IS663 – Advanced Sys Analysis & Design
Syllabus
Summer 2016

Instructor
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New Jersey Institute of Technology
I. COURSE SPECIFICATIONS

Course: IS 663
Course Title: Advanced System Analysis and Design
Prepared: May 2016

II. COURSE OVERVIEW

This course covers the theory, principles, and applications of the methodologies and tools of software analysis and design. Students will read selected material from the literature, actively participate in discussions, labs and exercises and prepare operational projects for real-world problems. We will spend a considerable amount of time interacting and learning through discussion of assigned readings and other material.

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.

IV. GRADE STRUCTURE

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>POINTS</th>
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</thead>
<tbody>
<tr>
<td>Exam</td>
<td>30</td>
</tr>
<tr>
<td>Project</td>
<td>40</td>
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<tr>
<td>Labs, Discussions and Participation</td>
<td>30</td>
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<tr>
<td><strong>TOTAL POINTS</strong></td>
<td><strong>100</strong></td>
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V  COURSE TEXTS AND READINGS

A. TEXTS

Required

Recommended
UML Documentation & White Papers: http://www.rational.com/uml

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

Note: The readings listed below are open to change. I will continue to update (add/remove/modify) the readings if/when I find more relevant papers as the semester progresses. I will, however, keep you informed of the changes as they occur.

VI. PROJECTS

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 posted on moodle.

Project teams should be made up of 4 to 6 students.

Deliverables

Requirements Package Including Project Plan  30
Design Documents  40
Prototype & Presentation  30
VII. DISCUSSIONS

Your overall grade for this component will be based on the quality of your effort in participating in class discussions and exercises both in class and on moodle.

Each week you are leading class discussions, you are expected to post (on moodle) TWO days ahead of time at least two questions that you would like the rest of the class to contemplate (especially while reading the articles for that class).

Your overall grade for this component will be based on the quality of your effort in leading and participating in class discussions and exercises.

**Distance Learning Class Discussion:** You will be responsible in participating in online discussion on the week’s theme for each class. This assumes you have thoroughly synthesized the information from the readings and has picked out a few relevant points to have a meaningful discussion. The explicit purpose is not to present the readings and/or author’s ideas, but also to elicit comments from the rest of the class in a meaningful discussion. A very useful way of doing this is by asking thought-provoking questions. Each student is expected to post (on moodle) TWO days ahead of time (i.e. before Monday of that week) at least TWO questions they would like the rest of the class to contemplate (especially while reading the articles for that class). Please be advised that posting questions late or not at all WILL affect your grade. At the end of the week (Sunday), each student must then pick TWO questions posted to reply to with their thoughts.

VIII. Class Schedule

<table>
<thead>
<tr>
<th>Session</th>
<th>Topic</th>
<th>Readings</th>
<th>Deliverables</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - 05-23</td>
<td>Introduction</td>
<td>CH 1</td>
<td></td>
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</table>
| 2 - 05-30 | SDLC Models: Basics, Comparative Analysis | CH2

"No Silver Bullet" by Fred Brooks, 1987, Brooks87.pdf | Project Teams Formed |
| 3 - 06-06 | Process models (cont.) Requirements Engineering Process: Activities, Standards, Documentation | CH 3
<p>| 4 - 06-13 | Requirements Modeling &amp; Specification | CH 4 | |</p>
<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>References</th>
</tr>
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<tbody>
<tr>
<td>6 – 06-27</td>
<td>Requirements Modeling &amp; Specification (Cont.) Methods: Use Cases and Scenarios Examples</td>
<td>CH 22, 23, 25</td>
</tr>
<tr>
<td>8 – 07-11</td>
<td>Design Methods and Notations Transitioning from Requirements to design - heuristics and guidelines Introducing Design Quality: Basic Elements, Cohesion &amp; Coupling, Reviews, Verification (Extra reading)</td>
<td>CH 24 Req Due</td>
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IS 663 Syllabus – Summer 2016

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<th>Date</th>
<th>Topic</th>
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<th>Notes</th>
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<tr>
<td>10 – 07-25</td>
<td>Quality Frameworks: SEI Maturity Model &amp; ISO 9000</td>
<td>CH 24</td>
<td>Entire Project Package Due</td>
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<td></td>
<td>XP, RUP Design and Requirements for the Internet age</td>
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<tr>
<td>11 – 08-01</td>
<td>Course Summary, Q&amp;A - Exam Preparation</td>
<td></td>
<td>Project Presentations</td>
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<tr>
<td>12 – 08-05</td>
<td>Final</td>
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<td>Exam</td>
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X. XI. 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.

Generally speaking the final letter grades will follow a curve

- A (25%)
- B+ (25%)
- B (30%)
- C+/C/F (20%)

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.