

THE INSTITUTE OF COMMERCIAL MANAGEMENT

SUBJECT SYLLABUS



**Applications**

**Unit code: AP- 0908**

**Level: Diploma**

**Credits: 20**

**Unit leader: PY**

**Pre-requisites:**

**Main Aims of the Unit:**

This unit will introduce a wide range of business applications and will improve the students understanding of such systems in a real situation. Applications of systems involving a large number of records will be introduced. The student will gain a good understanding of the meaning of data in different contexts. *(Note: This unit does **not** examine in detail the use of off-the-shelf applications packages such as spreadsheets, databases, etc.)*

**Main Topics of Study:**

**A. General**

1. Define package, program, application, program and data.
2. Benefits and limitations of different data capture methods to the business and to the client.
3. Data capture forms (screen and paper). In this case, an awareness that screen is an output device confirming inputs.
4. Outputs (printed and screen). Selection of appropriate form of output. Billing layouts.
5. Distinction between on-line direct access and batch runs.
6. Process diagrams. Systems flowchart or Data flow diagrams could be used but a formal diagram is not expected – the requirements are that candidates are aware of the sequence of events including rectifying errors.
7. Back-up systems needed including restart processes where a lengthy print run may fail in mid run because of a printer failure.

**B. Applications:** Thorough investigation of each of the following applications:

- a. Mail order and customer accounts
- b. Stock control
- c. Supermarket sales
- d. Library administration
- e. Public utility companies' administration
- f. Hotel administration and bookings
- g. Banking related to customer accounts.
- h. Club membership
- i. Estate agency (real estate) administration.

Such an investigation of each of the above applications should cover the aspects listed below.

1. Overall purpose of the application.
2. The role of the people involved.
3. The detailed format of the sources data for each aspect of the application.
4. The method of data capture for each type of input. Devices suitable for this.
5. The processes that operate in the business – systems diagrams. Batch or on-line.
6. The filing systems required including contents of each file and methods of organisation and access.
7. The outputs that are produced.
8. The devices required for each type of output.
9. How each output will be used and possible follow-ups.

**Learning Outcomes for the Unit:**

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

1. Evaluate a specific business system
2. Identify required inputs and outputs
3. Analyse the data format requirements of systems
4. Describe the required processing for a complete business system
5. Identify the roles of people involved in the system

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

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

The examination paper will consist of 8 questions with question 1 being compulsory and a further four being required.

**Indicative Reading for this Unit:****Main text**

Refer to the ICM website for notes on this subject

**Alternative texts and Further Reading:**

Computer Science for Advanced Level by R Bradley – Stanley Thornes

**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

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- **WARNING.** This module is mainly concerned with systems of particular business situations. Candidates should only be entered for this module if a range of applications are studied and in detail. A summary in note form of a sample system is listed at the end of this syllabus to give an outline of the requirements.
- Candidates must be introduced to the idea that business applications normally involve a very large number of records (customers, accounts, products) and must not be confused with classroom exercises which tend to consider only a small number. A supermarket could have 25,000 products on its shelves. An electricity board may supply power to one million homes and businesses. There may also be a large number of different processes within an application, many of them as fail-safe provisions to correct for errors or change of circumstances. "Display the file on the screen" is clearly not even a remote possibility, even with scrolling.
- Candidates will be expected to have a good understanding of the particular data associated with each application area. In addition, there may be a variety of different types of inputs and outputs. Stored data may also be used in different ways. Answers to questions must be specific. For instance, they must go beyond stating "the data is input..." by indicating exactly what data is captured, how, when and by whom/ what.
- Candidates who rely on "learning" the processes will find this module difficult – they must understand the whole system. The supplied example below (only in note form) shows the extent to which the real system differs from the ideal one where everything works without fault. The applications considered are complex. In a given paper, different aspects of business data processing will be covered in different applications.
- Online applications which use the internet will NOT be tested on this paper but will be tested in the NETWORKS paper.
- Each application should be taught separately, preferably as a case study. Teachers may find that role-play may be an effective way to teach this subject with students acting as customers and data clerks and even being a particular file. The movement of data can then be illustrated.
- The systems considered here are not part of an academic exercise. Many will be relevant to their home life and therefore a better understanding can be gained by discussing this outside the classroom with affected people – parents, family and friends.
- It is not sufficient to cover a small number of the applications because this will restrict the candidate's choice in the examination and the chosen ones may not be tested in a given paper.
- Five to six hours on each application should be sufficient. It may take ten hours to cover the first. Methods learnt in one application will almost certainly help understanding of later ones which should therefore take less time. Well into the course, one of the systems could be set as a student homework project provided the teacher later brings out the elements of the solutions for all the class to see.

**EXAMPLE (IN OUTLINE) – Public Utility – ELECTRICITY SUPPLIER (ADMINISTRATION)**

**Purpose :** To accept new customers, correct/amend customer details, update customer records. Read customer meters , bill them and accept payment. Generate reports for management. Maintain past records for enquiry purposes.

