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Spring 2024

# IS 390-002: Analysis and System Design

Dipesh Patel

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# IS390: Analysis and System Design
## Spring 2024

**Instructor: Dipesh Patel**
**E-Mail: dipesh.patel@njit.edu**

**Class:** T 11:30 AM – 12:50 PM ECEC 115
**Office Location:** TBA
**Office Hours:** M 09:00 AM to 12:00 PM
(via Zoom)

## *Course Description:*

This course is designed to be a study of the information systems development life-cycle (SDLC), from the initial stages of planning initiated from a system request, through information requirements analysis and determination, through the ultimate activities involving systems design, and concluding with a discussion of the steps to implement a system. The course offers theory, methodologies and strategies with a strong emphasis on the development of logical and physical process and data models in analysis and design. The course emphasizes a "learn by doing" approach to systems analysis and design, introducing a real-world project enabling students to actually analyze and design an information system.

As industry needs for robust IT infrastructures continually evolve, business leaders realize the need for people who understand both the basics of information technology and the essence of the business domain, people who can communicate with both computer programmers and business managers, people who serve as the "bridge" between the IS department and other business function units. The professionals who perform these roles are systems analysts and business analysts. This class will prepare students to join this important profession.

## *Number of Credit Hours:*

3

## *Prerequisite or Co-requisite:*

CS103, CS113, CS115, IS218 or IT202

## *Materials Required:*

Textbook:
1. Systems Analysis and Design | 8th Edition | ISBN-13: 978-1-119-80379-9 |
by Dennis, Alan; Barbara Haley Wixom and Roberta M. Roth | Wiley
Software:
1. No additional software is required.
Storage:
1. Some place to store files like Flash Drive, OneDrive, Google Drive, Box, etc.

## *Course Objectives:*

When you complete this course you should be able to:
- Describe the Systems Development Lifecycle (SDLC) and its different implementation methodologies; Know how to choose appropriate SDLC methodologies based on the nature of system development projects;

- Gather system requirements and think critically to gain depth on system needs;
- Identify the key actors of a system project and develop use cases that document the interactions required between the user and the system to accomplish user tasks, to more fully develop system requirements;
- Use automated modeling tools to develop logical data models and balance them against logical process models (data flow diagrams) to describe data that flows through the business processes of a proposed system;
- Convert logical process and data models to physical process and data models to capture the structural and behavioral specifications of a proposed system;
- Develop a system specification document detailing the results of the analysis and design steps of the SDLC as part of a project milestone for handoff to a system implementation team.
- Function effectively as a member or leader of a systems analysis and design team, providing deliverables for an information system development project.

## Course Requirements:

This course is a hybrid course integrating both classroom lecture and lab for hand-on experience.

### Exams:

There are two exams. I will notify you of the exam date at least one week before the exam is given. If you are not in class that day, it is your responsibility to find out when the exam will be given. If you miss the exam, your grade for that exam will be zero. **Makeup examinations are provided only under exceptional circumstances and the student has to notify me before the exam begins either by e-mail or in person that they will miss the exam.**

### Homework / Project Assignments:

Details of the homework assignments will be handed out or posted on Canvas. Assignments are to be submitted via Canvas. Homework assignments are to be completed individually by you. You may work in groups to complete the assignment, but each student must submit their own file. If you are having trouble with an assignment, please feel free to contact me or ask any student in the class. **Do not copy an assignment from another student and submit it as your own. If detected, you will get a zero for the assignment and reported to the Dean's office.** Every assignment must be completed and submitted via Canvas.

### Class Attendance:

Class attendance will be taken. However, it is your responsibility to find out about any lecture material, homework assignments and exams discussed in class. Attendance is highly correlated with good performance in the class, so attendance will be taken at each meeting.

Absences may be excused for athletics, religious holidays, illness, military obligation or family emergencies if you contact me before the missed class.

### Typical Assignments:

Students will be assigned discussion/research topics. Homework will be assigned based on the material discussed in class. All homework must be submitted electronically via Canvas; no physical homework will be accepted. Once the solutions are posted, no homework, regardless of reason will be accepted.

