



**LEVEL 5**

**INFORMATION SYSTEMS ANALYSIS**

**Student Guide**

## Modification History

Version	Date	Revision Description
V1.0	October 2011	For release

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## 1. Module Overview and Objectives

This unit aims to equip you with a range of tools to analyse the function and requirements of Information Systems, as well as giving you the skills to compare systems analysis models, and to examine them in the wider context of the Internet and the social, economic and political climate of an organisation. Finally the skills needed to deliver outcomes are addressed.

## 2. Learning Outcomes and Assessment Criteria

<b>Learning Outcomes;</b> The Learner will:	<b>Assessment Criteria;</b> The Learner can:
1. Understand soft and hard approaches to the analysis of information systems	1.1 Explain the key aspects of Soft Systems Methodology (SSM) and related approaches 1.2 Explain the key aspects of Structured Systems Analysis and Design Methodology (SSADM) and related approaches 1.3 Identify business situations where a soft or hard systems analysis might be appropriate 1.4 Explain combined soft/hard frameworks (such as Multiview).
2. Understand the techniques associated with requirements capture	2.1 Explain and apply stakeholder analysis techniques 2.2 Explain and apply CATWOE
3. Understand the different viewpoints associated with IS methodologies	3.1 Explain object-oriented IS methodologies 3.2 Explain organisation-oriented IS methodologies 3.3 Explain process-oriented IS methodologies 3.4 Explain people-oriented IS methodologies 3.5 Evaluate IS methodologies of different types in the context of a business scenario
4. Be able to apply various analytical techniques for understanding a complex organisational environment	4.1 Evaluate a knowledge-based view of organisations 4.2 Define and apply techniques for analysing the business environment (such as PEST and SWOT)
5. Understand the relationship between the economic, social, political and technical factors influencing a business problem	5.1 Analyse the economic, social, political and technical aspects of a business systems problem 5.2 Evaluate the different aspects of a business problem in the context of potential solutions
6. Understand and apply the principles of interface design and the requirements and characteristics of users that motivate these	6.1 Design or evaluate an interface with regard to the characteristics of its users 6.2 Explain the requirements of computer users and how good design can address these

### 3. Syllabus

Syllabus			
Topic No	Title	Proportion	Content
1	Introduction to Information Systems Analysis	1/12  1 hour of lectures 1 hour of tutorials 3 hours of seminars	<ul style="list-style-type: none"> <li>• An introduction to the module</li> <li>• Define and explain the term information system</li> <li>• Identify types and examples of information systems</li> <li>• Define and explain the abbreviation SDLC</li> <li>• Discuss Information systems analysis in the context of the SDLC</li> <li>• Define and explain analysis and requirements capture</li> <li>• Discuss the role of analysis and requirements capture in specific contexts</li> <li>• Define the term methodology</li> <li>• Determine the requirement for different methodologies</li> <li>• Present an overview of information system analysis and design methodologies</li> <li>• Research and discuss case studies</li> </ul> <p><b>Learning Outcome: 1</b></p>
2	Hard Approaches to the Analysis of Information Systems	1/12  1 hour of lectures 1 hour of tutorials 3 hours of seminars	<ul style="list-style-type: none"> <li>• Define and explain the term hard approach to systems analysis</li> <li>• Identify examples of hard approach methodologies</li> <li>• Identify business situations where a hard approach to systems analysis might be appropriate</li> <li>• Define and explain the abbreviation SSADM</li> <li>• Identify and discuss the advantages of SSADM</li> <li>• Identify and discuss the disadvantages of SSADM</li> <li>• Define and explain the abbreviation DFD</li> <li>• Define and explain terminology associated with DFDs</li> <li>• Illustrate the use of DFDs</li> <li>• Construct DFDs</li> <li>• Provide solutions to business problems using DFDs</li> </ul> <p><b>Learning Outcome: 1</b></p>



3	Soft Approaches to the Analysis of Information Systems	1/12  1 hour of lectures 1 hour of tutorials 3 hours of seminars	<ul style="list-style-type: none"> <li>• Define and explain the term soft approach to systems analysis</li> <li>• Identify examples of soft approach methodologies</li> <li>• Identify business situations where a soft approach to systems analysis might be appropriate</li> <li>• Define and explain the abbreviation SSM</li> <li>• Identify and discuss the advantages of SSM</li> <li>• Identify and discuss the disadvantages of SSM</li> <li>• Provide solutions to business problems using SSM</li> <li>• Research and discuss case studies</li> </ul> <p><b>Learning Outcome: 1</b></p>
4	Combined Soft/Hard Approaches to the Analysis of Information Systems	1/12  1 hour of lectures 1 hour of tutorials 3 hours of seminars	<ul style="list-style-type: none"> <li>• Define and explain the term combined soft/hard approach to systems analysis</li> <li>• Identify examples of combined soft/hard approach methodologies</li> <li>• Identify business situations where a combined soft/hard approach to information systems analysis might be appropriate</li> <li>• Define and explain the term Multiview</li> <li>• Identify and discuss the advantages of Multiview</li> <li>• Identify and discuss the disadvantages of Multiview</li> <li>• Provide solutions to business problems using Multiview</li> <li>• Research and discuss case studies</li> <li>• Compare and contrast soft, hard and combined approaches to information systems analysis</li> </ul> <p><b>Learning Outcome: 1</b></p>

5	Techniques Associated with Requirements Capture	1/12  1 hour of lectures 1 hour of tutorials 3 hours of seminars	<ul style="list-style-type: none"> <li>• Define and explain the term stakeholder</li> <li>• Identify and discuss types of stakeholder analysis techniques</li> <li>• Define and illustrate the Stakeholder Analysis Matrix</li> <li>• Define and explain the abbreviation CATWOE</li> <li>• Identify and discuss the advantages of CATWOE</li> <li>• Identify and discuss the disadvantages of CATWOE</li> <li>• Provide solutions to business problems using CATWOE</li> <li>• Evaluate CATWOE</li> </ul> <p><b>Learning Outcome: 2</b></p>
6	Organisation-Oriented and People-Oriented IS Methodologies	1/12  1 hour of lectures 1 hour of tutorials 3 hours of seminars	<ul style="list-style-type: none"> <li>• Define and explain the term organisation-oriented IS methodology</li> <li>• Identify the types of organisation-oriented IS methodologies</li> <li>• Identify and discuss the advantages of organisation-oriented methodologies</li> <li>• Identify and discuss the disadvantages of organisation-oriented methodologies</li> <li>• Evaluate and discuss an organisation-oriented methodology in the context of a business scenario</li> <li>• Define and explain the term people-oriented IS methodology</li> <li>• Identify the types of people-oriented IS methodologies</li> <li>• Identify and discuss the advantages of people-oriented methodologies</li> <li>• Identify and discuss the disadvantages of people-oriented methodologies</li> <li>• Define and explain the abbreviation ETHICS</li> <li>• Evaluate and discuss the ETHICS methodology in the context of a business scenario</li> <li>• Define and explain the term Agile methodology</li> <li>• Evaluate and discuss the Agile methodology in the context of a business scenario</li> </ul> <p><b>Learning Outcome: 3</b></p>

