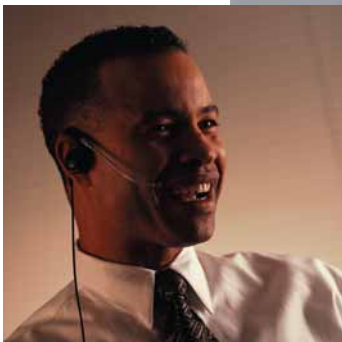


Diploma Syllabus



IMIS

The Professional Association for IS Professionals

IMIS

..... supporting IS students

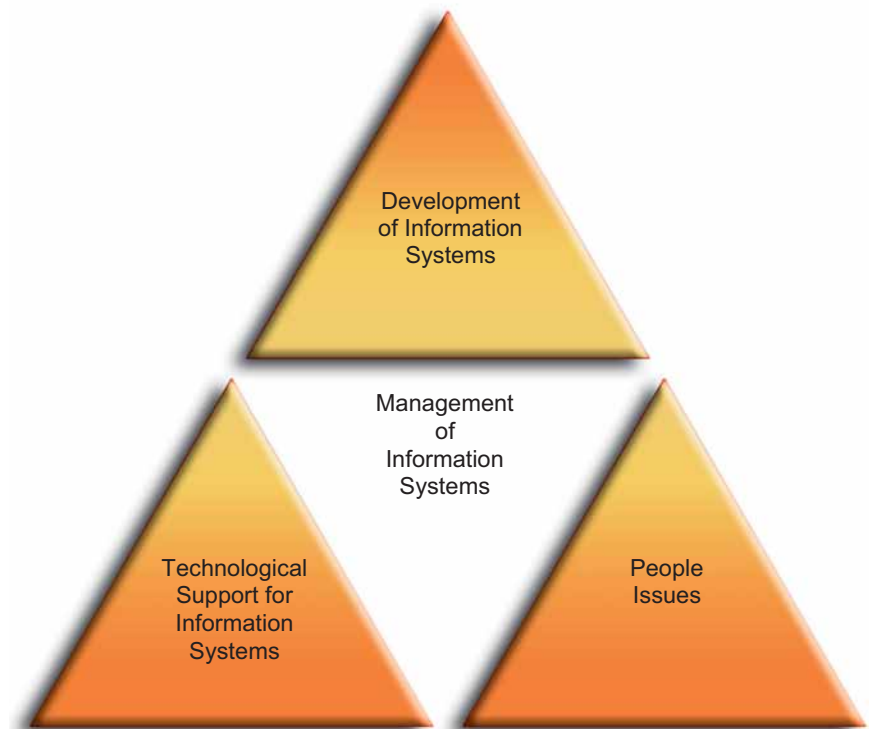
***Around the globe ...
..... into the future***

The Institute for the Management
of Information Systems Syllabus

The Institute for the Management of Information Systems

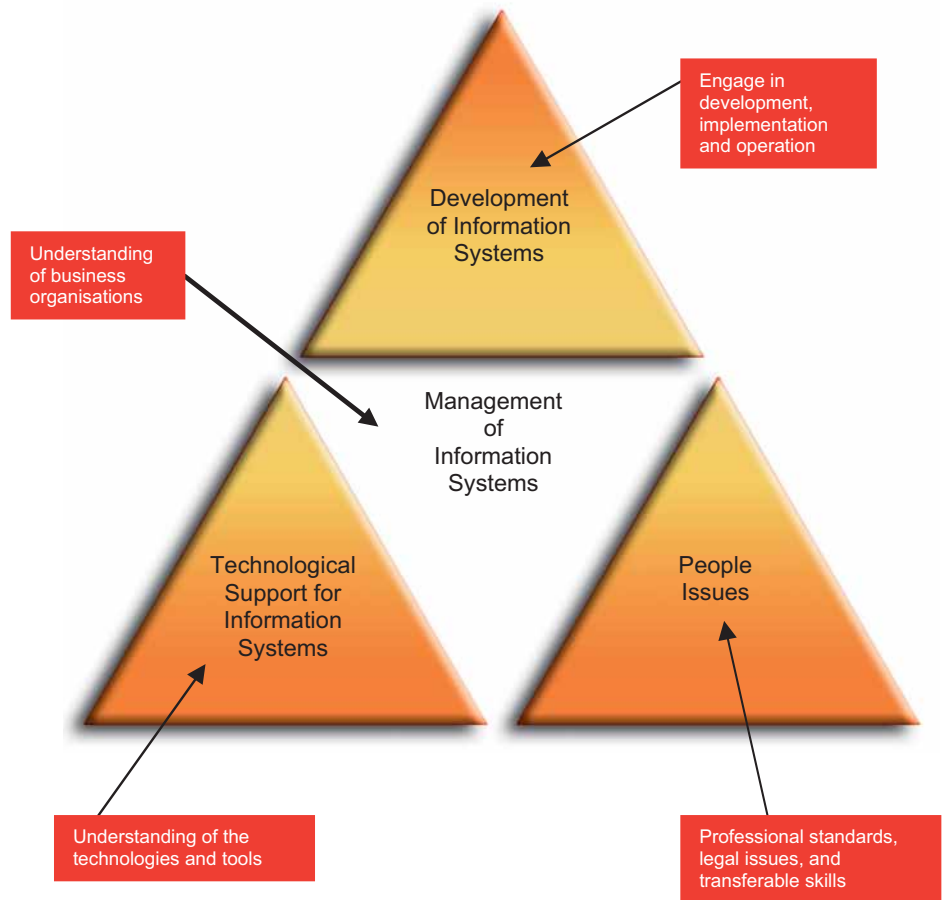


DIPLOMA SYLLABUS





DIPLOMA AIMS





CONTENTS

<i>PAGE</i>	<i>DESCRIPTION</i>
<i>4</i>	<i>INTRODUCTION</i>
<i>5</i>	<i>MAPPING OF QUALIFICATIONS AND PROPOSED IMIS EQUIVALENTS</i>
<i>6</i>	<i>THE DIPLOMA MODULES</i>
<i>7</i>	<i>COURSE COMPARISON</i>
<i>8</i>	<i>DIPLOMA AIMS AND LEARNING OUTCOMES</i>
<i>9</i>	<i>DIPLOMA MODULE MAPPING TO LEARNING OUTCOMES</i>
<i>10</i>	<i>SYLLABUS GUIDANCE NOTES</i>
<i>12</i>	<i>THE DIPLOMA MODULES</i>
<i>12</i>	<i>D21 INFORMATION SYSTEMS PRACTICE</i>
<i>15</i>	<i>D22 BUSINESS FUNDAMENTALS</i>
<i>19</i>	<i>D23 COMMUNICATIONS AND BUSINESS TECHNOLOGY</i>
<i>22</i>	<i>D24 PROGRAMMING AND WEB APPLICATIONS</i>
<i>26</i>	<i>D25 BUSINESS INFORMATION SYSTEMS</i>
<i>29</i>	<i>D26 INFORMATION SYSTEMS BUILDING</i>

INTRODUCTION

The syllabus across all levels is based on four themes, which are developed within and across the levels. Concepts, principles, methods and ideas may be introduced at one level and be expanded in a conceptually more demanding next level. Modules may be based predominantly on one theme but of necessity topics will be integrated. The principal theme, Management of Information Systems (IS), includes the study of IS and decision making at all levels in organisations together with the management of IS from the development of business and IS strategies through to eventual information system obsolescence. Structural and organisational issues regarding the Management of the Information Systems Development Process are included.



It is recognised that IS professionals will play a part in the planning, development, use and/or control of information systems. Therefore, additional supporting themes have been identified. The theme, Development of Information Systems, enables students to understand the process and apply techniques involved in the development and implementation of high quality technology-based solutions to business problems. The emphasis is on requirements determination, specification and design. However, students will have the opportunity to build a simple system. Implications for legacy systems will also be included. The theme, Technological Support for Information Systems, includes an understanding of the technology used within information systems and how current and emerging technologies can influence the success of business organisations. Appropriate tools to support the techniques used in IS development and management are addressed. The theme, People Issues, focuses on issues relating to all stakeholders involved in the management, development, implementation and operation of information systems. Knowledge and application of the IMIS Code of Ethics will enable students to understand the standards required for working as an Information Systems professional. Students will consider the wider societal implications of such professionals. The concepts and processes associated with project management are addressed.



