Course Title: Software Construction & Development

Course Code: SE 3001

Credit Hours: 3+1

**Course Objectives:**

By the end of the course, you will be able to:

• Convert OO design into code

• Use version controlling for their source code

• Use issue tracking system for dividing tasks among team members and tracking them

• Use logging in their software for error reporting

• Write unit test cases in JUnit

• Understand various code smells and refactorings

• Understand GoF design patterns and their corresponding code

**Reference Books:**

1. Java How to Program, Early Objects, Global Edition Paperback

by Harvey Deitel And Paul J. Deitel

**Tentative Weekly Plan:**

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| 1. | * Intro to the course * Java basics: static & dynamic binding, super keyword in Java, Java interfaces, class concepts. * OOP revision (Inheritance, polymorphism (overloading, overriding), java interfaces). |
| 2. | * Event-driven programming: events and event handlers, callbacks etc. * Java exception handling: try, catch, throw, throws, finally keywords * Java exception handling: try-with-resources, chained exceptions * File handling. |
| 3. | * Swing |
| 4. | * Swing * JavaFX (Text, TextField, Button, TableView etc.) |
| 5. | * JavaFX (Text, TextField, Button, TableView etc.) * CSS & graphics |
| 6. | Midterm I |
| 7. | * Servelets and JSP Applets |
| 8. | * Threads , Parallel processing * asynchronous programming |
| 9. | * Spring |
| 10. | * Spring boot |
| 11. | Midterm II |
| 12. | * Servelets and JSP |
| 13. | * Microservice |
| 14. | * JDBC/ODBC/DAO |
| 15. | * EJB |
| 16. | * Secure Java Programming |
| 17. | Final Exam |

Grading Scheme

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| Assignments | 5 % |
| Quizzes | 5 % |
| Project | 10 % |
| Midterms (2) | 15+15 % |
| Final | 50 % |