7	Process-Oriented IS Methodologies	1/12  1 hour of lectures 1 hour of tutorials 3 hours of seminars	<ul style="list-style-type: none"> <li>Define and explain the term process-oriented IS methodology</li> <li>Identify the types of process-oriented IS methodologies</li> <li>Identify and discuss the advantages of process-oriented methodologies</li> <li>Identify and discuss the disadvantages of process-oriented methodologies</li> <li>Define and explain the term Yourdon methodology</li> <li>Evaluate and discuss the Yourdon methodology in the context of a business scenario</li> <li>Define and explain the abbreviation POEM</li> <li>Evaluate and discuss the POEM methodology in the context of a business scenario</li> </ul> <p><b>Learning Outcome: 3</b></p>
8	Object-Oriented IS Methodologies	1/12  1 hour of lectures 1 hour of tutorials 3 hours of seminars	<ul style="list-style-type: none"> <li>Define and explain the term object-oriented IS methodology</li> <li>Identify the types of object-oriented IS methodologies</li> <li>Define and explain terminology associated with an object oriented methodology</li> <li>Illustrate the construction of an object-oriented methodology</li> <li>Identify and discuss the advantages of object-oriented methodologies</li> <li>Identify and discuss the disadvantages of object-oriented methodologies</li> <li>Evaluate and discuss an object-oriented methodology in the context of a business scenario</li> </ul> <p><b>Learning Outcome: 3</b></p>
9	Analytical Techniques for Understanding a Complex Organisational Environment	1/12  1 hour of lectures 1 hour of tutorials 3 hours of seminars	<ul style="list-style-type: none"> <li>Define and explain the term knowledge-based view of organisations</li> <li>Evaluate a knowledge-based view of organisations</li> <li>Define and explain the abbreviation PEST</li> <li>Demonstrate how PEST can be used</li> <li>Apply PEST to a business scenario</li> <li>Define and explain the abbreviation SWOT</li> <li>Demonstrate how SWOT can be used</li> <li>Apply SWOT to a business scenario</li> </ul> <p><b>Learning Outcome: 4</b></p>

10	Analysis of Factors Influencing a Business Problem	1/12  1 hour of lectures 1 hour of tutorials 3 hours of seminars	<ul style="list-style-type: none"> <li>Analyse the economic aspects of a business systems problem</li> <li>Evaluate and discuss the economic aspects of a business systems problem in the context of potential solutions</li> <li>Analyse the social aspects of a business systems problem</li> <li>Evaluate and discuss the social aspects of a business systems problem in the context of potential solutions</li> <li>Analyse the political aspects of a business systems problem</li> <li>Evaluate and discuss the political aspects of a business systems problem in the context of potential solutions</li> <li>Analyse the technical aspects of a business systems problem</li> <li>Evaluate and discuss the technical aspects of a business systems problem in the context of potential solutions</li> <li>Research and discuss case studies</li> </ul> <p><b>Learning Outcome: 5</b></p>
11	Principles of Interface Design and the Requirements and Characteristics of Users that Motivate These	1/12  1 hour of lectures 1 hour of tutorials 3 hours of seminars	<ul style="list-style-type: none"> <li>Identify the principles and good practice of interface design</li> <li>Analyse the requirements of the users of an interface</li> <li>Analyse the characteristics of the users of an interface</li> <li>Demonstrate how good interface design can address the requirements and characteristics of an interface user</li> </ul> <p><b>Learning Outcomes: 6</b></p>
12	Design or Evaluate an Interface with regard to the Requirements and Characteristics of its Users	1/12  1 hour of lectures 1 hour of tutorials 3 hours of seminars	<ul style="list-style-type: none"> <li>Design an interface that addresses the requirements and characteristics of an interface user</li> <li>Evaluate and discuss whether interface design principles have been applied to an interface</li> <li>Evaluate and discuss whether interface design principles have addressed the requirements and characteristics of the interface user</li> </ul> <p><b>Learning Outcomes: 6</b></p>

## 4. Related National Occupational Standards

The UK National Occupational Standards describe the skills that professionals are expected to demonstrate in their jobs in order to carry them out effectively. They are developed by employers and this information can be helpful in explaining the practical skills that you have covered in this module.

Related National Occupational Standards (NOS)
<b>Sector Subject Area:</b> 6.1 ICT Professional Competence <b>Related NOS:</b> 4.1.P.1 – Carry out IT/technology architecture activities 4.1.P.2.C – Contribute to information activities relating to IT/technology architecture models 4.1.P.1 – Contribute, under supervision, to the preparation of a data analysis assignment; 4.1.P.2 – Assist in the development of data analysis models 6.1.A.1 - Contribute to information management 6.1.A.2 - Document information assets 6.1.P.1 - Manage the classification and categorisation of information

## 5. Teaching and Learning

Suggested Learning Hours					
Lectures:	Tutorial:	Seminar:	Laboratory:	Private Study:	Total:
12	12	36	-	90	150

The teacher-led time for this module is comprised of lectures, laboratory sessions, tutorials and seminars. You will need to bring this Student Guide to all classes for this module. The breakdown of the hours is also given at the start of each topic.

### 5.1 Lectures

Your lecturer will be presenting the basic knowledge and the theoretical concepts required for the unit during this time. He/she will use PowerPoint slides during the lecture time and you will be expected to take notes.

You will also be encouraged to be active during this time and discuss and/or practice the concepts covered. Lectures will include question and answer elements to promote participation and to allow your lecturer to check whether you understand the concepts they are covering.

