

## New Jersey Institute of Technology

Course Title: <b><i>System Analysis and Design</i></b>	Semester: <b>Fall 2016</b>
Course Number: <b>IS 663</b>	Instructor: <b><i>Sathish Rajamani</i></b>
	Prerequisites: <b><i>Graduate Standing</i></b>
<b>Faculty Information</b>	
<b>Sathish Rajamani</b>	Office: <b><i>Adjunct faculty room</i></b>
Office Hours: Based on prior appointment	Telephone: <b><i>2019178456 (only text)</i></b>
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### **I. COURSE SPECIFICATIONS**

*Required background:* The students are required to have knowledge of key information systems concept, software development life cycle activities, and project management issues. Basic understanding of data modeling techniques and database fundamentals is expected as well.

### **II. COURSE OVERVIEW**

This course develops the skills necessary to analyze, design and manage the development of effective enterprise-scale information systems solutions incorporating contemporary methods and effective organizational and global project management practices. It focuses on technical business systems analysis and design techniques, and covers key software engineering principles, methods and frameworks, including process models, agile and lean principles, project and risk management, estimation, requirements elicitation and analysis, modeling, system and software architecture, design patterns, and quality systems. Students will actively participate in discussions, review selected articles, participate in team exercises and collaborate on projects involving analysis and prototyping of applications addressing real-world problems and integrating current and emerging technologies.

### **III. ACADEMIC INTEGRITY**

Students have the responsibility to know and observe the requirements of The NJIT Honor Code of Student Academic Integrity. This code prohibits cheating, fabrication or falsification of information, multiple submissions of academic work, plagiarism, abuse of academic materials, and complicity in academic dishonesty.

These standards of academic integrity will be enforced in this course. The full text of the NJIT Honor Code is available for your review at <http://www.njit.edu/academics/honorcode.php>.

## IV. COURSE TEXTS AND READINGS

### A. TEXTS

#### Required

"Software Engineering," Ian Sommerville, Addison-Wesley, England, 10th Edition, 2016

For UML Documentation & White Papers: <http://www.rational.com/uml>

### B. READING ASSIGNMENTS (to be read before the indicated session)

Several Reading materials including articles from Journals, Videos etc. will be posted on a regular basis on the Moodle Course page.

## V. GRADE STRUCTURE

ACTIVITY	POINTS
Project	40
Online Discussions	30
Quiz	30
<b>TOTAL</b>	<b>100</b>

The following scale will be used to determine your grade for the class: A (93 - 100%); B+ (88 - 92%); B (78 - 87%); C+ (75 - 77%); C (60 - 74%); F (Below 60%). There are no incompletes. Assignments that are not completed on time receive zero (0) credit. Final grades are based on total scores and on-line and in class participation.

## VI PROJECT

The Projects are an opportunity for you to apply the concepts we will discuss throughout the semester to solve "real-world" problems. Working as a team, you are to demonstrate your mastery of the concepts, methods, tools, and techniques covered in class.

You will be required to view the project from many angles - customer, analyst, developer, tester, manager and end user. You will develop and analyze requirements, project plans, designs and will eventually prototype your design. Details about the project will be announced in the 3<sup>rd</sup> session. Project teams should will be made up of 3 to 4 students.

## **Deliverables**

**Requirements Package 30**

**Design Documents 40**

**Prototype & Presentation 30**

## **VII. ONLINE DISCUSSIONS**

- The purpose of this assignment is to learn from the experiences and knowledge of each other. There will be THREE Online Discussions on various management topics pertaining to IS663.
- There are two parts to the on-line discussion. The initial part is to post a summary and address the questions posted in the discussion forum worth 6 points. The Final 4 comments are for you, the student to discuss other student's initial comment or subsequent comments, worth 4 points.
- **Comments such as "I agree" or "I disagree" do not count. You are expected to integrate the course material in each comment. Add value!! Each comment should be at least 50 words. No more than 2 comments on a single day. If any of the required 4 comments are posted on the last two days of the open assignment you will not receive credit. Additional comments are always welcome**

## **VIII. Grading**

Late assignments submissions may be accepted for partial credit, with every day late accruing a 10% penalty. As a rule of thumb, any assignment you submit to me will be graded and returned within a week. Online discussion grades will be reflected/updated whenever any other deliverable is graded and posted. Deliverables are due at 2355 Hours EST on the Due dates.

## **IX. Course Goals**

By the end of the semester students should be able to:

- 1- Choose appropriate development methodology
- 2- Understand and critique formal software requirements.
- 3- Evaluate various architecture and design choices for specific systems and choose optimal solution
- 4- Evaluate and exercise prototyping methodologies.

# IS 663 Class Schedule Fall 2016

Reading materials & Presentation will be uploaded in the Moodle

Date	Topic
Sept 9	Introduction
Sept 16	SDLC Models: Basics, Comparative Analysis
Sept 23	Requirements Engineering Process: Activities, Standards, Documentation
Sept 30	Requirements Modeling & Specification Overview: Structured and OO Approach, Use Cases, Informal and Formal Specifications, Data Flow Analysis; Methods: Data Flow Diagrams (DFD), Data Dictionary (DD), BNF, Process Description Examples
Oct 7	Methods: Use Cases and Scenarios Examples
Oct 14	Project Management, Risk Management Cost Estimation
Oct 21	Requirements Management Software Tools for Requirements Management, Modeling & Specification Tools
Oct 28	Design: Basic Concepts System & Software Architecture Design Methods & Tools
Nov 4	Design Methods and Notations Transitioning from Requirements to design - heuristics and guidelines. Introducing Design Quality: Basic Elements, Cohesion & Coupling, Reviews, Verification
Nov 11	Object Oriented Analysis & Design (OOAD): Basics Concepts, Static & Dynamic Views, Object Dictionary, OOD Overview
Nov 18	UML: Introduction, Notation, Diagrams
Nov 23 (Wed)	Design Patterns Quality Frameworks: SEI Maturity Model & ISO 9000
Dec 2	Project Presentation
Dec 9	Reserve Day

## X. ANNOUNCEMENTS AND INSTRUCTIONS

Students are responsible for all postings on moodle. Students should check moodle at least two or three times a week for any updates. Any announcements or due dates on moodle take precedence and are final.

**NOTE:** THE SCHEDULES AND PROCEDURES IN THIS COURSE ARE SUBJECT TO CHANGE IN THE EVENT OF EXTENUATING CIRCUMSTANCES. YOU WILL BE NOTIFIED OF DEVIATIONS.