Information Technology–A Practical Course

(with guidance notes for tutors)

Information Technology

A Practical Course

With Guidance Notes for Tutors

Harriet Harper

*Senior Lecturer in Business Computing
North East Surrey College of Technology*

M
MACMILLAN
EDUCATION

© Harriet Harper 1988

All rights reserved. No reproduction, copy or transmission of this publication may be made without written permission.

No paragraph of this publication may be reproduced, copied or transmitted save with written permission or in accordance with the provisions of the Copyright Act 1956 (as amended), or under the terms of any licence permitting limited copying issued by the Copyright Licensing Agency, 33-4 Alfred Place, London WC1E 7DP.

Any person who does any unauthorised act in relation to this publication may be liable to criminal prosecution and civil claims for damages.

First published 1988

Published by
MACMILLAN EDUCATION LTD
Houndmills, Basingstoke, Hampshire RG21 2XS
and London
Companies and representatives
throughout the world

Typeset by P & R Typesetters Ltd, Farnham, Surrey

British Library Cataloguing in Publication Data
Harper, Harriet

Information technology: a practical
course.

1. Information systems

I. Title

001.5

ISBN 978-1-349-10099-6 ISBN 978-1-349-10097-2 (eBook)

DOI 10.1007/978-1-349-10097-2

ISBN 978-0-333-46087-0 student's book

All names, addresses, telephone numbers, car registration numbers and house details are fictitious. Any resemblance to real people or real organisations is entirely coincidental.

Contents

<i>Acknowledgements</i>	viii
PART I: COMPUTERS AND WHAT THEY CAN DO	1
1 Introduction to Computers	3
2 Word Processing	12
3 Spreadsheets	17
4 Databases	21
5 Graphics	26
6 Videotex	29
7 Business Accounting	33
PART II: PRACTICAL ASSIGNMENTS	39
8 Word Processing Assignments	41
9 Spreadsheet Assignments	49
10 Database Assignments	55
11 Graphics Assignments	68
12 Videotex Assignments	71
13 Business Accounting Assignments	76
PART III: INTEGRATED ASSIGNMENTS	83
14 Film Club Network	85
15 New Office Technology Exhibition	90
16 Technical and Scientific Translation	96
<i>Index to Part I</i>	101

Acknowledgements

Special thanks to Andreas Credé. Thanks are also due to Sandra Lawrence, Nader Moghaddam, Julie Thorbes, Joyce Coope, Jean Spackman, The Information Technology Development Unit, Sandra MacBeth, and those students who worked through the assignments.

GUIDANCE NOTES FOR TUTORS

The aim of this section is to assist the tutor whose students are using *Information Technology—A Practical Course*. The complete text of the students' book, with the same page numbering, is also included.

The material can be used for a wide range of students on a variety of courses. It is particularly suitable for courses where the emphasis is on gaining and improving *practical*, as well as theoretical, information technology skills. It will be useful, therefore, for students following the RSA CLAIT scheme (Computer Literacy and Information Technology) and for those involved in the many other courses where Information Technology is either the main element or is one of several modules—for example BTEC, CPVE, CGLI 726, GCSE, TVEI, YTS and JTS.

Part I

Part I of the students' book contains an introductory chapter, followed by chapters on each of the following six applications: word processing, spreadsheets, databases, graphics, videotex and business accounting.

Although the material in this first part is theoretical, it is not intended that it should be used in isolation from practical work. How the tutor uses these chapters, however, will depend on a whole range of factors: the teaching staff, the number of students in a group, the level of the students, the time allocated for this subject area, examination requirements and equipment available.

Parts II and III

Part II of the students' book contains practical assignments. There are:

- 10 word processing assignments
- 10 spreadsheet assignments
- 10 database assignments
- 5 graphics assignments
- 5 videotex assignments
- 5 business accounting assignments

Part III contains 3 integrated assignments

Each type of application will be discussed in more detail below. There are, though, some general comments worth noting.

