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INTERNATIONAL
PROGRAMMES

Goldsmiths
UNIVERSITY OF LONDON

BSc and Diploma in Computing and Related Subjects

Extended booklist

2011

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Introduction

Who should use this extended booklist?

This extended booklist is a new publication for 2011/12. It is intended for the use of:

- students registered for the BSc Computing and Information Systems or for the BSc Creative Computing, whether studying at an institution or independently (the booklists for Study skills in English and 001 Mathematics for business do not apply)
- students registered for the Diploma in Computing and Information Systems or for the Diploma in Creative Computing studying at Recognised Centres with Diploma teaching status (the Level 2 and 3 booklists do not apply)
- institutions that are applying for recognition as part of the University of London International Programmes' Institutions Policy Framework and institutions that have either Registered or Affiliate status under this framework. (Registered and Affiliate institutions will have Diploma teaching status and/or will be recognised to teach the BSc in Computing and Information Systems and/or the BSc in Creative Computing.) Hereafter, such institutions are referred to as Recognised Centres.
- other institutions teaching informally for the BSc.

How should the booklists be used?

In this extended booklist, there are separate booklists for the different units at each Level of the degrees. The booklists for the Diploma units for Computing and Information Systems and Creative Computing are the same as for Level 1 of each BSc, plus there are booklists for Study skills in English and 001 Mathematics for business that are relevant only to the Diplomas.

On pages 2 to 3 there is a list of books and useful journals of a more general nature, not directly related to any particular units. These, therefore, will be of use for all Levels of each degree and Diploma.

For all books, an earlier edition is acceptable unless otherwise stated.

Some of the books are shown as out of print. They are included as they are still considered useful. They are likely to be found in some libraries and may be available second hand.

The booklists for the individual units do not replace the recommended reading given in the respective subject guides; they complement the subject guides and may contain information on recently published books.

For most units, the booklist is divided into Essential reading and Recommended reading:

Essential reading

These are essential books that students are expected to buy, even if they are studying at an institution. They are essential for effective study of a course.

Recognised Centres must provide copies of these books in their libraries.

Recommended reading

These are supplementary books which will give a wider and deeper understanding of the subject.

The list consists of books that the authors of the subject guides know cover at least some of the necessary material in sufficient detail and at an appropriate level. It is not intended to be an exhaustive list.

Students may want to buy some of these books, but are at least advised to seek out some of them in libraries, in particular those that are starred (*) as they are the most useful for further reading.

Recognised Centres should hold a selection of recommended reading in their libraries, including those that are starred (unless a starred book is out of print and the library is unable to obtain it).

This list updates some of the recommended further reading given in the subject guides, but in some subject guides there are additional books listed which may prove useful.

General books and other useful publications

General books

The following list contains details of general books. While they are not related directly to any particular course, reading any of them will give a broader knowledge and understanding of computing.

The books starred (*) are particularly useful.

Bishop, C.M. *Neural Networks for Pattern Recognition*. (Oxford University Press, 1995) [ISBN 0198538642 (pbk)].

Blissmer, Robert H. *Introducing Computers: Concepts, Systems and Applications*. (Wiley, 1995) [ISBN 0471113603 (pbk)].

*Dewdney, A.K. *New Turing Omnibus: 66 Excursions in Computer Science*. (Palgrave Macmillan, 2003) [ISBN 0805071660 (pbk)].

*Dromey, R.G. *How to Solve it by Computer*. (Prentice-Hall International, 1982) [ISBN 0134340019 (pbk): out of print].

*Dunleavy, P. *Studying for a Degree: In the Humanities and Social Sciences*. (Palgrave, 1986) [ISBN 0333418425 (pbk)] This book is included in students' study packs. Despite the fact that it is aimed at degrees in Humanities and Social Sciences, it is very broadly based and a great deal of the advice is appropriate to other degrees.

Hagan, M.T. *Neural Network Design*. (University Press of Colorado, 2006) [ISBN 0971732108 (spiral)].

Ham, F.M. and I. Kostanic *Principles of Neurocomputing for Science and Engineering*. (McGraw-Hill, 2001) [ISBN 007118161X (pbk): out of print].

*Harel, David and Yishai A. Feldman *Algorithmics: The Spirit of Computing*. (Addison Wesley, 2004) third edition [ISBN 0321117840 (pbk)].

- Hodges, Andrew *Alan Turing: The Enigma*. (Vintage, 1992) Reissue [ISBN 9780099116417 (pbk)].
- Long, Larry and Nancy Long *Introduction to Computers and Information Systems*. (Prentice Hall, 1997) fifth internet edition [ISBN 0132732289 (pbk)].
- Nikolaev, N. and H. Iba *Adaptive Learning of Polynomial Networks: Genetic Programming, Backpropagation and Bayesian Methods*. (Springer, 2006) [ISBN 0387312390 (hbk)].
- Penrose, Roger *The Emperor's New Mind: Concerning Computers, Minds and the Laws of Physics*. (Oxford University Press, 1999) [ISBN 0192861980 (pbk)].
- or Penrose, Roger and Michael Jackson *The Emperor's New Mind: Concerning Computers, Minds and the Laws of Physics*. (Vintage, 2009) [ISBN 9780099803706]
- Pratt, V. *Thinking Machines*. (Blackwell NCC, 1987) [ISBN 0631149538 (hbk): out of print].
- Principe, J.C., N.R. Euliano and W.C. Lefebvre *Neural and Adaptive Systems: Fundamentals Through Simulations*. (Wiley, 2000) [ISBN 0471351679 (hbk and CD-ROM)].
- Reed, R.D. and R.J. Marks *Neural Smithing: Supervised Learning in Feedforward Artificial Neural Networks*. (MIT Press, 1999) [ISBN 0262181908 (hbk)].
- Stein, D. *Ada: A Life and a Legacy*. (MIT Press, 1987) new edition [ISBN 0262691167 (hbk)].
- *Turk, Christopher and John Kirkman *Effective Writing: Improving Scientific, Technical and Business Communication*. (Spon Press, 1988) second edition [ISBN 0419146601 (pbk)].
- Zurada, J.M. *Introduction to Artificial Neural Systems*. (Jaico, 2006) [ISBN 9788172246501 (pbk)].

Other useful publications

The following suggested journals are a good introduction to the world of computing and also cover developments in the field. Students will find it useful, therefore, to refer to these journals, or others like them, wherever possible.

Note for Recognised Centres:

Your library should hold a selection of computing publications such as these in order to help students:

- *Communications of the ACM*
- *ACM Computing Surveys*
- *SIGCSE Bulletin* (not for students; for staff at institutions).

All of the above can be obtained from:

Association for Communication Machinery, 1515 Broadway, New York, NY10036, USA Tel: (212) 869 7440 www.acm.org/

- *Byte*

From: Subscriptions Department, PO Box 555, Hightstown, NJ 08520, USA Tel: 609 426 7070; www.drdoobs.com

Any easily available general interest weekly or monthly computing magazines would also be useful. Examples of the type of magazine (these are not the only suitable ones) are:

- *Personal Computer World*
From: VNU House, 32–34 Broadwick Street, London W1A 2HG, UK
www.computeractive.co.uk/personal-computer-world
- *Asia Computer Weekly* (of use in Asia)
www.mondotimes.com/2/topics/business/18/12007

Diploma/Level 1 booklists

Study skills in English (Diploma only)

Essential reading

Cottrell, Stella *The Study Skills Handbook*. (Palgrave, 2008) third edition [ISBN 0230573053 (pbk)].

Fowler, H. Ramsey and Jane E. Aaron *The Little, Brown Handbook*. (Longman, 2008) eleventh edition [ISBN 9780205651719 (hbk)].

Recommended reading

Study skills

*Northedge, Andrew *The Good Study Guide*. (Open University, 2005) second edition [ISBN 0749259744 (pbk)].

*Turner, Joan *How to Study: A Short Introduction*. (Sage, 2002) [ISBN 0761968083 (pbk); 0761968075 (hbk)].

Waters, Mary and Alan Waters *Study Tasks in English*. (Cambridge University Press, 1996) [ISBN 0521426146 (pbk)].

Writing

Hamp-Lyons, Liz and Ben Heasley *Study Writing*. (Cambridge University Press, 2006) second edition [ISBN 0521534968 (pbk)]. Explanations and exercises on organisational strategies for writing.

Oshima, Alice and Ann Hogue *Writing Academic English*. (Longman, 2005) fourth edition [ISBN 0131523597 (pbk)]. Examples, explanations and exercises on all aspects of writing from sentence structure to paragraphs and essays.

Grammar

*Eastwood, John *Oxford Practice Grammar: With Answers*. (Oxford University Press, 2006) new title [ISBN 0194309142 (pbk with CD-ROM: out of print); replacement edition 9780194579780]. Explanations and exercises for all levels of English grammar.

Swan, Michael *Practical English Usage*. (Oxford University Press, 2005) third edition [ISBN 0194420981 (pbk)]. Easy to use reference book on English grammar.

Vince, Michael and Peter Sunderland *Advanced Language Practice*. (Macmillan, 2009) [ISBN 9780230401051 (pbk/CD - audio)]. Explanations and activities for advanced students of English grammar.

001 Mathematics for business (Diploma only)

Essential reading

Dowling, Edward T. *Schaum's Outline of Mathematical Methods for Business and Economics*. (McGraw Hill/Schaum, 2009) [ISBN 9780071635325 (pbk)].

The above book contains many examples and exercises similar to those in the subject guide which you can use for further practice if necessary.

