CS 4311 SOFTWARE ENGINEERING II: SYLLABUS
WINTER 2015 (ONLINE)

Contact:

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Hours : Monday 12-1pm by Multimedia
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Course Home Page : http://www.mcs.csueastbay.edu/~billard/se/cs4311.html

Catalog Description:

Continuation of Software Engineering I with emphasis on the object-oriented design to implementation stages of the life cycle. Design methodologies including the Unified Modeling Language, illustrated with example design patterns. Implementation in Java. Topics include standards, documentation, instrumentation, testing. (4 Units)

Summary:

The life cycle step from design to implementation is examined in detail for the object-oriented methodology. In particular, design is in the Unified Modeling Language (UML) and implementation is in Java, with an introduction to JUnit testing.

UML topics include class, collaboration, and sequence diagrams. UML is used to present design patterns, which are reusable software to solve recurring problems. These patterns include singleton, abstract factory, object pool, proxy, observer, snapshot, and composite.

The case study involves objects which are persistent (using JDBC or Serializable), remote (using RMI), and observable.

Learning Outcomes: The successful student will be able to
- interpret UML design documents,
- translate UML designs to Java implementations, including advanced Java features,
- understand how design patterns solve recurring application problems.

Prerequisite: CS 3340 Object-Oriented Programming or equivalent Java experience. The student should be comfortable with programming Java classes, including simple Graphical User Interfaces.

Primary Text: http://www.mcs.csueastbay.edu/~billard/se/cs4311.pdf

Optional Text: Patterns in Java, Vol. 1, 2nd ed., Mark Grand (Wiley)

Grading:

Exercises : 40% [assignments due Sunday night, no late submissions or make-up work]
Mid-Term Exam : 25% [Sat. February 14, 9:00am-11:00am]
Final Exam : 35% [Sat. March 14, 9:00am-11:00am]
Attendance: Students must be able to attend these exam dates. There are no other class meetings. The exams are held in-class (room: SC S125). All students must bring a Photo ID.

Exercise Packet: http://www.mcs.csueastbay.edu/~billard/se/cs4311.zip

Exercise Modules:

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<thead>
<tr>
<th>#</th>
<th>Due</th>
<th>Wt</th>
<th>Topics</th>
<th>Exercises</th>
<th>Text Pages</th>
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<tr>
<td>1.</td>
<td>Wk 1</td>
<td>2%</td>
<td>UML/Java</td>
<td>Convert UML to Java</td>
<td>3..21</td>
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<tr>
<td>2a.</td>
<td>Wk 2</td>
<td>3%</td>
<td>Data Structures</td>
<td>Queue</td>
<td>25..32</td>
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<tr>
<td>2b.</td>
<td>Wk 3</td>
<td>1%</td>
<td>Design Patterns</td>
<td>Composite (JUnit on Queue)</td>
<td>51, 64..72</td>
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<tr>
<td>3.</td>
<td>Wk 3</td>
<td>2%</td>
<td>Design Patterns</td>
<td>Dynamic Starter</td>
<td>54..55</td>
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<tr>
<td>4.</td>
<td>Wk 4</td>
<td>3%</td>
<td>Design Patterns</td>
<td>Abstract Factory</td>
<td>56..57</td>
</tr>
<tr>
<td>5.</td>
<td>Wk 4</td>
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<td>Design Patterns</td>
<td>Connection Pool with JDBC</td>
<td>22..24, 52..53, 58..59</td>
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<tr>
<td>6a.</td>
<td>Wk 6</td>
<td>8%</td>
<td>Case Study</td>
<td>Observable, Persistence with JDBC</td>
<td>60..62, 73..85</td>
</tr>
<tr>
<td>6b.</td>
<td>Wk 6</td>
<td>3%</td>
<td>Case Study</td>
<td>Persistence with Serialization</td>
<td>86..87</td>
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<td>7.</td>
<td>Wk 7</td>
<td>4%</td>
<td>Case Study</td>
<td>Remote with RMI</td>
<td>63, 88..93</td>
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<tr>
<td>8.</td>
<td>Wk 8</td>
<td>4%</td>
<td>Data Structures</td>
<td>Breadth-First Search with JDBC</td>
<td>33..34</td>
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<tr>
<td>9.</td>
<td>Wk 10</td>
<td>7%</td>
<td>Data Structures</td>
<td>Re-engineer Btree</td>
<td>35..50</td>
</tr>
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Academic Dishonesty: By enrolling in this class the student agrees to uphold the standards of academic integrity described in the catalog under Grading and Academic Standards.