San José State University  
College of Science/Computer Science Department  
CS 251B, Object-Oriented Design, Section 1, Spring Semester, 2017

Course and Contact Information

Instructor: Pearce  
Office Location: 416 MacQuarrie Hall  
Telephone: (408) 924-5065  
Email: jon.pearce@sjsu.edu  
Office Hours: Tuesday & Thursday, 1500 - 1630  
Class Days/Time: Tuesday & Thursday, 1300 - 1445  
Classroom: 222 MacQuarrie Hall  
Prerequisites: CS 160 or instructor consent

Faculty Web Page
http://www.cs.sjsu.edu/faculty/pearce/pearce.html

Course Description

Catalog description
Course covers important concepts, activities, and artifacts of the design phase of object-oriented software development. Topics include design metrics, design patterns, refactoring, frameworks, and testing. Prerequisite: CS 160 or instructor consent.

Section description
Topics in the approximate order of presentation include: modeling collaborations using UML, Design principles, design patterns, and architecture patterns. Architecture patterns are implemented as frameworks.

Course Learning Outcomes

Upon successful completion of this course, students will be able to:
1. Create design models using UML and design patterns  
2. Implement design models  
3. Distinguish between good and bad designs

Required Texts/Readings

Textbook
There is no text for this course. Lecture notes will be posted at:
http://www.cs.sjsu.edu/faculty/pearce/modules/lectures/ooa2/index.htm

Other Readings
My lectures draw substantially from the following books:

Pattern-Oriented Software Architecture, volume 1; Buschmann, et. al.; Wiley; 1996.

Design Patterns, Elements of Reusable Object-Oriented Software; Gamma, et. al.; Addison-Wesley; 1994.

Other technology requirements / equipment / material

Star UML 2: http://staruml.io/  
Eclipse IDE for Java Developers: http://www.eclipse.org/downloads/

Course Requirements and Assignments (subject to change with fair notice)

Assignments
There will be three types of assignments: labs, exercises, and projects. Labs are begun in class and completed at home. Exercises usually consist of multiple problems and are done outside of class. Projects are single problems requiring detailed solutions.

Final Examination or Evaluation
There will be a comprehensive final exam on Monday, December 19, from 945 – 1200. The exam will be posted and submitted through Canvas. Students will use their laptops to create UML diagrams and write code. Access to notes and Internet is permitted, but all forms of communication are forbidden (except with the proctor).

Grading Information
Assignments will be submitted through Canvas. Rubrics will be used to grade the assignments. Models will typically be judged on accuracy, completeness, and implementability. There will also be a team project, which will be assigned after the midterm.

Determination of Grades
- Final Exam: 30%
- Midterm: 20%
- Team Project: 25%
- Weekly Assignments: 25%

Late assignments are accepted by prior arrangement with the instructor and only for compelling reasons.

Assuming a standard distribution of point totals I will use the following scale for assigning final grades:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>A</td>
<td>85% - 100%</td>
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<tr>
<td>B</td>
<td>70% - 84%</td>
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<tr>
<td>C</td>
<td>55% - 69%</td>
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<tr>
<td>D</td>
<td>40% - 54%</td>
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<tr>
<td>F</td>
<td>0% - 39%</td>
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Classroom Protocol
Students are expected to bring their laptops to class.

University Policies
Per University Policy S16-9, university-wide policy information relevant to all courses, such as academic integrity, accommodations, etc. will be available on Office of Graduate and Undergraduate Programs’ Syllabus Information web page at http://www.sjsu.edu/gup/syllabusinfo/

Final Exam
Tuesday, May 23, 12:15 – 14:30

Course Schedule
The tentative course schedule below is subject to change. Notification of changes will be made in class.

<table>
<thead>
<tr>
<th>Week</th>
<th>Dates</th>
<th>Topics/Activities</th>
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<tbody>
<tr>
<td>1</td>
<td>2/26</td>
<td>Syllabus</td>
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<tr>
<td>2</td>
<td>2/28 &amp; 3/2</td>
<td>Design Principles, Patterns, &amp; Metrics</td>
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<tr>
<td>3</td>
<td>2/7 &amp; 2/9</td>
<td>Overview SE, OOA, &amp; OOP</td>
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<tr>
<td>4</td>
<td>2/14 &amp; 2/16</td>
<td>Modeling Collaborations in UML</td>
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<tr>
<td>5</td>
<td>2/21 &amp; 2/23</td>
<td>Modeling Collaborations in UML</td>
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<tr>
<td>6</td>
<td>3/7 &amp; 3/9</td>
<td>Design Principles, Patterns, &amp; Metrics</td>
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<tr>
<td>7</td>
<td>3/14 &amp; 3/16</td>
<td>Pipeline Architectures</td>
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<tr>
<td>8</td>
<td>4/2 &amp; 4/4</td>
<td>Model-View-Control Architecture</td>
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<tr>
<td>9</td>
<td>3/1 &amp; 3/3</td>
<td>Agent-Based Architectures</td>
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<tr>
<td>10</td>
<td>3/26 - 3/31</td>
<td>Spring Break</td>
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<tr>
<td>11</td>
<td>4/11 &amp; 4/13</td>
<td>Model-View-Control Architecture</td>
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<tr>
<td>12</td>
<td>4/18 &amp; 4/20</td>
<td>Agent-Based Architectures</td>
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<td>13</td>
<td>4/25 &amp; 4/27</td>
<td>Agent-Based Architectures</td>
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<tr>
<td>14</td>
<td>5/2 &amp; 5/4</td>
<td>Creational Patterns</td>
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<td>15</td>
<td>5/9 &amp; 5/11</td>
<td>Open Architectures</td>
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<td>16</td>
<td>5/16</td>
<td>Final Review</td>
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<tr>
<td>17</td>
<td>5/22 &amp; 5/24</td>
<td>Finals</td>
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