Recommended reading

If you have not studied mathematics recently you might find it helpful to get a school mathematics book. For example the following revision guide covers most of the material in Chapter 1 as well as linear equations and graphs, simultaneous equations and inequalities:

GCSE Study Guide: Revise Maths. (Letts Educational, 2006) [ISBN 1843156326].

For a clear explanation of basic techniques in arithmetic, algebra and graphs, the following two volumes are also recommended:

Graham, Lynne and David Sargent *Countdown to Mathematics Volumes I and II*. (Prentice Hall, 1981) [ISBN 0201137305 (pbk) Volume 1; 0201137313 (pbk) Volume 2].

102 Mathematics for computing

Essential reading

The subject guide for this course gives a complete set of lecture notes, but you may want to supplement this by reading an alternative account of some topics, and by working through additional examples and exercises. References are given in the subject guide to the first two books in the following list, which are particularly suitable as regards coverage, level and clarity of presentation.

Recommended reading

Albertson, M.O. and J.P. Hutchinson *Discrete Mathematics with Algorithms*. (Wiley, 1988) [ISBN 0471849022 (hbk): out of print; ISBN 0471612782 (pbk): out of print]: Good background book, showing how the subject links to Computer Science.

Barnett, Stephen *Discrete Mathematics: Numbers and Beyond*. (Addison Wesley Longman, 1998) [ISBN 0201342928 (pbk)]. Does not cover our entire syllabus, but useful for some sections, particularly number bases, counting methods, applications of graphs.

Eccles, Peter J. *An Introduction to Mathematical Reasoning: Numbers, Sets and Functions*. (Cambridge University Press, 1997) [ISBN 0521597188 (pbk); 0521592690 (hbk)]. A good introduction to the basics of the course.

*Epp, Susanna S. *Discrete Mathematics with Applications*. (Thomson-Brooks/Cole, 2003) third edition [ISBN 0534359450 (hbk)].

Garnier, Rowan and John Taylor *Discrete Mathematics for New Technology*. (Hilger, 1992) [ISBN 075030135X (pbk); 0750301368 (hbk): out of print]. Good coverage and simply explained.

Grimaldi, Ralph P. *Discrete and Combinatorial Mathematics: An Applied Introduction*. (AddisonWesley Longman 2003) fifth edition [ISBN 9780201726343 (pbk)]. A comprehensive coverage of the subject area, but rather more demanding.

Goodaire, Edgar G. and Michael M. Parmenter *Discrete Mathematics with Graph Theory*. (Pearson Prentice Hall, 2005) third edition [ISBN 0131679953 (hbk)].

Hein, J.L. *Discrete Mathematics*. (Jones and Bartlett Publishers, 2002) second edition [ISBN 0763722103 (hbk): out of print].

Johnsonbaugh, Richard *Discrete Mathematics*. (Prentice Hall, 2004) sixth edition [ISBN 0131277677 (pbk): out of print].

Mattson H.F. *Discrete Mathematics with Applications*. (Wiley, 1994) [ISBN 0471606731 (hbk)]. A more demanding treatment, but good for links with computer science.

Mizrahi, Abe and Michael Sullivan *Finite Mathematics: An Applied Approach*. (John Wiley and Sons Inc, 2004) ninth edition (but earlier editions are fine) [ISBN 047169827X (hbk); 0471333514 (pbk): out of print]. Covers part of the course with an emphasis on business applications. Particularly useful for the sections of the syllabus taught in the second semester.

*Molluzzo, John C. and Fred A. Buckley *First Course in Discrete Mathematics*. (Waveland, 1997) reprinted 2004 [ISBN 0881339407 (hbk)].

Rosen, Kenneth H. *Discrete Mathematics and Its Applications*. (Higher Education, 2006) sixth edition [ISBN 9780073229720 (hbk)].

or Rosen, Kenneth H. *Discrete Mathematics and Its Applications*. (McGraw-Hill Education (ISE Editions), 2006) sixth edition [ISBN 0071244743 (pbk)].

Ross, Kenneth A. and Charles R.B. Wright *Discrete Mathematics*. (Pearson Education, 2002) fifth edition [ISBN 0130652474 (hbk); 013178448X (pbk): out of print]. An excellent book, covering the whole course and more besides, with a good selection of exercises.

Simpson, Andrew *Discrete Mathematics by Example*. (McGraw-Hill, 2001)
[ISBN 0077098404 (pbk)].

108 Information systems: foundations of ebusiness

Essential reading

Laudon, J.P. and K.C. Laudon *Management informations systems: managing the digital firm*. (Pearson Education, 2007) eleventh international edition [ISBN 013609368X (pbk)/013607846X (hbk)] or twelfth global edition (Pearson Education 2012) [ISBN 9780273754534: not yet published].

The above book is essential reading for the course.

- Website: www.pearsoned.co.uk/
- Email: heenquiriesuk@pearson.com

Recommended reading

Alter, S. *Information systems: foundations of e-business*. (Prentice Hall, 2001) fourth edition [ISBN 0130432423 (pbk)].

*Frenzel, Carroll W. *Management of Information Technology*. (Course Technology, 2003) fourth edition [ISBN 0619034173 (pbk)].

*Laudon, Kenneth C. and Jane Price Laudon *Essentials of Management Information Systems: Managing the Digital Firm*. (Pearson Education (US), 2008) eighth revised edition US [ISBN 013602579X (pbk): out of print, (Pearson Prentice Hall, 2008) [ISBN 0135013534 (pbk)].

*Oz, Effy *Management Information Systems*. (Course Technology, 2004) fourth edition [ISBN 0619215380 (hbk with CD-ROM)].

109 Introduction to Java and object-oriented programming

Essential reading

The subject guide gives a complete account of the course.

Danicic, S. *CIS109 Subject Guide Volume 1*. (University of London, 2007).

Danicic, S. *CIS109 Subject Guide Volume 2*. (University of London, 2007).

Web address for installing Java system www.oracle.com/technetwork/java/index.html/

Recommended reading

Arnow, David M., Gerald Weiss and Scott Dexter *Introduction to Programming using Java: An Object Oriented Approach*. (Pearson Addison Wesley, 2003) second edition [ISBN 0321200063 (pbk)].

Bishop, Judy *Java Gently*. (AddisonWesley, 2000) third edition [ISBN 0201710501 (pbk)].

Charatan, Quentin and Aaron Kans *Java: In Two Semesters*. (McGraw-Hill, 2009) third edition with CD-ROM [ISBN 9780077122676 (pbk)].

Deitel, Harvey M. and Paul J. Deitel *Java: How to Program*. (Prentice Hall, 2010) eighth edition with CD-ROM [ISBN 9780132626385 (pbk)].

Downey, Allen B. *How to Think Like a Computer Scientist – Java Version*. (Green Tea Press, 2003). Available at <http://greenteapress.com/thinkapjava/>

Felleisen M. and D.P. Freidman *A Little Java, A Few Patterns*. (The MIT Press, 1998) [ISBN 0262561158 (pbk)].

Flanagan, David *Java in a Nutshell: A Desktop Quick Reference*. (O'Reilly, 2005) fifth edition [ISBN 0596007736 (pbk)].

Hubbard, John R. *Schaum's Outline of Theory and Problems of Programming with Java*. (McGraw-Hill, 2004) second edition [ISBN 0071420401 (pbk)].

or Hubbard, John R. and Anthony Q. Baxter *Programming with Java: Based on Schaum's Outline of Programming with Java*. by John R. Hubbard (McGraw-Hill, 2001) [ISBN 0071369775 (pbk)].

Lambert, Kenneth Alfred and Martin Osborne *Java: A Framework for Programming and Problem Solving*. (Brooks/Cole, 2001) second edition [ISBN 0534382770 (hbk)].

Niemeyer P. and J. Knudsen *Learning Java*. (O'Reilly, 2005) third edition [ISBN 0596008732 (pbk and CD-ROM)].

Wu, Thomas C. *An Introduction to Object-Oriented Programming with Java with Olc Bi-Card*. (McGraw-Hill, 2005) fourth edition [ISBN 0073107972 (hbk)].

Sun Microsystems Inc.

- www.oracle.com/technetwork/java/javase/documentation/index.html. This is where you can look up information about Java classes and methods.

110 Introduction to computing and the internet

Part A

Essential reading

Stallings Williams *Computer Organization and Architecture: Designing for Performance*. (Pearson Prentice Hall, 2009) eighth edition [ISBN 9780135064177 (pbk); 9780136073734 (hbk); replacement edition 9780135064177 (pbk)].

Recommended reading

*Brookshear, J. Glenn *Computer Science: An Overview*. (AddisonWesley, 2008) tenth international edition [ISBN 0321544285 (pbk)].

Burrell, Mark *Fundamentals of Computer Architecture*. (Palgrave Macmillan, 2003) [ISBN 0333998669 (pbk with CD-ROM)].

Davis, W. *Operating Systems*. (Addison-Wesley, 2004) sixth edition [ISBN 0321269810 (pbk): out of print].

Dumas II, Joseph D. *Computer Architecture: Fundamentals and Principles of Computer Design*. (CRC Press, 2005) [ISBN 9780849327490 (hbk)].

Flynn, I. and A. McIver McHoes *Understanding Operating Systems*. (Brooks/Cole Thomson Learning, 2000) third edition [ISBN 0534376665 (hbk): out of print].

Flynn, Michael J. *Computer Architecture: Pipelined and Parallel Processor Design*. (Boston, Mass.: Jones and Bartlett, 1995) [ISBN 0867202041].

Kaeli, David R. and Philip M. Sailer *The DLX Instruction Set Architecture Handbook*. (Elsevier Science Ltd, 1996), [ISBN 1558603719: out of print].

