

HSE and University of London Parallel Degree Programme in
Management and Digital Innovation

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SYLLABUS
Introduction to Information Systems
(8 ECTS)

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Meeting Minute # ___ dated _____ 20___

1. Course Description

Pre-requisites:

- theoretical bases of informatics
- programming

Abstract:

The subject of information systems includes a rather broad set of topics and issues. The concerns we will address here certainly go beyond a narrow focus on technology – that is a subject that might be better studied under the heading of ‘computer science’ or ‘computer engineering’. Rather, this subject, and this course, investigates what we do with this particular technology in the world, why we choose to use it, who is affected or interested in its uses and how we organise ourselves to be able to get the best from it. We even go a bit further, beyond questions of what uses are found for information and communication technologies (ICTs), to questions about the consequences that follow – what are often spoken of as the impacts or the ‘so what?’ questions.

Information systems are considered in terms of the needs and tasks required by formal organisations. Often we will focus on business organisations – firms or companies – but we will also consider public sector organisations – a government ministry or some public agency such as a school or police district. Sometimes we may consider other kinds of organisations that need information systems such as non-governmental organisations (NGOs) and voluntary organisations.

As a student, you need to understand from the start of this course that we are concerned with more than just computers and networks and their most direct uses. Rather, we are studying the information systems which are found in, and are a fundamental part of, all manner of human organisations. Of course, these information systems may not use much digital information and communications technology (i.e. computers) – a paper notebook or diary, a noticeboard, a meeting room or a conversation can each serve as a part of an information system too. However, here we are mostly concerned with the more formal and deliberately structured information systems found in organisations and which, in most countries of the world, draw in large part on digital technology.

2. Learning Objectives

This course provides a broad introductory understanding of information systems, seen within organisational and societal contexts. The aim is to provide students with an appropriate balance of technical and organisational perspectives to serve as the basis for further study in the field.

3. Learning Outcomes

- explain fundamental assumptions made in studying information and communications technologies in organisations as sociotechnical systems in contrast to purely technical or managerial views
- debate the relevance of the sociotechnical approach and demonstrate this through the study of a number of practical business and administrative information systems within real organisations
- express a logical understanding of how the technical parts of computer-based information systems work, their principal structures and components, including contemporary technologies for information storage, processing and communications
- explain the various functions of systems and network software and various classes of business-oriented application packages
- describe fundamental principles that can be applied to ensure that security and personal privacy

- is respected in information systems
- explain the tasks required when undertaking the establishment of a new information system and be able to contrast alternative approaches to development
- describe and justify a range of professional roles in information systems development activity, and their changing nature, reflecting in part changes in technology use in and between organisations
- discuss the social, organisational, legal and economic context of computer use and be able to debate the significance of information and communications technologies on the economy and society
- demonstrate, through project work, understanding of the analysis and design of small projects using database and spreadsheet programs, and the ability to write brief but informative reports on such work.

4. Course Plan

	Topic	Contact Hours	Lectures	Seminars
1	Information systems concepts: Information and data. Capture of data, storage, processing and display. Information systems in organisations, the digital economy. Introduction to systems ideas and their application to information handling activities. The sociotechnical character of information systems.	14	10	4
2	Information systems within organisations: The roles and functions of information systems within organisations including providing management information, supporting e-commerce, supporting knowledge work and undertaking transaction processing. Use of information by various types of people and as applied to various types of task. New models of organising. Information systems management roles and structures.	16	10	6
3	Information and communications technologies: Introduction to computer hardware and software. Communications technologies and networks, the internet. Data storage systems, files and databases. Cloud computing. Operating software, applications packages and user written programs. Open source software. Social networking. (Note: this does not entail any	44	20	24

	particular knowledge of electronics, rather it is concerned with the major components and the logical structures of a computer as exemplified in popular personal computers and networks including the internet.)			
4	Systems development: Information systems development approaches; life cycle, prototyping, incremental models. Systems analysis tasks, methodologies, modelling and agile methods. Data modelling. Systems implementation. Professional roles in systems development. Criteria for successful applications development. Systems implementation and the management of change.	40	16	24
Total		124	56	68

5. Reading List

Required

Laudon, K.C. and J.P. Laudon Management information systems: managing the digital firm. Global edition. (Boston; London: Pearson, 2018) 15th edition [ISBN 9781292211756].

