

IB1 - Information Technology in a Global Society

December 2007 Exams

1. Basics: hardware and networks

1.1. Systems fundamentals

❖ Syllabus details

- *Social and ethical issues*: Students must study and evaluate the social and ethical issues involved in the use of IT systems. These may include:
 - the economic value of information
 - environmental issues related to the production of computer components and supplies
 - environmental issues related to the disposal of obsolete hardware and computer supplies
 - health issues and ergonomics related to the use of hardware
 - password protection, security, biometrics and authorized access
 - issues related to viruses on both stand-alone and network systems
 - greater dependence of organizations on IT
 - increase in teleworking and the virtual office
 - the need for ongoing training and retraining
 - the economic and psychological implications of planned IT obsolescence in hardware, software and services, which has been forced on consumers by the IT industry
 - organizational policies and standards, for example, e-mail, surveillance and monitoring policies.
- *Knowledge of technology*: In order to study and evaluate the social and ethical issues involved in the use of IT systems, the student must have an understanding of related technological concepts. These may include:
 - key terms—data, information, hardware components, for example, input devices, output devices, processing, storage, memory (RAM, ROM), MHz, dpi, bit, KB, MB, GB, TB, ASCII, compatibility, OCR, OMR, bar code, baud, verification and validation, encryption/decryption, firewall, virus, Trojan horse, worm, logic bomb, platform, peripheral
 - use, advantages and disadvantages of analogue and digital data
 - operating systems (multitasking, boot) and utilities, for example, defragment, disk format, virus scan programs
 - responsible computer use (for example, regular back-ups, virus checking, security, storage, housekeeping)
 - a responsible and systematic approach to implementing or upgrading IT systems, for example, analysis, design, implementation, testing, evaluation, training, policies and standards.

❖ Books and other resources

- Computer Confluence
 - Chapter 2 *Inside the Box*
 - Chapter 3 *Peripherals*
- A Gift of Fire
 - 4.1 *What Can Go Wrong?*
 - 4.2 *Case Study: The Therac-25*

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- Article: [Nigeria faces e-waste 'toxic legacy'](#) (BBC News)

1.2. Networks

❖ Syllabus details

- **Social and ethical issues:** Students must study and evaluate the social and ethical issues involved in the use of networks. These may include:
 - vulnerability of networks to intrusion
 - ability to implement different levels of access
 - implications of network failure, for example, banks, transportation, hospitals, schools
 - implications of collaboration, groupware and data sharing
 - threat of compromising data integrity in shared databases
 - additional threats to privacy on a network compared with stand-alone computers
 - the need to authenticate information
 - intellectual property protection on networks, for example, site licences, file access
 - equality of access for different groups and individuals
 - ability to monitor users (surveillance); concerns of people regarding monitoring
 - ability to filter incoming data
 - ability to control personal, business, military, government operations over a wide geographical area
 - increased globalization, for example, EFT, EDI, e-commerce
 - need for interface standards
 - need for network use policy.
- **Knowledge of technology:** In order to study and evaluate the social and ethical issues involved in the use of networks the student must have an understanding of related technological concepts. These may include:
 - key terms—LAN, WAN, client, server, Ethernet, access, access permissions, login, password, firewall, sysadmin, UPS, EDI
 - types of intrusion, for example, viruses, hacking, phreaking
 - security measures
 - network types, for example, Intranet, Internet, VPN
 - encryption and SSL
 - e-commerce.

❖ Books and other resources

- Computer Confluence
 - Chapter 8 *Networks and Communication*
 - Chapter 10 *Computer Security and Risks* pg 390-395 only
- A Gift of Fire
 - 2.2 *"Big Brother Is Watching You"*
 - 7.2 *Hacking*
 - 7.3 *Online Scams*
 - 7.4 *Fraud, Embezzlement, Sabotage, Information Theft and Forgery*
 - 3.3 *Cryptography and Its Uses*
- Article: [Tips to help you stay safe online](#) (BBC News)

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2. Applications

2.1. Software fundamentals

❖ Syllabus details

- *Social and ethical issues:* Students must study and evaluate the social and ethical issues involved in the use of software. These may include:
 - bug-free software
 - software piracy
 - interfaces adapted for the disabled language independence of GUIs, making computers accessible to a very wide range of users, including those with special needs, and very small children
 - use of password protection to prevent unauthorized access
 - globalization of software
- *Knowledge of technology:* In order to study and evaluate the social and ethical issues involved in the use of software, the student must have an understanding of related technological concepts. These may include:
 - key terms—software (application), shareware, public domain, freeware, commercial software, integrated software, user manual, registration card, serial number, warranty, copyright, licence (multi-user, single user, site licence), compression/decompression, back-up, back door (trapdoor), upload/download, wizard, template
 - GUI, command-line interface, voice recognition.