### 5.2 Tutorials

These are designed to deal with the questions arising from the lectures and private study sessions. You should think carefully beforehand about any areas in which you might need additional guidance and support and use this time to discuss these with your teacher.

### 5.3 Seminars

These sessions provide tasks to involve group work, investigation and independent learning for certain topics. The details of these tasks are provided in this guide.

## 5.4 Private Study

During these sessions, you are required to work through practical tutorials and various exercises. The details of these are provided in this guide.

## 6. Assessment

This module will be assessed by means of an assignment worth 25% of the total mark and an examination worth 75% of the total mark. These assessments will be based on the assessment criteria given above and you will be expected to demonstrate that you have met the module's learning outcomes.

## 7. Further Reading List

You will be expected to undertake further reading to consolidate and extend your knowledge of the topics covered in this module. Your Accredited Partner Centre's library will contain a selection of useful sources of information and you can also make use of materials available online. The list below also provides suggestions of suitable reference books you may like to use:

Avison D. and Fitzgerald G. (2002). *Information Systems Development: Methodologies, Techniques and Tools*, 3<sup>rd</sup> Edition. McGraw-Hill Education  
ISBN-10: 0077096266  
ISBN-13: 978-0077096267

Curtis G. and Cobham D. (2008). *Business Information Systems: Analysis, Design and Practice*, 8<sup>th</sup> Edition. Pearson Education Ltd.  
ISBN-10: 0273713825  
ISBN-13: 978-0273713821

Hoffer, J., George, J. and Valaciah, J. (2010). *Modern Systems Analysis and Design*, 6<sup>th</sup> Edition. Pearson Education Ltd.  
ISBN-10: 0135094895  
ISBN-13: 9780135094891

Shelly G., Cashman T. and Rosenblatt H. (2010) *Systems Analysis and Design*, 8<sup>th</sup> Edition. Thomson Course Technology  
ISBN-10: 0538479884  
ISBN-13: 978-0538479882

Yeates, D. and Wakefield, T. (2004) *Systems Analysis and Design*, 2<sup>nd</sup> Edition. Pearson Prentice Hall.  
ISBN-10: 0273655361  
ISBN-13: 978-0273655367

### Online Resources:

*Information Systems Journal*: Wiley-Blackwell  
<http://www.blackwellpublishing.com/journal.asp?ref=1350-1917>



## Topic 1: Introduction to Information Systems Analysis

### 1.1 Learning Objectives

This topic provides an overview of types of information systems, the systems development lifecycle, the purpose of the analysis of information systems and requirements capture, and types of analysis and design methodologies.

On completion of the topic, you will be able to:

- Define and explain the term information system;
- Identify types and examples of information systems;
- Define and explain the abbreviation SDLC;
- Discuss information systems analysis in the context of the SDLC;
- Define and explain analysis and requirements capture;
- Discuss the role of analysis and requirements capture in specific contexts;
- Define the term methodology;
- Determine the requirement for different methodologies;
- Identify types and examples of information system analysis and design methodologies.

### 1.2 Timings

Lectures:	1 hour
Seminars:	3 hours
Private Study:	7.5 hours
Tutorials:	1 hour

## 1.3 Seminar Notes

The time allocation for the seminars for this topic is 3 hours.

### Activity 1: Changes to Information Systems

In your group, discuss and record the reasons why an organisation might decide to introduce a new information system or upgrade an existing one. Make notes on your ideas.

### Activity 2: Case Study: A Patients' Records Information System

UK City Hospital is a large hospital located in the south east of England. The hospital uses a computer network which links the reception and the Administration Department.

When a patient is admitted to the hospital he or she is asked to complete a paper-based form with his or her personal details and any medical data. This form is taken with the patient to the ward that they will be staying in and the patient's details are read and copied onto a chart that is stored at the bottom of the patient's bed. The information on this chart is updated several times a day. If the patient has been in the hospital before, a member of the nursing staff has to retrieve the patient's folder (paper-based) from the Patients' Records Department to read the details contained in it and to check, for example, that they do not suffer from any allergies to medication they may be given to them. The patient's chart is updated with any relevant information.

The form is then taken to the Administration Department for a copy to be taken of it and the details are entered into the patient records database by data-entry staff. If the patient has not been in the hospital before, a new record is created for them; if they have been admitted before, their previous record is updated. The patient records database is updated once a day. The original form is then taken and placed in the patient's folder in the Patients' Records Department.

When the patient leaves the hospital, their patient chart is taken to the Administration Department where the data-entry staff enter information from it into the patient records database. The patient's chart is then taken to be stored in the patient's folder in the Patients' Records Department.

The manager of the hospital is very concerned about the current information system and has met with various senior staff and it has been decided that a new information system is required.

### Task 1

In your group discuss what concerns the manager of the hospital is likely to have.

### Task 2

In your group, write down at least ten questions that a systems analyst could ask the users of the existing patient's records information system.



### Task 3

In your group, discuss and record a number of difficulties that a systems analyst might face when trying to collect information for an analysis and requirements specification for a new patients' records information system.

### Task 4

In your group, discuss the requirements that might be needed for a new patients' records information system and complete the table below:

Requirements	Example
Functional areas involved	
Hardware	
Software	
System Functions	
Data input	
Data output	

System performance	
Security procedures	
Users	
Patients	
Link to other information systems	

## 1.4 Private Study Exercises

You should spend approximately 7.5 hours on the Private Study for this topic. You should use this time to complete the exercises below as directed by your lecturer and to review the contents of this topic.

### Exercise 1: The Importance of Detailed Analysis

Information systems are often disliked by the users who have to work with them and this is often because of inadequate development of the systems.

Write down your response to this statement.

### Exercise 2:

Write a letter to the Chief Executive Officer of an organisation explaining why a knowledge management system might benefit his/her organisation.

### Exercise 3: Information Gathering Methods

There are a number of ways that a systems analyst can collect information from staff at an organisation and each method has its advantages and disadvantages. Complete the table below:

Method	Advantages	Disadvantages
Interviews (Face-to-face)		
Interviews (Telephone)		
Interviews (Online)		
Questionnaires (Paper and email)		

Focus Groups		
Observations		
Documentation e.g. Data entry manuals Network system technical manuals System user guides System error logs		
Joint Applications Design (JAD) and Joint Requirements Analysis (JRA)		

#### **Exercise 4:**

Explain what types of information systems support the work of operational staff, middle and senior management and how they do so.

