**East West University**

**Department of Computer Science and Engineering**

**CSE-411, Software Engineering and Information Systems Design**

**Course Outline for Summer 2017**

Course Information

**Course Code**: CSE411

**Course Title**: Software Engineering and Information Systems Design

**Credit**: 3 + 1 Credits

**Lecture:** Section 1: 1010am – 1140am (S), Room: AB1-601

1010am – 1140am (R), Room: 108

**Lab:** 1010am – 1140am (T), Room: 534 (C. Lab-4)

Section 2: 0130 – 0300pm (S), Room: 726

1010am – 1140am (R), Room: 815

**Lab:** 0800am – 1000am (T), Room: 530 (C. Lab-4)

Instructor Information

**Instructor**: Shakila Mahjabin Tonni

Lecturer, Department of Computer Science & Engineering

**Mobile**: 01676342187

**Email**: [shakila@ewubd.edu](mailto:shakila@ewubd.edu), [tonni.cse@gmail.com](mailto:tonni.cse@gmail.com)

**Room:** 636

**Class Routine & Office Hour:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **0830-1000** | **1010-1140** | **1150-0120** | **0130-0300** | **0310-0440** | **0450-0650** |
| **Sun** | Office Hour | CSE411(1)  AB1-601 | Office Hour | CSE411(2)  726 | Office Hour |  |
| **Mon** |  |  |  | Office Hour | CSE435(1)  531 |  |
| **Tue** | CSE411LAB(2)  530 (C. Lab-2) | CSE411LAB(1)  534 (C. Lab-4) | Office Hour | Office Hour | CSE301(2)  433 |  |
| **Wed** |  |  |  | Office Hour | CSE435(1)  531 |  |
| **Thu** |  | CSE411(1)  108 | Office Hour | CSE411(2)  815 | CSE301 (2)  111 | CSE301(2)  530 (C. Lab-2) |

**TA:** Saymum Ahmed Sany (01689086568), Marzia Mohiudddin

Course Outcomes (CO)

The main outcome of this course is construction of actual information system by following the software lifecycle from the requirement analysis, specification, modeling and design phases.

At the end of the course, students should be able to:

1. **Analyze** stakeholder and software requirements
2. **Design** a project for developing actual software
3. **Assess** developed software

Mapping of Course Outcomes (COs) to Program Outcomes (POs)

| **COURSE OUTCOMES (CO)** | **Bloom’s Taxonomy Level**  **(Cognitive Domain)** | **PROGRAMME OUTCOMES (PO)** | | | | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** | **PO 9** | **PO 10** | **PO 11** | **PO 12** |
| CO1 | Analysis  (40%) |  | **√** |  |  |  |  |  |  |  |  |  |  |
| CO2 | Synthesis  (35%) |  |  | **√** |  |  |  |  |  | **√** | **√** |  |  |
| CO3 | Evaluation  (25%) |  | **√** | **√** |  | **√** |  |  |  |  |  |  |  |

*[ PO 1 Engineering Knowledge; PO 2 Problem Analysis; PO 3 Design/Development of Solutions; PO 4 Investigation; PO 5 Modern Tool Usage; PO 6 The Engineer and Society; PO 7 Environment and Sustainability; PO 8 Ethics; PO 9 Communication; PO 10 Individual and Team Work; PO 11 Life-Long Learning; PO 12 Project Management and Finance]*

Assessment of Different Soft Skills

**(1) Critical Thinking and Problem solving skills (CT) [Cognitive Domain]**

|  |  |
| --- | --- |
| * CT1- | The ability to identify and analyze problems in complex and vague situations, as well as to make justified evaluations |
| * CT2- | The ability to develop and improve thinking skills such as to explain, analyse and evaluate discussions |
| * CT3- | The ability to find ideas and alternative solutions |
| * CT4- | The ability to think out of box |
| * CT5- | The ability to make decisions based on concrete evidence |
| * CT6- | The ability to persevere as well as to fully concentrate on a given task |
| * CT7- | The ability to understand and to fit in the culture of the community and new work environment |