General comments

- The practical assignments are graded within each application. They become more complex in terms of instructions to follow and functions to perform.
- Keyboarding skills are required before attempting the assignments. It may be helpful to start with those assignments which need the least amount of keyboarding—for example, graphics and spreadsheets—and then go on to the others, leaving word processing to the end, by which time the students would have had the time to improve their keyboarding skills.
- The assignments are *not* machine-specific. Before attempting these tasks, students will therefore need to be familiar with an appropriate package (they need only know enough about the package to complete the next task).
- Tutors should work through the tasks themselves and make any amendments which are necessary to suit the software that students will be using. If, for example, it is not possible to justify text on the word processing package available, then delete that particular instruction from the relevant assignments. However, it is *not* advisable to turn the assignments into machine-specific ones by adding instructions like: 'Press Ctrl and then J to justify text'. This is because it is important to distinguish between two separate skills:
 - (a) learning how to use a particular application package and
 - (b) applying that package, or a similar one, as a TOOL to help solve problems.

There is no reason, therefore, why manuals or notes on how to use a package should not be made available while students are attempting the assignments.

- Working through each assignment will also give the tutor an idea of how much time is required for each one. It may be necessary to break up the tasks, particularly with the integrated assignments.
- Almost all the assignments require a print-out, as this is the easiest way of checking a student's work. If it is impractical for every student to print out every piece of work, remember to amend the objectives, as well as the instructions, for that particular task.
- Loading and exiting from packages appears in brackets in the objectives for each assignment, as it is not always appropriate or practical for students to load the program before each task or to exit when they finish that task. It may be necessary, therefore, to amend the objectives. It is important, though, that students load and exit from each package that they use for at least one of the assignments.
- Sharing terminals, if there are not enough facilities for one machine per person, can be a positive factor and in many cases

is preferable for problem-solving tasks. It is not advisable though for word processing once students are familiar with the basic functions. Where students do share, it may be difficult to determine which students have completed which objectives.

- It is not necessary to cover all the features of a package before actually using it. In fact, it would be difficult to do so. It is important, though, to understand and emphasise what is common to all or most packages of the same type (for example, the word 'cell' is common to all spreadsheet packages) and what is specific to the package students use (for example, pressing the key marked F3 to get to a specific cell). If students are clear about the distinction, they will find it much easier to transfer their skills to other configurations.
- For those facilities discussed in the 'theory' chapters in the first part which are not available on the particular package used by students, demonstrations, exhibitions or articles in computer magazines will assist understanding and discussion.
- Remind students to save regularly what they have keyed-in. This is a good habit to acquire and is particularly important for tasks which require a lot of typing. If text is then 'lost' or not saved, at least the last version of it is available.
- Tasks which involve formatting disks and/or making copies of documents can be added to any of the assignments, if appropriate.
- If using dedicated word processors for the word processing assignments, it is essential to explain the difference between them and word processing packages on microcomputers. Dedicated word processors are designed for word processing only. They cannot be used for other packages, such as accounting. The keyboard has keys with specific word processing functions, like 'Centre'. Function keys on microcomputers, however, are numbered (for example, F1, F2) so that the function they perform can vary depending on the package being used.

Part I—Theory

- When discussing mainframes and minis, try to arrange for your group actually to see one 'in action'. If there is not one within your institution, you may be able to arrange a visit to your local authority or to local companies.
- It is unlikely that tutors and students will have access to all the types of input, output and storage devices discussed. Concentrate on those which can actually be demonstrated and used by students for their practical work. The others can be seen in computer magazines, at exhibitions, on visits to local companies and on work experience.