❖ Books and other resources

- Computer Confluence
 - Chapter 4 *Software Applications: Tools for Users* pg 146-150
 - Chapter 4 *Software Piracy and Intellectual Property Laws* pg 166-167
- A Gift of Fire
 - 6.6 *Free Software*
 - 6.7 *Issues for Software Developers*

2.2. Databases and spreadsheets

❖ Syllabus Details

- *Social and ethical issues:* Students must study and evaluate the social and ethical issues involved in the use of databases and spreadsheets. These may include:
 - privacy of information in different cultures
 - rights of individuals with respect to the storage of personal data
 - social consequences of outdated or incorrect data stored in databases
 - social consequences of the release of sensitive data stored in databases
 - legislation on access and use of database information in different countries

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- responsibility for the security of data stored in databases from different perspectives, for example, the developer, the user and the management of an organization
- accountability for the negative social effects caused by insecure databases
- ethical issues related to the collection and use of personal data
- ethical issues related to the selling of data stored in databases.
- **Knowledge of technology: Databases**
 - Key terms—field, key field, record, search, query, sort, database management system, mail merge
 - Flat-file database versus relational database
 - Paper files versus electronic files
 - Data redundancy and data integrity
 - Updating data
 - Data transfer between a database and a spreadsheet
 - Search and the use of the Boolean operators (AND, OR and NOT)
 - Data mining/data matching
 - Report generation
 - Special-purpose databases, for example, personal information managers, encyclopedias, library systems
- **Knowledge of technology: Spreadsheets**
 - Key terms—cell, cell format (number, text, value, function, calculation, date, currency), row, column, label, macro, replicate, template, worksheet, “what if” questions, range, absolute and relative reference
 - Paper files versus electronic files
 - Reliability and integrity of data
 - Data transfer between a database and a spreadsheet
 - Select print and display area of a worksheet
 - Use of the appropriate graph or chart for the meaningful representation of information
 - Special-purpose spreadsheets, for example, inventory, budget
- ❖ Books and other resources
 - Computer Confluence
 - Chapter 5 *Basic Productivity Applications* pg 196-203
 - Chapter 7 *Database Applications and Privacy Implications* pg 267-269, 271-275

2.3. Word processing and desktop publishing

❖ Syllabus details

- **Social and ethical issues:** Students must study and evaluate the social and ethical issues involved in the use of word processing and desktop publishing (DTP). These may include:
 - effects of DTP on the right to publish, for example, freedom of the press, free exchange of ideas
 - economic effects of DTP on business
 - intellectual property issues associated with reproduction and/or transformation of digitized text

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- effects of word processing and DTP on the workplace, for example, job loss, deskilling, surveillance
- ergonomics/health impacts of word processing and DTP in the workplace
- social impact of speech-enabled input/output.
- *Knowledge of technology:* In order to study and evaluate the social and ethical issues involved in the use of word processing and desktop publishing, the student must have an understanding of related technological concepts. These may include:
 - key terms—formatting, template, spell check, grammar check, ASCII/unicode, PDF, RTF, text
 - word processing versus page layout
 - appropriate use of templates
 - effective use of word processing functions to streamline production of documents
 - use of appropriate fonts, white space and line spacing to create output that communicates effectively.
- ❖ Books and other resources
 - Computer Confluence
 - Chapter 5 *Basic Productivity Applications* pg 179-195
 - Chapter 2 *Hardware Basics* pg 79-81
 - A Gift of Fire
 - 9.3 *Loss of Skill and Judgment* pg 374-377
 - 8.1 *The Changing Nature of Work*
 - 8.2 *The Impact on Employment*
 - 8.3 *The Work Environment*

Students must also study the revision notes, handouts and PowerPoint slides given in class. If you are missing a document, refer to my website <http://pkafkarkou.co.nr>