### Typical Project:

A topic of your choice based on the material mentioned in the textbook. Both the paper and any PowerPoint / display material will be submitted via Canvas. The purpose of this assignment is to give you practice in presenting technical information in a clear and simply explained manner that can be disseminated to both technical and non-technical audiences. This is a crucial skill for an information technology professional to master in order to be effective in the business world. Further details on this project will be provided in class and on Canvas.

### Discussion Forum:

You are required to participate in the Discussion Forum per specific instructions posted.

Absences may be excused for athletics, religious holidays, illness, military obligation or family emergencies if you contact me before the missed class.

### Late Assignment Policy:

Approved assignments that are turned in late, will be subject to penalty as follows:
1. Homework - 10% reduction of the grade
2. Discussion Board - 10% reduction of the grade
3. Lab - 10% reduction of the grade
4. Project – 20% reduction of the grade
5. Quiz / Exam - 20% reduction of the grade
NOTE: The last day late assignments will be accepted the instructor is communicated via Canvas Announcements.

### Academic Dishonesty:

Academic Integrity is the cornerstone of higher education and is central to the ideals of this course and the university. Cheating is strictly prohibited and devalues the degree that you are working on. As a member of the NJIT community, it is your responsibility to protect your educational investment by knowing and following the academic code of integrity policy that is found at: *http://www5.njit.edu/policies/sites/policies/files/academic-integrity-code.pdf*

Please note that it is my professional obligation and responsibility to report any academic misconduct to the Dean of Students Office. Any student found in violation of the code by cheating, plagiarizing or using any online software inappropriately will result in disciplinary action. This may include a failing grade of F, and/or suspension or dismissal from the university. If you have any

questions about the code of Academic Integrity, please contact the Dean of Students Office at *dos@njit.edu*

### *Class Attendance:*

Class attendance will be taken. However, it is your responsibility to find out about any lecture material, homework assignments and exams discussed in class. Attendance is highly correlated with good performance in the class, so attendance will be taken at each meeting.
Absences may be excused for athletics, religious holidays, illness, military obligation or family emergencies if you contact me before the missed class.

### *Typical Assignments:*

Students will be assigned 3-4 discussion/research topics. Homework will be assigned based on the cases discussed in class. Forum posts are assigned on a weekly basis. A comprehensive group project is assigned and involves a complete study of a digital crime, from the technology used to how the criminals were caught, what methods were used for surveillance, how the digital evidence was obtained and investigated, the prosecution and laws pertaining to that particular crime investigation.

### *Performance Evaluation:*

The course grade would depend upon your performance on assignments and exams. The following is an allocation of weights:

| Evaluation | | Grading | |
|---|---|---|---|
| Attendance / Participation | 10% | A | A(90-100) |
| Discussion / Group Assignments | 15% | B | B+(85-89), B(80-84) |
| Quizzes | 15% | C | C+(75-79), C(70-74) |
| Team Project / Presentation | 25% | D | D (60-69) |
| Midterm Exam | 15% | F | 59 or less |
| Final Exam | 20% | | |
| Total | 100% | | |

### *Tentative Class Schedule:*

| Week | Lecture | Activities / Dues |
|---|---|---|
| 1 | Introduction to the Course<br>Chap 1: The Systems Analyst and Information Systems Development | |
| 2 | Chap 2: Project Selection and Management | |
| 3 | Chap 3 Requirements Determination | |
| 4 | Chap 4: Use Case Analysis | |
| 5 | Chap 5: Process Modeling | |
| 6 | Review: Planning and Analysis: The Tune Source Case Study | |
| 7 | Chap 6 Data Modeling | |
| 8 | Midterm Exam - Online | Midterm Exam |

| 9 | Spring Break | |
|------|------------------------------------------------------------------------------------|------------|
| 10 | Chap 7 – Moving into Design | |
| 11 | Chap 8 – Architecture Design<br>Chap 9 – User Interface Design | |
| 12 | Chap 10 – Program Design | |
| 13 | Chap 11 – Data Storage Design | |
| 14 | Chapter 11 - Data Storage Design – Continued<br>Chapter 12 - Moving into Implementation | |
| 15 | Chapter 13 - Transition to the New System | |
| 16 | Presentations<br>Final Exam - Online | Final Exam |
| **Note**: | Chapters to cover on the indicated dates may vary according to each individual class. | |