MAPPING OF QUALIFICATIONS AND PROPOSED IMIS EQUIVALENTS

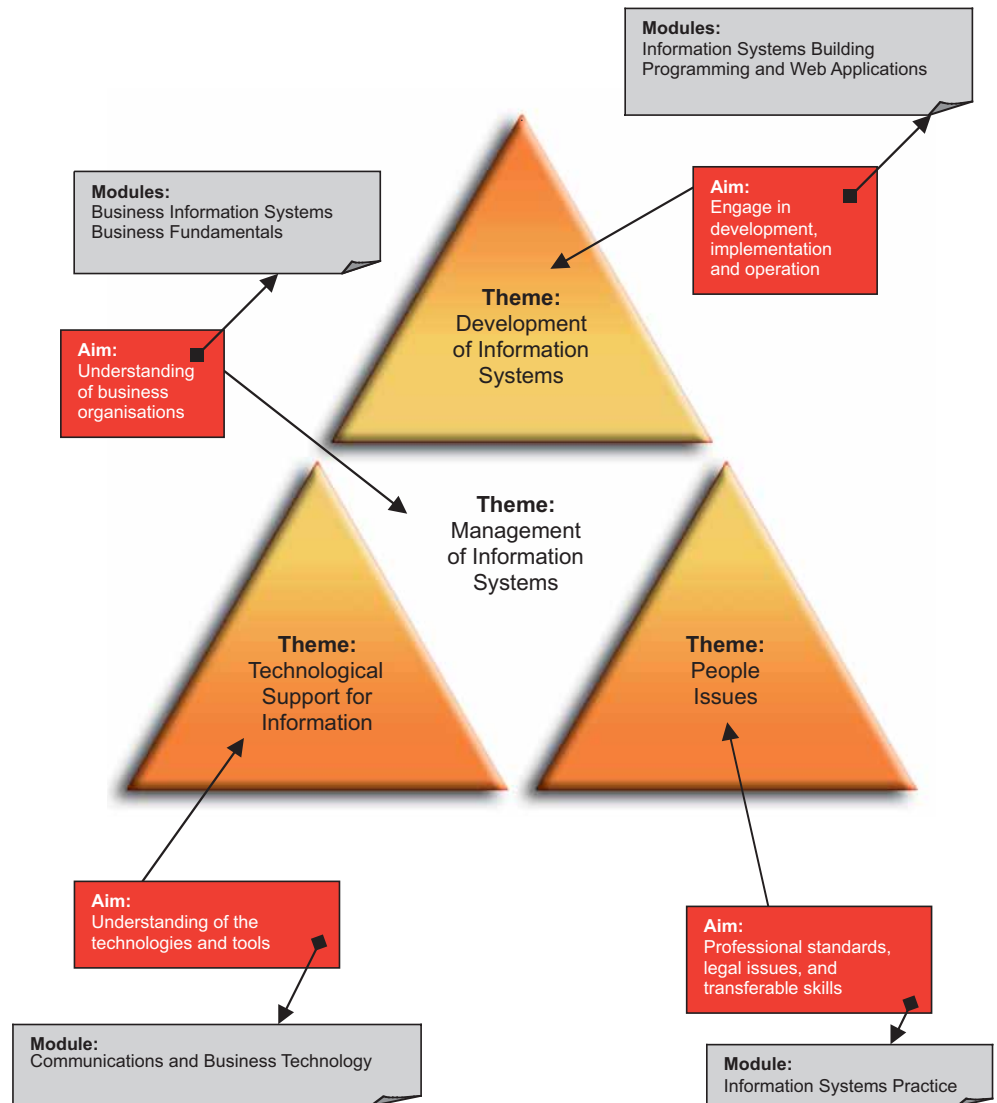
NQF Level	QAA HE Level	Typical CATS Equivalent*	General	Occupational	Other	IMIS Qualification	IMIS Membership & SFIA Level
8	HE5		PhD/DPhil (Research) PhD/DPhil (Taught)	NVQ Level 5			
7	HE4		MPhil/Masters/PG Cert/PG Dip				
6	HE3	360/120@3	Honours Degree	NVQ Level 4			MIMIS SFIA Level 5
5	HE2	240/120@2	Diploma of HE		HND/HNC BCS Diploma	Higher Diploma	AIMIS SFIA Level 4
4	HE1	120/100@1	Cert. of HE			Diploma	LIMIS SFIA Level 3
3 Advanced Level			A Level	NVQ Level 3	BTEC Nationals	Foundation Diploma	Practitioner SFIA Level 1 / 2
2 Intermediate Level			GCSE A* - C	NVQ Level 2	BTEC First		
1 Foundation Level			GCSE D – G	NVQ Level 1	BTEC Introductory Cert/Diploma		
Entry Level			Certificate of (educational) achievement				

* CATS – The CATS values are given as the total number of credits followed by the minimum at a specified level.



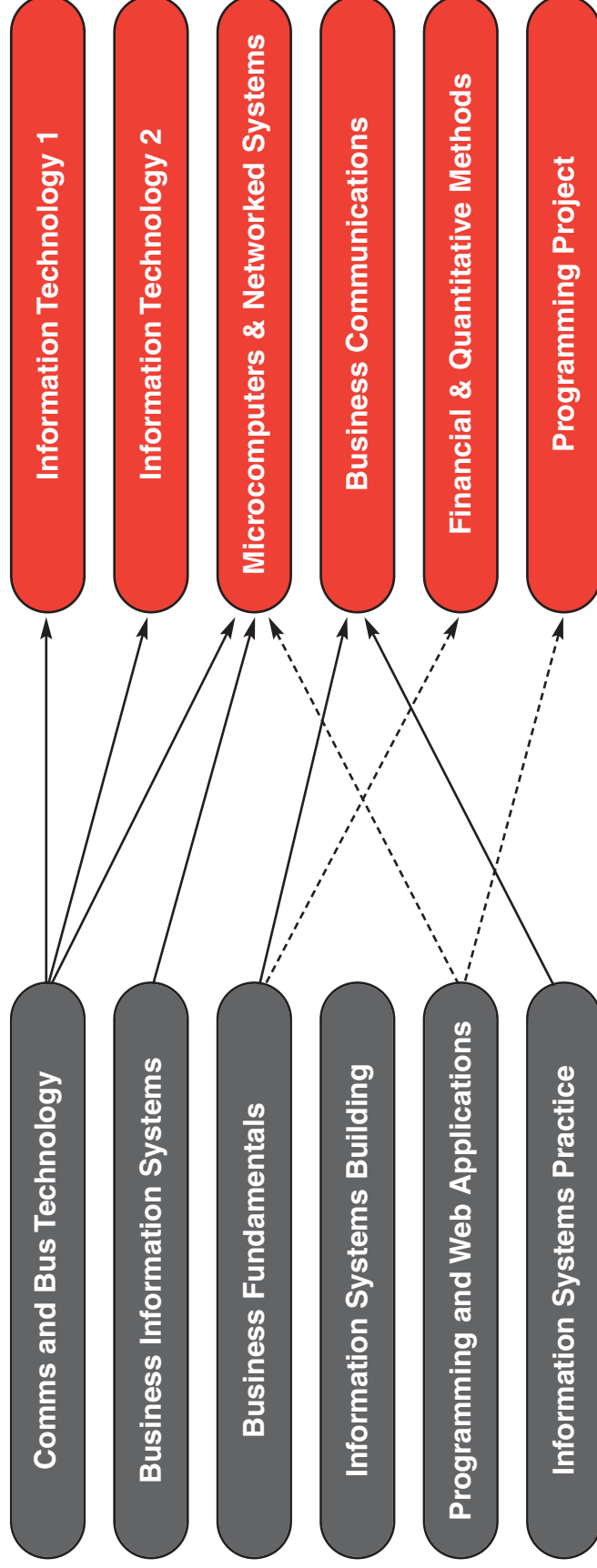
DIPLOMA MODULES

The diagram shows the primary focus for each module:



COURSE COMPARISON

Diploma



A student who has successfully completed the existing Diploma will require appropriate prior learning of the following modules in order to prepare for studying the Higher Diploma:

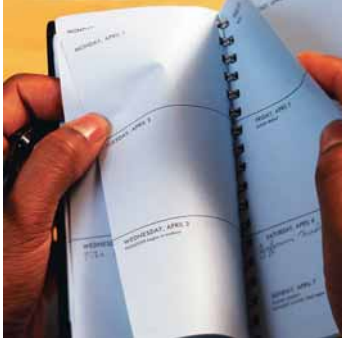
- Information Systems Building
- Programming and Web Applications



Diploma Aims and Learning Outcomes

Aims:

To provide students with:



D1. Management of IS

An understanding of business organisations in terms of types and structures, and the information systems needed to enable those business organisations to operate successfully within their environment.