Nutt, G.J. *Operating Systems: AND Advanced Programming UNIX Environment*. (Pearson Education Limited, 2005) international edition [ISBN 0582894573 (pbk/hbk)].

Nutt, G.J. *Operating Systems: a modern perspective*. (Addison-Wesley, 2001) [ISBN 0201741962 (hbk): out of print].

Parhami, Behrooz *Computer Architecture: From Microprocessors to Supercomputers*. (Oxford University Press, 2005) [ISBN 9780195154559].

Przybylski, Steven A. *Cache and memory hierarchy design*. (Morgan Kaufmann, 1990) [ISBN 1558601368].

*Schneider, G. Michael and Judith L. *Gersting An Invitation to Computer Science: Java Version*. (Brooks/Cole, 2004) [ISBN 0534390978 (pbk)].

Silberschatz, Abraham and Peter B. Galvin *Operating System Concepts with Java*. (Wiley, 2005) sixth edition [ISBN 0471759945 (hbk)].

Tanenbaum, Andrew S. *Structured Computer Organization*. (Pearson Prentice Hall, 2005) fifth edition [ISBN 0131485210 (hbk with assembly language CD-ROM)].

Tarnoff, David. *Computer Organization and Design Fundamentals*. (Lulu.com) January 2006 [ISBN 9781411636903 (pbk): out of print].

White, R. *How Computers Work*. (QUE, 2007) ninth edition [ISBN 0789736136 (pbk)].

Wilkinson, B. *Computer architecture – design and performance*. (Prentice Hall, 1996) second edition [ISBN 013518200X (pbk)].

Part B

Essential reading

Buchanan, William *Mastering the Internet*. (Macmillan, 1997) [ISBN 0333692616 (pbk)]. This book describes, at an introductory level, the communication protocols used by the Internet as well as the basics of Java programming and Javascript.

Casad, J. *Sams Teach Yourself TCP/IP in 24 Hours*. (Sams Publishers, 2008) fourth edition [ISBN 9780672329968 (pbk)] This covers most of the subject matter of the second part of the course at an appropriate level of detail and is not difficult to read, being designed as a self-study text.

Castro, E. *HTML, XHTML and CSS*. (Peachpit Press, 2006) sixth edition [ISBN 0321430840 (pbk)].

Useful web addresses

For information about the 1998 UK Data Protection Act which was based on a 1995 EU directive, you should refer to documents available at the website of the UK Information Commissioner. The web page is entitled 'Document Library – A comprehensive resource for individuals and organisations'.

- www.ico.gov.uk/tools_and_resources/document_library.aspx

There is also a useful leaflet entitled 'Data Protection in the European Union' which is freely available from the European Commission:

- http://ec.europa.eu/public_opinion/flash/fl147_data_protect.pdf

PC Support Advisor has freely available tutorial articles on networking topics.

- www.pcsupportadvisor.com/index.htm

Specialist magazines such as .net have regular tutorial features on all aspects of web design and authoring.

- www.netmagazine.co.uk

Useful tutorials on web authoring.

- www.webmonkey.com
- www.w3schools.com

The world wide web consortium is an authoritative source of reference on protocols and standards.

- www.w3.org/

The British Computer Society is also a useful source of information on data protection and professional issues in general and related issues.

- www.bcs.org/

There are also web resources for important information about security issues and viruses such as CERT centre at Carnegie-Mellon University, which is highly informative on network security.

- www.cert.org/

Denial of service was not covered in the Computer Misuse Act 1990. It is now illegal in the UK and is covered by the Police and Justice Act 2006. For information about DoS, CMA 1990 and the Police and Justice Act 2006 see the following sites:

- www.opsi.gov.uk/acts/acts2006/ukpga_20060048_en_1
- www.out-law.com/page-2586
- www.hg.org/articles/article_1423.html

Recommended reading

- Agre, Philip and Marc Rotenberg (eds) *Technology and Privacy: The New Landscape*. (MIT Press, 1998) [ISBN 0262511010 (pbk)].
- Angel, John and Chris Reed (eds) *Computer Law*. (Oxford University Press, 2007) sixth edition [ISBN 0199205965 (pbk)].
- Brenan, Paul *Law for IT Professionals*. (XPL Publishing, 2003) [ISBN 1858113229 (pbk)].
- Comer, Douglas *Computer Networks and Internets: With Internet Applications*. (Pearson Education, 2008) fifth edition [ISBN 9780136061274 (pbk)].
- <http://netbook.cs.purdue.edu/> More detail than is needed at this stage but useful for those who are particularly enthusiastic about computer networking.
- Comer, Douglas *The Internet Book*. (Pearson Prentice Hall, 2006) fourth edition [ISBN 0132335530 (pbk)].
- Graham, Ian S. *XHTML 1.0 Language and Design Sourcebook: The Next Generation HTML*. (John Wiley & Sons, 2000) [ISBN 9780471374855 (pbk): out of print].
- Grimes, Roger *A Malicious Mobile Code: Virus Protection for Windows*. (O'Reilly, 2001) [ISBN 156592682X (pbk)].
- Musciano, Chuck and Bill Kennedy *HTML and XHTML: The Definitive Guide*. (O'Reilly, 2002) fifth edition [ISBN 059600382X (pbk)]. This book is a comprehensive textbook and reference resource on web authoring.
- Shelly, John *XHTML and CSS Explained*. (Bernard Babani, 2001) [ISBN 0859345017 (pbk): out of print].
- Shelly, John *Fun Web Pages with Javascript*. (Bernard Babani, 2002) second edition [ISBN 0859345203 (pbk)].
- Tanenbaum, Andrew S. *Computer Networks*. (Prentice Hall PTR, 2010) fifth edition [ISBN 9780132553179 (pbk); 9780132126953 (hbk)].
<http://authors.phptr.com/tanenbaumcn4/>
- Wild, Charles and Stuart Weinstein *Internet Law*. (Old Bailey Press, 2005) [ISBN 1858365732 (pbk): out of print].

Legal and professional issues are not particularly well covered in introductory computing textbooks, and when computer science texts do address these issues they tend to do so from a US perspective, which is not appropriate for this course. On the other hand, legal textbooks covering computer law have tended to be rather expensive and difficult for the non-specialist to follow. This book is a notable exception. Despite being aimed at law students this book is quite accessible to the non-lawyer and seems fairly sound on the technicalities of 'e Crime'.

112 Creative computing: image, sound, motion

Essential reading

- Reas, Casey and Ben Fry *Processing: A Programming Handbook for Visual Designers and Artists*. (MIT Press, October 2007) [ISBN 0262182629 (hbk)].
- Reas, Casey and Ben Fry *On-line processing reference manual*.
At: www.processing.org/reference
- Essential information about the Bauhaus, the most important school of architecture, design, and art of the twentieth century is available at: www.bauhaus.de/english/index.htm

Recommended reading

- Berger, John *Ways of Seeing*. (Penguin, 1990) Reissue [ISBN 0140135154 (pbk)].
- Foley, James D., Andries van Dam, Steven K. Feiner and John F. Hughes *Computer Graphics: Principles and Practice*. (Addison-Wesley, 1995) second edition [ISBN 0321210565 (pbk)].
- Maeda, John *Creative Code*. (Thames and Hudson, 2004) [ISBN 0500285179 (pbk)].
- Moggridge, Bill *Designing Interactions*. (MIT Press, 2006) [ISBN 0262134748 (hbk)].

- Packer, Randall and Ken Jordan (eds) *Multimedia: From Wagner to Virtual Reality*. (W.W. Norton and Company, expanded edition 2003) [ISBN 0393323757 (pbk)].
- Rand, Paul *A Designer's Art*. (Yale University Press, new edition 2001) [ISBN 0300082827 (pbk): out of print].
- Wong, Wucious *Principles of Form and Design*. (Wiley, 1993) [ISBN 0471285528 (pbk)].
- Zakia, Richard D. *Perception and Imaging*. (Elsevier Focal Press, 2007) third edition [ISBN 0240809300 (pbk)].

Level 2

209 Database systems

Essential reading

Connolly, T. and C. Begg *Database Systems: A Practical Approach to Design Implementation and Management*. (Addison-Wesley, 2009) fifth edition [ISBN 9780321523068 (pbk)]. More extensive and more application/methodology based.

or

*Date, C.J. *An Introduction to Database Systems*. (AddisonWesley, 2003) eighth edition [ISBN 0321189566 (pbk); 0321197844 (hbk: out of print)]. More concise and theoretically rigorous.