- The following have deliberately been omitted:

comparative prices of hardware and software
 speeds of printers
 storage capacities of disks and tapes

This is because they change so rapidly as a result of technological developments. What was true at the time of writing the material is unlikely to remain so even for a few months. This does not mean, though, that the subject should be avoided. The tutor should find out current prices, speeds and storage capacities by getting details from exhibitions, magazines or local dealers. It may also be a good exercise for the students to find out these details for themselves. With this additional information, it is easier to discuss the pros and cons of purchasing and using different types of equipment.

- Understanding the concept of an 'operating system' may prove difficult, particularly for newcomers to computers. This is certainly true where students are using systems which have been set up so that users go straight into an application package and therefore do not 'see' the operating system. Too much *difficult* theory is unnecessary and can put people off using computers. It is not necessary to understand operating systems before you use computers, just as it is not necessary to understand how cars or telephones work before you use them. It may be better, therefore, to touch on operating systems briefly and leave a more detailed discussion of them until students are more confident and have used application packages. If it is impractical for all students to use the operating system on their computer, they should at least see a demonstration of some of the commands and of the house-keeping tasks which can be performed.
- The names of operating systems have been listed, whereas the names of application packages have not. This is because there are hundreds of each type of application package available, with new ones coming on the market all the time. Students should be aware of the name of the package they are using but should also know the names of others, especially popular packages used outside education. This again can be found in the computer press, in local shops selling computers and at exhibitions. It is important to stress that software packages are designed to work on specific types of computer, and so the package students are familiar with will not run on all computers. This is explained in more detail in chapter 1.
- Making a comparative study of a set number of packages of the same type (for example, three different database packages) is a useful exercise for students to complete. By using articles from computer magazines or sales literature that students or the

tutor have collected, this kind of 'theory' exercise can be used for some of the class while the others do their practical work.

- Where access to integrated packages or desk-top publishing is available, its use should be encouraged.

Part II—Practical assignments

Word processing

- To complete the assignments, students need reasonable keyboarding skills and an idea of layout.
- Where text appears in handwriting, students should be encouraged to try to decipher it rather than immediately to ask for explanations.
- Students are expected to use common sense. The letter in assignment 5, for example, is addressed to 'Mr S'. The name should, of course, be typed in full.
- It may be preferable for the tutor to key-in some of the assignments with the 'deliberate errors' before the lesson starts, so that students can recall them and edit them rather than create all the assignments. Assignment 6 would be suitable (remember to change the objectives as well as the instructions though).
- In those assignments which require page numbering (assignments 7 and 8), it is assumed that students will use the automatic page numbering facility rather than put in numbers manually.
- Where instructions are given in assignments 4 and 8 to leave certain amounts of space in the text for margins or for the inclusion of diagrams, instructions are given in centimetres rather than inches in order to enable students to become familiar with metric measurements (Note: 1 inch is equivalent to 2.5 centimetres.)
- The last assignment (number 10) is aimed at the more able student. Students are required to *compose* a letter, rather than copy one. If students are not ready to do this but the tutor wants to use this exercise, the letter below could be used (either typed in beforehand by the tutor and then recalled, or copied by students).

Andrew Crown plc
Marlow House
Church Road
Isleworth
Middlesex

(applicant address)

Dear (applicant name)

Grade II clerical assistant

Thank you for your application for the above position. We are pleased to inform you that you have been shortlisted. We would like to invite you for an interview on (date) at (time).

Please report to the reception desk on arrival. If you are unable to attend, please inform us.

We look forward to meeting you.

Yours sincerely

(Name)
Personnel Department

- For this last assignment, the intention is to use the mailmerge facility. If this facility is not available, the material can still be used to demonstrate the use of standard letters. In this way, students keep recalling the letter, change the relevant details each time and then print out each letter individually.

