**COURSE BASICS**

Course Title**: Software Requirements Engineering**

Course Code**: SEN-211**

Credit Hours**: 3 + 0**

Prerequisite**: (SEN-120 + Introduction to Software Engineering)**

Class & Section: **BSE-3 A,B&C**

**Course Objectives and Description:**

This course introduces students to the process of requirements engineering and helps them understand important issues in requirements engineering. It will also help them to learn and apply the RE concepts for elicitation, specification, modeling and analysis of software requirements. Important topics include Requirement engineering types, Requirements management and validation of requirements

**Course Learning Outcomes (CLO):**

|  |  |  |  |
| --- | --- | --- | --- |
| CLO | Statement | Bloom’s Taxonomy | Associated PLO |
| 1 | Describe various software requirement needs for a variety of stakeholders/situations | C1 | PLO1 |
| 2 | Apply requirements engineering activities & processes to any given situation | C3 | PLO2 |
| 3 | Analyze various requirements engineering tools & techniques suitable for a given situation | C4 | PLO2 |
| 4 | Compile a software requirement specification document | C5 | PLO3 |

**Weekly Breakdown:**

|  |  |  |
| --- | --- | --- |
| **Week** | **Week Days** | **Tentative Course Plan** |
| 1 | 11th October- 15th October | Introduction to OBE, Course CLOs and Course Outline.  Introduction to Requirements Engineering & importance, |
| 2. | 18th October- 22nd October | Types of software Requirements Information  Levels and origins of software Requirements |
| 3 | 25th October- 29th October | Kinds of Software Requirements (Functional, Non-Functional, Domain, Inverse, Design and Implementation Requirements |
| 4 | 1st November- 5th November | A structured approach to Requirement Engineering and Requirement Development  (Quiz 1) |
| 5 | 8th November- 12th November | Requirements from the customer’s perspective  Good practices for requirements engineering |
| 6 | 15th November- 19th November | The business analyst role, tasks and skills  Establishing the business requirements  Vision and scope document  Scope representation techniques |
| 7 | 22nd November- 26th November | Stakeholders, User classes, User personas and The product champion  Requirements elicitation Techniques, Planning, Preparing, Performing and Follow up |
| 8 | 29th November – 3rd December | Use cases and user stories  The use case approach  Good practices for requirements engineering |
| **9** | 6th December – 10th  December | **Mid Term Exam** |
| 10 | 13th December – 17th December | Sources of Requirements & Documenting the requirements (SRS) |
| 11 | 20th December – 24th December | Modeling(UML) & Specifying data requirements(Quiz 2) |
| 12 | 27th December – 31st December | Software quality attributes Exploring, Defining & Specifying  Prototyping & requirement priorities |
| 13 | 3rd January – 7th January | Validation and verification of requirements  Beyond requirements development  Requirements management practices, |
| 14 | 10th January – 14th January | Change Management & Requirements Traceability(Quiz 3) |
| 15 | 17th January – 21st January | Project Presentations |
| 16 | 24th January – 28th January | Requirements Engineering in Agile projects |
| 17 | 1st February -5th February | Tools for Requirement engineering (KANBAN) |
| **18** | 8thFebruary – 12th February | **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.*

**COURSE ASSESSMENT METHOD**

**Method of Evaluation and Structure:**

A student’s grade will be based on multiple measures of performance as mentioned below:

|  |  |
| --- | --- |
| **Evaluation Instruments (EI)** | **Marks** |
| Quizzes (4 Quizzes of 10 Marks) | 10 |
| Assignments (4 Assignments) | 20 |
| Mid Term Examination | 20 |
| Final Examination | 50 |
| **Total** | **100** |

*NOTE: Any change in this scheme/format will be communicated well in time.*

**Mapping of CLOs to PLOs (Program Learning Outcomes)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **PLO’s** | **CLO’s** | | | |
| **CLO 1** | **CLO 2** | **CLO 3** | **CLO 4** |
| PLO:1 (Engineering Knowledge) | ✓ |  |  |  |
| PLO:2 (Engineering Problem Analysis) |  | ✓ | ✓ |  |
| PLO:3 (Designing and Development) |  |  |  | ✓ |
| PLO:4 (Investigation) |  |  |  |  |
| PLO:5 (Modern tool usage) |  |  |  |  |
| PLO:6 (Engineer and Society) |  |  |  |  |
| PLO:7 (Environment and Sustainability) |  |  |  |  |
| PLO:8 (Professionalism and Ethics) |  |  |  |  |
| PLO:9 (Individual and Team Work) |  |  |  |  |
| PLO:10 (Communication) |  |  |  |  |
| PLO:11 (Project Management) |  |  |  |  |
| PLO:12 (Lifelong Learning) |  |  |  |  |

**Mapping of CLOs to Course Evaluation Instruments (EI)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **EI** | **CLO’s** | | | |
| **CLO 1** | **CLO 2** | **CLO 3** | **CLO 4** |
| Assignments | ✓ |  |  | ✓ |
| Quizzes | ✓ | ✓ | ✓ |  |
| Midterm Exam | ✓ | ✓ | ✓ |  |
| Final Exam | ✓ | ✓ | ✓ |  |

**Grading System:**

|  |  |  |  |
| --- | --- | --- | --- |
| **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 |

**COURSE RESOURCES**

**Instructor:**

Name: Engr. Bushra Fazal Khan

Designation: Assistant Professor

Office: Iqbal Block, Ground Floor, Faculty 11

Counselling Hours: Monday, Tuesday & Thursday, 1:30 to 3:30

**Text Book:**

* + - 1. Karl Wiegers & Candase Hokanson, (2023). Software Requirements Essentials, 1st Ed, ‎Addison-Wesley**.**
      2. Karl Wiegers & Joy Beatty, (2013). Software Requirement, 3rd Ed, Microsoft.

**Reference Books:**

* + - 1. Elizabeth Hull, Ken Jackson, Jeremy Dick (auth.)-Requirements Engineering-Springer-Verlag London (2011)
      2. Dean Leffingwell, Don Widrid, Managing Software Requirements
      3. Sommerville, Ian\_ Sawyer, Pete-Requirements Engineering - A Good Practice Guide-John Wiley & Sons (1997)

**Online References:**

1. <https://me2013regulation.wordpress.com/2014/06/24/cp7007-software-requirements-engineering-notes/>
2. <http://www.utdallas.edu/~chung/SYSM6309/syllabus.htm>
3. <http://wwwagse.informatik.uni-kl.de/teaching/re/ws2015/>

**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) |