INFO 620: Information Systems Analysis & Design

Winter 2013
Wednesday, 6:00-8:50PM, Room 213

Instructor
Dr. Il-Yeol Song
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Home page: http://www.ischool.drexel.edu/faculty/song
Office Hours: Wednesday: 5:00-6:00 PM or by appointment

Blackboard: http://learn.dcollege.net
(a) Captured Lecture:
   a. Use Drexel ID and PW to log in
   b. Our class is marked as INFO-620-001
   c. If you miss the class, watch the recorded lecture first and then ask questions.
(b) Folders to use in this class
   a. To simplify the management, during Week 1-9, we will use ONLY Course Material folder. I will upload important handouts such as syllabus, assignments, and lecture notes to this folder.
   b. At the end of the term (Week 10 and exam week), we will also use Assignment folder to which you will submit the term project, peer evaluation form, and final exam.

Prerequisite
INFO 605 (Database Management I). INFO 608 (HCI) can be co-taken with 620. If you have any questions, talk to the instructor.

Text Books & Readings

The following papers will be posted in the Course Material Folder of Blackboard.
• Yunan Chen and Il-Yeol Song, "Guidelines for Developing Quality Use Case Descriptions,” in the Proc. of 2007 IRMA International Conference. (UCD paper)
Other References

Object-Oriented Analysis & Design

General Reference

- Booch, G et al., Object-Oriented Analysis and Design with Applications, Addison Wesley, 3rd ed., 2007. (**One of the classic books on OOA&D**)
- McLaughlin, B. and Pollice, G., Head-First Object-Oriented Analysis and Design, O’Reilly, 2006. (**An excellent book on developing class diagrams for Java coding**)
- Podeswa, H., UML for the IT Business Analyst, Course Technology PTR, 2nd ed., 2009. (**Focus on requirements modeling techniques using the use case techniques**)

Use Case Modeling


Other Recommended Books

- Gamma, E., etc. Design Patterns: Elements of Reusable Object-Oriented Software, Addison Wesley, 1995.
- Freeman, E. and Freeman, E., Head First Design Patterns, Addison O’Reilly, 2004.
INFO620, Winter 2013, Il-Yeol Song


Other Classic OOA&D Books
- Booch, G., Object-Oriented Analysis & Design with Applications, Benjamin-Cummings, 1993. (Booch method)
- Wirfs-Brock, R., etc., Designing Object-Oriented Software, Prentice-Hall, 1990. (CRC Method)

Journal and Magazine
Application Development Trends (adtmag.com/Home.aspx), Software Magazine
(www.softwaremag.com), IEEE Software
(http://www.computer.org/portal/web/computingnow/software)

Course Objectives
This course will focus on principles and practical techniques of object-oriented systems analysis & design using the UML.

Software
In this class, all diagrams submitted must be computer-generated and all text must be computer-printed. Hand-written submission will not be counted. This class uses IBM Rational Rose as a standard model-building tool. The instruction for downloading and installing Rational Rose will be posted in the Blackboard. You will receive an email of
download Visio, but I encourage you to use Rose, which is a more professional UML tool. Note that Visio uses a wrong notation for the use case diagram. It is your responsibility to use the correct notation because our class uses the standard UML notation. If you are using Visio, let me know so that I can send you Visio stencil you can use the correct use case notation.

Grading Structure

Assignments
There will be three homework assignments for your hands-on experience.

Project
A term project (max 3 members, except the last team) will be required. Solo project will be allowed only for Research paper category, and a group project is encouraged. The term project categories are (a) Analysis & Design (A&D) projects; (b) Lifecycle Projects; (c) Tools; (d) Research Paper;

An A&D project must produce a specification based on UML and other documents. A life cycle project category should implement one use case. The focus of a life cycle project is to learn how UML specifications are implemented and compare the specification models before and after the implementation. A tool project will implement a tool related to analysis and design. Examples of tools include web-based tutorials, visualization of models, or any creative tool. For a research topic, you must do an in-depth study of the topic and produce a report (about 20 single-spaced pages). The quality of the report should be publishable in a professional magazine or a conference. A doctoral student must choose an individual research paper topic. See a separate handout on Project and project topics will be discussed in Week 2.

Peer Evaluation Form (PEF) for group Projects
For each group project, a confidential Peer Evaluation Form must be filled out and submitted when the final project report is submitted or within 24hrs of the submission. Every team member evaluates himself/herself and each fellow team member for various aspects of the project. Peer evaluations could affect your and your teammate’s grades; thus, it is in your best interest to ensure that these evaluations are conducted fairly. If an individual has taken on extra responsibility, such as organizing the group, extra effort for a particular model development, editing submissions for consistency, or assembling the whole project components, these activities should be indicated by group members and extra credit will be assigned to that person. Other factors considered are group leadership or ability to plan project and help keep team on track, contribution of each member to the overall project, quality of contribution, development of proposal and problem statement, contribution to the models common to all the members such as use case diagram, class diagram, and other diagrams. Without this form, your project grade will be zero. This form is required only for group project members.