D2. Development of IS

The knowledge to enable them to engage in the processes of development, implementation and operation of technology-based information systems.

D3. Development of IS/Technological Support for IS

An understanding of the technologies and tools that may be used to support those information systems and their development.

D4. People Issues

Recognition of the need for professional standards together with the knowledge of legal issues and social responsibilities required in their work as Information Systems professionals. Appropriate transferable skills.



Learning outcomes:

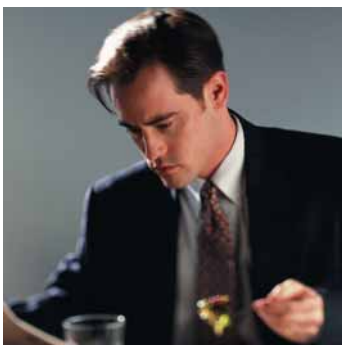
Management of IS

- D1.1 Compare different types of business organisations, their structures and how they operate within and interact with their environment.
- D1.2 Identify the information needed to support decision making at all levels within business organisations.
- D1.3 Describe information systems and work flows that support the functional areas of business at the operational level, and explain how information may be used for planning, decision making and control.



Development of IS

- D2.1 Explain the need for a disciplined approach to all stages of IS development, with emphasis on those techniques used within requirements definition.



Development of IS/Technological Support for IS

- D3.1 Demonstrate the basic principles of programming, and apply the techniques suitable for developing simple web applications.
- D3.2 Describe the role of user participation in the IS development process, and explain how prototyping may help this process.
- D3.3 Describe the technology required to support IS, and explain how such technology may be acquired, and the role of security systems.



People Issues

- D4.1 Demonstrate the communication and problem solving skills required by Information Systems professionals in the workplace.
- D4.2 Explain the IMIS Code of Ethics.
- D4.3 Develop an understanding of the legal issues and social responsibility within the IMIS Code of Ethics.

Diploma Module Mapping to Learning Outcomes

Mapping includes primary and secondary foci.

	Information Systems Practice	Business Fundamentals	Comms and Business Technology	Programming & Web Applications	Business Information Systems	Information Systems Building
D1.1	Compare different types of business organisations, their structures and how they operate within and interact with their environment.	X				
D1.2	Identify the information needed to support decision making at all levels within business organisations.	X			X	
D1.3	Describe information systems and work flows that support the functional areas of business at the operational level, and explain how information may be used for planning, decision making and control.				X	
D2.1	Explain the need for a disciplined approach to all stages of IS development, with emphasis on those techniques used within requirements definition.					X
D3.1	Demonstrate the basic principles of programming, and apply the techniques suitable for developing simple web applications.			X		
D3.2	Describe the role of user participation in the IS development process, and explain how prototyping may help this process.			X		X
D3.3	Describe the technology required to support IS, and explain how such technology may be acquired, and the role of security systems.		X			
D4.1	Demonstrate the communication and problem solving skills required by Information Systems professionals in the workplace.			X	X	X
D4.2	Explain the IMIS Code of Ethics.	X				
D4.3	Develop an understanding of the legal issues and social responsibility within the IMIS Code of Ethics.	X				



Syllabus Guidance Notes



1. The syllabus modules are documented in the sequence in which they should be studied. This is for your guidance, as prior knowledge may be required. It is also suggested that Information Systems Building and Programming and Web Applications could be studied in parallel.
2. IMIS members who log on to the IMIS website (www.imis.org.uk) have access to (www.emeraldinsight.com). This website allows IMIS members instant and unlimited full text access to over 35,000 articles from Emerald's international management portfolio of more than 100 Emerald Journals, complete with full text articles back to 1994. Subject coverage spans a spectrum of management disciplines including strategy, leadership, quality, information management, marketing, HR and much more.
3. Within the recommended reading section for each module there is also a section for some modules entitled Additional Reading. This follow-up work is suggested to extend the student's knowledge in various topic areas and they should not necessarily expect to be able to follow up everything. Also, colleges should expect to provide assistance with acquisition to resources, either by acquiring the resources, or by providing students with access to these resources through electronic information services (which may require subscriptions). Obviously, colleges and students may also gain access to such services as provided through their IMIS membership.
4. Where specific modules refer to the consideration of the following resource: CASE (Computer Aided Software Engineering) tools, these general guidelines apply:
 - Must cover at least the analysis phase of structured system development.
 - Should include the following models:
 - Data Flow Diagrams (DFDs)
 - Entity Relationship Diagrams (ERDs).
 - Should allow models to be individually correlated and verified.
 - Should allow models to be validated against each other.
 - Should provide syntactic rules for constructing models.
 - Should include a data dictionary facility for describing system and model elements and providing consistency and completeness checking.



The choice of CASE tool in an academic environment will usually depend on factors such as:

- Ease of use – particularly important for students who need to make quick progress with using a CASE tool
- Cost –integrated CASE tools tend to be proprietary and therefore come with expensive licences. Look for freeware in the public domain.
- Required functions and features.

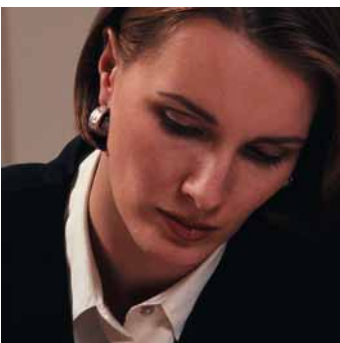
A CASE tool may cover both the structured analysis and design development stages, but the degree of vertical integration between the phases can differ widely between products. Alternatively, a separate CASE tool designed specifically to aid the building of structured design models could be used (in which case there might be no vertical integration with an analysis tool).

Note that SSADM (Structured Systems Analysis and Design Method) is a relatively prescriptive methodology and therefore CASE tools that support SSADM will necessarily be ones that support a prescribed set of steps and a prescribed notation for models. Nevertheless, such a CASE tool may be flexible enough to support the drawing of DFD and ERD (Logical Data Model) models and the description of them into a data dictionary.

5. All data flow diagrams presented in examinations will use the notation (i.e. De Marco) specified in the main course text . The one exception to this will be that the notation for data stores will be shown by including the data store name between two horizontal parallel lines. When drawing DFDs in answer to a question, students should be advised that they may use an alternative notation provided that this is named e.g. Yourdon notation.
6. All data models should conform to the Chen notation. Examination questions involving data models will adopt this notation.

The Diploma Modules

Theme: People Issues
Course: Diploma
Module Title: Information Systems Practice
Module Code: D21
Resources:
Assessment: By a single 3-hour externally set examination paper
CATS Equivalent: 200 Notional Hours:
 80 Hours Structured, 120 Hours Directed Self-Study



SPECIFIC COURSE AIMS AND LEARNING OUTCOMES:

- D3.2** Describe the role of user participation in the IS development process, and explain how prototyping may help this process.
- D4.1** Demonstrate the communication and problem solving skills required by Information Systems professionals in the workplace.
- D4.2** Explain the IMIS Code of Ethics.
- D4.3** Develop an understanding of the legal issues and social responsibility within the IMIS Code of Ethics.

MODULE AIMS:

To provide students with:

- An understanding of the role of a code of conduct in professional practice. (A1)
- An awareness of the legal issues related to information systems development and operation. (A2)
- A broad appreciation of the social and ethical impacts of information systems. (A3)
- An understanding of the key personal skills required by the Information Systems (IS) professional. (A4)
- An understanding of career development within the IS area. (A5)

MODULE LEARNING OUTCOMES:

Students should be able to:

A1:

- Explain the relevance of a code of conduct to professional practice within IS. (LO1)
- Identify principal codes of conduct. (LO2)

A2:

- Describe the legal issues related to information systems development and operation. (LO3)
- Identify the main national and international laws relevant to information systems development and operation. (LO4)

A3:

- Recognise the social and ethical aspects of information systems applications. (LO5)

A4:

- Identify the key personal skills of the IS professional. (LO6)

A5:

- Explain the main elements of career advancement and professional development within IS. (LO7)



DETAILED MODULE CONTENT:

LO1: The Code of Conduct in Professional Practice within IS

- Professional responsibility.
- Functions of codes of conduct.
- Licensing.
- Code of conduct components.

LO2: Example Codes of Conduct

- IMIS Code of Ethics.
- ACM/IEEE-CS The Software Engineering Code of Ethics and Professional Practice.
- BCS Code of Conduct

LO3: Legal Issues Relating to IS Development and Operation

- Data protection.
- Computer crime:
 - software theft
 - unauthorised access, denial of service, sabotage
 - fraud
 - viruses.