Recommended reading

- Abiteboul, Serge, Richard Hull and Victor Vianu *Foundations of Databases: The Logical Level*. (AddisonWesley, 1995) [ISBN 0201537710 (hbk)]
- Anahory, Sam and Dennis Murray *Data Warehousing in the Real World: A Practical Guide for Building Decision Support Systems*. (AddisonWesley, 1997) [ISBN 0201175193 (hbk)].
- Bertino, Elisa, Barbara Catania and Gian Piero Zarri *Intelligent Database Systems*. (AddisonWesley, 2000) [ISBN 0201877368 (pbk)].
- Cattell, R.G.G., Douglas K. Barry, R.G.C. Cattle (eds) et al. *The Object Data Standard: ODMG 3.0*. (Morgan Kaufman, 2000) [ISBN 1558606475 (pbk)].
- Chakravarthy, S. *Fundamentals of Active Database Systems*. (Morgan Kaufman, 2003) reissue [ISBN 1558603786 (hbk)].
- Connolly, Thomas M. and Carolyn E. Begg *Database Solutions: a Step-by-Step Guide to Building Databases*. (AddisonWesley, 2003) second edition [ISBN 0321173503 (pbk)]. This book is a more concise version of the main text.
- Eaglestone, Barry and Mick Ridley *Web Database Systems*. (McGraw-Hill, 2001) [ISBN 0077096002 (Spiral Binding): out of print].
- Elmasri, Ramez and Shamkant B. Navathe *Fundamentals of Database Systems*. (AddisonWesley, 2010) sixth edition [ISBN 9780136086208 (hbk)].
- Garcia-Molina, Hector *Database Systems: the Complete Book*. (Pearson Prentice Hall, 2008) second edition [ISBN 0131354280 (pbk)].
- Han, Jiawei and Micheline Kamber *Data Mining: Concepts and Techniques*. (Morgan Kaufman, 2000) [ISBN 1558604898 (hbk)].
- Melton, Jim, Andrew Eisenberg and Rick Cattell *Understanding SQL and Java Together: A Guide to SQLJ, JDBC, and Related Technologies*. (Morgan Kaufman, 2000) [ISBN 1558605622 (pbk with CD-ROM)].
- Özsu, M. Tamer and Patrick Valduriez *Principles of Distributed Database Systems*. (Prentice Hall, 1997) second edition [ISBN 0136597076 (pbk)].
- Post, Gerald V. *Database Management Systems: Designing and Building Business Applications*. (McGraw-Hill/Irwin, 2004) third edition [ISBN 0072973129 (hbk)].

or Post, Gerald V. *Database Management Systems: Designing and Building Business Applications*. (McGraw-Hill/Irwin, 2003) third edition [ISBN 0071111808 alternative edition (hbk)].

Ramakrishnan, Raghu and Johannes Gehrke *Database Management Systems*. (McGraw-Hill, 2002) third edition [ISBN 9780072465631 (hbk)].

Subrahmanian, V.S. *Principles of Multimedia Database Systems*. (Morgan Kaufman Publishers, 1997) [ISBN 1558604669 (hbk): out of print]. New edition to be published in 2013 [ISBN 9780120884087].

Zaniolo, Carlo, Stefano Ceri, Christos Faloutsos et al. *Advanced Database Systems*. (Morgan Kaufman, 1997) [ISBN 155860443X (hbk): out of print].

220 Graphical object-oriented and internet programming in Java

Essential reading

Sierra, K. and B. Bates *Head First Java*. (O'Reilly, 2005) second edition [ISBN 0596009208 (pbk)].

Recommended reading

Bloch, J. *Effective Java*. (Addison Wesley, 2001) [ISBN 0201310058 (pbk)].

Darwin, I. *Java Cookbook*. (O'Reilly, 2004) [ISBN 0596007019 (pbk)].

Flanagan, D. *Java in a Nutshell*. (O'Reilly, 2005) fifth edition [ISBN 0596007736 (pbk)].

Harold, E.R. *Java Network Programming*. (O'Reilly, 2004) third edition [ISBN 9780596007218 (pbk)].

Niemeyer, P. and J. Knudsen *Learning Java*. (O'Reilly, 2005) third edition [ISBN 0596008732 (pbk)].

222 Data Communications and Enterprise Networks

Essential reading

The subject guide gives a complete account of the course.

Recommended reading

Canavan, John E. *Fundamentals of Network Security*. (Artech House, 2001) [ISBN 1580531768 (hbk)].

Carr, Houston H. and Charles A. Snyder *The Management of Telecommunications: Business Solutions to Business Problems Enabled by Voice and Data Communications*. (McGrawHill, 2003) second edition [ISBN 9780071199285 (pbk); 9780072489316 (hbk)].

FitzGerald, Jerry and Alan Dennis *Business Data Communications and Networking*. (Wiley, 2009) tenth edition [ISBN 0470055758 (hbk)].

* Forouzan, Behrouz A. *Data Communications and Networking*. (McGraw Hill Higher Education, 2006) fourth edition [ISBN 0071254420 (pbk); 0073250325 (hbk)].

* Kurose, James F. and Keith W. Ross *Computer Networking: A Top Down Approach featuring the Internet*. (Addison Wesley, 2009) fifth edition [ISBN 0136079679 (hbk); 0131365487 (pbk)].

Porter, Michael E. *Competitive Strategy: Techniques for Analyzing Industries and Competitors*. (Free Press, 2004) [ISBN 0743260880 (pbk)].

* Stallings, William *Data and Computer Communications*. (Pearson Education, 2010) ninth edition [ISBN 9780131392052 (hbk); ninth international edition [ISBN 9780132172172 (pbk, digital or multimedia)]].

* Tanenbaum, Andrew S. *Computer Networks*. (Prentice Hall PTR, 2010) fifth edition [ISBN 9780132553179 (pbk); 9780132126953 (hbk)].

226 Software engineering, algorithm design and analysis

Part A

Essential reading

Fowler, Martin *UML Distilled. A Brief Guide to Standard Object Modelling Language.* (Addison-Wesley, 2003) third edition [ISBN 0321193687 (pbk)].

Stevens, Perdita with Rob Pooley *Using UML. Software Engineering with Objects and Components.* (Addison-Wesley, 2005) second edition, updated [ISBN 0321269675 (pbk)].

Recommended reading

Bloch, Joshua *Effective Java.* (Addison Wesley 2001) first edition [ISBN 0201310058 (pbk)].

Brooks, Frederick *The Mythical Man-Month.* (Addison Wesley, 1995) anniversary edition [ISBN 0201835959 (pbk)].

*Pressman, Roger *Software Engineering. A Practitioner's Approach.* (McGraw-Hill, 2000) fifth edition [ISBN 0071181822 (pbk)].

Stiller, Evelyn and Cathie Leblanc *Project-based Software Engineering. An Object-Oriented Approach.* (Addison Wesley, 2001) [ISBN 020174225X (hbk)].

Part B

Essential reading

Bailey, Duane A. *Java Structures: Data Structures in Java for the principled programmer.* (McGraw-Hill, 1999) international edition [ISBN 0071160914 (pbk)].

Goodrich, Michael T. and Roberto Tamassia *Data Structures and Algorithms in Java.* (John Wiley and Sons, Inc., 2005), fourth edition [ISBN 0471738840 (hbk)].

Levintin, Anany *Introduction to the design and analysis of algorithm.* (Addison-Wesley Professional, 2006) [ISBN 0321358287 (pbk)].

Recommended reading

*Cormen, Thomas H., Clifford Stein, Charles E. Leiserson and Ronald L. Rivest *Introduction to Algorithms.* (MIT Press, 2009) third edition [ISBN 9780262533058 (pbk); 9780262033848 (hbk)]

Johnsonbaugh, Richard and Marcus Schaefer *Algorithms.* (Pearson Education International, 2003) international edition [ISBN 0131228536 (pbk)].

Kingston, Jeffrey *Algorithms & Data Structures: Design, Correctness, Analysis.* (Addison-Wesley, 1997) second edition [ISBN 0201403749 (pbk)].

Main, Michael *Data Structures and Other Projects Using Java.* (Pearson/Addison Wesley, 2005) third edition [ISBN 0321375254 (hbk)].

or Main, Michael *Data Structures and Other Projects Using Java.* (Pearson/Addison Wesley, 2005) third international edition [ISBN 0321364120 (pbk)].

Rawlins, Gregory J.E. *Compared to What? – An Introduction to the Analysis of Algorithms.* (Computer Science Press, 1992) [ISBN 071678243X (hbk)].

Shackelford, Russell L. *Introduction to Computing Algorithms.* (Prentice Hall College Division, 1999) custom edition [ISBN 0201636131 (pbk)].

Weiss, Mark Allen *Data Structures and Problem Solving Using Java.* (Pearson/Addison Wesley, 2009) fourth edition [ISBN 9780321546227 (pbk); 9780321541406 (hbk)].

227 Creative computing: interactive multimedia

Essential reading

The subject guide gives a complete account of the course.

Recommended reading

Reas, Casey and Ben Fry *Processing: A Programming Handbook for Visual Designers and Artists*. (MIT Press, October 2007) [ISBN 0262182629 (hbk)].

Eaton, John W. *GNU Octave*. (Network Theory, 2002) [ISBN 0954161726 (pbk): out of print]. Also available online in HTML format: www.gnu.org/software/octave/doc/interpreter and in texinfo source format in the Octave source code distribution.

Foley, James D. *Introduction to Computer Graphics*. (Addison Wesley, 1993) revised edition [ISBN 9780201609219 (hbk)].

Helmholtz, Herman. *On the Sensations of Tone*. (Dover 1954) [ISBN 0486607534 (pbk)].

Howard, David M. *Acoustics and Psychoacoustics*. (Focal Press, 2009) fourth edition [ISBN 9780240521756 (pbk/CD-ROM)].

Müller, M. *Information Retrieval for Music and Motion*. (Springer, 2007) [ISBN 3540740473 (hbk)].

Oppenheim, Alan V. *Signals and Systems*. (Prentice Hall, 1996) second edition [ISBN 0138147574 (hbk)].

or Oppenheim, Alan V. *Signals and Systems*. (Prentice Hall, 2004) second edition [ISBN 1405811099 (pbk)].

Van Rijsbergen, C.J. *Information Retrieval*. Available at: www.dcs.gla.ac.uk/Keith/Preface.html

Witten, I.H., A. Moffat and T.C. Bell *Managing Gigabytes: Compressing and Indexing Documents and Images*. (Morgan Kaufmann Publishing, 1999) second edition [ISBN 1558605703 (hbk)].

Further reading

Feynman, Richard P. *Lectures on Physics Mainly Mechanics, Radiation and Heat*. (Volume 1, Chapters 35 and 36) (Pearson, 1989) [0201510030 (hbk)].

