**Course Specification**

(IS 351 Analysis & Design of Information Systems I)

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| **University:** | Helwan University |
| **Faculty:** | Faculty of Computers & Information |
| **Department:** | Information systems |

**1. Course Data**

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| --- | --- |
| **Code:** | **IS 351** |
| **Course title:** | Analysis & Design of Information Systems I |
| **Level:** | 3 |
| **Specialization:** | Information Systems |
| **Credit hours:** |  |
| **Number of learning units (hours):** | (3) theoretical (2) practical |

**2. Course Objective**

This course is concerned with designing all aspects of the user interface (input forms, input screens, output screens, reports and documents, dialogues) as well as underlying principles of data and process design. The process design approach is not prescribed but could include Structured English, Data Action Diagrams, Update Process Models, and Sequence Diagrams. Normalization is the fundamental design technique for data design.

**3. Intended Learning Outcomes:**

1. **Knowledge and Understanding of:**

A10. Represent System Analysis and Design.

1. **Intellectual Skills**

B7. Reconstruct results analysis.

B11. Solve IT problems in applications.

B14. Perform requirement specifications.

1. **Professional and Practical Skills**

C5. Deploy tools for systems documentations.

C18. Prepare reports.

1. **General and Transferable Skills**

D5. Practice Creative thinking techniques.

D13. Use Designing skills to solve problems effectively.

**4. Course contents**

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| --- | --- | --- | --- |
| **Topic** | **No. of hours** | **Lecture** | **Tutorial/ Practical** |
| **Introduction**  Design & Implementation in the lifecycle  Interpreting the models of analysis  Design approach  Design objectives and constraints  Design architecture | 3 | 1 | 1 |
| **Input / Output Design**  Input and output design  Form and document design  Selection of appropriate input and data capture solutions  Output technologies  Selection of appropriate output technologies | 3 | 1 | 1 |
| **Interface Design**  Design of input & output screens  Design of human/computer interaction  Usability and style guides  Modeling / prototyping the interface | 3 | 1 | 1 |
| **Data Design (normalization)**  Notation and conventions of relational data analysis  Progressive normalization of selected inputs and outputs from un-normalized format to third normal form  Rationalizing results  Third Normal Form data model | 6 | 2 | 2 |
| **Process Design & Specification**  Detailed definition of write (read and update) processes  Detailed definition of read-only processes | 6 | 2 | 2 |
| **Controls and Security**  Physical security  Logical security (passwords, access control)  Risk assessment  Backup and recovery procedures  Audit trails  Contingency planning  Legislative controls  Ethical issues | 6 | 2 | 2 |
| **Physical Design**  Physical data design  Design of codes and keys  Physical process design  Physical process deign principles (e.g. cohesion and coupling)  Design patterns  Interface and sub-system design  Principles of re-factoring  Round-trip engineering | 6 | 2 | 2 |
| **Testing within the chosen lifecycle**  Test cases from design models  Design and code inspection  Unit testing  Integration testing in the small (link testing)  System testing  Integration testing in the large  User acceptance testing  Requirements traceability | 3 | 1 | 1 |
| **Methods of implementation**  Implementation planning and preparation  Changeover methods  Handover procedures | 3 | 1 | 1 |
| **Training**  Analyzing training needs  Methods of training delivery  Evaluating training | 3 | 1 | 1 |
| **Post implementation**  Post implementation & post project reviews  Benefits realization  Types of maintenance  Change control  Build and release strategy | 3 | 1 | 1 |

**Mapping contents to ILOs**

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| --- | --- | --- | --- | --- |
| Topic | Intended Learning Outcomes (ILOs) | | | |
| Knowledge and understanding | Intellectual Skills | Professional and practical skills | General and Transferable skills |
| **Introduction** | A10 | B7 | C5 | D5 |
| **Input / Output Design** |  | B11 |  |  |
| **Interface Design** | A10 | B14 |  | D13 |
| **Data Design** |  | B14 | C18 |  |
| **Process Design & Specification** | A10 |  | C5 |  |
| **Controls and Security** |  | B11,B7 |  | D5 |
| **Physical Design** |  |  |  |  |
| **Testing within the chosen lifecycle** |  | B11 | C18 |  |
| **Methods of** | A10 |  |  | D5,D13 |
| **Training** |  | B11 |  |  |
| **Post implementation** |  | B14 | C18 |  |

**5. Teaching and Learning Methods**

Lectures

Exercises

Case Studies

Lab Work

**6. Teaching and Learning Methods for students with limited capability**

Using data show

e-learning management tools

**7. Students Evaluation**

**a) Used Methods**

Written Exams: to assess Concepts related to system development tools

Project: to assess understanding of system development tools

Presentation: to assess workgroup collaboration and communication skills.

**b) Time**

Assessment 1…Mid-Term Examination Week 8

Assessment 2 …Practical Examination Week 15

Assessment 3…Semester Work and Project Week 4, 8, 12, 14

**c) Grades Distribution**

Mid-Term Examination 10%

Final-term Examination 50%

Practical Examination 20%

Semester Work and Project 20%

Total 100%

**List of Books and References**

**a) Notes**

Course Notes

**b) Mandatory Books**

**Whitten, Jeffery and L., Lonnie D. Bentley, Kevin C. Dittman . Systems analysis and design methods.** Boston : McGraw-Hill Irwin, c2004 . 6th ed.

Kirikova, [Marite et. al,.](http://www.amazon.com/exec/obidos/search-handle-url/index=books&field-author-exact=Marite%20Kirikova&rank=-relevance%2C%2Bavailability%2C-daterank/002-1371038-3465634)  Information Systems Development: Advances in Methodologies, Components and Management Springer;1 edition (February 28, 2003)

**c) Suggested Books**

Information Systems Development and Data Modeling: Conceptual and Philosophical Foundations (Cambridge Tracts in Theoretical Computer Science) by Rudy Hirschheim, Heinz K. Klein, and Kalle Lyytinen (Hardcover - Oct 27, 1995)

**d) Other publications**

http://goliath.ecnext.com/coms2/summary\_0199-1955991\_ITM

<http://www.isbn.nu/toc/0306476983>

**Course Coordinator:**  Dr. Ayman Khedr

**Chairman of the Department:** Prof. Dr. Yehia Helmy