Spreadsheets

- Where figures relate to pounds, students should be encouraged to put the word 'pounds' in the appropriate heading. If not, they are tempted to put the pound sign before each figure which can cause problems on some packages, as the figures will then be treated as text not as numbers.
- Depending on the default settings, which can almost always be amended, figures may be left or right justified, centred or decimal aligned. It is not advisable to teach students how to change these settings before they have mastered the basic functions of entering and amending text and formulae.
- The default cell width on most packages is ten characters. If this is the case for the package being used, the cell size will not need to be changed for the first five assignments. If the default cell size is smaller and does need to be altered, it may be better for the tutor to change the default before students attempt the assignments. To teach students how to change cell sizes before doing the first four or five assignments may be confusing.
- With long formulae, such as adding up columns and rows, students should be encouraged—once they have learnt how to create and use simple formulae—to use any built-in functions which are available, such as SUM or AVG (for average).
- Tutors may wish to key-in some of the models themselves and

let the students recall and edit them according to the instructions, rather than create all the models. Assignment 8 would be suitable for this. This would make the tasks less frustrating for those students whose keyboarding skills are still limited (remember, though, to change the objectives as well as the instructions).

- Assignment 6 is considerably more difficult than the previous five. It is the first one where students are not told which headings to give to the additional columns and which formulae to enter. The more able students should work this out for themselves, while others will need help. The model should look like this:

	A	B	C	D	
1	item	unit cost	number	cost	
2		(pounds)			
3					
4	lg. plate	5.95	0	(b4*c4)	[replicate
5	sm. plate	4.50	0		formula
6	saucer	3.95	0		for column]
7	teacup	4.35	0		
8	teapot	8.00	0		
9	coff. cup	4.45	0		
10	coff. pot	9.25	0		
11	sug. bowl	5.50	0		
12	milk jug	4.10	0		
13	gravy bt	7.60	0		
14					
15	TOTAL				sum of column formula

- Remember to stress that replicating formulae works because the computer does not store the formula $b4*c4$ as 'put what is in b4 times what is in c4 in this cell' (as in the above example). If it did, every number in the last column would be the same whatever was in the previous two columns. The computer, in fact, stores that formula as 'multiply what is in two cells to the left by what is in one cell to the left'. Some packages are clearer at indicating this than others. It may, for example, be indicated as $c(-2)*c(-1)$, where c refers to column.
- The last assignment is for the more able student, although it is easier than it first appears. The model should look something like this:

	A	B	C	D	E
1					
2	amount to borrow			750	
3	percentage charge			0.05	
4	number of repayments			6	
5					
6	value of charge				$e2*e3$
7	total cost of loan				$(e2*e3) + e2$
8	amount of repayment				$((e2*e3) + e2)/e4$

- It is only necessary to amend cells e3 and e4 to calculate the figures required for each of the five methods of payment.

Databases

- The first assignment may not be practical for some groups and is obviously unsuitable for students working on their own. It is intended to be a way of introducing databases and getting everyone in the class involved.
- Students need to be prepared in advance for the second assignment so that they can have the necessary material ready for the lesson. Those who are unprepared can, perhaps, go to the library and pick out ten books.
- Tutors may prefer to key-in some of the databases before the lesson and let students search and print as instructed, rather than leave students to spend too much time typing in records (remember, though, to amend the objectives as well as the instructions). Assignments 3, 5, 7, 8 and 10 would be suitable, although students should create from scratch at least one of them.
- Where field names are not given but students are told to devise their own, students will need to know the maximum number of characters that they can use.
- Students should be encouraged to check fields carefully before entering all the data. On some packages it is not possible to change the fields once they have been created. Where figures are involved and the computer has to perform mathematical functions, as in assignments 7, 8 and 9, it is usually necessary to identify the relevant fields at the time of creating them.
- Rather than use the material provided for the estate agent assignments (numbers 8 and 9), it may be preferable to base the assignments on local property and ask students to collect relevant material from local papers and estate agents.