Handel, Stephen *Listening*. (Chapters 1 to 3) (MIT, 1993) [ISBN 0262581272 (pbk)].

Levitin, D.J. *This Is Your Brain On Music*. (Atlantic, 2007) [ISBN 9781843547150 (hbk)].

Sacks, O. Musicophilia. *Tales of Music and the Brain*. (Random House Audio Assets, 2007) [ISBN 9780739357392 (CD-Audio)].

Level 3

310 Artificial intelligence

Essential reading

Russell, Stuart J. and Peter Norvig *Artificial Intelligence: A Modern Approach*. (Prentice Hall, 2003) second edition [ISBN 0137903952 (pbk)].

Recommended reading

Bertsekas, D.P. and J.N. Tsitsikilis *Introduction to Probability*. (Athena Scientific, 2002) [ISBN 9781886529236 (hbk)].

Bishop, CM. *Pattern Recognition and Machine Learning*. (Springer, 2006) [ISBN 0387310738 (hbk)].

- Clocksin, W.F. and C.S. Mellish *Programming in Prolog*. (SpringerVerlag, 2003) fifth edition [ISBN 3540006788 (pbk)].
- Haugeland, J. (ed.) *Mind Design II: Philosophy, Psychology, and Artificial Intelligence*. (MIT Press, 1997) revised edition [ISBN 0262581531 (pbk)].
- Lycan, W. (ed.) *Mind and Cognition: An Anthology*. (Blackwell, 2008) third edition [ISBN 9781405157858 (pbk); 9781405157841 (hbk)].
- Sutton, R.S. and A.G. Barto *Reinforcement Learning: An Introduction*. (MIT Press, 1998) [ISBN 0262193981 (hbk)].

311 Neural networks

Essential reading

Rojas, R. *Neural Networks: a Systematic Introduction*. (1999) Available online at: <http://page.mi.fu-berlin.de/rojas/neural/>

Although not available in print this book is available for free download from the author's website.

Krose, B. and P. van der Smagt (1996) *An introduction to neural networks*. Available at: <http://lia.univ-avignon.fr/fileadmin/documents/Users/Intranet/chercheurs/torres/livres/book-neuro-intro.pdf>

Another essential read which gives a good introduction to the subject is available on: www.statsoft.com/textbook/neural-networks/

Recommended reading

- Bishop, Christopher M. and Geoffrey Hinton *Neural Networks for Pattern Recognition*. (Clarendon Press, 1995) [ISBN 0198538642 (pbk)]. Note that this book is aimed at professionals, postgraduates and researchers.
- Clabaugh, C., D. Myszewski and J. Pang *Neural networks*. (2009) Available online at www-cs-faculty.stanford.edu/~eroberts/courses/soco/projects/2000-01/neural-networks/Files/presentation.html (Last accessed April 2011.)
- Hagan, Martin T., Howard B. Demuth and M.H. Beale *Neural Network Design*. (University Press of Colorado, 2006) [ISBN 0971732108 (pbk)].
- Haykin, Simon *Neural Networks: A Comprehensive Foundation*. (Prentice Hall, 2008) third international edition [ISBN 9780131471399 (hbk); 9780131293762 (pbk)].
- Haykin, Simon *Neural Networks and Learning Machines*. (Prentice Hall, 2009) third edition [ISBN 9780131293762 (pbk)].
- Principe, J.C. and Neil R. Euliano *Neural and Adaptive Systems: Fundamentals through Simulations*. (Wiley, 2000) [ISBN 0471351679 (hbk with CD-ROM)].
- Reed, R.D. and R.J. Marks II *Neural Smithing: Supervised Learning in Feedforward Artificial Neural Networks*. (MIT Press, 1999) [ISBN 0262181908].
- Ripley, Brian D. *Pattern Recognition and Neural Networks*. (Cambridge University Press, 2008) [ISBN 0521717701 (pbk)].
- Rumelhart, D.E., J.L. McClelland and the PDP Research Group *Parallel Distributed Processing: Explorations in the Microstructure of Cognition*. (MIT Press, 1987). A two volume set. [Volume 1 ISBN 026268053X (pbk): out of print. Volume 2 ISBN 0262631105 (pbk)].
- Sejnowski, T.J. and C.R. Rosenberg *Parallel networks that learn to pronounce English text*. *Complex Systems* 1, pp.145-168. (1987) Available online at <http://papers.cnl.salk.edu/index.php?SearchText=Parallel+networks+that+learn+to+pronounce+English+text> (Last accessed January 2011.) or search using <http://papers.cnl.salk.edu> as the starting point.
- Zurada, Jacek M. *Introduction to Artificial Neural Systems*. (Jaico, 2006) new edition [ISBN 8172246501 (pbk)]. An excellent book, with examples and applications. Some of the mathematics is too technical for this course but can be omitted without degrading the readability.

Useful web addresses

If you want to simulate more realistic neurons take a look at this website:
<http://nba.uth.tmc.edu/snap/>

Another useful site is <http://nips.cc/> which is the Neural Information Processing Systems (NIPS) Foundation. Conference proceedings from 1987 to 2008 are available for download.

University of Pittsburgh and Carnegie Mellon have set up the 'Center for the Neural Basis of Cognition: Integrating the sciences of mind and brain'. They also have a useful website at: www.cnbc.cmu.edu

314 Software engineering management

Essential reading

Although neither of these books is essential, at least one of them should be acquired. They contain rather more material than will be covered in this course, but will be relevant to other courses.

Pressman, Roger S. Edited by Darrel Ince *Software Engineering: A Practitioner's Approach: European Adaptation*. (McGraw-Hill, 2000) fifth edition [ISBN 0077096770 (pbk)].

Sommerville, Ian *Software Engineering*. (Addison Wesley, 2010) ninth edition [ISBN 9780137035151 (hbk)].

Recommended reading

*Brooks, F.P. *The Mythical Man-Month: Essays on Software Engineering*. (Addison Wesley Longman, 1995) anniversary edition [ISBN 0201835959 (pbk)]. A first-hand account of the development of a large computer system, containing a wealth of wit and wisdom about the management of software projects, and how the highly interactive nature of such projects means that simple methods of calculating the effort required can be grossly misleading.

Hodges, Andrew *Alan Turing: The Enigma*. (Walker, 2000) [ISBN 0802775802 (pbk)].

or Hodges, Andrew *Alan Turing: The Enigma*. (Vintage, 1992) reissue [ISBN 0099116413 (pbk)]. A biography of one of the greatest geniuses in the history of computing. Describes in simple terms some of the mathematical ideas that made the development of the modern computer possible, and gives an excellent account of the early history of computing.

Ince, D. *Software Development: Fashioning the Baroque*. (Oxford University Press, 1988) [ISBN 0198537573: out of print; 0198537581 (pbk): out of print]. A collection of essays on various aspects of software engineering. Good at describing the problems with some of the proposed solutions to the 'software crisis'.

Kidder, Tracy *The Soul of a New Machine*. (Little Brown and Co, 2000) [ISBN 0316491977 (pbk)].

or Kidder, Tracy *The Soul of a New Machine*. (Modern Library, 1998) [ISBN 0679602615 (pbk)].

or Kidder, Tracy *The Soul of a New Machine*. (Avon USA, 1995) [ISBN 038071115X (pbk)]. An account of the design and development of a new computer, and some of the human drama it occasions.

*Pressman, Roger S. and S. Russell Herron *Software Shock: The Danger and the Opportunity*. (Dorset House Publishing Company, 1991) [ISBN 093263320X (pbk): out of print]. A straightforward account of the software crisis, its effect on society and what we can do about it.

Weizenbaum, Joseph *Computer Power and Human Reason: From Judgement to Calculation*. (WH Freeman, 1976) first edition [ISBN 0716704641 (pbk): out of print]. A rather philosophical work on the problem of 'Can a machine think?' On the way, it explains very clearly for the lay reader exactly what software is, and introduces many of the fundamental concepts of computing.

317 Accounting information systems

Essential reading

- Bassett, Paul *Computerised Accounting*. (NCC Blackwell, 1996) fourth edition [ISBN 1855548267 (pbk): out of print].
- Robson, A.P. *Essential Accounting for Managers*. (Thomson Learning, 2000) [ISBN 0826454712 (pbk)].

Recommended reading

- Bhasker, K.N. and R.J.W. Housden *Accounting Systems and Data Processing*. (Heinemann, 1985) [ISBN 0434901385: out of print].
- Samuelson, Lars A. *Models of Accounting Information Systems: The Swedish Case*. (Chartwell-Bratt, 1990) [ISBN 0862382386].
- Wilkinson, Joseph W., M.J. Cerullo, V. Raval and B. Wong-On-Wing *Accounting Information Systems: Essential Concepts and Applications*. (John Wiley, 1999) fourth edition [ISBN 0471253529 (hbk)].

318 Information systems management

Essential reading

- Turban E., D. Leidner, E. McLean and J. Wetherbe *Information Technology for Management: Transforming Organizations in the Digital Economy*. (Wiley 2009) seventh edition [ISBN 0470287489 (hbk)].
- Laudon, Jane P. and Kenneth C. Laudon *Management Information Systems: Managing the Digital Firm*. (Pearson Education, 2009) eleventh international edition [ISBN 013609368X (pbk)].