## 1.5 Tutorial Notes

The tutorial for this topic will last for 1 hour.

### **Exercise 1: Review of Private Study Exercises**

Review your solutions to each exercise undertaken during private study and take the opportunity to discuss any problems you encountered.

### **Exercise 2: The Role of a Systems Analyst**

Produce a job description for the role of systems analyst. State the skills needed for the job as well as the personal qualities required.





## Topic 2: Hard Approaches to the Analysis of Information Systems

### 2.1 Learning Objectives

This topic provides an overview of the types of hard approach analysis methodologies, structured systems analysis and design methodology, tools and techniques, advantages and disadvantages of structured systems analysis and design methodologies, and the purpose and potential of dataflow diagrams.

On completion of the topic, you will be able to:

- Define and explain the term 'hard approach to systems analysis';
- Identify examples of hard approach methodologies ;
- Identify business situations where a hard approach to systems analysis might be appropriate;
- Define and explain the abbreviation SSADM;
- Identify and discuss the advantages of SSADM;
- Identify and discuss the disadvantages of SSADM;
- Define and explain the abbreviation DFD;
- Define and explain terminology associated with DFDs;
- Illustrate the use of DFDs;
- Construct DFDs;
- Provide solutions to business problems using DFDs.

### 2.2 Timings

Lectures:	1 hour
Seminars:	3 hours
Private Study:	7.5 hours
Tutorials:	1 hour

## 2.3 Seminar Notes

The time allocation for the seminars for this topic is 3 hours.

### **Activity 1: A Cost/Benefits Analysis**

In your group, refer to the Case Study from Activity 2 in the Topic 1 seminar (A Patients' Records Information System) and put together a Cost-Benefit Analysis to be presented to management at the hospital. At this stage you need only include the factors that should be included as costs and benefits; you do not need to include actual costs. List both the tangible factors (that can be costed, e.g. insurance) and intangible factors (that cannot be costed, e.g. increased patient satisfaction).

### **Activity 2: Current Physical Data Flow Diagram**

Construct a Current Physical DFD of the Patients' Records Information System. Apply decomposition if you feel it is necessary.

### **Activity 3: Required Physical Data Flow Diagram**

Construct a Required Physical DFD of the Patients' Records Information System. Apply decomposition if you feel it is necessary.

### **Activity 4: Current Physical and Logical DFDs**

Construct a current physical and logical DFD that illustrates your application process to college, from the time you applied to the time that you enrolled on your course. Apply decomposition if you feel it is necessary.



## 2.4 Private Study Exercises

You should spend approximately 7.5 hours on the Private Study for this topic. You should use this time to complete the exercises below as directed by your lecturer and to review the contents of this topic.

### Exercise 1: CASE

CASE can be used when analysing or developing an information system. Research CASE and write a short report to your manager that explains:

- What is meant by this term
- What CASE can be used for
- How the analysis of an information system can benefit from the use of CASE by a systems analyst.

The following websites may be helpful for your research:

- <http://www.npd-solutions.com/case.html>
- <http://case-tools.org/>

### Exercise 2: DSDM

DSDM is an alternative methodology to SSADM. Prepare notes for a short presentation to explain to your colleagues the use, stages and benefits of using DSDM and how it differs to SSADM.

This website may be helpful for your research:

- <http://www.selectbs.com/process-maturity/what-is-dsdm>

### Exercise 3: Prototyping

Read the article below on prototyping and write down whether or not you think that it would be a good methodology for an analyst to use when working on the Patients' Record Information System development. Justify your opinion.

McClendon, C., Regot, L. and Akers, G. (1999). *What is prototyping?* [Available Online] <http://www.umsi.edu/~sauterv/analysis/prototyping/proto.html>

## 2.5 Tutorial Notes

The tutorials for this topic will last for 1 hour.

### **Exercise 1: Review of Private Study Exercises**

Review your solutions to each exercise undertaken during private study and take the opportunity to discuss any problems you encountered.

### **Exercise 2: Internet Company DFD**

Construct current physical and current logical DFDs that represent how an Internet company accepts/processes/outputs a customer order.



## Topic 3: Soft Approaches to the Analysis of Information Systems

### 3.1 Learning Objectives

This topic provides an overview of the types of soft approach analysis methodologies and the advantages and disadvantages of using such methodologies and how they can provide solutions to business problems.

On completion of the topic, you will be able to:

- Define and explain the term 'soft approach to systems analysis';
- Identify examples of soft approach methodologies;
- Identify business situations where a soft approach to systems analysis might be appropriate;
- Define and explain the abbreviation SSM;
- Identify and discuss the advantages of SSM;
- Identify and discuss the disadvantages of SSM;
- Provide solutions to business problems using SSM.

### 3.2 Timings

Lectures:	1 hour
Seminars:	3 hours
Private Study:	7.5 hours
Tutorials:	1 hour

### 3.3 Seminar Notes

The time allocation for the seminars for this topic is 3 hours.

#### **Activity 1: A Rich Picture**

In your group, construct a rich picture of the Patients' Record Information System. You may also refer to the manager's concerns if you feel that this would be helpful (this was discussed in seminar 1).

#### **Activity 2: A Root Definition**

Produce a root definition of the Patients' Record Information System.

#### **Activity 3: A Conceptual Model**

Construct a conceptual model of the Patients' Record Information System.

#### **Activity 4: Comparing rich pictures and conceptual models**

Compare your rich pictures and conceptual models and write down what is similar and what is different.

### 3.4 Private Study Exercises

You should spend approximately 7.5 hours on the Private Study for this topic. You should use this time to complete the exercises below as directed by your lecturer and to review the contents of this topic.

#### Exercise 1: SSM as a Methodology

Now that you have some practical experience of working with SSM, prepare a short presentation that outlines why you think it should or should not be used as a methodology. Ensure that you refer to the main purpose of why SSM is used as a methodology and what its benefits and limitations are.

#### Exercise 2: SSM Modelling

Read the information on the following website and attempt the exercises.

