Northfleet Technology College

Course Outline: Information Technology in a Global Society

Equivalent to ½ A level

Introduction: What is ITGS

Information Technology in a Global Society

- "International" refers to the perspective of the world's constituent parts, nation states and their relationships with each other.
- "Global" refers to the perspective of the planet as a whole.

Developments in IT systems have effectively created a second industrial revolution. As the relationship bet ween human beings and IT systems continues to evolve, ITGS will provide young people with the tools to a ddress the effects of this revolution. Furthermore, ITGS will also uniquely prepare young people with the wi sdom to be informed and responsible citizens of tomorrow.

In a future world where IT systems will form critical infrastructures, they will be defining the social effects of those systems, developing societal resilience and attempt to resolve the ethical issues raised by their us e.

Introduction to the course

The study of how developments in Information Technology affect people and society. You will study situations from across the world from the local community to an international level and in different areas, looking at both social impacts and ethics.

- Social impacts – negative or positive
- Ethics – what is right or wrong

There are many uses of IT which are completely legal but which raise social and ethical concerns, and may be objectionable to some people.

There are **four** aspects of ITGS.

1. Social and Ethical Significance
   Impacts affect stakeholders in a variety of ways including economically, legally and psychologically. Questions raised are 'who is responsible if the system fails?' or is this an ethical way to use technology?'
   - *Reliability and Integrity*
   - *Security*
   - *Privacy and Anonymity*
   - *Intellectual Property*
   - *Authenticity*
   - *The Digital Divide and Equality of Access*
   - *Surveillance*
   - *Globalisation and Cultural Diversity*
   - *Policies*
   - *Standards and Protocols*
   - *People and Machines*
   - *Digital Citizenship*

2. Application to specific scenarios
   It exists all around us – laptop computers, smart phones and games consoles are obvious examples used in our everyday lives. But IT exists in many other places in our cars controlling the braking system, in banking enabling the global financial markets to operate etc.
3. IT Systems
   How the underlying system works in order to better understand how the systems differ from previous systems, and how they affect society.
4. Stakeholders
   The people affected by the issues and the IT systems

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www.itgstextbook.com

Assessment focus

- Paper 1– 1 hr 30 mins – (40 marks)
- Paper 2 - 1 hr 15 mins – (30 marks)
- Internal Assessment (IA) – the requirement of the project is to develop an original IT solution to a real problem for a specified client. Students should undertake a challenging task and using advanced techniques published annually on the OCC to demonstrate their practical IT and project management skills. (30 marks)

How does the curriculum focus on all learners?

- Supports the development of the attributes of the IB learner profile
- Addresses students' social, emotional and physical well-being
- Promotes effective teamwork and purposeful/productive collaboration
- Provides opportunities for making reasoned, ethical decisions
- Emphasizes learning how to learn (approaches to learning) and promotes the autonomy of the learner
- Provides for appropriate differentiation and supports students with a variety of language profiles
- Provides access to the curriculum for a diverse range of learner

How does the curriculum reflect the IB's approaches to teaching and learning?

- Provokes curiosity in order to structure and sustain relevant inquiry
- Creates opportunities for real-world, authentic learning
- Creates opportunities for learning experiences leading to principled action
- Fosters creativity and imagination
- Promotes critical reflection and thinking through analysis, synthesis and evaluation
- Promotes mastery of skills
- Stimulates conceptual understanding
- Offers opportunities to communicate in a variety of ways
- Incorporates opportunities for appropriate formative and summative assessment

How does the curriculum develop opportunities to explore local and global contexts?

- Creates opportunities to engage with multiple perspectives
- Values and develops individual student's language profiles to promote multilingualism
- Promotes intercultural understanding by exploring human commonality, diversity and interconnection
- Prepares learners for a highly connected and rapidly changing world
- Explores local, national and global challenges in: environment; development; rights; peace and conflict; cooperation and governance

How does the curriculum explore significant content?

- Develops disciplinary understanding
- Develops interdisciplinary and/or transdisciplinary understanding
- Explores opportunities for authentic learning that reach beyond the scope of the individual subjects
- Promotes conceptual understanding and knowledge transferable to new contexts
- Derives from the aims and objectives of each subject (group)
- Assures content aligned with varied, meaningful assessments

Material to be covered

- Hardware – hardware affects both the performance and the way in which IT systems are used
    - The available types of computers
    - Common input, output and storage devices
    - The role of the main computer component
    - Specifications of a computer

- Software – from the most powerful supercomputers to the simplest mobile phone, all IT requires software to operate.
    - Operating systems and application software
    - Categories of application software
    - Types of user interface
    - Types of software license
    - Impacts of software failure