Recommended reading

- Earl, M.J. *Management Strategies for Information Technology*. (Prentice Hall, 1989) [ISBN 0135516560 (pbk): out of print].
- Evans, P and T.S. Wurster *Blown to Bits: How the New Economics of Information Transform Strategy*. (Harvard Business School Press, 1999) [ISBN 087584877X (hbk)].
- Lincoln, T. *Managing Information Systems for Profit*. (Wiley Series in Information Systems, 1990) [ISBN 0471925543 (hbk)].
- Robson, Wendy *Strategic Management and Information Systems: An Integrated Approach*. (Pitman, 1997) second edition [ISBN 0273615912 (pbk)].
- Ward, John and Joe Peppard *Strategic Planning for Information Systems*. (Wiley, 2002) third edition [ISBN 0470841478 (hbk)].
- Scott Morton, Michael S. *The Corporation of the 1990s: Information Technology and Organisational Transformation*. (Oxford University Press, 1991) [ISBN 0195063589 (hbk)].

319 Decision support and executive information systems

Essential reading

- Sauter, Vicki Lynn *Decision Support Systems: An Applied Managerial Approach*. (Wiley, 1997) [ISBN 0471311340 (hbk)].
- Watson, Hugh J., George Houdeshell and R. Rainer Jr. Kelly *Building Executive Information Systems and other Decision Support Applications*. (John Wiley, 1997) [ISBN 0471068861 (pbk)].
- or Watson, Hugh J., George Houdeshell and R. Rainer Jr. Kelly *Building Executive Information Systems and other Decision Support Applications*. (John Wiley, 1996) [ISBN 0471069302 (pbk); 0471069302 (hbk)].

Recommended reading

- Thesen, Arne and Laurel E. Travis *Simulation for Decision Making*. (West Publishing Company, 1992) [ISBN 0314835490 (hbk): out of print].
- The above book is about simulation and comes with a disk that has on

it an educational version of GPSS-PC. This will give some experience in the use of a decision support system generator. Some topics are not adequately covered in any textbook and this is particularly true of model-based management systems. Thus, in a few instances, reference will be made to journal articles not in the above texts and to other text books.

There are many periodicals which are relevant to both DSS and EIS, one of the most important is:

Decision Support Systems: The International Journal. (North-Holland) (10 issues per year) [ISSN 01679236].

General

It is always good practice to peruse academic journals and professional magazines for any appropriate articles. It is often monthly computer magazines which highlight the most recent developments in the field. These can be followed up by a more in-depth study later.

320 Project

Essential reading

Dawson, Christian W. *Projects in Computing and Information Systems. A Student's Guide*. (Addison-Wesley, 2009) second edition [ISBN 0273721313 (pbk)].

This book tackles the four key areas of project work i.e. planning, conducting, presenting and taking the project further. It covers the skills students need in order to excel in areas such as writing proposals, surveying literature and project management. As the title suggests the emphasis is rather more on computing than information systems, however the overall balance of ideas on projects is sound and the principles can be applied to any project.

Recommended reading

Cornford, T. and S. Smithson *Project Research in Information Systems: A Student's Guide*. (Palgrave Macmillan, 2005) second edition [ISBN 1403934711 (pbk)].

Raimond, Paul *Management Projects: Design, Research and Presentation*. (Chapman and Hall, 1993) [ISBN 0412468107 (pbk): out of print].

Rogerson, S. *Project Skills Handbook*. (Chartwell-Bratt, 1989) [ISBN 0862381460 (pbk): out of print].

323 Electronic commerce

Essential reading

Schneider, G. *Electronic Commerce*. (Quinnipiac University, 2010) ninth edition [ISBN 0538469242].

or Schneider, Gary P. *E-Business*. (Course Technology Cengage Learning, 2008) eighth edition [ISBN 032478807X (pbk)].

Recommended reading

Barnett, Gary *Application Servers: Creating the Web-Enabled Enterprise*. (Ovum Ltd, 1999) [ISBN 1902566173 (pbk)].

Bauknecht, Kurt *Electronic Commerce and Web Technologies: 4th International Conference, EC-Web 2003, Prague, Czech Republic, September 25, 2003*. (Springer-Verlag, 2003) [ISBN 3540408088 (pbk)].

or Bauknecht, Kurt *Electronic Commerce and Web Technologies: Second International Conference, EC-Web 2001, Munich, Germany, September 4-6, 2001*. (Springer, 2001) [ISBN 3540425179 (pbk)].

or Bauknecht, K.; S.K. Madria and G. Pernul *Electronic Commerce and Web Technologies: First International Conference, EC-Web 2000, London, UK, September 4-6, 2000: Proceedings*. (Springer, 2000) [ISBN 3540679812 (pbk)].

- Bidgoli, Hossein *Electronic Commerce: Principles and Practice*. (Academic Press, 2002) [ISBN 012095978X (Spiral Binding)].
- or Bidgoli, Hossein *Electronic Commerce: Principles and Practice*. (Academic, 2001) [ISBN 0120959771 (hbk)].
- Cooper, Elizabeth and Liam Davenport (eds) *Electronic Commerce*. (wmrc.com, 1999) [ISBN 1903150019 (pbk with CD-ROM)].
- Greenstein, Marilyn and Miklos A. Vasarhelyi *Electronic Commerce: Security, Risk Management and Control*. (Mcgraw-Hill Irwin, 2001) second edition [ISBN 0071131124 (hbk): out of print].
- Kou, Weidong; Yelena Yesha and C.J. Tan (eds) *Topics in Electronic Commerce: Second International Symposium, ISEC 2001 Hong Kong, China, April 26–28, 2001 Proceedings*. (Springer, 2001) [ISBN 3540419632 (pbk)].
- Magid, Jonathan, Paul Jones and R. Douglas Matthews *The Web Server Book: Tools and Techniques for Building your own Internet Information Site*. (Ventana Press, 1995) [ISBN 1566042348 (pbk with CD-ROM)].
- or Magid, Jonathan, Paul Jones and R. Douglas Matthews *The Web Server Book: Tools and Techniques for Building your own Internet Information Site*. (Ventana Communications Group Inc, 1995) [ISBN 1566043174 (pbk with CD-ROM)].
- Timmers, Paul *Electronic Commerce: Strategies and Models for Business-to-Business Trading*. (Wiley, 2000) [ISBN 0471498408 (pbk)].
- or Timmers, Paul *Electronic Commerce: Strategies and Models for Business-to-Business Trading*. (Wiley, 1999) [ISBN 0471720291 (hbk)].
- Turban, Efraim *Electronic Commerce: A Managerial Perspective*. (Pearson Prentice Hall, 2005) [ISBN 0132230151 (hbk)].
- Yeager, Nancy J. and Robert E. McGrath *Web Server Technology: The Advanced Guide for World Wide Web Information Providers*. (Morgan Kaufmann Publishers, 1996) [ISBN 155860376X (pbk)].

325 Data compression

Essential reading

Pu, Ida M. *Fundamental Data Compression*. (Butterworth-Heinemann, 2005) [ISBN 0750663103 (pbk)].

This book may be ordered directly from the publishers. Contact details:

directorders@elsevier.com

Tel: + 44 1865 474010 Fax: + 44 1865 474011

Online orders: www.elsevierdirect.com/product.jsp?isbn=9780750663106

Recommended reading

Drozdek, Adam *Elements of Data Compression*. (Brooks/Cole-Thomson Learning, 2001) [ISBN 053438448X (pbk)].

Gibson, Jerry D., Toby Berger, Tom Lookabaugh, Dave Lindbergh and Richard L. Baker *Digital Compression for Multimedia: Principles and Standards*. (Morgan Kaufmann, 1998) [ISBN 1558603697 (hbk)].

Salomon, David *Concise introduction to data compression*. (Springer, 2008) [ISBN 1848000715 (pbk)].

Sayood, Khalid *Introduction to Data Compression*. (Morgan Kaufmann, 2000) second edition [ISBN 1558605584 (hbk)].

Useful web address

Debra A. Lelewer and Daniel S. Hirschbert – Data Compression:
www.ics.uci.edu/~dan/pubs/DataCompression.html

326 Computer security

Essential reading

The subject guide gives a complete account of the subject. However, students should be aware that developments in the world of computer security mean that the subject guide can never be completely up-to-date.

Students are therefore advised to access further reading wherever possible to keep abreast of the current state of technology in this field.

Following is a list of books that are recommended. It is not necessary to have copies of all of these books but a selection would complement the material covered in the subject guide. Some of the books are available to download free of charge; where appropriate the website addresses are given.

Recommended reading

Anderson, R. *Security Engineering – The Book*. Six sample chapters of this book are available to download free of charge from the website:

www.cl.cam.ac.uk/~rja14/book.html

The first five chapters deal with protocols, passwords, access control and cryptography and are particularly relevant to the subject.

Ferguson, N. and D. Schneier *Practical Cryptography*. (Wiley, 2003)

[ISBN 0471223573 (pbk)]. As the title suggests this book is a practical guide to choosing and using cryptographic tools. Some students may prefer this practical approach over the more academic approach of traditional text books.

*Gollmann, D. *Computer Security*. (John Wiley and Sons Ltd, 2005) second edition [ISBN 0470862939 (pbk)]. This book provides useful further reading on identification and authentication and access control, including a chapter on Unix security. There are lots of thought provoking and practical exercises.

Menezes, Alfred J., Paul C. Van Oorschot and Scott A. Vanstone *Handbook of Applied Cryptography*. (CRC, 1996) new edition [ISBN 0849385237 (hbk)].

Chapters of this book are available to download free of charge from:

www.cacr.math.uwaterloo.ca/hac/index.html

This book is intended for professional cryptographers and is the ultimate reference book for cryptography. Thorough details on all aspects of cryptography are given. This book is over 700 pages and is not recommended for a light read but it is well worth looking at the website.