- The OR Society (undated). *Soft Systems Methodology*. [Available Online] [http://www.orsoc.org.uk/about/teaching/StrategicProblems/m\\_s\\_3frs.htm](http://www.orsoc.org.uk/about/teaching/StrategicProblems/m_s_3frs.htm)

### 3.5 Tutorial Notes

The tutorials for this topic will last for 1 hour.

#### **Exercise 1: Review of Private Study Exercises**

Review your solutions to each exercise undertaken during private study and take the opportunity to discuss any problems you encountered.

#### **Exercise 2: Internet Company Rich Picture**

Produce a rich picture that represents how an Internet company accepts and processes a customer order.



## Topic 4: Combined Soft/Hard Approaches to the Analysis of Information Systems

### 4.1 Learning Objectives

This topic provides an overview of combined soft/hard approach methodologies, the purpose and potential of Multiview, advantages and disadvantages of Multiview and a comparison and contrast of soft, hard and combined approaches to information systems analysis.

On completion of the topic, you will be able to:

- Define and explain the term 'combined soft/hard approach' to systems analysis;
- Identify examples of combined soft/hard approach methodologies;
- Identify business situations where a combined soft/hard approach to information systems analysis might be appropriate;
- Define and explain the term 'Multiview';
- Identify and discuss the advantages of Multiview;
- Identify and discuss the disadvantages of Multiview;
- Provide solutions to business problems using Multiview;
- Compare and contrast soft, hard and combined approaches to information systems analysis.

### 4.2 Timings

Lectures:	1 hour
Seminars:	3 hours
Private Study:	7.5 hours
Tutorials:	1 hour

## 4.3 Seminar Notes

The time allocation for the seminars for this topic is 3 hours.

### **Activity 1: Stages 1, 2 and 3 of Multiview**

In your group, with reference to the Patients' Records Information System, produce the documentation that is required for stages 1, 2, and 3 of Multiview.

### **Activity 2: Socio-technical Aspects**

Document all the information that you have on the existing socio-technical aspects. Consider the list of possible requirements that you compiled in Topic 1, Activity 2, Task 4. What socio-technical aspects do you think should be developed/improved?

### **Activity 3: Multiview and a Stock Control System**

In your group, prepare a short presentation explaining how using Multiview could help an organisation develop a new, more efficient stock control system.



## 4.4 Private Study Exercises

You should spend approximately 7.5 hours on the Private Study for this topic. You should use this time to complete the exercises below as directed by your lecturer and to review the contents of this topic.

### Exercise 1:

Multiview has been used in the analysis and design of transaction processing systems such as seat reservation systems. Write a short report to your manager, explaining why you think that this particular approach would be suitable to be used for the analysis of a seat reservation system.

## 4.5 Tutorial Notes

The tutorials for this topic will last for 1 hour.

### **Exercise 1: Review of Private Study Exercises**

Review your solutions to each exercise undertaken during private study and take the opportunity to discuss any problems you encountered.

### **Exercise 2: A comparison of a Hard, Soft and Combined Approach to the Analysis of the Patients' Record Information System**

Write down which approach you have preferred using when analysing the Patients' Records Information System. Compare your view to that of your fellow students, giving reasons to support your opinion.



## Topic 5: Techniques Associated with Requirements Capture

### 5.1 Learning Objectives

This topic provides an overview of stakeholder analysis techniques, the stakeholder analysis matrix, the purpose and potential of CATWOE, advantages, disadvantages and evaluation of CATWOE.

On completion of the topic, you will be able to:

- Define and explain the term 'stakeholder';
- Identify and discuss types of stakeholder analysis techniques;
- Define and illustrate the Stakeholder Analysis Matrix;
- Define and explain the abbreviation CATWOE;
- Identify and discuss the advantages of CATWOE;
- Identify and discuss the disadvantages of CATWOE;
- Provide solutions to business problems using CATWOE;
- Evaluate CATWOE.

### 5.2 Timings

Lectures:	1 hour
Seminars:	3 hours
Private Study:	7.5 hours
Tutorials:	1 hour

### 5.3 Seminar Notes

The time allocation for the seminars for this topic is 3 hours.

#### Activity 1: Stakeholder Matrix

In your group, produce a Stakeholder Matrix for UK City Hospital and record the positions of various staff in the sections of the matrix that you think would be most appropriate for them.

Keep Satisfied	Manage Closely
Monitor	Keep Interested

Record in the table below the reasons for your choices:

Stakeholder	Interest	Potential Impact on them	How to try and Maintain/Gain their Support


### **Activity 2: CATWOE**

Apply CATWOE to the UK City Hospital and prepare a short presentation on how CATWOE can be used for the analysis and why this could benefit the organisation.

### **Activity 3: College Stakeholder Analysis and CATWOE**

Produce a Stakeholder Matrix for your college and also complete a CATWOE analysis.

## 5.4 Private Study Exercises

You should spend approximately 7.5 hours on the Private Study for this topic. You should use this time to complete the exercises below as directed by your lecturer and to review the contents of this topic.

### Exercise 1: CATWOE

Write a short report for your manager explaining the expected benefits of using the CATWOE technique and identifying stakeholders.

### Exercise 2: CATWOE Investigation

Explain how an analyst would identify the information needed for a Stakeholder Analysis and to produce information on CATWOE.

## 5.5 Tutorial Notes

The tutorials for this topic will last for 1 hour.

### **Exercise 1: Review of Private Study Exercises**

Review your solutions to each exercise undertaken during private study and take the opportunity to discuss any problems you encountered.

### **Exercise 2: Internet Company and CATWOE**

Produce a CATWOE analysis for an Internet company with which you are familiar.







## Topic 6: Organisation-Oriented and People-Oriented IS Methodologies

### 6.1 Learning Objectives

This topic provides an overview of types of organisation-oriented Information Systems methodologies and their advantages, disadvantages and potential effectiveness; people-oriented Information Systems and their advantages, disadvantages and potential effectiveness; ETHICS and its purpose and potential; the Agile methodology and its purpose and potential (briefly, as Agile systems development is a separate level 5 module).

