 4: Behavior modeling</b>   |
|        |                          |                        | Behavior Models   |
|        |                          |                        | Interaction Diagrams: Objects, Operations, Messages; Sequence Diagrams; Communications Diagrams |
|        |                          |                        | States, Events, Transitions, Actions, Activities  |
|        |                          |                        | What is in a Behavioral State Machine?  |
|        |                          |                        | Creating a Behavioral State Machine   |
|        |                          |                        | <b>Assignment #4:</b> Create an ERD.  |
|        |                          |                        | Quiz #5   |

| Week   | WEEK STARTING DATE (Mon) | WEEK ENDING DATE (Sun) | ACTIVITIES/ASSIGNMENTS   |
|--------|--------------------------|------------------------|--|
| Week 6 | 5/12/2025                | 5/18/2025              | <b>Week 6: Design Phase Strategies and Modeling</b>  |
|        |                          |                        | Reading Assignment: Systems Analysis and Design, 8th edition, Chapter 6 Moving into Design, pages 203-220. |
|        |                          |                        | <b>WEEK 6, LECTURE 1: Design Strategies</b>  |
|        |                          |                        | Transition from Analysis to Design   |
|        |                          |                        | Ways to construct the system:  |
|        |                          |                        | (1) Custom in-house development (make)   |
|        |                          |                        | (2) Acquiring third party solutions (buy)  |
|        |                          |                        | (3) Outsourcing the work   |
|        |                          |                        | Alternative Matrix (Decision matrix); Weighted alternative matrix  |
|        |                          |                        | Determine the appropriate design strategy  |
|        |                          |                        | <b>WEEK 6, LECTURE 2: Balancing Models; Transforming Analysis Models to Design Models</b>                  |
|        |                          |                        | Balancing (ensuring consistency of, verifying/validating) Functional-Structural models                     |
|        |                          |                        | Balancing Functional-Behavioral models   |
|        |                          |                        | Balancing Structural-Behavioral models   |
|        |                          |                        | Evolving Analysis Models to Design Models: Factoring, Partitions, Layers                                   |
|        |                          |                        | <b>WEEK 6, LECTURE 3: Package Diagrams</b>   |
|        |                          |                        | Guidelines   |
|        |                          |                        | Creating a Package Diagram   |
|        |                          |                        | <b>Assignment #5:</b> Using a weighted alternative matrix.   |
|        |                          |                        | Quiz #6  |

| Week   | WEEK STARTING DATE (Mon) | WEEK ENDING DATE (Sun) | ACTIVITIES/ASSIGNMENTS  |
|--------|--------------------------|------------------------|---|
| Week 7 | 5/19/2025                | 5/25/2025              | <b>Week 7: Physical Architecture Layer Design</b>   |
|        |                          |                        | Reading Assignment: Systems Analysis and Design, 8th edition, Chapter 7 Architecture Design, pages 222-247. |
|        |                          |                        | <b>WEEK 7, LECTURE 1: Design Thinking, Systems Thinking</b>   |
|        |                          |                        | Design Thinking   |
|        |                          |                        | Systems Thinking  |
|        |                          |                        | <b>WEEK 7, LECTURE 2: Architecture Overview</b>   |
|        |                          |                        | Architectural Components (hardware, software)   |
|        |                          |                        | Types of architectures (Client-server, Server-based, mobile, etc.)  |
|        |                          |                        | Virtualization  |
|        |                          |                        | Cloud Computing   |
|        |                          |                        | Containerization, Kubernetes  |
|        |                          |                        | <b>WEEK 7, LECTURE 3: Specifications, Non-functional requirements/Quality</b>                               |
|        |                          |                        | Non-functional requirements/Quality considerations  |
|        |                          |                        | Hardware and Software specifications  |
|        |                          |                        | <b>WEEK 7, LECTURE 4: Review for the Midterm</b>  |
|        |                          |                        | Quick run through of content of the midterm, quickly reviewing key concepts that have been covered          |
|        |                          |                        | <b>Assignment #6:</b> Making system architecture choices.   |
|        |                          |                        | No quiz this week (due to the midterm)  |
|        |                          |                        | Midterm. Tentatively between Thursday, May 22 8am through Friday, May 23 11:59pm.                           |

