1. **Course number and name:** 055:033 - Introduction to Software Design

2. **Credits and contact hours:** 3

3. **Instructor:** Tom Casavant

4. **Textbook:** Java: How to Program (8th Ed), Deitel and Deitel, 2009.
   - **Other supplemental materials:** Deitel/Deitel Android How to Program (Draft edition)

5. **Specific course information**
   - **Brief description.** Design of software for engineering systems; algorithm design and structured programming; data structures; introduction to object-oriented programming, GUI design, software interrupt architecture, exception handling, multithreading, and synchronization in JAVA, introduction to mobile device programming on Android; applications to engineering problems; lab arranged.
   - **Prerequisite:** 057:017
   - **Required** for all computer track students.

6. **Specific goals of the course and mapping to outcomes**

<table>
<thead>
<tr>
<th>Course Goal</th>
<th>Basis For Goal Assessment</th>
<th>Supports ABET Outcomes</th>
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</thead>
<tbody>
<tr>
<td>1. The student will learn to design, implement, test, and debug complex software systems.</td>
<td>Instructor/ student oral review of software design exercises</td>
<td>a(○), b(○), c(●), e(●), k(●)</td>
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<tr>
<td>2. The student will gain experience using modern software tools for Java programming for engineering applications.</td>
<td>Instructor/student oral review of software design exercises</td>
<td>c(●), c(●), k(●)</td>
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<tr>
<td>3. The student will learn the fundamentals of object-oriented design and programming.</td>
<td>Instructor/ student oral review of software design exercises, exam questions</td>
<td>c(●), c(●), k(●)</td>
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<td>4. The student will apply these principles to current engineering applications using the Java environment.</td>
<td>Instructor/ student oral review of software design exercises</td>
<td>a(○), b(○), c(●), e(●), k(●)</td>
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<tr>
<td>5. The student will learn programming principles for networked environments and multithreaded systems.</td>
<td>Instructor/student oral review of software design exercises, exam questions</td>
<td>c(●), c(●), k(●)</td>
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7. **Brief list of topics to be covered**
   - Object-oriented programming techniques
   - Object-oriented programming in Java
   - GUI programming in Java
   - Event Handling in GUIs
   - Exception Handling
   - Event Handling
   - Multithreaded programming
   - Android Software Architecture
   - Android simulator usage
   - Generics, Collections and Data Structures/Algorithms in Java
   - Oral mid-term exams