On completion of the topic, you will be able to:

- Define and explain the term 'organisation-oriented IS methodology';
- Identify the types of organisation-oriented IS methodologies;
- Identify and discuss the advantages of organisation-oriented methodologies;
- Identify and discuss the disadvantages of organisation-oriented methodologies;
- Evaluate and discuss an organisation-oriented methodology in the context of a business scenario;
- Define and explain the term people-oriented IS methodology;
- Identify the types of people-oriented IS methodologies;
- Identify and discuss the advantages of people-oriented methodologies;
- Identify and discuss the disadvantages of people-oriented methodologies;
- Define and explain the abbreviation ETHICS;
- Evaluate and discuss the ETHICS methodology in the context of a business scenario;
- Define and explain the term Agile methodology;
- Evaluate and discuss the Agile methodology in the context of a business scenario.

### 6.2 Timings

Lectures:	1 hour
Seminars:	3 hours
Private Study:	7.5 hours
Tutorials:	1 hour

## 6.3 Seminar Notes

The time allocation for the seminars for this topic is 3 hours.

### Activity 1: ETHICS

Interview one of your fellow students about a job that they may currently do or have done in the past. Find out as much information as you can. Use ETHICS to document your answers. Once you have done this, then the other student can undertake the same process with you.

### Activity 2: ETHICS and the UK City Hospital

If you were using ETHICS at the UK City Hospital, list the staff that you would use it with. Write down if you think there may be problems using it and explain why you think so. Discuss and compare your answers with the rest of the group.

### Activity 3: ETHICS POSTER

Design a poster that aims to persuade staff at the UK City Hospital to attend an ETHICS interview.

## 6.4 Private Study Exercises

You should spend approximately 7.5 hours on the Private Study for this topic. You should use this time to complete the exercises below as directed by your lecturer and to review the contents of this topic.

### Exercise 1: RAD/RSD

RAD/RSD is an alternative methodology to SSADM. Prepare notes for a short presentation to explain to your colleagues the use, stages and benefits of using RAD/RSD and how it differs from SSADM.

The following articles may be helpful for your research:

- Select Business Solutions. (2011). *What is Rapid Application Development?* [Available Online] <http://www.selectbs.com/analysis-and-design/what-is-rapid-application-development>
- Maner, W. (1997). *Rapid Application Development (RAD)*. [Available Online] <http://www.cs.bgsu.edu/maner/domains/RAD.htm>

### Exercise 2: JAD

JAD is an alternative methodology to SSADM. Prepare notes for a short presentation to explain to your colleagues the use, stages and benefits of using JAD and how it differs from SSADM.

The following article may be helpful for your research:

- Rottman, D. (undated). *Joint Application Development (JAD)*. [Available Online] [http://www.umsl.edu/~sauterv/analysis/488\\_f01\\_papers/rottman.htm](http://www.umsl.edu/~sauterv/analysis/488_f01_papers/rottman.htm)

## 6.5 Tutorial Notes

The tutorials for this topic will last for 1 hour.

### **Exercise 1: Review of Private Study Exercises**

Review your solutions to each exercise undertaken during private study and take the opportunity to discuss any problems you encountered. Your teacher may ask you to deliver your presentations on RAD/JAD to the rest of the group during this time.

### **Exercise 2: ETHICS**

Reflect on your use of ETHICS. Did you find the session easy or difficult? Write down your views on this experience and compare them with your fellow students.



## Topic 7: Process-Oriented IS Methodologies

### 7.1 Learning Objectives

This topic provides an overview of types of process-oriented Information System methodologies and their advantages and disadvantages, the purpose and potential of the Yourdon methodology and the POEM methodology.

On completion of the topic, you will be able to:

- Define and explain the term 'process-oriented IS methodology';
- Identify the types of process-oriented IS methodologies;
- Identify and discuss the advantages of process-oriented methodologies;
- Identify and discuss the disadvantages of process-oriented methodologies;
- Define and explain the term Yourdon methodology;
- Evaluate and discuss the Yourdon methodology in the context of a business scenario;
- Define and explain the abbreviation POEM;
- Evaluate and discuss the POEM methodology in the context of a business scenario.

### 7.2 Timings

Lectures:	1 hour
Seminars:	3 hours
Private Study:	7.5 hours
Tutorials:	1 hour

## 7.3 Seminar Notes

The time allocation for the seminars for this topic is 3 hours.

### **Activity 1: Management Information Systems Analysis**

Prepare a presentation that explains how the analysis of a management information system might benefit from a process-oriented methodology being applied. Note that Activity 2 below should also be included in your presentation.

### **Activity 2: Hard v Soft Approach**

Include in your presentation the advantages and disadvantages of taking either a hard approach or a soft approach to the analysis of the above system. Also, consider if it would be suitable to use a combined approach and if so, include the reasons why it would be suitable.

## 7.4 Private Study Exercises

You should spend approximately 7.5 hours on the Private Study for this topic. You should use this time to complete the exercises below as directed by your lecturer and to review the contents of this topic.

### Exercise 1: POEM

Write a report for your manager that explains the purpose of POEM and the benefits of using it.

### Exercise 2: Process Mapping

Explain what is meant by process mapping and provide examples of how this tool can be applied.

You may find the following article useful for your research:

- The CPS Activity Based Costing Team. (2011). *A Guide to Process Mapping and Improvement*. [Available Online] [http://www.cps.gov.uk/publications/finance/process\\_mapping.html](http://www.cps.gov.uk/publications/finance/process_mapping.html)

## 7.5 Tutorial Notes

The tutorials for this topic will last for 1 hour.

### **Exercise 1: Review of Private Study Exercises**

Review your solutions to each exercise undertaken during private study and take the opportunity to discuss any problems you encountered.

### **Exercise 2: Process Mapping, DFD and Rich Picture**

Write down which of the above you have found the easiest to construct and explain your reasons why. Ensure that you make at least one comment about each technique in your answer. Compare your response with the other students.





## Topic 8: Object-Oriented Methodologies

### 8.1 Learning Objectives

This topic provides an overview of the types of object-oriented Information Systems methodology, object-oriented terminology, the construction of such a methodology, its advantages and disadvantages, its role in a business scenario and its evaluation.

On completion of the topic, you will be able to:

- Define and explain the term 'object-oriented IS methodology';
- Identify the types of object-oriented IS methodologies;
- Define and explain terminology associated with an object oriented IS methodology;
- Illustrate the construction of an object-oriented IS methodology;
- Identify and discuss the advantages of object-oriented IS methodologies;
- Identify and discuss the disadvantages of object-oriented IS methodologies;
- Evaluate and discuss an object-oriented IS methodology in the context of a business scenario.