*Pfleeger, Charles P and Shari Lawrence Pfleeger *Security in Computing*. (Prentice Hall, 2007) fourth edition [ISBN 9780132390774 (hbk)]. In this book, the authors introduce the core concepts of computer security and then identify and assess the threats currently facing programs, operating systems, database systems and networks. Attacks on RSA, SHA and DES are discussed.

*Piper, Fred and Sean Murphy *Cryptography: A Very Short Introduction*. (Oxford University Press, 2002) [ISBN 0192803158 (pbk)]. This really is a very short book and a great introduction to cryptography. The ideas behind symmetric key and public key cryptography and their uses are explained very clearly.

Schneier, Bruce *Secrets and Lies: Digital Security in a Networked World*. (Wiley, 2004) new edition [ISBN 0471453803 (pbk)]. Computer security from a business world perspective. This book examines the necessity for computer security in the real world. It is written more like a reading book than a text book and gives an interesting background to the subject of computer security.

*Stallings, William *Network Security Essentials: Applications and Standards*. (Prentice Hall, 2006) third edition [ISBN 0132380331 (pbk)]. This book covers Internet security tools and applications. It includes good descriptions of symmetric cryptosystems including DES, 3DES, AES, IDEA, Blowfish and RC5. Lots of exercises and test questions (but no solutions).

Useful web address

- www.schneier.com/resources.html
Provides links to sites regarding symmetric algorithms as well as many other articles on computer security.
- www.cl.cam.ac.uk/~rja14/book.html
Download chapters of *Security Engineering* by Ross Anderson.
- www.cacr.math.uwaterloo.ca/hac/index.html
Download chapters of *Handbook of Applied Security* by Menezes, van Oorschot and Vanstone.

343 Computing art and image effects

Essential reading

Kemp, M. *The Science of Art – Optical Themes in Western Art from Brunelleschi to Seurat*. (Yale University Press, 1992) revised edition [ISBN 9780300052411 (hbk)]. This book will be of great value in understanding many issues to do with developments in artists' understanding of creating more realistic representations, particularly with regard to perspective and colour. It will provide most students with greater insight into the creative process for a visual artist and thus provide additional impetus for those attempting to develop their own visual creativity.

Reas, C. and B. Fry *Processing: A Programming Handbook for Visual Designers and Artists*. (The MIT Press, 2007) [ISBN 0262182629 (hbk)]. While this text will already be well-known from use earlier in the programme of study, students should ensure a copy is to hand and that the contents are familiar.

Recommended reading

Foley, J.D., A. van Dam, S.K. Feiner, J.F. Hughes, and R.L. Phillips *Introduction to Computer Graphics*. (Addison-Wesley, 1993) [ISBN 0201609215 (hbk)].

or Foley, J.D., A. van Dam, S.K. Feiner, and J.F. Hughes *Computer Graphics: Principles and Practice*. (Addison-Wesley, 1995) [ISBN 0201848406]. This covers essential topics at greater length than the book above and may not be as easy to follow on some topics.

Gombrich, E.H. *The Story of Art*. (Phaidon, 1995) sixteenth edition. [ISBN 071483355X (hbk); 9780714832470 (pbk)]. Those parts relating to artists discussed in the subject guide should be read to broaden understanding of the influences on how artists worked and on what they produced. It should be readily available in any good library and used extensively for background reading. It is a recommended book to avoid excessive emphasis on Art History in a BSc programme.

Kemp, M. *Seen/Unseen*. (Oxford University Press, 2006) [ISBN 0199295727 (hbk) or 9780199295722 (hbk)]. An excellent book for thoughtful views on the relationships between artists' and scientists' developing understanding in several areas including representation of spatial relationships in nature.

Eisner, Lotte H. *The Haunted Screen*. (University of California Press, 1974) [ISBN 9780520024793 (pbk: out of print)]. Although not a new book it is excellent in text and pictorial coverage of German Expressionist film, giving clear illustrations of techniques and effects.

346 Sound and music

Unless otherwise stated, articles are available via the University of London Research Library: <http://external.shl.london.ac.uk/>.

This annotated reading list is to help you find material to support your understanding and knowledge of the area. Together with the subject guide, the recommended readings include core topics that give a basic understanding of the central themes in the area. The supplementary readings give a broader picture, and are for those students interested in exploring some topics further.

Recommended reading

Fremerey, C., F. Kurth, M. Müller and M. Clausen "A Demonstration of the SyncPlayer System". In: *Proceedings of the 8th International Conference on Music Information Retrieval (ISMIR)*. Vienna, Austria 2007, pp.131–32. URL: www.mpi-inf.mpg.de/~mmueller/publications/2007_FremereyKurthMuellerClausen_SyncPlayerDeE_mo_ISMIR.pdf.

This short paper describes the SyncPlayer system, which is an example of an end user application which has been made possible by a great deal of research in the field of MIR.

Lerdahl, F. "Cognitive constraints on compositional systems" In: *Contemporary Music Review* 6 (1992), pp.97–121. doi:10.1080/07494469200640161.

This paper is an early example of how developments in the understanding of music cognition can be insightful for composers. It emphasises the importance of considering music as a perceptual phenomenon. Since computer musicians often employ abstract generative processes to create music, this paper is very relevant when considering how the results of algorithmic processes might

be interpreted by listeners. Pages 97–104 present the main argument, and are the most important to consider. The remaining pages focus on the details of particular constraints drawing from Lerdahl and Jackendoff influential ‘Generative Theory of Tonal Music’.

Overholt, D., J. Thompson, L. Putnam, B. Bell, J. Kleban, B. Sturm and J. Kuchera-Morin “A Multimodal System for Gesture Recognition in Interactive Music Performance”. In: *Computer Music Journal* 33.4 (2009), pp.69–82. DOI: 10.1162/comj.2009.33.4.69.

There are many papers to be found discussing various aspects of interactive music systems. This paper describes a relatively recent project that combines video analysis, audio analysis, and sensor data in order to provide a system with which a human instrumentalist can interact.

Supplementary reading

Fremerey, C., M. Clausen, S. Ewert and M. Müller “Sheet Music-Audio Identification”. In: *Proceedings of the International Conference on Music Information Retrieval (ISMIR)*. Kobe, Japan 2009, pp.645–50.
URL: www.mpi-inf.mpg.de/~mmueller/publications/2009_FremereyClausenMuellerEwert_SheetMusicAudioIdentification_ISMIR.pdf
This paper discusses the general MIR problem of music synchronisation, and is an example of experimental work in the field of MIR.

Pearce, M.T. and G.A. Wiggins “Expectation in Melody: The Influence of Context and Learning”. In: *Music Perception* 23.5 (2006), pp.377–405.
Substantial scientific paper presenting a computational learning model of human melodic expectation. The model learns statistical regularities in a corpus of music, and is able to account for behavioural data gathered from previous psychological experiments. It is argued that the model subsumes previous proposed theories, and is able to offer greater explanatory power. This paper is a good example of a rigorous application of cognitive science methodology, and of how scientific knowledge is advanced. It also surveys much other work in the field, and raises important challenges for future research.

Pre-print: www.doc.gold.ac.uk/~mas01mtp/papers/PearceWigginsMP06.pdf

348 Interaction design

Full details of the textbooks and extensive recommended readings for this course are given in the subject guide. The lists below will provide a general introduction to Interaction Design, User Experience Design and Human Computer Interaction.

Essential reading

The recommended texts for the course (a major textbook and two design workbooks which should be purchased) are:

Shneiderman, Ben, Catherine Plaisant, Maxine Cohen and Steve Jacobs *Designing the User Interface: Strategies for Effective Human-Computer Interaction*. (Pearson Education, 2009) fifth edition [ISBN 0321537351 (hbk)].
www.pearsonhighered.com/dtui5einfo/;
http://wps.aw.com/aw_shneiderman_dtui_5/

Buxton, Bill *Sketching User Experience*. (Morgan Kaufman, 2007) [ISBN 9780123740373 (pbk)]. www.elsevier.com/wps/find/bookdescription.cws_home/711463/description#description

Buxton, Bill, Saul Greenberg and Sheelagh Cpendale *Sketching User Experiences: The Workbook*. (Morgan Kaufman, 2010) [ISBN 0123819598 (pbk)]. Due to be published in February 2012.
www.elsevier.com/wps/find/bookdescription.cws_home/723098/description#description

The most recent editions of the textbooks below should be consulted in addition to the above and may be used if *Designing the User Interface* is unavailable.

Dix, Alan, Janet Finlay, Greg Abowd and Russell Beale *Human-Computer Interaction*. (Pearson, 2003) third edition [ISBN 0130461091 (hbk)].
www.hcibook.com/e3/

Sharp, Helen, Yvonne Rogers, and Jennifer Preece *Interaction Design: Beyond Human Computer Interaction*. (John Wiley & Sons, 2007) second edition [ISBN 0470018666 (pbk)].
<http://eu.wiley.com/WileyCDA/WileyTitle/productCd-0470018666.html>
<http://www.id-book.com/>

All references to this textbook in the subject guide refer to the second edition, not to the recently published third edition. The original online links are still available at: www.id-book.com/secondedition/. Students are therefore recommended to use the second edition of this book for the time being. Any updates relating to the third edition will be posted on the VLE.

Recommended reading

The following textbooks may be useful, especially for those undertaking a project with a strong HCI element to it. They are not essential purchases but are worth considering and should be consulted if possible.