LO4: National and International Laws

- Local national laws and regulation relating to information systems development and operation.
- International laws and regulation relating to information systems development and operation.

LO5: Social and Ethical Aspects of IS Applications

- Ethics in the Information Age.
- Privacy.
- Intellectual property rights.
- Security and human values.
- Stakeholder participation.

LO6: Personal Skills of the IS Professional

- Personal skills and self-awareness.
- Time management.
- Handling information.
- Verbal and non-verbal communication.
- Written communication.
- Interviewing.
- Assessment.
- Systematic problem solving.
- Decision making.
- Review and evaluation.

LO7: Professional Development

- Continuous professional development.
- Staff appraisal and its role in career progression.
- Career planning.

RECOMMENDED READING REFERENCES:

Main course texts:

Bynum, T W & Rogerson, S (2004)
Computer Ethics and Professional Responsibility
Blackwell Publishing
ISBN: 1855548453



Thompson, N (2002)
People Skills (2nd Ed.)
Palgrave Macmillan
ISBN: 0333987462

Additional reading:

Ayres, R (1999)
The Essence of Professional Issues in Computing
Pearson Education
ISBN: 0139087400



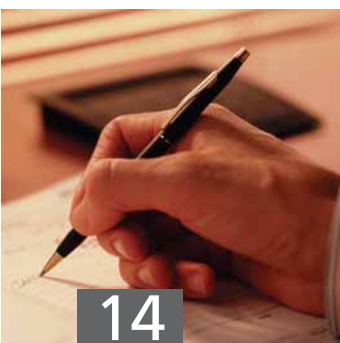
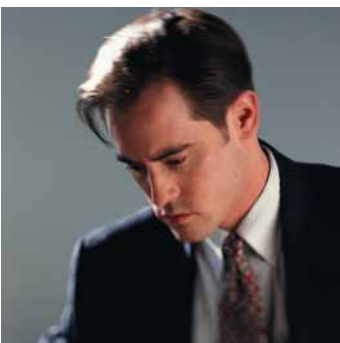
Burnett, R (2003)
IT Legal Risk Management
Faculty of IT, Institute of Chartered Accountants in England & Wales
ISBN: 184152185X



Prior, M, Fairweather, N B, & Rogerson, S (2002)
IS IT Ethical? Survey of Professional Practice
Institute for the Management of Information Systems
ISBN: 0953511626

Useful web sites:

Association for Computing Machinery (ACM): www.acm.org
British Computer Society (BCS): www.bcs.org
Institute for the Management of Information Systems (IMIS):
www.imis.org.uk
Institute of Electrical and Electronic Engineers (IEEE) Inc:
www.ieee.org





Theme:	Management of Information Systems
Course:	Diploma
Module Title:	Business Fundamentals
Module Code:	D22
Resources:	Software: Accounting Package (SAGE, Pastel or equivalent), and Spreadsheet Package
Assessment:	By a single 3-hour externally set examination paper
CATS Equivalent:	200 Notional Hours: 80 Hours Structured, 120 Hours Directed Self-Study

SPECIFIC COURSE AIMS AND LEARNING OUTCOMES:

- D1.1** Compare different types of business organisations, their structures and how they operate within and interact with their environment.
- D1.2** Identify the information needed to support decision making at all levels within business organisations.

MODULE AIMS:

To provide students with:

- An understanding of business organisations in terms of types and structures, and the information systems needed to enable those business organisations to operate successfully within their environment. (A1)
- An understanding of the ways in which businesses may be supported by the deployment of information systems. (A2)
- An understanding of the basics of business finance. (A3)
- An awareness of fundamental human resource issues arising in different businesses entities. (A4)

MODULE LEARNING OUTCOMES:

Students should be able to:

A1:

- Identify and describe different types of business entities. (LO1)
- Explain the significance of various types of environmental disturbance to particular businesses. (LO2)
- Describe the accounting process in terms of, recording, analysing and interpreting financial data and statements. (LO3)
- Describe a range of organisational structures and explain the implications for reporting systems. (LO4)

A2:

- Describe the following key business sub-units (Purchases and stock control; Sales and marketing; Production and manufacturing systems; Distribution and Logistics). (LO5)
- Demonstrate the application of computerised accounting systems for a range of business structures. (LO6)
- Explain the importance of budgeting; describe the budgeting process and the way it is supported by information systems. (LO7)

A3:

- Identify alternative sources of capital. (LO8)
- Identify and discuss transfer pricing policies. (LO9)
- Explain the time value of money and its implication for businesses. (LO10)

A4:

- Identify fundamental human resource issues associated with managing various types of business entity. (LO11)

DETAILED MODULE CONTENT:

LO1: The Nature of Business Entities

- Partnerships.
- Sole traders.
- Corporations:
 - private companies
 - public companies.
- Obligations as regards record keeping, accounting and auditing.
- Stakeholders for different entities.
- Basic capital structures and reward systems for business owners.

LO2: Business and the Environment

- Recognise the significance of environmental disturbance to particular businesses, noting:
 - behaviour of customers and competitors
 - the impact of interventions by government (for example, health and safety, control measures, or licensing)
 - fundamental micro-economic issues, supply and demand, elasticity of demand, as they might affect a particular entity.
- Recognise the impact on business of technological advances that might have positive or adverse effects on the entity.

LO3: The Accounting Process and Interpretation of Financial Statements

- Develop the accounting equation and recognise operating statements (Profit and Loss Accounts, Income and Expenditure Statements) and Balance Sheets.
- The accounting process, recording, analysing and interpreting financial data:
 - recording – control systems for source data, data preparation, batch controls
 - analysing financial transactions - distinctions between capital and revenue, coding for creation of management reports, chart of accounts for computerised accounting systems, recording fixed assets and depreciation.
- Interpretation of financial statements:
 - analysing profitability:
 - gross and net profit
 - Return on Capital Employed
 - Earnings Per Share (EPS) (for companies) and Price Earnings Ratio.





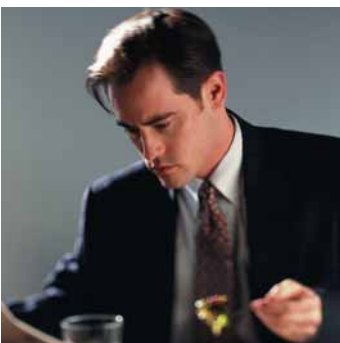
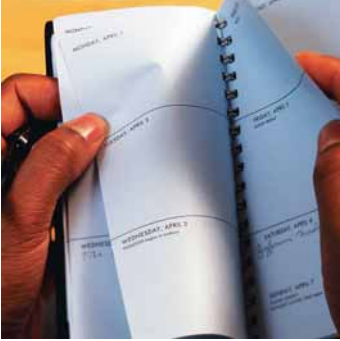
- assessing efficiency:
 - Debtors and Creditors Ratios
 - Current Ratio and Acid Test
 - stock turn.
- analysing risk:
 - Balance Sheet Gearing Ratio
 - Income Gearing Ratio.

LO4: Organisational Structures and Implications for Reporting Systems

- Subsidiaries.
- Divisions.

LO5: The Business Sub-Units

- Purchases and stock control:
 - Inventory Management:
 - economic order quantities and re-order level
 - Just In Time (JIT).
 - Stock valuation and implications for assessing performance:
 - Last In First Out (LIFO)
 - First In First Out (FIFO).
- Sales and marketing:
 - understanding discounts and promotional costs
 - break even calculations and understanding 'contribution'
 - amortising marketing expenditure
 - treatment of research and product development expenditure.
- Production and manufacturing systems (part one):
 - basics of resource planning and other integrated systems
 - accounting for manufacturing costs
 - allocation of overheads.
- Production and manufacturing systems (part two):
 - systems design implications of cost recording requirements:
 - Cost Centres
 - Profit Centres
 - approaches to cost accounting:
 - Marginal costing
 - Absorption costing
 - Standard costing (principles only)
 - Activity Based costing (principles only).
- Distribution and Logistics:
 - accounting for distribution costs
 - implications of Just in Time (JIT) for businesses and their customers
 - information requirements for fleet management
 - implications of outsourcing of transport management.



LO6: Computerised Accounting Systems

- Chart of accounts.
- Simple transaction processing systems.
- Modular accounting packages.
- Access, audit and security issues:
 - verification and validation procedures.

LO7: Introduction to Budgeting

- The basic model.
- Zero-based budgeting.
- Incremental budgeting.

LO8: Capital Funding

- Selecting sources of capital for specific projects.

LO9: Transfer Pricing

- Introductory issues.

LO10: Broader Financial Issues

- Time value of money.
- Interest rates.
- Cost of capital.