| Week   | WEEK STARTING DATE (Mon) | WEEK ENDING DATE (Sun) | ACTIVITIES/ASSIGNMENTS  |
|--------|--------------------------|------------------------|---|
| Week 8 | 5/26/2025                | 6/1/2025               | <b>Week 8: Human to Computer Interaction Layer Design Concepts</b>  |
|        |                          |                        | Reading Assignment: Systems Analysis and Design, 8th edition, Chapter 8 User Interface Design, pages 250-295. |
|        |                          |                        | <b>WEEK 8, LECTURE 1: User Interface Design Overview</b>  |
|        |                          |                        | Layout  |
|        |                          |                        | Content awareness   |
|        |                          |                        | Aesthetics  |
|        |                          |                        | User Experience   |
|        |                          |                        | Consistency   |
|        |                          |                        | <b>WEEK 8, LECTURE 2: User Interface design process</b>   |
|        |                          |                        | Use scenarios   |
|        |                          |                        | Structure, Standards  |
|        |                          |                        | Prototyping   |
|        |                          |                        | Visual Table of Contents (VTOC)   |
|        |                          |                        | <b>WEEK 8, LECTURE 3: Navigation, Design of Input, Design of Output</b>                                       |
|        |                          |                        | Input principles  |
|        |                          |                        | Output principles   |
|        |                          |                        | Non-functional requirements   |
|        |                          |                        | <b>Assignment #7:</b> Create the user interface for a simple application.                                     |
|        |                          |                        | Quiz #7   |

| Week   | WEEK STARTING DATE (Mon) | WEEK ENDING DATE (Sun) | ACTIVITIES/ASSIGNMENTS  |
|--------|--------------------------|------------------------|---|
| Week 9 | 6/2/2025                 | 6/8/2025               | <b>Week 9: Program Design</b>   |
|        |                          |                        | Reading Assignment: Systems Analysis and Design, 8th edition, Chapter 9 Program Design, pages 300-330.            |
|        |                          |                        | <b>WEEK 9, LECTURE 1: Moving from Logical to Physical Process Models</b>  |
|        |                          |                        | Moving from Logical to Physical Process Models  |
|        |                          |                        | Physical Data Flow Diagram (DFD)  |
|        |                          |                        | Modularity  |
|        |                          |                        | <b>WEEK 9, LECTURE 2: Structure Charts</b>  |
|        |                          |                        | Hierarchical format: sequence of invocation, selection (conditions for module invocation), iteration (repetition) |
|        |                          |                        | Control module, subordinate modules, library modules  |
|        |                          |                        | Data couples, control couples   |
|        |                          |                        | Afferent processes (inputs), central processes (operational processes), efferent processes (outputs)              |
|        |                          |                        | Transaction structure; Transform structure  |
|        |                          |                        | <b>WEEK 9, LECTURE 3: Design Criteria, Design Guidelines</b>  |
|        |                          |                        | Coupling  |
|        |                          |                        | Cohesion  |
|        |                          |                        | Factoring   |
|        |                          |                        | Connascence   |
|        |                          |                        | Design activities: specifications, reuse, optimization  |
|        |                          |                        | Constraints, Contracts  |
|        |                          |                        | Method specification: events, message-passing, algorithms   |
|        |                          |                        | <b>Assignment #8:</b> Design a simple application.  |
|        |                          |                        | Quiz #8   |