Cairns, Paul and Anna Cox (eds) *Research Methods for Human-Computer Interaction*. (Cambridge University Press, 2008) [ISBN 9780521690317 (pbk)].
www.cambridge.org/gb/knowledge/isbn/item1163666/?site_locale=en_GB

Lazar, Jonathan, Jinjuan Heidi Feng and Harry Hochheiser *Research Methods in Human Computer Interaction*. (Wiley, 2009) [ISBN 0470723378 (pbk)].
<http://eu.wiley.com/WileyCDA/WileyTitle/productCd-0470723378.html>

Norman, Kent L. *Cyberpsychology: An Introduction to Human-Computer Interaction*. (CUP, 2008) [ISBN 9780521687027 (pbk); 9780521867382 (hbk)].
www.cup.cam.ac.uk/us/catalogue/catalogue.asp?isbn=9780521867382
This useful and wide-ranging report may be downloaded free of charge.

Harper, Richard et al. *Being Human: HCI in the Year 2020*. (Microsoft Research, 2008).
<http://research.microsoft.com/en-us/um/cambridge/projects/hci2020/download.html>

These titles are extensive handbooks which may be available to consult in a library, or to look at online (selected chapters only). They should be consulted if possible but are not mandatory.

Helander, Martin, Thomas Landauer and Prasad Prabhu (eds) *Handbook of Human-Computer Interaction*. (Elsevier, 1997) second edition [ISBN 9780444818621 (hbk): out of print].
www.elsevier.com/wps/find/bookdescription.cws_home/524988/description#description

Lumsden, Joanna (ed.) *Handbook of Research on User Interface Design for Mobile Technology, Vols. I and II*. (iGI Global, 2008) [ISBN 9781599048727 (hbk)].
www.igi-global.com/reference/details.asp?ID=7312

Schumacher, Robert *The Handbook of Global User Research*. (Morgan Kaufmann, 2010) [ISBN 9780123748522 (hbk)].
www.elsevier.com/inca/717479

Sears, Andrew and Julie Jacko (eds) *The Human-Computer Interaction Handbook*. (CRC Press, 2007) second edition [ISBN 9780805858709 (hbk)].
www.taylorandfrancis.com/books/details/9780805858709/

General and background reading

The following books and edited compilations are linked to topics in the course and many are referenced in the subject guide, where further detail may be found. Some may be useful for coursework assignments and those indicated by * are highly recommended.

Burns Wendell, Jessamyn, Karen Holtzblatt and Shelley Wood *Rapid Contextual Design: A How-to Guide to Key Techniques for User-Centered Design*. (Morgan Kaufmann, 2004) [ISBN 9780123540515 (pbk)].
www.elsevier.com/wps/find/bookdescription.cws_home/703690/description#description

- Carroll, John, *Making Use: Scenario-Based Design of Human-Computer Interactions*. (MIT Press, 2000) [ISBN 9780262513883 (pbk)].
<http://mitpress.mit.edu/catalog/item/default.asp?ttype=2&tid=4114>
- *Cooper, Alan, Robert Reimann and David Cronin *About Face 3: The Essentials of Interaction Design*. (Wiley, 2007) [ISBN 9780470084113 (pbk)].
<http://eu.wiley.com/WileyCDA/WileyTitle/productCd-0470084111.html>
- Druin, Allison (ed.) *Mobile Technology for Children*. (Morgan Kaufmann, 2009) [ISBN 9780123749000 (pbk)].
http://www.elsevier.com/wps/find/bookdescription.cws_home/717552/description#description
- *Jones, Matt and Gary Marsden *Mobile Interaction Design*. (Wiley, 2005) [ISBN 9780470090893 (pbk)].
<http://eu.he.wiley.com/WileyCDA/HigherEdTitle/productCd-0470090898.html>
- *Kuniavsky, Mike *Smart Things: Ubiquitous Computing User Experience Design*. (Morgan Kaufmann, 2010) [ISBN 9780123748997 (pbk)].
www.elsevier.com/wps/find/bookdescription.cws_home/723092/description#description
- *Lazar, Jonathan *Universal Usability*. (Wiley, 2007) [ISBN 9780470027271 (pbk)].
<http://eu.wiley.com/WileyCDA/WileyTitle/productCd-0470027274.html>
- Mayhew, Deborah *The Usability Engineering Lifecycle: A Practitioner's Handbook for User Interface Design*. (Morgan Kaufmann, 1999) [ISBN 9781558605619 (pbk)].
www.elsevier.com/wps/find/bookdescription.cws_home/680582/description#description
- *Moggridge, Bill *Designing Interactions*. (MIT Press, 2006) [ISBN 0262134748 (hbk)].
www.designinginteractions.com/
- Norman, Donald A. *The Design of Everyday Things*. (MIT Press, 1998) [ISBN 978-0-262-64037-4 (pbk)].
<http://mitpress.mit.edu/catalog/item/default.asp?ttype=2&tid=5393>
- *Norman, Donald A. *Living with Complexity*. (MIT Press, 2010) [ISBN 9780262014861].
<http://mitpress.mit.edu/catalog/item/default.asp?ttype=2&tid=12250>
- Preece, Jennifer *Online Communities: Designing Usability and Supporting Sociability*. (Wiley, 2000) [ISBN 9780471805991 (pbk)].
<http://eu.he.wiley.com/WileyCDA/HigherEdTitle/productCd-0471805998.html>
- Rosson, Mary Beth and John Carroll *Usability Engineering: Scenario Based Development of Human Computer Interaction*. (Morgan Kaufmann, 2001) [ISBN 9781558607125 (hbk)].
www.elsevier.com/wps/find/bookdescription.cws_home/677961/description#description
- Saffer, Dan *Designing for Interaction: Creating Innovative Applications and Devices*. (New Riders Press, 2009) [ISBN 9780321643391 (pbk)].
www.peachpit.com/store/product.aspx?isbn=0321643399
- *Sommerville, Ian *Software Engineering*. (Pearson Education, 2010) ninth international edition [ISBN 9780137053469 (pbk)].
www.pearsonhighered.com/educator/product/Software-Engineering/9780137035151.page
- Wilson, Chauncey (ed.) *User Experience Re-mastered*. (Morgan Kaufmann, 2009). [ISBN 9780123751140 (pbk)].
www.elsevierdirect.com/product.jsp?isbn=9780123751140
- *Winograd, Terry (ed.) *Bringing Design to Software*. (Addison Wesley, 1996) [ISBN 0201854910 (pbk)].
www.pearsonhighered.com/educator/product/Bringing-Design-to-Software/9780201854916.page
- Wright, Peter and John McCarthy "Experience-centered design: designers, users and communities in dialogue", *Synthesis Lectures on Human-Centered Informatics 3*. (Morgan and Claypool, 2009).
www.morganclaypool.com/doi/abs/10.2200/S00229ED1V01Y201003HCI009

352 Operations research and combinatorial optimisation

Essential reading

The subject guide gives a complete account of the course. The recommended books are useful for further reading, with Padadimitriou and Steiglitz being particularly recommended. The unit is quite theoretical; the operations research textbooks have been chosen to provide a perspective which is more oriented towards management practice, while those on algebra and discrete mathematics will supplement the material on linear algebra and combinatorics.

Recommended reading

- Applegate David L., Robert E. Bixby, Vašek Chvátal, and William J. Cook *The Traveling Salesman Problem: A Computational Study*. (Princeton University Press, 2007) [ISBN 0691129932 (hbk)]. A major case study in modern optimisation. The background to the Concorde software found on the CD-ROM accompanying the subject guide for this unit.
- Cameron, Peter J. *Introduction to Algebra*. (Oxford University Press, 2007) second edition [ISBN 0198527934 (pbk)]. Highly recommended as an introduction to linear algebra and to mathematical concepts generally.
- Gass, S.I. *An Illustrated Guide to Linear Programming*. (Dover Publications, 1990). [ISBN 9780486262581 (pbk)]. At a slightly lower level than this unit but an excellent and low-cost guide to the concepts and applications of linear programming.
- Higgins, P.M. *Nets, Puzzles and Postmen: an Exploration of Mathematical Connections*. (Oxford University Press, 2009) [ISBN 9780199218431 (pbk)]. A delightful non-technical introduction to graph theory and combinatorial problem solving.
- Hillier, Frederick S. and Gerald J. Liebermann *Introduction to Operations Research*. (McGraw-Hill Higher Education, 2004) eighth edition [ISBN 007123828X (pbk/CD-ROM)]. Covers the practice of linear programming in much more depth than needed for this unit as well as many standard other OR topics such as queuing theory. Includes CD-ROM of optimisation software.
- Jones, Antonia J. *Game Theory: Mathematical Models of Conflict*. (Horwood Publishing Ltd, 2000) [ISBN 1898563144 (pbk)]. An introduction which gives prominence to, and a very clear account of, linear programming.
- Lindley, Dennis V. *Making Decisions*. (John Wiley & Sons, 1985) second edition [ISBN 0471908088 (pbk)]. A book that everybody involved in quantitative management should read.
- *Padadimitriou, Christos H. and Kenneth Steiglitz *Combinatorial Optimization: Algorithms and Complexity*. (Dover Publications Inc., 2000) new edition [ISBN 0486402584 (pbk)]. A low-cost Dover reprint of a famous text from the 1980s. Clear and comprehensive coverage of both main subjects on this course: matroid theory and linear programming.
- Wilson, Robin J. *Introduction to Graph Theory*. (Prentice Hall, 2010) fifth edition [ISBN 027372889X (pbk)]. A classic textbook, somewhat pricy compared to more recent texts, but exceptionally clear and authoritative.
- Winston, Wayne L. *Operations Research: Applications and Algorithms*. (Brooks Cole, 2003) fourth edition [ISBN 0534423620 (hbk/CD-ROM)]. As with Hillier and Liebermann, covers the practice of linear programming in great depth. Includes CD-ROM of optimisation software.