**(2)Communication skills (CS) [Psychomotor Domain]**

|  |  |
| --- | --- |
| * CS1- | The ability to present ideas orally & in written form |
| * CS2- | The ability to practice active listening skills and provide feedback |
| * CS3- | The ability to present clearly with confidence and appropriate to the level of the listener |
| * CS4- | The ability to use technology in presentations |
| * CS5- | The ability to use non-verbal skills |

**(3) Team work skills (TS) [Psychomotor Domain]**

|  |  |
| --- | --- |
| * TS1- | The ability to build good relations, interact with others and work effectively with them to achieve the same objectives |
| * TS2- | The ability to understand and interchange roles between that of a team leader and a team member |
| * TS3- | The ability to recognize and respect the attitude, behavior and belief of others |
| * TS4- | The ability to contribute towards the planning and coordination of the team’s efforts |
| * TS5- | Be responsible for the group’s decision |

Student Learning Time (SLT)

Student Learning Time (SLT) can be divided into: Face to Face (36 hours), Guided Learning (24 hours), Independent Learning (78 hours) and Assessment (22 hours). The detailed breakdown is as follows:

|  |  |  |
| --- | --- | --- |
| **NO.** | **TEACHING AND LEARNING ACTIVITIES** | **STUDENT LEARNING TIME (SLT)** |
| 1. | Lecture | 36 hours (3 x 12 weeks) |
| 2. | Review lesson after lecture (includes preparation for mid-term exams, final exam, quiz, and class test) | 66 hours (5.5 x 12 weeks) |
| 3. | Carry out Project | 12.5 hours |
| 4. | Carry out mid-term exams, final exam, quiz, and class test | 5.5 hours |
|  | **TOTAL SLT (Lecture)** | 120 hours (Credit = SLT/40=3.0) |
|  |  |  |
| 5. | Lab | 24 hours (2 x 12 weeks) |
| 6. | Student’s preparation for lab | 12 hours (1 x 12 weeks) |
| 7. | Carry out Lab Tests | 4 hours |
|  | **TOTAL SLT (Lab)** | 40 hours (Credit = SLT/40=1.0) |
|  | **TOTAL SLT (Overall Course)** | 160 hours |
|  | **TOTAL CREDIT = SLT/40** | 4.0 |

Course Contents and Lesson Plan

|  |  |  |
| --- | --- | --- |
| **Week** | **Lecture/Lab/Assignment Topic** | **References** |
| 1 | **Introduction:** Introduction to Software Engineering, Software development lifecycle, Boehm’s spiral model. | See main references |
| 2 | **Introduction:** Concurrent Model, Agile Software Development, Different types of information, qualities of information. | As the above |
| 3 | **Project Management Concepts:** Software management process and project Metrics, Software Project Planning, Project Scheduling | As the above |
| 4 | **Project Management Concepts:** Risk Analysis and management, quality management, Software Cost Estimation, Process Improvement. | As the above |
| 5 | **Requirement Analysis Concepts and Principles:** Software requirement, Requirement analysis, Use case model for requirement writing. | As the above |
| 6 | **System Modeling Concepts:** Flow oriented modeling, Scenario based modeling, UML diagrams. | As the above |
| 7 | **System Modeling Concepts:** Class and Interaction Diagram for designing Software, behavioral Modeling. | As the above |
| 8 | **Design Concepts and Principles:** Overview of design approach, Architectural design, Function oriented design, User Interface design. Object Oriented software development and design, | As the above |
| 9 | **Design Concepts and Principles:**  Iterative Development and the Unified Process. Elaboration using System Sequence Diagram, Domain Model. | As the above |
| 10 | **Software Testing:** White Box and Black Box testing, Basis path testing, Cyclomatic complexity, Testing for specialized environment. | As the above |
| 11 | **Software Testing:** Software testing strategies- Unit test, Integration test, Validation test, Systems test. Debugging | As the above |
| 12 | **Service Oriented Architecture:** Web service | As the above |