### 8.2 Timings

Lectures:	1 hour
Seminars:	3 hours
Private Study:	7.5 hours
Tutorials:	1 hour

## 8.3 Seminar Notes

The time allocation for the seminars for this topic is 3 hours.

### **Activity 1: Objects, Attributes and Classes**

In your group, identify the objects, attributes and classes of the Patients' Records Information System. Identify the appropriate methods for each object and the relationships between them and construct an object model that illustrates the system.

### **Activity 2: OOA**

Prepare a presentation that explains how OOA helps to improve the analysis of an information system. You should also refer to any limitations that you think this method has and why. Describe how you think it compares to other techniques, such as DFDs and rich pictures, conceptual modelling, etc.

## 8.4 Private Study Exercises

You should spend approximately 7.5 hours on the Private Study for this topic. You should use this time to complete the exercises below as directed by your lecturer and to review the contents of this topic.

### Exercise 1: Use Case

Write a report to your manager that explains the Use Case and its use as a technique in OOA. Illustrate how the UK City Hospital Patients' Records Information System could benefit from it.

You may find the following article useful during your research:

- Gatherspace.com (2011). *Writing Effective Use Case and User Story Examples*. [Available Online] [http://www.gatherspace.com/static/use\\_case\\_example.html](http://www.gatherspace.com/static/use_case_example.html)

### Exercise 2: OOA and SSADM

Write a report that describes the main differences between OOA and SSADM.

## 8.5 Tutorial Notes

The tutorials for this topic will last for 1 hour.

### **Exercise 1: Review of Private Study Exercises**

Review your solutions to each exercise undertaken during private study and take the opportunity to discuss any problems you encountered.

### **Exercise 2: Object Model for an Internet Company**

Identify the objects, attributes and classes of an Internet company. Identify the appropriate methods for each object and the relationships between them and construct an object model that illustrates the system.



## Topic 9: Analytical Techniques for Understanding a Complex Organisational Environment

### 9.1 Learning Objectives

This topic provides an overview of the meaning of a knowledge-based view of organisations, the purpose and potential of PEST and the purpose and potential of SWOT.

On completion of the topic, you will be able to:

- Define and explain the term 'knowledge-based view of organisations';
- Define and explain the abbreviation PEST;
- Demonstrate how PEST can be used;
- Apply PEST to a business scenario;
- Define and explain the abbreviation SWOT;
- Demonstrate how SWOT can be used;
- Apply SWOT to a business scenario.

### 9.2 Timings

Lectures:	1 hour
Seminars:	3 hours
Private Study:	7.5 hours
Tutorials:	1 hour

## 9.3 Seminar Notes

The time allocation for the seminars for this topic is 3 hours.

### **Activity 1: SWOT Analysis**

In your group produce a SWOT analysis for the UK City Hospital.

### **Activity 2: SWOT ANALYSIS Purpose and Benefits**

Prepare a presentation for the manager at the hospital that explains the purpose and expected benefits of investing in a SWOT analysis.

### **Activity 3: SWOT Analysis and Transaction Processing System**

Explain how using a SWOT analysis would benefit a large organisation that wanted to develop a new transaction processing system.

## 9.4 Private Study Exercises

You should spend approximately 7.5 hours on the Private Study for this topic. You should use this time to complete the exercises below as directed by your lecturer and to review the contents of this topic.

### Exercise 1: Knowledge-Based View of an Organisation

Explain why it is vital that an organisation ensures that it knows how to locate, develop, share and retain its knowledge.

You may find the following article useful for your research:

- Zack, M. (2003). Rethinking the Knowledge-Based Organisation. *Sloan Management Review*, 44 (4), p66-77 [Available Online] <http://web.cba.neu.edu/~mzack/articles/kbo/kbo.htm>

### Exercise 2: Knowledge Management Information Systems

Write a report to your manager that explains the purpose and importance of a knowledge management information system. Refer to the problems of establishing such a system but why it is necessary.

You may find the following articles helpful:

Robertson, J. (2005). *10 Principles for Effective Information Management*. [Available Online] [http://www.steptwo.com.au/papers/kmc\\_effectiveim/index.html](http://www.steptwo.com.au/papers/kmc_effectiveim/index.html)

Petrides, L. (2004). Knowledge Management, Information Systems and Organisations. *EDUCAUSE Research Bulletin*, 20. [Available Online] [net.educause.edu/ir/library/pdf/ERB0420.pdf](http://net.educause.edu/ir/library/pdf/ERB0420.pdf)

## 9.5 Tutorial Notes

The tutorials for this topic will last for 1 hour.

### **Exercise 1: Review of Private Study Exercises**

Review your solutions to each exercise undertaken during private study and take the opportunity to discuss any problems you encountered.

### **Exercise 2: Tacit Knowledge Gathering**

Write down some of the methods that a systems analyst might use to gather tacit knowledge at an organisation.





## Topic 10: Analysis of Factors Influencing a Business Problem

### 10.1 Learning Objectives

This topic provides an overview of the economic, social, political and technical aspects of a business systems problem and an evaluation of these aspects in the context of potential solutions.

On completion of the topic, you will be able to:

- Analyse the economic aspects of a business systems problem;
- Evaluate and discuss the economic aspects of a business systems problem in the context of potential solutions;
- Analyse the social aspects of a business systems problem;
- Evaluate and discuss the social aspects of a business systems problem in the context of potential solutions;
- Analyse the political aspects of a business systems problem;
- Evaluate and discuss the political aspects of a business systems problem in the context of potential solutions;
- Analyse the technical aspects of a business systems problem;
- Evaluate and discuss the technical aspects of a business systems problem in the context of potential solutions.

### 10.2 Timings

Lectures:	1 hour
Seminars:	3 hours
Private Study:	7.5 hours
Tutorials:	1 hour

## 10.3 Seminar Notes

The time allocation for the seminars for this topic is 3 hours.

### Activity 1: PEST

In your group complete the following PEST analysis for the UK City Hospital and explain how any factors you identify might influence development of the information system.

Political Factors	Economic Factors	Social Factors	Technical Factors

### Activity 2: Local, regional and global companies influenced/affected by PEST factors

Write a short report that explains which local, regional and/or global companies have been affected by PEST factors.