LO11: Human Resource Management Issues

- Recruiting.
- Training.
- Reward schemes.
- Motivation.
- Managers and finance.
- Consultation and the budget process.

RECOMMENDED READING REFERENCES:

Main course text:

Glynn, J, Murphy, M, Abraham, A & Perrin, J (2003)
Accounting for Managers (3rd Ed.)
Thomson Learning
ISBN: 186152904X

Fardon M, Adcock F, Birth I, Cox D, Matchan M, O'Byrne S, Prokopiw J (2000)
Advanced Business
Osborne Books
ISBN: 1872962041

Secondary course text:

Weightman, J (2004)
Managing People (2nd Ed.)
Chartered Institute of Personnel Development
ISBN: 0852929943

Study for this module will be enhanced by reading the local business press (newspapers and journals) and by the study of additional reputable accounting and general business texts.



Theme:	Technological Support for Information Systems
Course:	Diploma
Module Title:	Communications and Business Technology
Module Code:	D23
Resources:	Internet connections
Assessment:	By a single 3-hour externally set examination paper
CATS Equivalent:	200 Notional Hours: 80 Hours Structured, 120 Hours Directed Self-Study

SPECIFIC COURSE AIMS AND LEARNING OUTCOMES:

D3.3 Describe the technology required to support Information Systems (IS), and explain how such technology may be acquired, and the role of security systems.

MODULE AIMS:

To provide students with:

- An understanding of the information systems infrastructure: hardware, software, data storage, and telecommunications technology. (A1)
- Knowledge of how all this information technology works together with the Internet to create a new infrastructure for the digital integration of the enterprise. (A2)
- An awareness of the opportunities created by the power of contemporary information systems and the global connectivity of the Internet, ensuring security and control. (A3)

MODULE LEARNING OUTCOMES:

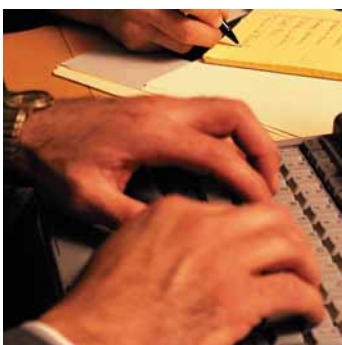
Students should be able to:

A1:

- Identify the hardware components in a typical computer system and interactive multimedia and their role in processing information. (LO1)
- Compare the capabilities of mainframes, midrange computers, Personal Computers (PC), workstations, servers and supercomputers and identify different arrangements of computer processing. (LO2)
- Describe the major types of software and compare leading PC operating systems. (LO3)
- Analyse the strengths and limitations of the major application programming languages and software tools and describe contemporary approaches to software development. (LO4)
- Describe the characteristics, advantages and disadvantages of distributed systems. (LO5)

A2:

- Describe the basic components of a telecommunications system. (LO6)
- Identify the capacity of telecommunications channels, analyse transmission media and compare the various types of telecommunications networks. (LO7)
- Analyse the alternative network services and identify the principal telecommunications applications for supporting electronic commerce and electronic business. (LO8)



- Identify the features of the new information technology (IT) infrastructure and important connectivity standards. (LO9)
- Describe how the Internet works, identify its major capabilities, recognise the benefits the Internet offers organisations and describe the principal technologies for supporting electronic commerce. (LO10)

A3:

- Demonstrate why information systems are so vulnerable to destruction, error, abuse, and system quality problems and compare general controls and application controls for information systems. (LO11)
- Identify the special measures required to ensure the reliability, availability and security of electronic commerce and digital business processes. (LO12)
- Demonstrate the importance of auditing information systems and safeguarding data quality. (LO13)
- Analyse important issues in managing hardware technology and organisational software assets. (LO14)

DETAILED MODULE CONTENT:

LO1: The Computer Hardware and IT Infrastructure

- The computer system, how computers represent data, the Central Processing Unit (CPU) and primary storage, microprocessors and processing power, multiprocessors and parallel processing.
- Storage, input and output technology: magnetic disks, optical disks, magnetic tape, new storage alternatives, input and output devices, interactive multimedia.

LO2: Categories of Computers and Computer Systems

- Categories of computers, computer networks and client/server computing, network computers, peer-to-peer computing.

LO3: System Software

- Functions of the operating system, multiprogramming, virtual storage, time-sharing and multiprocessing, graphical user interfaces.

LO4: Application Software

- Programming languages, fourth-generation languages and PC software tools, software for enterprise integration.

LO5: Distributed Processing Systems

- Distributed systems definitions, evolution of distributed systems, duplicated databases and inconsistent data, centralisation and its disadvantages, networked systems, distributed file systems.
- Advantages and disadvantages of distributed systems.

LO6: Components and Functions of a Telecommunications System

- Telecommunication system components, functions of telecommunications systems, types of signals, communications channels, communications processors and software.

LO7: Communications networks

- Network topologies, private branch exchanges, local area networks, wide area networks, network services and broadband technologies, and network convergence.



LO8: Electronic Business and Electronic Commerce Technologies

- Electronic mail and groupware, voice mail and fax, teleconferencing, data conferencing and video conferencing, and electronic data interchange.
- The information superhighway.

LO9: New IT Infrastructure for the Digital Firm

- Enterprise networking and internetworking, standards and connectivity for digital integration.

LO10: The Internet and Electronic Commerce

- What is the Internet, Internet technology and services, next generation Internet.
- The world-wide web:
 - searching for information on the web, intranet and extranet technology
 - wireless communications.
- Web servers and e-commerce servers, web content management tools, web performance monitoring tools, web hosting services.

LO11: System Vulnerability and Abuse

- Why systems are vulnerable, system quality problems – software and data.

LO12: Creating a Control Environment

- General controls and application controls, internet security challenges, security and e-commerce, developing a control structure – costs and benefits.

LO13: System Audits, Privacy, and Data Integrity Implications

- The role of auditing in the control process, analyse security vulnerabilities, data quality audits and data cleansing.
- Information rights: privacy and freedom in an information society, property rights, system quality: data quality and system errors.

LO14: Managing Hardware and Software Assets

- Hardware technology requirements for electronic commerce, hardware acquisition and the total cost of ownership of technology assets, monitoring technology trends.
- Rent or build decisions, software maintenance, selecting software for the organisation.

RECOMMENDED READING REFERENCES:

Main course texts:

Laudon, K C & Laudon, J P (2004)
Management Information Systems – Managing the Digital Firm (8th Ed.)
Pearson Education
ISBN: 0131206818

Stamper, D A & Case, T L (2002)
Business Data Communications
Pearson Education
ISBN: 0131202049

Additional reading:

Walrand, J (1997)
Communication Networks – A First Course
McGraw-Hill
ISBN: 0071448586

Englander, I (2003)
The Architecture of Computer Hardware and Systems Software
– An Information Technology Approach
Wiley Europe
ISBN: 0471368970



Theme: Development of Information Systems
Course: Diploma
Module Title: Programming and Web Applications
Module Code: D24
Resources: Software: Visual Basic (at least V6), Notepad
Assessment: By a single 3-hour externally set examination paper
CATS Equivalent: 200 Notional Hours:
 80 Hours Structured,
 120 Hours Directed Self-Study

SPECIFIC COURSE AIMS AND LEARNING OUTCOMES:

- D3.1** Demonstrate the basic principles of programming, and apply the techniques suitable for developing simple web applications.
- D3.2** Describe the role of user participation in the Information Systems (IS) development process, and explain how prototyping may help this process.
- D4.1** Demonstrate the communication and problem solving skills required by Information Systems professionals in the workplace.

MODULE AIMS:

To provide students with:

- An awareness of the development environment in which the programming activity is carried out, and the participants in that environment. (A1)
- An introductory programming course in the Visual Basic (VB) programming language. (A2)
- An introduction to Hyper Text Markup Language (HTML) and the design of web pages. (A3)
- An overview of the use of Visual Basic Script (VBScript) to enhance the functionality of a web page displayed in a web browser. (A4)

MODULE LEARNING OUTCOMES:

Students should be able to:

A1:

- Identify the commonly accepted levels of programming languages. (LO1)
- Recognise that computer programs are usually written to solve problems or perform tasks on a computer, and as part of an information system, are used to support business functions. (LO2)
- Describe the basic software required to create and run a computer program. (LO3)
- Describe the steps involved in the program development cycle. (LO4)
- Identify areas that may involve interaction with users and other developers. (LO5)

A2:

- Demonstrate competence in the use of the Visual Basic's Integrated Development Environment (IDE). (LO6)
- Demonstrate the ability to write simple programs in Visual Basic (VB) using some or all of the following: fundamental data types, control structures, procedures, functions and arrays. (LO7)
- Demonstrate the ability to create a Graphical User Interface (GUI) using a variety of VB GUI controls. (LO8)
- Demonstrate the ability to employ simple error handling and debugging strategies. (LO9)
- Demonstrate the ability to create, read, write and close sequential and random-access files. (LO10)

**A3:**

- Describe how a web browser communicates with a web server. (LO11)
- Demonstrate the ability to create a formatted HTML document and display it in a web browser. (LO12)
- Demonstrate the ability to create and display a structured web page containing text and graphics using HTML features. (LO13)

A4:

- Demonstrate the ability to access the Internet with Visual Basic. (LO14)
- Demonstrate the ability to create web pages with HTML and VBScript. (LO15)

DETAILED MODULE CONTENT:**LO1: Levels of Programming Languages**

- Machine languages, assembly languages and high-level languages.