Optional

- Curtis, G. and D. Cobham Business information systems: analysis, design and practice. (London: Prentice Hall, 2008) sixth edition [ISBN 9780273713821]
- Beynon-Davies, P. Business information systems. (London: Palgrave, 2013) second edition [ISBN 9781137265807].
- Avgerou, C. and T. Cornford Developing information systems: concepts, issues and practice. (London: Macmillan, 1998) second edition [ISBN 9780333732311]. Chapter 6 is Essential reading for Chapter 3 of the subject guide.
- Sommerville, I. Software engineering: global edition. (London: Pearson, 2015) 10th edition [ISBN 9781292096131].

6. Grading System

The formula for the final grade G:

$$G = 0.1G_{HW} + 0.1G_{class} + 0.3G_{mock} + 0.5G_{UoL}, \text{ where}$$

G_{HW} – average score for homework assignments (UoL project work is not included here)

G_{class} – average score for in-class activity

G_{mock} – score achieved at the internal HSE mock exam at the end of the 3rd module. The mock exam is held in the same format as the final UoL exam, but on a narrower set of topics

G_{UoL} – overall score for the UoL assessment, which consists of the practical coursework (spreadsheet and database projects, each counting for 12.5% of G_{UoL}) and the final UoL written examination with a weight of 75%.

All individual components are marked from 0 to 100 with no intermediate rounding applied, the final grade is converted to the 10-point HSE grading system by dividing by 10 and rounding to the nearest integer.

Failure to achieve a passing grade (40+ out of 100) for G_{UoL} will require a retake of the external UoL exam in the next academic year. The overall formula still applies for the HSE grade. If $G < 4$, students need to retake the mock exam during the exam retake period in September-October to advance to the next academic year.

7. Examination Type

The internal HSE mock exam and the final UoL exam are held in written form. Students need to answer 3 of the given 8 questions.

Question examples:

1. a) Explain the purpose of developing a use case diagram as part of the initial phases of a systems development project. In your answer explain the various ways the diagram can be used to take the project forward.

b) Using an example explain the diagrammatic techniques available when drawing a use case diagram including the various types of association.
2. a) Set out the principal arguments in favour of adopting a sociotechnical approach to systems development. Are there situations where this may not be the most appropriate approach?

b) Explain how a) Prototyping and b) End user computing may be useful and support a sociotechnical approach.
3. Why should an IS project include an early feasibility study? Explain how the feasibility of a proposed new information system might be established and the various criteria to be considered when making a decision about feasibility.
4. a) Write a short report to senior management that sets out the arguments for and against choosing to outsource the development and operations of a company's principal information systems to a large international specialist supplier.

- b) Under what circumstances, if any, might a company choose to build and operate key business information systems itself, including their design and programming?
5. Write a job description for each of the IT professional roles below including a description of the work they perform and the specific skills they need.
- i. Project manager
 - ii. System designer
 - iii. Database administrator
6. a) Explain what is meant by a ‘knowledge worker’, and by a ‘knowledge work system’. Give relevant examples to illustrate your answer.
- b) How seriously should we take the idea that modern computing technologies, including artificial intelligence and big data, will lead to more powerful knowledge work systems, and the loss of many knowledge work jobs?
7. Explain the basic architecture of business information systems that are based on:
- i. Cloud computing
 - ii. Client server architecture
 - iii. Enterprise systems
- In each case give a relevant example to illustrate your answer.
8. “Data protection and online privacy is more important today than it has ever been. But people’s attitudes to these issues are changing, and the expectation that data about us will be collected, shared and used is now almost universal and certainly does not inhibit many people from using online services. This sets a real challenge for regulators and law makers.”
- Critically assess this statement and suggest what regulators and law makers should do.

8. Methods of Instruction

In general, lectures should give insight into the concepts and ideas underlying the topics under review. The theoretical core of presentation should be preceded and followed up by clear examples. It is highly recommended to provide students with the lecture slides prior to the lecture so that they could familiarize themselves with the material in advance and prepare some questions. The lecturers should refer the students for recommended textbooks, reviews and papers as needed throughout the presentation. Practice classes play the key role in providing the course. The difficult tasks should be discussed and worked out together with students.

All ongoing assessments is used to teach students how to discuss, argue, make analytics and think with regards to course-content.