Information Engineering Course Specifications

Faculty: Faculty of computer and informatics

Department: Information System

Program(s) on which the course is given: Bachelor Degree in Computer & Information Sciences

Major or Minor element of program   : Information System

Department offering the program   : Information System

Department offering the course   : Information System

Academic year / Level   : Fourth Year/B.Sc**.**

Date of specification approval   : 25/9/2009

A. Basic Information

Title: Information Engineering   **Code:** INF 482

Lectures: 4 hrs/week   **Practical:** 2 hrs/week   **Tutorial: ---**

Credit Hours: ---   **Total:** 6 hrs/week

B. Professional Information

1. Overall Aims of Course:

Information engineering methodology is an architectural approach to planning, analyzing, designing, and implementing applications within an enterprise. It aims to enable an enterprise to improve the management of its resources, including capital, people and information systems, to support the

achievement of its business vision. It is defined as: "An integrated and evolutionary set of tasks and techniques that enhance business communication throughout an enterprise enabling it to develop people, procedures and systems to achieve its vision".Information engineering has many purposes, including organization planning, business re-engineering, application development, information systems planning and systems re-engineering.

The course aims to provide specialist, advanced technical skills in the areas of Distributed Systems, Information Storage and Retrieval, and Data Analysis. Students on the course will become specialist practitioners in the specification, design and implementation of advanced information systems, and will be able to access, critically appraise and disseminate research results. Students will be provided with a sound basis for further research and/or professional development.

The course Introduces the fundamental concepts and implementations of the relational database systems, including data structures, data manipulation, relational models, and the structured query language (SQL). Discusses the Entity- Relationship (ER) model and the Object-Oriented (OO) model. Includes basic computing platforms, software architectures, and file systems. Introduces integration and acquisition of information for management of information systems.

2. **Intended Learning Outcomes of Course (ILOs):**

   a. **Knowledge and Understanding**

Students who complete the course will have the ability to:

a1. understand the underlying theoretical concepts involved in transmission , indexing, storage and content analysis of information

a2. Model a system, incorporating feedback.

a3. Examine the significance of Rapid Applications Development (RAD) techniques in a modern information systems development environment.

a4. Explain the advantages and disadvantages of developing a system using a database management system

a5. Describe common methods for data communications.

b- Intellectual skills

   b1. Upon successful completion of the course, each student will be able to:

b2. Examine the Information Engineering approach to systems development.

b3. Demonstrate to students that the development of information systems is not purely a 'technical' exercise, but also needs consideration of human factors.

b4. Consider the underlying components of a generic development methodology.

C. professional and practical skills

Knowledge of the concepts and the material studied in this course will provide the students with the capability to:

c1. Understand data modeling.

c2. Know the database models.

c3. Know how to perform data model schema analysis.

c4. Chart the development of object-oriented techniques and their increasing importance as a systems development paradigm.

c5. Know the basic use of SQL.

c6. Understand client/server basics.

D. General and transferable skills

Knowledge of the concepts and the material studied in this course will provide the students with the capability to:

d1. To look at some of the techniques used to enable user participation in systems development.

d2. Provide skills training in object-oriented analysis and design techniques.

E. Attitude:

e1- A knowledge and respect of ethics and ethical standards in relation to a major area of study.

e2- Illustrate the use of example, analogy, and counter-analogy in ethical argument.

e3- Demonstrate an ethical behavior toward software copyrights.

e4- Relationship Emphasis a successful with other students.

e5- Learn how to make relation with other, and the limit of this relation.

e6- Explain the nature of privacy and how it is protected by the Data Protection.

1. **Contents:**

Topic	No. of hours	Lecture	Tutorial/ Practical
Development of Information Systems, Systems development methodologies	6	4	2
Planning Information Systems Current State Examination	6	4	2
Information gathering techniques	6	4	2
Information gathering techniques	6	4	2
Methodology framework, data modeling, Process Modeling, Behavioral modeling, three view approach, Case tools in perspective, 4GLs and their impact on methodologies.	6	4	2
Information Engineering Method Underlying philosophy, the methodology structure: Information Strategy Planning, Business Area Analysis, Systems Planning and Design, Construction and cutover, Significance of case tool to this approach, Significance of 4GLs to this approach.	6	4	2
User Participation in systems development Prototyping systems requirements, Joint Applications Design, role of a 4GL environment in prototyping	6	4	2
Rapid Applications Development techniques General RAD concepts, DSDM method: background to the method, framework of the method, DSDM principles, time versus functionality, when to use the method, technology support. Appraisal of application development environments	6	4	2
Object-oriented systems analysis and design	6	4	2
Developing the context diagram, developing the Use Case Scenario model, developing the Interface Descriptions	6	4	2
Properties of objects and classes: finding objects and classes in the real world	6	4	2
Events and states, transitions and actions, the state transition diagram	6	4	2