LO2: Why Programs are Developed

- Problem-solving process represented as Input/Processing/Output.
- Programming support for the IT function; legacy systems.
- Programming-in-the-small: programs created by one or two programmers in a short space of time, typically to support small business units.
- Programming-in-the-large: Building large, enterprise-wide systems employing teams of systems developers and programmers.

LO3: Supporting Program Development

- Programming tools: flow charts, pseudocode, hierarchy charts.
- Program editors, compilers, interpreters, debuggers, executables, and integrated development environments (IDEs).

LO4: Program Development Cycle

- Program development cycle: analyse, design, select interface, code, test and debug, document code and program.

LO5: Interaction with Others

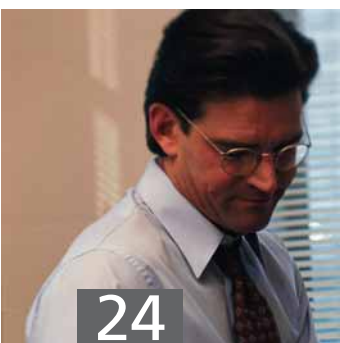
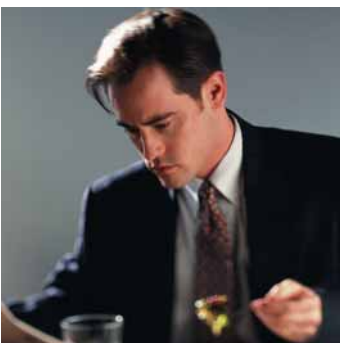
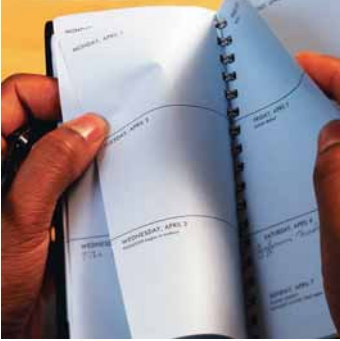
- User involvement: requirements determination; verification, end-user programming; acceptance testing.
- Interaction with other developers.

LO6: Visual Basic's Integrated Development Environment

- Overview of the Visual Basic IDE features: Projects, Forms, and Properties; Toolbox and Controls; Form Layout Window and Properties Window.

LO7: Writing Simple Programs

- Visual programming and event-driven programming.
- Arithmetic operators; number formats; declaring variables; numeric constants; expressions.
- Using text boxes for input and output.
- Decision making: comparison operators.
- Formulating algorithms with top-down, step-wise refinement.
- Introduction to control structures: If/Then and If/Then/Else; While/Wend, Do While/Loop and Do Until/Loop.



- Further control structures: For/Next, Do/Loop While and Do/Loop Until; Select Case; Exit Do and Exit For; data type Boolean and logical operators.
- Sub procedures and Function procedures.
- Arrays: Creating and accessing arrays; ordered and unordered arrays; control arrays; dynamic arrays; passing arrays to procedures.
- Strings: data type String; string constants and string variables; string concatenation with & and +; string functions.

LO8: Creating a Graphical User Interface

- Graphical User Interface (GUI): consistency of user interfaces for business applications, common "look and feel", ease of customisation.
- GUI components: event-driven control approach; default controls in Visual Basic; ActiveX controls.
- Designing and creating forms in Visual Basic: TextBox Control, MaskEdit Control, ComboBox Control, ListBox Control, Scrollbars, Menu Editor, Pop-Up Menus, the function MsgBox.
- Designing user interfaces consisting of multiple forms: creating additional forms using Add Form, using the Hide and Show methods to determine which forms appear, modal forms, the Common Dialog Control.

LO9: Error Handling and Debugging Strategies

- Program errors; trapping errors with On Error; writing error-handling routines.
- Debugging: desk-checking simple programs or algorithms; placing Print methods at strategic points in the program.
- Stepping through a program:
- executing a program one statement at a time (stepping into)
- executing the statements of a procedure one at a time (stepping through the procedure)
- executing the entire procedure at once (stepping over the procedure)
- execute the remainder of the procedure at once (stepping out of the procedure)
- setting breakpoints.
- Using the Visual Basic debugger: the Immediate Window, the Watch Window and the Locals Window.

LO10: Sequential and Random-Access Files

- Creating and using sequential files.
- Defining records and declaring them using a Type declaration.
- Creating and using random-access files; reading and writing records.

LO11: Communication Between Browser and Server

- Web server; web client/browser, how a browser communicates with a web server.

LO12: Creating and Displaying a Formatted HTML Document

- Hyper Text Markup Language (HTML); HTML tags; attributes of tags.
- Commonly used HTML commands: the structure of an HTML program; document head; document body.
- Titles and footers.
- Text formatting: paragraph breaks, line breaks.
- Emphasising material in a web page: heading styles, drawing lines.
- Text styles: bold, italic, underline; other text effects: for example, text justification.
- Lists: Types of lists: unordered lists (bullets), ordered lists (numbering), definition lists.



LO13: Creating and Displaying a Structured Web Page using HTML Features

- Adding graphics to HTML documents: picture file formats .GIF and .JPG, the tag , image attributes ALIGN, BORDER, WIDTH, HEIGHT, HSPACE, VSPACE, ALT.
- Tables: <TABLE> </TABLE>, headers rows <TH> </TH>, data rows <TD> </TD>, the caption tag; using WIDTH and BORDER attributes, the CELLPADDING attribute, the CELLSPACING attribute, the COLSPAN and ROWSPAN attributes, the BGCOLOR attribute.
- Linking documents: external document references, internal document references; images as hyperlinks: image maps, HREF.

LO14: Accessing the Internet with Visual Basic

- Adding the Web Browser control to the Visual Basic Toolbox; properties and methods of the Web Browser control; programming in Visual Basic with the Web Browser control.

LO15: Creating Web Pages with HTML and VBScript

- Overview of VBScript:
- Using client-side VBScript in HTML documents: in the <HEAD> </HEAD> section, the <SCRIPT> </SCRIPT> tag; using in-line scripting code in the <BODY> </BODY> section; HTML GUI controls and common events; HTML tags for HTML controls; using inline VBScript to respond to an event; using the Document object's Location property to specify the URL of the page to display.

RECOMMENDED READING REFERENCES:

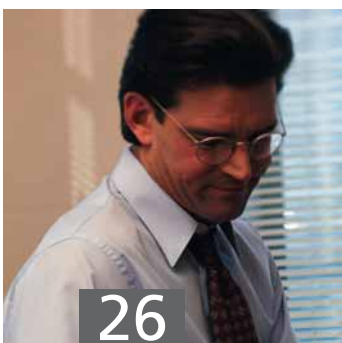
Main course text:

Schneider, D I (2004)
An Introduction to Programming with
Visual Basic 6.0 (4th Ed.)
Pearson Education
ISBN: 0131219189

Additional reading:

Deitel, H M, Deitel, P J, & Nieto, T R (2003)
Visual Basic 6: How to Program
Pearson Education
ISBN: 013122817X

McGrath, M (2003)
HTML in Easy Steps (3rd Ed.)
Computer Step
ISBN: 1840782544



Theme: Management of Information Systems
Course: Diploma
Module Title: Business Information Systems
Module Code: D25
Resources: Software: Accounting Package (SAGE, Pastel or equivalent), Spreadsheet Package, and CAD/CAM Package
Assessment: By a single 3-hour externally set examination paper
CATS Equivalent: 200 Notional Hours:
80 Hours Structured,
120 Hours Directed Self-Study

SPECIFIC COURSE AIMS AND LEARNING OUTCOMES:

- D1.2** Identify the information needed to support decision making at all levels within business organisations.
- D1.3** Describe information systems and work flows that support the functional areas of business at the operational level, and explain how information may be used for planning, decision making and control.
- D4.1** Demonstrate the communication and problem solving skills required by Information Systems (IS) professionals in the workplace.

