** King Saud University**

**College of Computer and Information Sciences**

**Department of Information Systems**

**IS 340 – Information Systems Analysis and Design 2 (3-0-1)**

**Semester I, Academic Year 2019-2020**

**Course Coordinator: Prof. Alaaeldin Hafez**

**Textbook(s) and/or Other Required Materials:**

**Primary:**

* John W. Satzinger, Robert B. Jackson, and Stephen D. Burd, *Introduction to Systems Analysis and Design*, 7th Edition. Cengage Learning, 2016, ISBN-13: 9781305117204
* Ian Somerville, Software *Engineering*, 10th Edition, Pearson Publishing, 2015, ISBN: 13: 978-0133943030

**Additional Readings:**

* Alan Dennis, Barbara Haley Wixom, David Tegarden, *Systems Analysis and Design: An Object-Oriented Approach with UML*, 5th Edition, Wiley, 2015, ISBN-13: 978-1118804674
* Joseph S. Valacich, Joey George, *Essentials of Systems Analysis and Design*, 6th Edition, Pearson, 2014, ISBN-13: 978-0133546231

**Course Description (catalog):**

This course extends existing knowledge and skills of the information systems analysis and design obtained from IS240 course. It provides additional advance concepts and techniques of information systems analysis and design. The course continues the coverage of the Unified Modelling Language (UML) notation used for structural and behavioral modeling and allows students to gain practical skills in modeling systems from the process and object perspectives as well as an understanding of the approaches that can be used when undertaking a holistic analysis and design project. Topics extends to include Agile software development and management, testing, basic design patterns, system architecture and software reusability, security and reliability. The course involves a project component in order to allow students to apply concepts presented in this course.

**Pre-requisite:** IS 240 (Information Systems Analysis and Design 1)

**Co-requisite:** None

**Course Type:** Core

**Course Learning Outcomes (CLOs):**

Upon the successful completion of this course, a student should be able to:

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| --- | --- | --- | --- |
| **Code****#** | **NQF Learning Domains** **And Course Learning Outcomes** | **Course Teaching****Strategies** | **Course Assessment****Methods** |
| **1.0** | **Knowledge** |
| 1.1 | Describing the basic Information Systems Development Team Structures and Dynamics | * Lectures to give an overview of the content of the course and its relationship to students’ existing knowledge.
* Tutorials to review the content of each lecture and clarify any matters not understood.
 | * Interactive discussions
* Quiz to evaluate the materials covered in the lectures and tutorials
* Midterms and final examinations
 |
| 1.2 | Describing different types of System Architecture and design patterns |
| 1.3 | Realizing advanced design principles  |
| 1.4 | Describing software testing design and techniques  |
| **2.0** | **Cognitive Skills** |
| 2.1 | Develop advanced analysis and design diagrams | * Discussing the UML models, methods and examples during lectures and Tutorials.
* Discussing building UI interfaces.
* Solving exercises
 | * Homeworks
* Group project
* Midterms and final examinations
 |
| 2.2 | Building UI interfaces |
| **3.0** | **Interpersonal Skills & Responsibility** |
| 3.1 | Demonstrate communication skills with other students. | * Using a group project to practice the developing of UML diagrams
* Practical case studies on information system development.
* Presenting solved case study of the course project.
 | * Group project require presentation.
* Homework Assignment.
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| **4.0** | **Communication, Information Technology, Numerical** |
| 4.1 | Solve case studies  | * Solving group assignments in class interactively
* Developing communication skills by using group project and group assignments
 | * Midterms, final examinations and Assignments
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**Measuring CLOs**

|  |  |
| --- | --- |
| **Course LOs #** | Q= Quiz A= Assignment M=Midterm F=final P= Project |
| **Q1** | **Q2** | **M** | **A1** | **A2** | **A3** | **A4** | **P** | **F** |  |
| **1.1** Describing the basic Information Systems Development Team Structures and Dynamics |  |  | **X** |  |  | **X** |  |  | **X** |  |
| **1.2** Describing different types of System Architecture and design patterns  |  |  | **X** |  |  |  |  |  | **X** |  |
| **1.3** Realizing advanced design principles |  | **X** |  |  |  |  |  |  | **X** |  |
| 1.4 Describing software testing design and techniques |  | **X** |  |  |  |  | **X** |  | **X** |  |
| **2.1** Develop advanced analysis and design diagrams | **X** |  | **X** | **X** | **X** |  |  |  |  |  |
| 2.2 Building UI interfaces |  |  |  |  |  |  |  |  |  |  |
| **3.1** Demonstrate communication skills with other students. |  |  |  |  |  |  |  | **X** |  |  |
| **4.1** Solve case studies  |  |  | **X** |  |  |  |  |  | **X** |  |

**Major Topics covered and schedule in weeks:**

|  |  |  |
| --- | --- | --- |
| **Week no.**  | **Topic** | **# of hours** |
| 1 | Course Introduction | 1 |
| 1 | Object Oriented Design: Principles | 3 |
| 2 | Object-Oriented Design: Use Case Realizations | 3 |
| 3 | Designing the user interface | 3 |
| 4-5 | Project Planning and Project Management | 4 |
| 6-7 | Agile Software development and Management  | 6 |
| 8-9 | Architectural design | 4 |
| 10-11 | Software testing  | 6 |
| 12 | Software Reliability  | 3 |
| 13 | Software Security | 3 |
| 14 | Designing the User Interface | 3 |
| 15 | Project discussion and review  | 3 |
| 16 | Final Exam | 1 |

**Allocation of Marks**

|  |  |  |
| --- | --- | --- |
| **No** | **Assessment Instruments** | **Course Weight** |
| **1** | Assignments  | 10% |
| **2** | Quizzes | 10% |
| **3** | Course Project | 20% |
| **4** | Mid-Term Exam | 20% |
| **5** | Final Exam | 40% |
|  | Total  | **100%** |

**Tutorial content and Schedule in weeks:**

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| --- | --- |
| Lab Orientation (Introducing the project, Grading, Polices … etc.) + Quick Revision on IS 240 (Information Systems Analysis and Design 1) | Week 2 |
| Introducing UML tool "IBM RSA: Rational Software Architect" and drawing **(Use case diagram** + **Design class diagram**) with students. | Week 3 |
| Introducing UML tool "IBM RSA: Rational Software Architect" and drawing (**Sequence diagram** + **Activity diagram**) with students. | Week 4 |
| Assessment on using "RSA" tool (**Use case diagram**). **“3 marks”**  | Week 5 |
| Assessment on using "RSA" tool (**Design class diagram**). **“3 marks”** | Week 6 |
| Introducing Project Management tool "Microsoft Project". (**Gantt chart**). | Week 7 |
| Introducing Project Management tool "Microsoft Project". (**WBS**). | Week 8 |
| Assessment on using "Microsoft Project" tool (**Gantt chart**). **“2 marks”** | Week 9 |
| Assessment on Testing (design test cases). **“2 marks”**  | Week 10 |
| Course’s Project support (Q and A). | Week 11 |
| Projects Submission | Week 12 |
| Projects' Discussion and Presentations  | Week 13 |