Proposal
Proposal submitted on time will carry 5% of the total project grade.
Exam
There will be no mid-term exam. A final exam will be a take-home and given on Week 10.

Grading
Assignments 30%
Project 30%
Final Exam 40%

Letter Grade

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
<th>Description</th>
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<tbody>
<tr>
<td>A+</td>
<td>97-100</td>
<td>Walks on water. Professional level work of the highest caliber.</td>
</tr>
<tr>
<td>A</td>
<td>94-96</td>
<td>Outstanding achievement. Student performance demonstrates full command of the course materials and evinces a high level of originality and/or creativity that far surpasses project and course expectations.</td>
</tr>
<tr>
<td>A-</td>
<td>90-93</td>
<td>Excellent achievement. Student performance demonstrates thorough knowledge of the course materials and exceeds project and course expectations by completing all requirements in a superior manner.</td>
</tr>
<tr>
<td>B+</td>
<td>87-89</td>
<td>Very good work. Student performance demonstrates above-average comprehension of the course materials and exceeds project and course expectations on all tasks as defined in the course syllabus.</td>
</tr>
<tr>
<td>B</td>
<td>84-86</td>
<td>Student performance meets designated project and course expectations and demonstrates understanding of the course materials at an acceptable level.</td>
</tr>
<tr>
<td>B-</td>
<td>80-83</td>
<td>Marginal work. Student performance demonstrates incomplete understanding of course materials.</td>
</tr>
<tr>
<td>C+</td>
<td>77-79</td>
<td>Unsatisfactory work. Student performance demonstrates incomplete and inadequate understanding of course materials.</td>
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<tr>
<td>C</td>
<td>74-76</td>
<td></td>
</tr>
<tr>
<td>C-</td>
<td>70-73</td>
<td>Unacceptable work at varying levels of unacceptability.</td>
</tr>
<tr>
<td>D+</td>
<td>68-69</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>64-67</td>
<td></td>
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<tr>
<td>D-</td>
<td>60-63</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>0.0</td>
<td>Failing—or dropped the course and forgot to tell anyone</td>
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A key difference between a B and an A is the degree to which the work turned in is original, creative, and shows mastery of the concepts. Doing what is expected and no more, or simply following my suggestions for improvement, however well done, earns, at best, a B+.

In graduate school, a C does not mean satisfactory, even though it is considered a “passing” grade. It’s an indication that there is something definitely wrong that needs to be addressed.

Class Civility:
Please observe proper classroom etiquette to demonstrate respect for your classmates and the class:

- **Turn off cell phones or put in vibration mode** before the class begins.
- **Arrive on time.** Late arrivals pattern is noted and accounted for. Arrival on time is very important not to lose important discussions.
- **Late Arrivals** – Do not disturb the class and don’t slam the door.
- **Sleepy?** – Make faces and yawn; pull down ear balls; massage your finger tips; Stretch your legs; stretch your arms over your head, massage your back necks and heads. Sit straight; do not lean back. If nothing works, nod for 2 min.
Policy
Assignments must be turned in on the due date in class before the class begins. The answers for assignments will be discussed both on the due date and when assignments are returned. No late assignments will be accepted for grading once the assignment material is discussed in class, unless discussed with me in advance. All late assignments will receive 10% off regardless of the reasons for the lateness.

Students should make every effort to attend all classes. Please make arrangements with other class members to obtain the material of any classes that you miss. It is suggested that class members exchange contact information for consultation on class materials and discussions as necessary. Discussion of lectures among class members is encouraged, but individual completion of assignments and tests is mandatory. Note that copying sentences directly from the textbook, lecture notes, or other’s work is plagiarism and will not be accepted. Write with your own words. Do not give/show a soft/hard copy of assignment answers or send via email your assignment answer files to your classmates. You can discuss lecture materials, but you cannot discuss assignments with your classmates. You cannot co-develop a part or the whole solution of any assignments. Both parties will suffer for doing this. Ask me in advance if you have any questions on what is allowed and what is not allowed. For this course, remember that all assignments and final exams are individual efforts and only the project is a joint effort venture.

Plagiarism is the representation of another’s words, ideas or work as your own. The standards for academic honesty are described in Student Handbook and on Drexel website. All students are responsible for reading and understanding these rules.

For this course, students found guilty of plagiarism can expect one or more or all of -
(a) Incident being reported to the University Judicial Office, where a permanent record is maintained, and
(b) Fail the course.

For group project’s, all the team members are equally responsible to observe this policy. If a team member does not faithfully collaborate, I recommend you talk to me about the nature of collaboration. Different members of a group may receive a different grade, if such an instance is noticed or suspected.

We’re All Human
I am well aware that you have a life and responsibilities outside of this course. If you encounter serious personal difficulties (e.g., death in the family, hospitalization, accidents, etc.) that preclude you from completing an assignment or an examination, please contact me in advance of the due date to discuss alternatives.