MODULE AIMS:

To provide students with:

- An understanding of information, systems, information systems (IS) and their relationship with business systems and information technologies. (A1)
- The ability to relate information systems to the functional areas of a business and to decision making at various levels of the organisation. (A2)
- Knowledge of how information systems relate to developing technologies and modern business methods. (A3)
- An awareness of the security issues relating to information systems in business. (A4)
- An appreciation of the organisation of the IS function in business along with career paths and aspects of professionalism required by IS staff in the workplace. (A5)

MODULE LEARNING OUTCOMES:

Students should be able to:

A1:

- Describe the characteristics of information, systems and different types of information systems in business. (LO1)
- Identify the relationship between information systems and the Information Technology (IT) infrastructure and relate developments in IT with developments in business and information systems. (LO2)
- Describe business processes and corresponding information systems. (LO3)

A2:

- Explain how information systems can support the functional areas of an organisation. (LO4)
- Describe how information systems can support business decision making in relation to the organisational hierarchy. (LO5)

A3:

- Recognise internet-based developments and their impact on business and information systems. (LO6)
- Describe the use of information systems for the implementation of Supply Chain (SC) management. (LO7)



A4:

- Describe security issues that relate to business information systems. (LO8)

A5:

- Describe the organisation of the IS function in business and the pattern of careers in information systems. (LO9)
- Demonstrate professional skills in relation to information systems. (LO10)

DETAILED MODULE CONTENT:

LO1: Information, Systems, and Information Systems

- The field of information systems.
- Definition of a system.
- System components.
- Definition of data and information.
- How data becomes information.
- Characteristics of information.

LO2: Relationship Between IS and IT

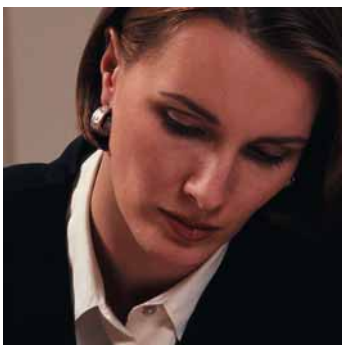
- Information systems in relation to Information Technology (IT).
- The IT infrastructure for business and IS.

LO3: Business Processes and Information Systems

- The structure of business by level and function.
- Management reporting systems.
- Introduction to decision making in business: structured and unstructured decisions.
- Types of information systems, decision making and levels of support.
- Introduction to Information systems for strategic business advantage.
- Opportunities and challenges of information systems.
- Transaction processing (TP).
- Information systems for transaction processing.
- Making operational decisions with TP systems.
- Batch processing.

LO4: IS Support for Business Functions

- Information systems by functional area:
 - production and operations management
 - logistics and material management
 - planning production and operations
 - manufacturing
 - Computer-Aided Design (CAD), Computer-Aided Engineering (CAE), Computer-Aided Manufacturing (CAM), Computer-Integrated Manufacturing (CIM)
 - introduction to agile manufacturing and Enterprise Resource Planning (ERP)
 - marketing
 - customer service
 - telemarketing and on-line shopping
 - marketing management
 - Point-of-Sale systems (POS)
 - finance and accounting
 - financial planning and budgeting
 - financial and economic forecasting
 - managing financial transactions
 - inventory management
 - control and auditing
 - Human Resource Management (HRM)
 - recruitment
 - development
 - planning and management.
- Introduction to Customer Relationship Management (CRM).
- Cross-functional coordination.



LO5: IS Support in Decision Making

- Information systems for decision making at levels in the business hierarchy.
- An introduction to Management Information Systems (MIS), Decision Support Systems (DSS), Group DSS (GDSS), Executive Information Systems (EIS), Artificial Intelligence (AI) and Expert Systems (ES).

LO6: The Impact of Internet-Based Developments

- Internet, intranets, extranets in business.
- Information retrieval and communications tools for the internet; the World-Wide Web (WWW).
- Electronic Commerce (e-commerce) and information systems.
- Models of e-commerce.
- Effective e-commerce, difficulties and costs.
- Global commerce and country-by-country developments.

LO7: Supply Chain Management

- Introduction to Supply Chain (SC) management.
- SC components.
- Upstream, internal and downstream SC.
- SC and the value chain.
- SC problems and solutions.

LO8: Security Issues

- Information systems security.
- Why information systems are vulnerable.
- Types of security breach.
- Security controls.
- Disaster recovery planning.

LO9: The IS Department

- The IS department and careers in information systems.

LO10: Professional Issues

- Professional issues in information systems.

RECOMMENDED READING REFERENCES

Main course text:

Gupta, U (2000)
Information Systems: Success in the 21st Century
Pearson Education
ISBN: 013010857X

Secondary course text:

Turban, E, McLean, E, & Wetherbe, J (2002)
Information Technology for Management –
Transforming the Business in the
Digital Economy (3rd Ed.)
Wiley Europe
ISBN: 0471215333



Theme: Development of Information Systems
Course: Diploma
Module Title: Information Systems Building
Module Code: D26
Resources: Software: Visual Basic, Access. Spreadsheet Package. CASE Tools.
Assessment: By a single 3-hour externally set examination paper
CATS Equivalent: 200 Notional Hours:
80 Hours Structured,
120 Hours Directed Self-Study

SPECIFIC COURSE AIMS AND LEARNING OUTCOMES:

- D2.1** Explain the need for a disciplined approach to all stages of Information Systems (IS) development, with emphasis on those techniques used within requirements definition.
- D3.2** Describe the role of user participation in the IS development process, and explain how prototyping may help this process.
- D4.1** Demonstrate the communication and problem solving skills required by Information Systems professionals in the workplace.

MODULE AIMS:

To provide students with:

- An overview of the development process, managed in the context of the systems life cycle, for designing and implementing an information system. (A1)
- Knowledge of the structured models commonly used within each stage of the development of an information system, and the structured methods and techniques for specifying, documenting and constructing them. (A2)
- A perspective of information systems building in an organisational context that includes working in a project-based environment, human and technical aspects of design, and quality-assured processes. (A3)

MODULE LEARNING OUTCOMES:

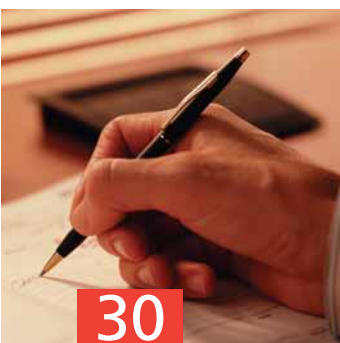
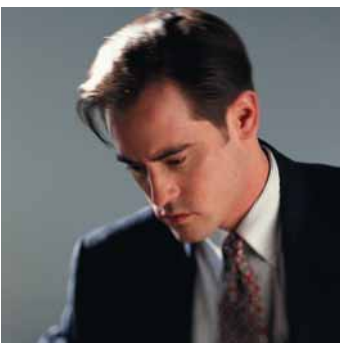
Students should be able to:

A1:

- Describe a simple system in terms of basic system principles, and describe the relationship between people, process and information technology. (LO1)
- Describe the stages in the Systems Development Lifecycle (SDLC) that most systems development projects follow and alternative software development processes (LO2)

A2:

- Explain the need to specify and document a computerised information system from the three modelling perspectives: process, data and behaviour. (LO3)



- Identify functional and non-functional system requirements and describe methods for specifying them. (LO4)
- Describe methods used for modelling system process and system data. (LO5)
- Describe the major elements of system design. (LO6)
- Explain why testing should be regarded as a significant part of an information systems development project, and identify the different types of testing that may be carried out during the SDLC. (LO7)
- Design, document and implement from a requirements specification, a relatively simple information system that incorporates a Graphical User Interface (GUI), and the facility for the persistent storage of data from several entities using either a database package or files. (LO9)

A3:

- Describe the supporting activities needed in the systems development process. (LO8)
- Describe the role of the end-user in the stages of systems development. (LO10)
- Describe and compare organisational strategies for managing the changeover to a new information system from an old system. (LO11)
- Give an account of the ethical, moral and legal issues facing the information systems professional. (LO12)
- Describe data entry controls and controls for managing threats to an information system. (LO13)

DETAILED MODULE CONTENT:

LO1: The System Development Environment

- System environment, system boundary and subsystems; how people use information technology and processes in their work; the basic components of computer-based information systems.