| Week    | WEEK STARTING DATE (Mon) | WEEK ENDING DATE (Sun) | ACTIVITIES/ASSIGNMENTS   |
|---------|--------------------------|------------------------|--|
| Week 10 | 6/9/2025                 | 6/15/2025              | Week 10: Data Storage Design   |
|         |                          |                        | Reading Assignment: Systems Analysis and Design, 8th edition, Chapter 10 Data Storage Design, pages 336-364. |
|         |                          |                        | <b>WEEK 10, LECTURE 1A: Data Storage formats</b>   |
|         |                          |                        | Files, databases   |
|         |                          |                        | Databases: hierarchical, relational, multi-dimensional   |
|         |                          |                        | Object-Relational Databases  |
|         |                          |                        | Object-oriented databases  |
|         |                          |                        | <b>WEEK 10, LECTURE 1B: Moving to a Physical ERD</b>   |
|         |                          |                        | Physical ERD   |
|         |                          |                        | Updating the CRUD matrix   |
|         |                          |                        | <b>WEEK 9, LECTURE 2: Mapping domain objects to a storage format</b>   |
|         |                          |                        | Designing data access, data manipulation   |
|         |                          |                        | <b>WEEK 9, LECTURE 3: Non-functional requirements in data storage design</b>                                 |
|         |                          |                        | Performance (storage efficiency, speed of access)  |
|         |                          |                        | Storage efficiency: Normalization  |
|         |                          |                        | Access Speed: Denormalization, clustering, indexing  |
|         |                          |                        | Estimating storage size  |
|         |                          |                        | <b>Assignment #9:</b> Data Storage Design for a simple application.  |
|         |                          |                        | Quiz 9   |

| Week    | WEEK STARTING DATE (Mon) | WEEK ENDING DATE (Sun) | ACTIVITIES/ASSIGNMENTS   |
|---------|--------------------------|------------------------|--|
| Week 11 | 6/16/2025                | 6/22/2025              | Week 11: Implementation  |
|         |                          |                        | Reading Assignment: Systems Analysis and Design, 8th edition, Chapter 11 Moving Into Implementation, pages 369-389.                            |
|         |                          |                        | <b>WEEK 11, LECTURE 1: Implementation</b>  |
|         |                          |                        | Managing the development effort  |
|         |                          |                        | The Mythical Man-month   |
|         |                          |                        | On-going project management, managing scope creep, change control  |
|         |                          |                        | DevOps, Continuous Development and Delivery  |
|         |                          |                        | Remember the context (System Development Life Cycle): Development before generating test cases, or Creating the test cases and then developing |
|         |                          |                        | <b>WEEK 11, LECTURE 2: Testing</b>   |
|         |                          |                        | Unit testing, Integration testing, System Testing; Regression testing; Automated testing; Acceptance testing                                   |
|         |                          |                        | Alpha Testing  |
|         |                          |                        | Beta Testing (production environment or limited exposure)  |
|         |                          |                        | <b>WEEK 11, LECTURE 3: Documentation</b>   |
|         |                          |                        | Documentation: System documentation; user documentation  |
|         |                          |                        | Hierarchical Input Process Output (HIPO) chart   |
|         |                          |                        | <b>Assignment #10:</b> Prepare the user documentation for a simple application.  |
|         |                          |                        | No Quiz this week (we have had ten quizzes, Quizzes 0 through 9)   |

| Week    | WEEK STARTING DATE (Mon) | WEEK ENDING DATE (Sun) | ACTIVITIES/ASSIGNMENTS  |
|---------|--------------------------|------------------------|---|
| Week 12 | 6/23/2025                | 6/27/2025              | <b>6/27/2023 is Friday, the last day of the quarter. Week 12: Rollout and post-rollout</b>                            |
|         |                          |                        | Reading Assignment: Systems Analysis and Design, 8th edition, Chapter 12 Transition to the New System, pages 391-415. |
|         |                          |                        | <b>WEEK 12, LECTURE 1: Rollout (Installation, Operations)</b>   |
|         |                          |                        | First Customer Shipment, First Revenue Shipment   |
|         |                          |                        | Limited Availability, General Availability (all sales regions, etc.)  |
|         |                          |                        | Migration, Conversion   |
|         |                          |                        | Training; Transfer of Information (TOI) to support and sales organizations  |
|         |                          |                        | <b>WEEK 12, LECTURE 2: Change Management</b>  |
|         |                          |                        | Resistance to change and overcoming it (John Kotter's model)  |
|         |                          |                        | Support, Maintenance, Sustaining Engineering (Level 1-3)  |
|         |                          |                        | Project assessment, lessons learned   |
|         |                          |                        | <b>WEEK 12, LECTURE 3: Review of course material in preparation for the final.</b>                                    |
|         |                          |                        | Comprehensive review for the final (review of several hundred slides).  |
|         |                          |                        | <b>Assignment:</b> No assignment this week, other than studying for the final exam.                                   |
|         |                          |                        | No Quiz this week due to the final exam.  |
|         |                          |                        | Final Exam. Tentatively between Thursday, June 26 8am through Friday, June 27 11:59pm.                                |
|         |                          |                        | End of course survey (optional)   |