- Networks – allow global collaboration and sharing of information and ideas.
    - Roles of computers on networks
    - Types of networks
    - How computers connect to a network
    - How computers communicate to a network
    - Network performance
    - Impacts of network failure

- Security – the security risks faced by computer users, the implications of security failure and preventative measures and solutions.
    - Common security problems and their impacts
    - Good security practices (preventative measures)
    - Solutions to common security problems (corrective measures)
    - Appropriate security software
    - Biometric, Encryption and the ethical issues related

- Multimedia – the technical details required to understand how these technologies work and how they can affect users and society as a whole.
    - Techniques used t digitally manipulate images
    - Social and ethical impacts of digital manipulations
    - How computers store images
    - Factors that affect image quality and file size
    - Lossless and lossy compression
    - Common file formats used for multimedia
    - Bitmap and vector graphics
    - Software used to create multimedia products

- Databases – the construction and use of databases and their role in IT systems
    - Flat file and relational databases
    - Applications of databases
    - Importance of data normalization
    - Rules governing data use
    - Privacy and integrity concerns related to database use

- Computer Models and Simulations – how computer models are constructed, how they can be used to predict a variety of events and some of the problems that might exist with doing this.
    - Computer models and computer simulations
    - Applications of models and simulations
    - How a computer model is created
    - Using spreadsheets to create a simple computer model
    - Issues related to the accuracy and reliability of models

- Business and Employment – the use of information technology in the three ITGS Business and Employment areas; traditional offline businesses, online businesses, and the transportation industry.
    - Technologies used for employee monitoring
    - The effectiveness of teleworking
    - Policies needed to regulate IT in the workplace
    - Appropriate web design and e-commerce techniques
    - E-marketing techniques
    - How IT can be used in the transportation industry

- Education – as businesses demand ever more IT literate employees, educational institutions need to ensure their students are prepared for the 21st century work environment by exposing them to the latest technologies and skills.
    - The technologies used for teaching and learning
    - How IT is used in school administration
    - Types of resources available online
    - The benefits of IT in the classroom

- Environment – the many ways IT is used in relation to our environment, both positive and negative.
    - Analog and digital data
    - The applications of digital imaging and mapping
    - How digital imaging and mapping work
    - The toxins found in electronic equipment
    - How to safely dispose of IT equipment
    - The environmental impacts of IT

- Health - Telemedicine systems (telehealth) the benefits and disadvantages
    - How IT can be used in patient diagnosis
    - How IT can be used in surgery
    - How IT can be used in patient treatment
    - Consequences of technology addiction
    - Availability of online medical advice
    - How to prevent overuse injuries

- Home and Leisure – ubiquitous broadband Internet access and mobile devices have enabled near constant access to communication technologies while social networks allow ever more detailed maps of users' to lives to be created online.
    - Technologies used in copyright infringement
    - Possible solutions to copyright infringement
    - Impacts of computer gaming
    - How news and media is broadcast using IT
    - The effects of citizen journalism and social media
    - How IT is used in digital preservation and restoration

- Politics and Government – IT has many uses in the political sphere. If used correctly, IT greatly facilitates the political process, increasing transparency, information sharing, and enfranchisement.
    - How Internet content can be filtered
    - The ethical and social impacts of Internet filtering
    - Technologies used for electronic and online voting
    - The social issues related to electronic and online voting
    - How government can use the Internet to provide services
    - How IT can be used by the military
    - The use of IT for military purposes

During year 12 until the end of term 4 you will studying various materials as listed.
In term 5 and 6 you will be starting your Internal Assessment (IA) which will need to be completed before the End of term 2 in year 13.
Exam questions from past papers will be studied alongside the theory of ITGS to prepare you for a PPE for papers 1 and 2 in January 2019.

Task: Research

One of the topics that is covered during yr 12 is E-Waste (electronic waste).
E-waste refers to old, broken, and obsolete computer and electronic equipment. E-waste includes monitors, keyboards, mice, printers, batteries, mobile phones, chargers, and other household electrical goods such as televisions and DVD players. In 2007, over 2 million tonnes of e-waste were thrown away in the US, and less than 20% of it was recycled.

Electronic waste, or e-waste, is an increasing problem as more and more computers are discarded each year. In some countries e-waste has spurned large industries but also caused great health problems.

1 - Describe 2 health problems caused by discarded electronic equipment

2 – Explain 2 concerns that users might have about donating their old IT equipment for reuse.

3 – What equipment do you have at home that requires recycling?

4 – Do you recycle your old equipment e.g. mobile phones, games consoles? Explain how do you do this?