

THE INSTITUTE OF COMMERCIAL MANAGEMENT

SUBJECT SYLLABUS



Systems Analysis

Unit code: SA-0908

Level: Diploma

Credits: 20

Unit leader: PY

Pre-requisites:

Main Aims of the Unit:

This unit describes the processes involved in the analysis, design and implementation of new or upgraded computer systems. The unit will explore the basic stages involved in the systems life-cycle. Other issues will be considered including privacy & security, the importance of appropriate and comprehensive documentation, and characteristics of common data handling systems.

Main Topics of Study:

A. Overview

1. The need for systems analysis for business systems.
2. The role of the systems analyst.
3. The role of other people in defining a new system and updating an existing one.
4. Differences between the development of a new system and a MAJOR upgrade of an existing system.
5. SSADM – an overview. CASE tools.

B. Systems Life Cycle

1. The sequence of stages in the life cycle. Time scales.
2. Initial Investigation.
3. Feasibility Study. Initial briefing statement. Contents of the report. Possible management decisions on reading and discussing the report. Cost/Benefit analysis. User needs.
4. Analysis stage. Investigations into current systems through questionnaires, interviews, observation of everyday usage, documentation. Evaluation of the relative merits of these methods. Who to interview. Techniques for maximising information. Identifying the main processes needed. Recording the results.
5. Design stage.
6. Implementation stage. Program production or acquisition. Testing methods. Training. Documentation completion. Hand-over. For system upgrade - methods of file conversion and changeover.
7. Maintenance & Review. Reasons for each. Differences between them. How each is completed and by whom and when.

C. Recording the findings for the system.

Students may be required to draw one of the charts/tables for a given system during the examination.

1. E-R diagrams and associated terms.
2. Data Flow diagrams.
3. System flow-charts.
4. Decision tables.
5. Progress/Testing charts. Gantt charts.
6. Deciding which is the most appropriate chart to use.

D. Design

1. Deciding the most appropriate data capture method for a given system.
2. Data-entry form design. Factors that makes a form effective and user friendly?
3. The need for data to be coded. The advantages of data coding. Types of data codes – sequence, block, faceted, hierarchical. Coding data for a given application. Check digit systems.
4. Output design. Making screen outputs effective and user friendly. Limitations of screen output.
5. Printout design. Standard outputs (e.g. the invoice, account statement).
6. Identify necessary files, organisation method and access method. Identify files that must be accessed for different purposes and the subsequent effect this has on organisation method.

7. Identify contents of each file.
8. Plan and schedule the development process. Deciding the method of obtaining programs and language/platform to be used.

E. Implementation

1. Analyst initial briefing of the programming team. Subsequent collaboration between analyst and programmer. Time scales and planning.
2. Analyst role in testing. Test plan. Design of test data. Testing log. Testing at different levels – module, program, system, and user-acceptance.
3. Training of users. Production of documentation.

F. Software acquisition methods

1. Purchase and customise standard software.
2. Develop a database and associated processes.
3. Commission a software house.
4. Write in-house programs.
5. Prototyping.
6. Comparison of the above methods – advantages and disadvantages.

G. Security and Privacy

1. Define Privacy as the need to build in safeguards for the data subjects.
2. Define Security as the need to safeguard hardware, software and data.
3. Building REALISTIC security into a system. The differences between small and large business security systems.
4. Use of passwords and encryption for privacy.
5. Methods to secure hardware, software and data.

H. Documentation

1. System specification and its contents.
2. Program specification and its contents.
3. User documentation and its contents. Maintenance documentation and its contents. The differences between these three.

Characteristics of common systems.

1. Describe the main elements of the following processes:
 - i file sort,
 - ii merging of files,
 - iii search a files for records which meet a given condition,
 - iv produce a printed report following a search.
2. Identify method of data capture, main processing, required outputs, files (contents, organisation and access), manual processes and people involved for:
 - i Stock control
 - ii Retail systems
 - iii Mail-ordering systems
 - iv Staff payroll and personnel records
 - v Medical records
 - vi Library administration
 - vii Club membership.

Learning Outcomes for the Unit:

At the end of this Unit, students will be able to:

1. Describe the stages of computer systems development including analysis, design, development and implementation.
2. Evaluate appropriate approaches to software acquisition.
3. Compare appropriate privacy and security measures in different systems.
4. Describe the main elements of file processing across a range of applications.

The numbers below show which of the above module learning outcomes are related to particular cognitive and key skills:

Knowledge & Understanding 1, 2, 4
Analysis 2, 3
Synthesis/Creativity 4
Evaluation 2
Interactive & group Skills -
Self-appraisal/Reflection on Practice -
Planning and Management of Learning -
Problem Solving 2, 3
Communication & Presentation -
Other skills (please specify) -

Learning and teaching methods/strategies used to enable the achievement of learning outcomes:

Learning takes place on a number of levels through lectures, class discussion including problem review and analysis. Formal lectures provide a foundation of information on which the student builds through directed learning and self managed learning outside of the class. The students are actively encouraged to form study groups to discuss course material which fosters a greater depth learning experience.

Assessment methods weightings which enable students to demonstrate the learning outcomes of the Unit:

3 hour examination: 100%
(Answer any 5 questions from 8, each worth 20% of the marks)

Indicative Reading for this Unit:

Main text

Refer to the ICM website for notes on this subject

Alternative Texts & Further Reading:

Systems Analysis and Design by Donald Yeates and Tony Wakefield (Prentice Hall) – 2nd edition
ISBN 0273 65536 1. 499 pages.

Computer Science for Advanced Level by Ray Bradley – (Nelson Thornes) 4th edition
ISBN 0 7487 4046 5

Guideline for Teaching and Learning Time (10 hours per credit)

Lectures / Seminars / Tutorials / Workshops: 50 hours
Tutorial support includes feedback on assignments and may vary by college according to local needs and wishes.

Directed learning: 50 hours
Advance reading and preparation / Class preparation / Background reading / Group study / Portfolio / Diary etc

Self managed learning: 100 hours
Working through the course text and completing assignments as required will take up the bulk of the learning time. In addition students are expected to engage with the tutor and other students and to undertake further reading using the web and/or libraries.

Guidelines

- Tutors should endeavour to use case studies to teach as much of this syllabus as possible.
- Candidates will be expected to have some appreciation of REAL business systems rather than be able to repeat generalised notes gained from books. For instance, a consideration of time scales should make it clear that the major cost and delays in a system occur in the production of programs however they are produced.
- A clear understanding of file organisation and access methods needs to be developed by the candidate.
- Many elements of this syllabus can be helped by setting exercises for each student or for a group of students.