**People:** Office staff will enrol new customers and deal with queries. Meter-readers will read meters in houses. Computer staff will update files from these readings and subsequently produce bills that will be despatched to customers. Customers will pay (or not). Office staff will deal with payments and request non-payment runs that will generate reminder letters.

**Source data:**

- New customers – Name/Address/Telephone/Start date/Existing meter No and reading if one already present in the house. Some of this data may not be available at the time of registration.
- Change of customer details, Enquiry OR Customer cancelling – letter or telephone call with details of the account to verify authenticity.
- Meter reading – electricity usage in the household from meter reading and meter number.

**Data capture:**

- New customers/Changes – Keyboard using on-screen form.
- Meter reading:
  - a. Palm top – new reading keyed in. Checked against expected reading/past usage.
  - b. Mark Sense form – mark sense reader with batches of readings per meter-reader.
  - c. Manual forms – keyboard entry at the office.
  - d. Customer reading – some companies accept meter readings by telephone/internet made by the customer but require an official reading perhaps once per year.

**Processes :**

- New customer entry/enquiry/changes to existing customer – update the customer file.
- This includes customer readings and reported errors. Generate new bill for a leaving customer.
- Create from file, meter-round details for the meter-reader – file down-load onto palm-top, mark documents or printed forms – each in round order.
- Input of meter readings to update accounts for billing.
- Bill production by batch processing - exceptions on request
- Payment recording – either direct to account from OCR form/keyed payment or batch of payment records from remote office.
- Batch non-payment check.

**Filing systems:**

- Customer file
  - identity details: name/address lines/telephone/start date/payment method/round number/number within the round/account number
  - meter details: meter number/previous reading/particular tariffs
  - history : past usage details.
  - Access: sequential for batch billing run  
direct access for individual enquiries, payments, meter reading update.
  - Organisation : Index sequential to achieve both access methods.
- Meter readings file: (to update customer file)
  - Customer address/account number/round number/meter reader ID/expected reading (prediction – to reduce errors when reading) /actual reading (filled in on the round)
  - Organisation & Access: Sequential (number within round) for recording new readings.
- History file (customer past usage)

**Outputs & Devices:**

- Billing invoices with payment slip – printed
- Customer records for updating/enquiry – screen
- Reminder letters for customers & lists for accounts department – printed.

**Use of Outputs:**

- Screen records for clerks to deal with problems and answer customer queries.
- Bills for customer to identify reasons for charging and make payments. Data clerks to accept payment.
- Reminder letters for customer to take remedial action and use for late payments.

This is only an outline. The candidates should be taken through the whole process, preferably in a logical sequence from first registration of a customer to payment of bills. The scale of the problem should be discussed to show one customer is only one of a large number. The following and many more questions should be discussed and answered. There are no precise answers but those that are put forward should be realistic within the confines of this application and situation.

- How can the company cope with say, 1 million customers?
- How often are bills printed? If this is three monthly (50 working days allowing for other processes and building in safety margins), all of the following considerations need to take this into account.
- How many meter readers might be needed assuming that the reading is staggered over the three months? It therefore follows each would need their own data capture device and appropriate file down-load for each round, prepared in advance.
- How long does it take, realistically, for a meter-reader to move from one house to the next and read a meter? Simulate this process to find out.
- How do you deal with house which the meter-reader cannot gain access on his round? What happens to subsequent billing? Candidates may have experience of this or be able to talk to parents about it.
- How are businesses treated differently from homeowners? Business may have the equivalent of 10, 100 or 1000 times the electricity usage and have multiple meters.
- How many operators (and therefore computer terminals) are needed to deal with queries and changes?
- What hardware would be needed to print 1 million bills over three months, again staggering them over three months?
- How do you post 1 million bills over the three months? The letters would need to be addressed. If the customers are all local (large city) it may pay to employ delivery staff otherwise general mailing systems would be used.
- What security is needed to ensure continuity? Even temporary failure of a fast main printer could have major delaying effects. How can this be overcome? Failure midway through a run means some of the bills are printed and the file updated while the remaining customers are effectively unprocessed. How can the system cope with this problem?
- Past data is filed in a history file. How far back in time should this go? How frequently should the history files be updated?
- How are reminder letters generated? If just 1% fail to pay on time, this is 10,000 over three months. This would be 200 per day over 50 days. How does the system identify this group? Should the reminder run be performed once per week/once per month - this would delay income? Clearly they would have to be batched and related to when the meter was read/bill sent.

The questions are almost endless. When any of these systems are initially created, such questions will face the system designers. This is therefore a good way to teach this module encouraging enquiring minds to look for solutions (and problems). Students will have a better understanding and this will almost certainly simplify the consideration of other systems.