### **Important Dates (Academic Calendar Spring 2025)**

<http://www.deanza.edu/calendar/>

[Academic Calendar \(deanza.edu\)](http://www.deanza.edu/academic-calendar/)

<https://www.deanza.edu/calendar/index.html>

|                    |  |
|--------------------|--|
| <b>January 27</b>  | <b>View schedule of classes for spring 2025</b>                |
| <b>February 1</b>  | <b>Application for admission open</b>                          |
| <b>February 1</b>  | <b>Registration opens based on Priority Registration group</b> |
| <b>February 18</b> | <b>Group 1-A registration opens</b>                            |
| <b>February 19</b> | <b>Group 1-B registration opens</b>                            |
| <b>February 20</b> | <b>Group 2 registration opens</b>                              |
| <b>February 24</b> | <b>Group 3 registration opens</b>                              |
| <b>February 25</b> | <b>Group 4 registration opens</b>                              |
| <b>February 26</b> | <b>Group 5 registration opens</b>                              |
| <b>February 27</b> | <b>Group 6 registration opens</b>                              |
| <b>February 28</b> | <b>Group 7 registration opens</b>                              |

|                   |  |
|-------------------|--|
| <b>March 3</b>    | <b>Group 8 registration opens</b>                                      |
| <b>March 26</b>   | <b>Drop for nonpayment on cumulative fee balances of \$250 or more</b> |
| <b>April 7</b>    | <b>Spring classes begin</b>  |
| <b>April 20</b>   | <b>Last day to add 12-week classes</b>                                 |
| <b>April 20</b>   | <b>Last day to drop classes without a W</b>                            |
| <b>May 24-26</b>  | <b>Memorial Day Weekend - no classes, offices closed</b>               |
| <b>May 30</b>     | <b>Last day to drop classes with a W</b>                               |
| <b>June 19</b>    | <b>Juneteenth Holiday - no classes, offices closed</b>                 |
| <b>June 23-27</b> | <b>Final exams</b>   |
| <b>June 29</b>    | <b>Graduation</b>  |

### **Help and Support**

#### **Disability Accommodations:**

De Anza College views disability as an important aspect of diversity, and is committed to providing equitable access to learning opportunities for all students.

Disability Support Services (DSS) is the campus office that collaborates with students who have disabilities to provide and/or arrange reasonable accommodations. If you have, or think you have, a disability in any area such as, mental health, attention, learning, chronic health, sensory, or physical, please contact DSS to arrange a confidential discussion regarding equitable access and reasonable accommodations.

If you are registered with DSS and have accommodations set by a DSS counselor, please be sure that your instructor has received your accommodation letter from Clockwork early in the quarter to review how the accommodations will be applied in the course. Students who need accommodated test proctoring must meet appointment booking deadlines at the Testing Center. a) Midterm exam be booked at least five (5) business days in advance of the instructor approved exam date/time. b) Final exams must be scheduled seven (7) business days/weekdays in advance of the instructor approved exam date/time. Failure to meet appointment booking deadlines will result in the forfeit of testing accommodations and you will be required to take your exam with the class.

DSS Location: RSS Building, Suite 141 <http://www.deanza.edu/DSS/> Phone: 408-864-8753 Email: [DSS@deanza.edu](mailto:DSS@deanza.edu)

#### **Student Success Center:**

**Need help?** Meet with tutors and attend workshops in the Student Success Center: [www.deanza.edu/studentsuccess](http://www.deanza.edu/studentsuccess). **Can't make it to campus?** Use the free online tutoring available to all De Anza students. Just login to MyPortal, go to the Students tab, and find the [Smarthinking](#) link.