Students with Disabilities
If you have any type of disability which will interfere with your participation and comprehension in this class, or with completion of assignments, please contact the Office of
Disability Services as soon as possible. Student with disabilities requesting accommodations and services at Drexel University need to present a current accommodation verification letter (“AVL”) to faculty before accommodations can be made. AVL’s are issued by the Office of Disability Services (“ODS”). For additional information, contact the ODS at http://www.drexel.edu/oed/disability, 3201 Arch St., Ste. 210, Philadelphia, PA 19104, Phone 215-895-1401, or TTY 215-895-2299.

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<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Activity</th>
<th>Reading</th>
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<tbody>
<tr>
<td>1</td>
<td>Introduction to Systems Development Requirements</td>
<td></td>
<td>Larman: Ch 1-3</td>
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<tr>
<td>2</td>
<td>Overview of UML Discussion on projects</td>
<td>Project info given</td>
<td>Larman: Ch 4-5</td>
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<tr>
<td>3</td>
<td>Use case modeling</td>
<td>Project Proposal due; HW 1 out</td>
<td>Larman: Ch 6-7, 30</td>
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<td>4</td>
<td>Use case documentation Class modeling (Part 1)</td>
<td>HW 2 out</td>
<td>Larman Ch 6 (Documentation)</td>
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<td>Larman: Ch 8, 9 TCM paper</td>
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<td>5</td>
<td>Class modeling (Part 2)</td>
<td>(Project use case diagram review)</td>
<td>Larman: Ch 16, 32</td>
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<tr>
<td>6</td>
<td>Dynamic Modeling: Sequence diagrams (Part 1)</td>
<td>HW 3 out</td>
<td>Larman: 10, 11, 12, 13, 14, 15, 31 SQD paper</td>
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<tr>
<td>7</td>
<td>Dynamic Modeling: Collaboration diagrams (Part 2)</td>
<td>HW 3 due</td>
<td>Larman: Ch 17, 18-18.4, 19, 20</td>
</tr>
<tr>
<td>8</td>
<td>Dynamic Modeling: State, and Activity diagrams (Part 3)</td>
<td>(Project class diagram review)</td>
<td>Larman: Ch 28, 29</td>
</tr>
<tr>
<td>9</td>
<td>Design Class diagrams &amp; DB Generation</td>
<td></td>
<td>Larman: Ch 20, 33, 34</td>
</tr>
<tr>
<td>10</td>
<td>Architecture, Testing, Patterns, and Summary</td>
<td>Final Given</td>
<td>Larman: 36, 37, 21, 22, 40</td>
</tr>
<tr>
<td>11</td>
<td></td>
<td>Final Due</td>
<td>Project due</td>
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UML Sources, OO CASE Tools, and Web Sites: See OOLinks (http://wwwischool.drexel.edu/faculty/song/ool.htm) in my home page

• Rational (Rational Rose) http://www.rational.com
• OMG http://www.uml.org/
• Larman’s book home page http://www.craiglarman.com
• Martin Fowler’s home page http://martinfowler.com
• Agile Modeling http://www.agilemodeling.com/
• Modeling Style Guidelines http://www.agilemodeling.com/style/

• UML Modeling Style http://www.modelingstyle.info
• UML Center http://www.platinum.com/corp/uml/uml.htm
• OO Tips http://ootips.org/
• Use cases http://www.usecases.org; http://foruse.com
• Cockburn’s use case http://members.aol.com/acockburn/papers
• PATTERN sites http://st-www.cs.uiuc.edu/users/patterns/patterns.html
http://www.hillside.net/patterns
• Refactoring http://www.refactoring.com,
http://xprogramming.com
• Agile programming http://agileManifesto.org

• CRC Cards: http://ugweb.cs.ualberta.ca/~c425/12/index.html
http://www.csc.calpoly.edu/~dbutler/tutorials/winter96/crc_b/
• OMG sites http://www.omg.org (ODMG: http://odmg.org/)
• JAVA Literature reviews http://www.ebooks.com/java.html

See http://www.cis.drexel.edu/faculty/song/oolinks.html for more OO links.

• Workflow pattern: http://www.minicom.com/mtrspirt/workflow/>
• XML Resources: http://searchxmlresources.techtarget.com
• COMPONENTS sites http://www.jtone.com (telecom service and eqmt manufactures)
http://jfox.com (financial industry)

• Repository Products:
  Microsoft Object repository http://www.microsoft.com/repository
  Unisys Universal Repository http://www.unisys.com
• Law of Demeter http://www.ccs.neu.edu/home/lieber/LoD.html

• Application Development Trends http://adtmag.com/Home.aspx
• Software Magazine http://www.softwaremag.com/

• Free UML tools
  Lucid Chart http://www.lucidchart.com/;
  ArgoUML http://argouml.tigris.org/
  Visual Paradigm http://www.visual-paradigm.com/product/vpuml/editions/community.jsp;
  Visio UML Stencils http://softwarestencils.com/