LO2: Systems Development Lifecycle

- Stages of the SDLC and their major activities and deliverables: Initiation; Feasibility study; Systems analysis; Systems design; System implementation; System changeover; Review and Maintenance; the linear/waterfall lifecycle.
- Bespoke development; off-the-shelf packages; end-user development.
- Problems with the linear/waterfall lifecycle; incremental/staged development; prototyping in system development; Rapid Application Development (RAD); Dynamic Systems Development Method (DSDM); evolutionary design and the spiral model (Boehm); quality assurance in the development process.

LO3: Why We Model Information Systems

- Modelling the three aspects of a system: processes, data and relationships, and behaviour.
- Modelling information systems with different characteristics: process-oriented systems; event-driven systems; real-time systems.
- Validating and verifying system models: checking the syntactic accuracy and the semantic accuracy of each model.



- Maintaining consistency of information between models: cross-validating system models.
- Distinction between a physical model and a logical model.
- Modelling existing systems and modelling new systems; green-field and brown-field development; legacy systems: creating new front-ends; understanding and capturing information about the current system; re-engineering and forward engineering.

LO4: Systems Analysis: Requirements Determination

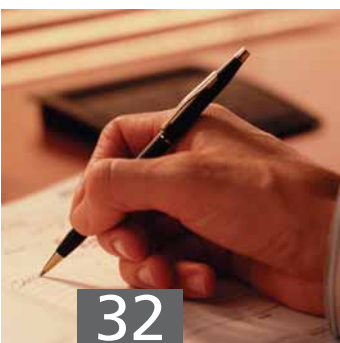
- Contrast between modelling an existing system and modelling the requirements for a new system.
- Problem definition; feasibility analysis.
- The analysis phase of systems development; requirements determination and analysis.
- Determining requirements: gathering information and data collection methods.
- Functional and non-functional requirements.
- Expressing functional requirements as a list of system features by short, high-level descriptions.
- Expressing functional requirements with Use Cases.

LO5: Systems Analysis: Modelling Methods and Techniques

- Contrast between using Data Flow Diagrams (DFDs) for modelling the flow of information between processes and Flow Charts for modelling the sequence of control between processes.
- Context diagrams; physical DFDs; logical DFDs; leveling DFDs.
- Describing data: the Chen Entity-Relationship Diagram (ERD), identifying candidate entities; distinguishing between an entity and an attribute of an entity; relationships between entities; drawing an ERD using the Chen notation; resolving many-to-many relationships.
- Process descriptions.
- Hard and soft methods and techniques in systems analysis; human activity systems; Checkland's Soft Systems Methodology (SSM): rich pictures, outline of stages in SSM, using SSM as a 'front end' to more traditional structured development methodologies.

LO6: System Design

- Creating the system specification; transition from analysis to design.
- Program and module design: creating subsystems; structure charts and structured design; completing module definitions.
- User interface design: as part of the field of Human-Computer Interaction (HCI); interface elements, for example, forms, dialogues and menus.
- Input design: user input and data capture techniques: for example, on-screen forms, files, bar-code scanning; data validation.



- Output design: specifying how production of reports will occur, for example, source of data (which records and fields); processing requirements for example, aggregation, calculation and sorting; and whether output to screen, printer, file or database.
- Logical database design: logical data structures; relations and tables in the relational database model.
- Physical design:
 - converting a logical record structure to a relational database definition
 - specifying access requirements
 - packaging the program design into load modules
 - system deployment.

LO7: System Development Testing

- The purpose of testing: checking that the requirements have been implemented; identifying errors or bugs.
- Test specification; systematic testing using a test script; test plan.
- Relating analysis and design activities to testing activities: the V-model.
- Testing carried out by the developer; testing carried out by the user, for example, user acceptance testing.
- Quality assurance: reviews, inspections and walk-throughs.

LO8: Supporting System Development

- Project management activities and tools.
- Development teams; inclusion of end-users in the stages of development work.
- Configuration management: builds and release versions; alpha releases and alpha testing; beta releases and beta testing.
- Using CASE tools; component CASE tools; integrated CASE tools.

LO9: Information Systems Building

- Students should design, build and implement a simple system starting from a set of system requirements. Note that this is not intended as an exercise in requirements determination, but as an exercise in specifying and constructing a system from a given set of requirements. This will typically involve:
 - the production of relevant systems analysis models
 - use of a Computer Aided Software Engineering (CASE) tool for at least part of the system building process
 - production of a design specification to include the following:
 - program structure chart
 - Structured English for at least one module
 - an appropriate user interface design incorporating input/output (I/O) design
 - coding the system and implementing it.
- Students should be encouraged to build incrementally with the first build dealing with input and output to the screen, the second build dealing with file I/O or database I/O.

**LO10: Role of the End-user**

- Participation of the end-user in stages of the development process: for example, use of prototyping in systems analysis; opportunities for end-user development; acceptance testing.

LO11: Selecting a Changeover Method

- Factors to consider: cost; time; quality of new system after changeover; impact on customers; impact on employees; technical issues.
- Alternative methods for changeover: immediate cutover; parallel running; phased implementation; pilot system.
- Using combinations of changeover methods.
- Deployment planning.

LO12: Ethical, Legal and Moral Constraints on Information Systems

- Computer ethics: ethical behaviour as morally acceptable conduct; stakeholders; codes of professional conduct (for example, IMIS Code of Ethics); privacy and confidentiality.

LO13: Data Controls and Information Systems Security

- Validation of data entry: controls for interactive transaction input, controls with offline input.
- Data security: authentication, authorisation, privacy, and data integrity.
- The need for controls upon information systems: different types of threats, control strategies, types of controls.

RECOMMENDED READING REFERENCES:**Main course text:**

Hawryszkiewicz, I (2001)
Introduction to Systems Analysis and Design (5th Ed.)
Pearson Education
ISBN: 1740092805

Secondary course text:

Bocij, P, Chaffey, D, Greasley, A, & Hickie, S (2003)
Business Information Systems: Technology, Development and Management for the e-business (2nd Ed.)
Pearson Education
ISBN: 027365540X

Additional reading:

Kendall, K E, & Kendall, J E (2004)
Systems Analysis and Design (6th Ed.)
Pearson Education
ISBN: 013127323X

Dennis, A, & Wixom, B H (2002)
Systems Analysis and Design
Wiley Europe
ISBN: 0471073229

Lejk, M, & Deeks, D (2002)
An Introduction to Systems Analysis and Techniques (2nd Ed.)
Pearson Education
ISBN: 0201797135



Johnson, P (1991)
Human Computer Interaction: Psychology, Task Analysis
and Software Engineering
McGraw-Hill
ISBN: 0077072359

Nielsen, J (1994)
Usability Engineering
Academic Press
ISBN: 0125184069

Neilsen, J, & Mack, R L (1994)
Usability Inspection Methods
Wiley Europe
ISBN: 0471018775



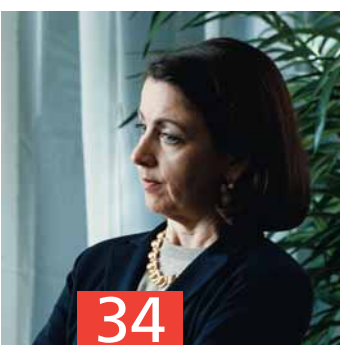
Wood, J, & Silver, D (1989)
Joint Application Design: How to Design Quality Systems
in 40 Per Cent Less Time
Wiley Europe
ISBN: 0471504629

Dumas, J S, & Redish, J C (1999)
A Practical Guide to Usability Testing
Intellect Books
ISBN: 1841500208

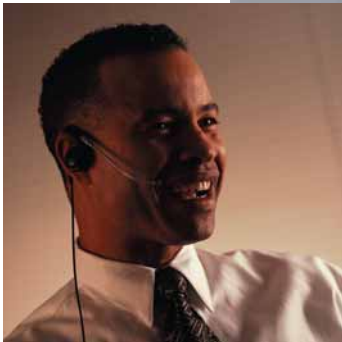


Rubin, J (1994)
Handbook of Usability Testing: How to Plan, Design, and
Conduct Effective Tests
Wiley Europe
ISBN: 0471594032

Macaulay, L (1996)
Requirements Engineering
Springer-Verlag Berlin & Heidelberg
ISBN: 3540760067







Institute for the Management of Information Systems
5 Kingfisher House
New Mill Road
Orpington
Kent BR5 3QG
United Kingdom
Tel: +44 (0) 700 00 23456
Fax: +44 (0) 700 00 23023
Email: central@imis.org.uk
Internet: www.imis.org.uk

IMIS

The Professional Association for IS Professionals