### COURSE BASICS

Course Title**: Software Design & Architecture Lab**

Course Code**: SEL 221**

Credit Hours**: 1**

Prerequisite**: None**

Class & Section: **BSE- 4(B)**

**Course Objectives and Description:**

This course teaches the principles and concepts involved in the analysis and design of large software systems. Below, are the learning objectives:

• Express the analysis and design of an application using UML

• Specify functional semantics of an application using OCL

• Specify and evaluate software architectures

• Select and use appropriate architectural styles

• Understand and apply object-oriented design techniques

• Select and use appropriate software design patterns

• Understand and perform a design review

**Course Learning Outcomes (CLO):**

|  |  |  |
| --- | --- | --- |
| **CLO #** | **CLO Statement** | **Bloom’s Taxonomy** |
| CLO 1: | Reproduce the implementation of design & architecture tasks as demonstrated. | P3 |
| CLO 2: | Demonstrate self-reliance when working independently or in group activities involving design, architecture, and development. | A5 |
| CLO 3: | Manipulate design & architecture tasks to improve or modify as needed for the situation at hand. | P4 |
| CLO 4: | Display commitment and academic honesty pertaining to the assigned tasks | A5 |
| CLO 5: | Respond effectively on a variety of situations involving hands-on skills. | P2 |

**Appendix I**

For Lab Based Courses

|  |  |  |
| --- | --- | --- |
| **Week** | **Week Days** | **Tentative Course Plan** |
| 1 | 7th Mar – 11th Mar |  |
| Lab:1 Introduction To Rational Rose & UML |
| 2 | 14th Mar – 18th Mar |  |
| Lab:2 Design To Code & Code To Design Using Rational Rose |
| 3 | 21st Mar – 25th Mar |  |
| Lab:3 User Interface Design |
| 4 | 28th Mar – 1st April |  |
| Lab :4 Web Application Design |
| 5 | 4th April – 8th April |  |
| Lab:5 Introduction To Design Pattern – Singleton Design Pattern |
| 6 | 11th April – 15th April |  |
| Lab:6 Factory Design Pattern |
| 7 | 18th April – 23rd April |  |
| Lab:7 Decorator Design Pattern |
| 8 | 25th April – 29th April |  |
| **OEL/Mid Viva** |
| **9** | **2nd May – 6th May Mid Term Exam** | |
| 10 | 9th May – 13th May |  |
| Lab:8 Adapter Design Pattern |
| 11 | 16th May – 20st May |  |
| Lab:9 Chain Of Responsibility Design Pattern |
| 12 | 23rd May – 27th May |  |
| Lab:10 Interactive Systems With MVC Architectural Pattern |
| 13 | 30th May – 3rd June |  |
| Lab:11 Software Reuse |
| 14 | 6th June – 10th June |  |
| Lab:12 Architectural Styles – Layered Architecture |
| 15 | 13th June – 17th June |  |
| Lab:13 Service Oriented Architecture |
| 16 | 20th June – 24th June |  |
| **OEL -II** |
| 17 | 27th June – 1st July |  |
| **Project and Viva** |
| **18** | **4th July – 15th July Final Term Exam** | |

***NOTE:***

1. *This schedule is subject to revisions as conditions may warrant.*
2. *Topics will be covered in sequence no matter if city observes any planned or unplanned holidays.*
3. *The information in this course outline is subject to revision as conditions may warrant.*

**MARKS DISTRIBUTION:**

|  |  |
| --- | --- |
| LAB PERFORMANCE + LAB FILE | 52 Marks (13\*4) Lab evaluation=3 each, Lab file =1 each |
| OEL/MID VIVA | 12 Marks (OEL=6 , Mid Viva=6) |
| OEL-II | 6 Marks |
| PROJECT | 30 Marks (Demo=20, Viva=5, Report=5) |

**COURSE RESOURCES**

**Instructor:**

Name: **ENGR.MAJID KALEEM, ENGR. SANIYA SARIM**

Designation: **lab engineer**

Office: **Software Design Lab**

Email: **saniyasarim@gmail.com**

**Counseling Hours: Monday (10:00 AM – 12:00 PM)**

**Thursday (10:00 AM-12:00 PM)**

**Appendix II**

Grading System: FALL 2018 and onward

|  |  |  |  |
| --- | --- | --- | --- |
| **Letter Grade** | **Grade Point** | **Percentage** | |
| **A** | 4.0 | ≥ 85 | - |
| **A-** | 3.67 | ≥ 80 | < 85 |
| **B+** | 3.33 | ≥ 75 | < 80 |
| **B** | 3.00 | ≥ 71 | < 75 |
| **B-** | 2.67 | ≥ 68 | < 71 |
| **C+** | 2.33 | ≥ 64 | < 68 |
| **C** | 2.00 | ≥ 60 | < 64 |
| **C-** | 1.67 | ≥ 57 | < 60 |
| **D+** | 1.33 | ≥ 54 | < 57 |
| **D** | 1.00 | ≥ 50 | < 53 |
| **F** | 0.00 | - | < 50 |

**Appendix III**

Blooms Taxonomy Levels Codes

|  |  |
| --- | --- |
| **C**ognitive | Knowledge (C1) |
| Comprehension (C2) |
| Application (C3) |
| Analysis (C4) |
| Synthesis (C5) |
| Evaluation (C6) |
| **A**ffective | Receiving (A1) |
| Responding (A2) |
| Valuing (A3) |
| Organization (A4) |
| Characterization (A5) |
| **P**sychomotor | Perception (P1) |
| Set (P2) |
| Guided Response (P3) |
| Mechanism (P4) |
| Complete Overt Response (P5) |
| Adaption (P6) |
| Organization (P7) |