|  |  |  |
| --- | --- | --- |
| Lab | Lab Experiment Title | Lab Equipment/ Software |
| 1 | Familiarization with a Software development IDE. | MS Visual Studio 2012 |
| 2,3 | Designing different forms/pages for software. Create basic entry and view pages.  **Group Assignment:** Functional Requirement Document with Questionnaire | MS Visual Studio 2012 |
| 4 | Connecting with database from the application | MS Visual Studio 2012, SQL Server 2008 |
| 5 | **LAB Exam - I on Formulation of Requirements and Page design** |  |
| 6, 7 | Design the database based on the FRD & Creation of Database Tables with Integrity Constraints | SQL Server 2008 |
| 8 | UML Diagrams: Software designing using Use case diagram | ArgoUML |
| 9 | UML Diagrams: Software designing using Class Diagram | ArgoUML |
| 10 | UML Diagrams: Software designing using Activity and Sequence diagram | ArgoUML |
| 11 | **Final LAB Exam + Viva** |  |
| 12 | **Term Project Presentation and Demonstration** |  |

Teaching Materials/ Equipments

**Reference (Text books)**

**[1]** Software Engineering – Ian Sommerville (main text)

**[2]** Software Engineering: A Practitioner’s Approach (Latest edition)- Roger S. Pressman

**[3]** Fundamental of Software Engineering, Rajib Mall

**Software Tools (For Lab & Project):**

1. Visual Studio 2012
2. SQL Server 2008
3. ArgoUML

**Teaching Materials:** Lecture Notes\*, LabExercises/Notes\*, Reference Book, and Web Materials

\*Lecture and Lab Notes that are required for the course will be delivered during class.

Evaluation and Grading Policy

The relative contributions of exams, assignments, and lab work are as follow:

|  |  |
| --- | --- |
| Attendance | 5% |
| Assignment/Quiz | 10% |
| Project | 10% |
| Lab | 25% |
| Mid1 | 15% |
| Mid2 | 15% |
| Final | 20% |

**Notes:**

* **STRICTLY NO COPYING** from other individuals/groups.
* **LATE ASSIGNMENTS suffer a penalty rate of 20% per day, up to 5 days (weekends count towards the 5 days).** Assignments that are more than 5 days late are penalized by 100%.

**Grading System:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Marks (%) | Letter Grade | Grade Point | Marks (%) | Letter Grade | Grade Point |
| 97-100 | A+ | 4.00 | 73-76 | C+ | 2.30 |
| 90-96 | A | 4.00 | 70-72 | C | 2.00 |
| 87-89 | A- | 3.70 | 67-69 | C- | 1.70 |
| 83-86 | B+ | 3.30 | 63-66 | D+ | 1.30 |
| 80-82 | B | 3.00 | 60-62 | D | 1.00 |
| 77-79 | B- | 2.70 | Below 60 | F | 0.00 |

Exam Dates

|  |  |
| --- | --- |
| Mid Term 1 | 08 June 2017 |
| Mid Term 2 | 13 July 2017 |
| Final | 17 August 2017 |

Academic Code of Conduct

**Academic Integrity:** Any form of cheating, plagiarism, and personating, falsification of a document as well as any other form of dishonest behavior related to obtaining academic gain or the avoidance of evaluative exercises committed by a student is an academic offence under the Academic Code of Conduct and **may lead to severe penalties up to and including suspension and expulsion.**

**Special Instructions**

1. Students **will not be allowed to enter into the classroom** after 15 minutes of the starting time.
2. For plagiarism, the grade will be automatically become **zero for that exam/ assignment**.
3. There will be **NO make-up examinations**. In case of emergency, you MUST inform me within 24 hours of the exam time. Failure to do so will mean that you are trying to take UNFAIR advantage and you will be automatically disqualified. Also proper medical certificate (if applicable) has to be presented on the next class you attend.
4. You MUST have **at least 80% class attendance** to sit for the final exam.
5. All mobile **phones MUST be turned to silent** during class, lab and exam period.
6. There is **zero tolerance for cheating** at EWU. Students caught with cheat sheets in their possession, whether used or not used, &/or copying from cheat sheets, writing on the palm of hand, back of calculators, chairs or nearby walls, etc. would be treated as cheating in the exam hall. The only penalty for cheating is expulsion from EWU

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