You may find the following websites useful for sourcing information:

- <http://money.cnn.com/magazines/fortune/global500/2011/>
- <http://www.global100.org/>

Political Factors	Economic Factors	Social Factors	Technical Factors

## 10.4 Private Study Exercises

You should spend approximately 7.5 hours on the Private Study for this topic. You should use this time to complete the exercises below as directed by your lecturer and to review the contents of this topic.

### Exercise 1: PEST

Read the information and try the PEST exercise on the website below:

<http://marketingteacher.com/lesson-store/lesson-pest.html>

### Exercise 2: Information Gathering and PEST

Explain how an analyst might gather the information for a PEST analysis and also the problems that he or she might face in obtaining this information.

## 10.5 Tutorial Notes

The tutorials for this topic will last for 1 hour.

### **Exercise 1: Review of Private Study Exercises**

Review your solutions to each exercise undertaken during private study and take the opportunity to discuss any problems you encountered.

### **Exercise 2: Evaluation of PEST**

Do you consider PEST to be a useful tool for analysis? Write down your thoughts and compare your answers with the other students.





## Topic 11: Principles of Interface Design and the Requirements and Characteristics of Users that Motivate These

### 11.1 Learning Objectives

This topic provides an overview of the principles and good practice of interface design, analysis of the requirements and characteristics of interface users and how good interface design can address these requirements and characteristics.

On completion of the topic, you will be able to:

- Identify the principles and good practice of interface design;
- Analyse the requirements of the users of an interface;
- Analyse the characteristics of the users of an interface;
- Demonstrate how good interface design can address the requirements and characteristics of an interface user.

### 11.2 Timings

Lectures:	1 hour
Seminars:	3 hours
Private Study:	7.5 hours
Tutorials:	1 hour

## 11.3 Seminar Notes

The time allocation for the seminars for this topic is 3 hours.

### **Activity 1: Portable Patients' Record Information System**

The manager of the UK City Hospital is very interested in the possibility of developing a Portable Patients' Record Information System. Such a system would involve using a hand-held device with wireless capabilities that would allow a patient's data to be input to it, stored to a server, retrieved from the server and output to a printer. It would also allow reports on patient data to be generated. The interface design would be very important for this device as all levels of staff would have access to it at different levels.

What factors need to be taken into account before the design of this interface begins?

### **Activity 2: Undertaking Analysis**

Undertake the above analysis for the UK city Hospital. Record your findings and present them to the other groups.

### **Activity 3: User Characteristics and Requirements**

Explain what you consider to be the characteristics and requirements of the UK City Hospital users.



## 11.4 Private Study Exercises

You should spend approximately 7.5 hours on the Private Study for this topic. You should use this time to complete the exercises below as directed by your lecturer and to review the contents of this topic.

### Exercise 1: A Management Information System Interface

Write a report to your manager explaining how you will undertake the analysis of the development of a management information system user interface. Choose your own methodology and techniques.

## 11.5 Tutorial Notes

The tutorials for this topic will last for 1 hour.

### Exercise 1: Review of Private Study Exercises

Review your solutions to each exercise undertaken during private study and take the opportunity to discuss any problems you encountered.

### Exercise 2: Interface Types

Complete the table below including the advantages and disadvantages and examples of use of various types of interface:

Style of Interaction	Advantages	Disadvantages	Examples of where it can be used
Direct manipulation			
Menu selection			
Form fill-in			
Command language			
Natural language			



## Topic 12: Design or Evaluate an Interface with regard to the Requirements and Characteristics of its Users

### 12.1 Learning Objectives

This topic provides an overview of interface design that addresses the requirements and characteristics of an interface user, an evaluation of interface design principles and whether these principles address the requirements and characteristics of the interface user.

On completion of the topic, you will be able to:

- Design an interface that addresses the requirements and characteristics of an interface user;
- Evaluate and discuss whether interface design principles have been applied to an interface;
- Evaluate and discuss whether interface design principles have addressed the requirements and characteristics of an interface user;

### 12.2 Timings

Lectures:	1 hour
Seminars:	3 hours
Private Study:	7.5 hours
Tutorials:	1 hour

## 12.3 Seminar Notes

The time allocation for the seminars for this topic is 3 hours.

### **Activity 1: Design the User Interface for the UK City Hospital Portable Patients' Records Information system**

In your group, prepare a design (on paper or computer) of the User Interface for the UK City Hospital Portable Patients' Records Information system.

### **Activity 2: Evaluation Checklist/Assessment**

Produce a checklist/assessment of the criteria that you will use to evaluate the interface designs of your own and other group's interfaces.

## 12.4 Private Study Exercises

You should spend approximately 7.5 hours on the Private Study for this topic. You should use this time to complete the exercises below as directed by your lecturer and to review the contents of this topic.

### Exercise 1: Design a Management Information Systems Interface

Design (on paper or computer) a user interface for a management information system.

You may find the following article useful:

- Hinze-Hoare, V. (2007). *Review and Analysis of Human Computer Interaction (HCI) Principles*. [Available Online] <http://arxiv.org/ftp/arxiv/papers/0707/0707.3638.pdf>

### Exercise 2: User Interface Evaluation

What two interface evaluation techniques would you recommend be used to evaluate an interface and what are the reasons for your choices?

You may find the information in the following articles useful:

- Jeffries, R., Miller, J., Wharton, C. and Uyeda, K. (1991) User Interface Evaluation in the RealWorld: A Comparison of Four Techniques. Proceedings of CHI'91 (ACM Computer Human Interaction), New Orleans, April 28-May 3, 1991/ [Available Online] <http://www.hpl.hp.com/techreports/91/HPL-91-03.pdf>
- Zazelenchuk, T. (2006). *Heuristic Evaluation and Its Alternatives*. [Available Online] <http://www.userfocus.co.uk/articles/heuristics.html>

### Exercise 3: Revision

Review the material for the module. You should bring any specific questions about the module and revision for the examination to the tutorial session.

## 12.5 Tutorial Notes

The tutorials for this topic will last for 1 hour.

### **Exercise 1: Review of Private Study Exercises**

Review your solutions to each exercise undertaken during private study and take the opportunity to discuss any problems you encountered.

### **Exercise 2: Evaluation of User Interfaces**

Evaluate your own group's interface (UK City Hospital) and those of other groups and note how they compare. Document any differences.