Graphics

- The first assignment requires the use of a 'painting' or 'drawing' package, whereas the other four involve 'business graphics' packages. 'Paint' packages are those which allow the user to produce shapes, symbols and text on screen, whereas 'business graphics' packages are used to represent numerical data graphically in the form of graphs and charts.
- For the first assignment, students should be clear about the purpose of a logo. It is a good idea to look at well-known logos and decide on which ones are effective and why.
- Students' work may have to be assessed on screen, especially if colours are used and colour printing is not available (remember though to change the objectives as well as the instructions).

- For the second assignment, if students use two or more modes of transport (such as taking a bus to the railway station and then catching a train), use just the main type of transport (that is, the train) to avoid unnecessary complications.
- If this assignment is inappropriate, or students are working on their own and not in groups, then present them with fictitious figures such as:

foot	3
bus	12
train	8
bicycle	6
car	5

Videotex

- For the first assignment, students need access to an appropriate viewdata or teletext system. What information is available will depend on the system. Tutors may wish to make the assignment more specific with their own system in mind.
- The remaining assignments—2, 3, 4 and 5—involve the use of local viewdata systems whereby students can actually create, route and edit their own material.
- The third assignment involves a lot of typing. Tutors may prefer to key-in the material themselves and ask students just to complete the editing, which is in the following assignment.
- Tutors may wish to make instructions for the last assignment more specific and relate it to another area of the course students are involved in.

Business accounting

- These assignments are slightly different from the previous ones in that all five are based around one fictitious company—File-It-Away.
- Two different types of business accounting applications are involved. The first three assignments require the use of a stock control program and the last two require a sales ledger program. These may be 'modules' of one business accounting package or they may be entirely separate.
- Tutors may prefer to key-in the stock details in the first assignment before the lesson, so that students can use all the available time to update the file and prepare reports.
- Business accounting applications are not included in the integrated assignments. However, if tutors wish to use the business accounting assignments as a base on which to centre an integrated assignment, the following tasks could be added:
 - Word processing. Create a standard letter to customers

informing them about File-It-Away's new product. Details of the product can be found in assignment 3.

- Spreadsheet. Set up a model which would answer such questions as 'What if all the products are sold?' 'What if prices change?' 'What if stock levels change?' (specific questions could be asked). The word 'profit' refers in this case only to the difference between the cost of the products and the retail price. Not enough is known about the company to include other factors, such as overheads. The model could look something like this:

	A	B	C	D	E	F
1	File	cost	retail	profit	no in	profit
2	type			per file	stock	
3						
4	BA			(c4 - b4)		(e4 * d4)
5	BF					
6	LA					
7	LF					
8						
9		TOTAL AMOUNT				(sum of
10						column)

- Database. This application could be included but is not advisable. A database could be created of either File-It-Away customers or products, but it would involve considerable overlap with the existing 'databases' within the stock control and sales ledger programs.
- Graphics. Present a graphical representation of the stock situation for all products, as indicated numerically in the first assignment.
- Videotex. Create a viewdata system which gives details (colours, sizes and prices) of File-It-Away products. This could be arranged in a number of ways. One possibility would be to have one page for each of the four types of files.

Part III—Integrated assignments

- Each of the three large assignments involve tasks using:
word processing
spreadsheets
databases
graphics
videotex
- These assignments are aimed at those students who have successfully completed all, or most of, the previous assignments.
- These assignments should not be attempted until students have acquired adequate keyboarding skills and are familiar with each type of application.

- Remind students to read through the whole assignment before starting any one of the tasks within it. They will therefore be aware of the final instructions about collating all the material and also know that information not given in one section can be found in another.
- Each assignment contains a graph or chart to be incorporated into a word-processed document. If desk-top publishing facilities (or integrated packages) are available, whereby graphics can be pasted into text electronically, they should be used. If not, space should be left in the text so that the graph or chart can be cut out and pasted in manually. In this case, students should be aware that, with appropriate hardware and software, electronic pasting is possible.
- Students who successfully complete these integrated assignments can very confidently refer to themselves as 'information technology literate'!