APT 2010: SYSTEMS ANALYSIS AND DESIGN

Pre-requisites: IST 1020: Introduction to Information Technology

3 Credit Units

Course Rationale

One of the major strands in the information technology field is that of systems analysis and design. The analysis of case studies requires effective listening and reading skills. The students will study analysis techniques and then design appropriate solutions. The design requires the production of accurate, understandable and efficient systems requirement documents using formats which will maximize effective communication. Some typical business information systems will be studied. A CASE product will be utilized.

Course Description

This course introduces the fundamentals of information systems analysis and design by covering a variety of current methods, tools, and techniques. The course will cover system development activities in the context of when they typically occur. Most of the course will be devoted to learning and practicing the techniques and processes used by the systems analyst at each phase within the systems development cycle and to working as a team to create a system solution for a client.

Learning Outcomes

Upon completion of this class, the student will:

1. List the responsibilities of a systems analysts and software architects.
2. Distinguish various systems development methods and techniques (e.g., evaluating software packages, developing systems from scratch, integrating systems, prototyping, JRP …).
3. Define key terminology of systems development (e.g., SDLC, CASE, RAD, ERD, data flow diagram, use case, RFP, UML, system owner, …)
4. Explain the benefit of RAD tools.
5. Differentiate among systems development methodologies and understand the importance of having a methodology.
6. Describe the steps involved in system development and the deliverables at each phase.
7. Use UML to model object oriented systems.
8. Be able to use the traditional modeling tools for data modeling (entity relationship diagrams) and process modeling (data flow diagrams).
9. Collaborate with classmates to develop a system solution.

Course Content

Overview of the people involved in information systems development – their roles and responsibilities, with special emphasis on the systems analyst. Types of information systems and their characteristics. The process of systems development, especially the underlying principles. Typical phases of systems development and of the traditional systems development life cycle.

Alternative approaches: model-driven, rapid application development, packaged software. Project Management, with emphasis on charts and project reporting. Systems analysis phase overview, emphasizing the tasks which are completed in this phase; Fact finding techniques for determining user requirements; Documenting user requirements with Use Cases; Data modeling using entity relationship diagrams; Process modeling using data flow diagrams; Object modeling using UML; Feasibility Analysis. System Design tasks. Application Architecture tasks – defining where data and processes "live". Database Design. Object-oriented design and modeling tasks using the UML. Output Design; Input Design considerations and tools; User Interface Design.

Teaching Methodologies

A series of lectures and laboratory exercises will be used to study the concepts. Audio-visual aids will be used in the lectures.

Instructional Materials/Equipment

CASE tools, Course text, Handouts, White board, Presentation slides

Methods of Evaluation

Laboratory Work	20%
Project	20%
Assignment	10%
Mid-semester	20%
Final semester exams	30%
Total	100%

Course Text

Systems analysis and design by Allan Dennis, Barbara Haley Wixom, Roberta 2010

Recommended Reading

1. System analysis**,** design**,** and development: concepts, principles by Charles S. Wasson – 2005
2. Shelly, Gary B., Cashman, T. & Rosenblatt, H.J. 2001, Systems Analysis and Design, 4th edition, Course Technology, Cambridge, Massachusetts.
3. Weaver Lambrou & Walkey, Practical SSADM 4- A Complete Tutorial Guide, 2nd Edition, Pitman Publishing, ISBN 0273626752, 1998.
4. Booch, G. 1994, Object-Oriented Analysis and Design with Applications, 2nd edition, Benjamin/Cummings, Redwood City, California.
5. Date, C.J. 2000, An Introduction to Database Systems, 7th edition, Addison-Wesley, Redding, Massachusetts.
6. Hawryszkiewycz, I.T. 1998, Introduction to Systems Analysis and Design, 4th edition, Prentice-Hall, Sydney.

7. Whitten, J.L., Bentley, L.D. & Dittman K.C. 2001, Systems Analysis & Design Methods, 5th edition, Irwin/Mcgraw-Hill, Boston, Massachusetts.
8. Denis Alan, Systems Analysis and Design in Action in Action, John Wiley & Sons,ISBN: 0471241008, 1999.