

FREEHOLD REGIONAL HIGH SCHOOL DISTRICT

OFFICE OF CURRICULUM AND INSTRUCTION

INTERNATIONAL BACCALAUREATE PROGRAM

INFORMATION TECHNOLOGY IN A GLOBAL SOCIETY, YEAR 1

Grade Level: 11

Credits: 5

BOARD OF EDUCATION ADOPTION DATE:

AUGUST 29, 2016

[SUPPORTING RESOURCES AVAILABLE IN DISTRICT RESOURCE SHARING](#)

APPENDIX A: ACCOMMODATIONS AND MODIFICATIONS

APPENDIX B: ASSESSMENT EVIDENCE

APPENDIX C: INTERDISCIPLINARY CONNECTIONS

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IB INFORMATION TECHNOLOGY IN A GLOBAL SOCIETY SL, YEAR 1

COURSE PHILOSOPHY

The International Baccalaureate Organization provides the following philosophy: *“Students of group 3 subjects study individuals and societies. This means that they explore the interactions between humans and their environment in time and place. As a result, these subjects are often known collectively as the human sciences or social sciences. The IB Diploma Programme Information Technology in a Global Society (ITGS) course is the study and evaluation of the impacts of information technology (IT) on individuals and society. It explores the advantages and disadvantages of the access and use of digitized information at the local and global level. ITGS provides a framework for the student to make informed judgments and decisions about the use of IT within social contexts. Although ITGS shares methods of critical investigation and analysis with other social sciences, it also considers social and ethical considerations that are common to other subjects in group 3. Students come into contact with IT on a daily basis because it is so pervasive in the world in which we live. This increasingly widespread use of IT inevitably raises important questions with regard to the social and ethical considerations that shape our society today. ITGS offers an opportunity for a systematic study of these considerations, whose range is such that they fall outside the scope of any other single discipline.”*

COURSE DESCRIPTION

The International Baccalaureate Organization provides the following description: *“The nature of the subject is defined by the use of fundamental ITGS terms. For the purpose of the ITGS syllabus the following definitions apply. “Information technology” (IT) is the study, design, development, implementation, support or maintenance of computer-based information systems. “Social and ethical significance” refers to the effects that the development, implementation and use of information technology has on individuals and societies. Social impacts and ethical considerations are not mutually exclusive and are therefore categorized as a single entity. However, in general: social impacts tend to refer to the effects of IT on human life and ethical considerations tend to refer to the responsibility and accountability involved in the design and implementation of IT. An “information system” is a collection of people, information technologies, data, processes and policies organized to accomplish specific functions and solve specific problems.”*

COURSE SUMMARY

COURSE GOALS

CG1: Students will evaluate the impact of current and emerging IT systems on a range of stakeholders and various real-world scenarios.

CG2: Students will evaluate social and ethical considerations arising from the widespread use of IT by individuals, families, communities, organizations and societies at the local and global level.

CG3: Students will create and justify IT solutions for a specified client or end user to solve real-world problems.

COURSE ENDURING UNDERSTANDINGS

CEU1: Individuals, groups, communities, corporations, and societies are impacted by IT developments and the impact may vary for each.

CEU2: Social impacts and ethical considerations of IT need to be analyzed from both a local and a global perspective, recognizing that attitudes and opinions are diverse within and between different cultures.

CEU3: Selecting the correct IT application is just as important as finding a solution.

COURSE ESSENTIAL QUESTIONS

CEQ1a: What are the capabilities of current and emerging IT systems?

CEQ1b: What is their impact on a range of stakeholders?

CEQ2a: What are the ethical issues that may evolve when introducing new forms of IT locally and globally? Who is responsible and accountable?

CEQ2b: How will the perception of new forms of IT differ based on cultural perspective?

CEQ2c: What are the possible social impacts of IT on human life?

CEQ2d: What is fair in terms of access to technology?

CEQ3a: What is more important – the problem solving process or the actual solutions?

CEQ3b: How does a person choose the best IT solution to a given problem?

UNIT GOALS & PACING

UNIT TITLE	UNIT GOALS	RECOMMENDED DURATION
Unit 1: Introduction	Students will evaluate IT related problems and develop solutions taking into account the social and ethical impacts.	4 weeks
Unit 2: Business and Employment	Students will evaluate IT related problems related to business and employment and develop solutions, taking into account the social and ethical impacts.	8 weeks
Unit 3: Healthcare	Students will evaluate IT problems related to the healthcare field and develop solutions taking into account the social and ethical impacts.	7 weeks

UNIT LEARNING GOALS

Students will evaluate IT related problems and develop solutions taking into account the social and ethical impacts.

UNIT LEARNING SCALE

4	In addition to score 3 performances, the student can review a peer’s work and provide meaningful feedback.
3	The student can: <ul style="list-style-type: none"> • explain the key components of the ITS Triangle; • identify examples of applications of IT; • collaborate using web 2.0 tools; • analyze a scenario using the ITGS triangle (i.e., identify the stakeholders involved, identify the relevant IT, explain the social impacts, explain the ethical issues); • evaluate social and ethical considerations arising from the widespread use of IT by individuals, families, communities, organizations and societies at the local and global level; and • design an independent IT solution for an end user client.
2	The student sometimes needs assistance from a teacher, makes minor mistakes, and/or can do the majority of level 3 performances.
1	The student needs assistance to avoid major errors in attempting to reach score 3 performances.
0	Even with help, the student does not exhibit understanding of performances listed in score 3.
ENDURING UNDERSTANDINGS	
EU1: Many IT developments have a limited life span.	
ESSENTIAL QUESTIONS	
EQ1a: What will happen to outdated IT systems and how will we deal with the ever growing amounts of e-waste?	
EQ1b: How do we know when an IT system should be retired?	

COMMON ASSESSMENT

ALIGNMENT	DESCRIPTION
LG1 EU1, EQ1a, b 8.1.12.A.3 8.1.12.D.5 9.2.12.C.7 WHST.11-12.1 DOK 3	<p>Students will write an essay using the following criteria on an applied scenario. Applied scenarios may include any topic regarding IT. This assessment will be designed for students to use the key components of the ITGS Triangle and develop ITGS writing skills.</p> <p>Criterion A: The issue and the stakeholder(s)</p> <ul style="list-style-type: none"> • Describe one social/ethical concern related to the IT system. • Describe the relationship of one primary stakeholder to the IT system. <p>Criterion B: The IT concepts and processes</p> <ul style="list-style-type: none"> • Describe, step by step, how the IT system works. • Explain the relationships between the IT system and the social/ethical concern described in Criterion A. <p>Criterion C: The impact of the social/ethical issue(s) on the relevant stakeholders</p> <ul style="list-style-type: none"> • Evaluate the impact of the social/ethical issues on the relevant stakeholders. <p>Criterion D: A solution to a problem arising from the article</p> <ul style="list-style-type: none"> • Evaluate one solution that addresses at least one problem identified in Criterion C.

ALIGNMENT	DESCRIPTION
LG1 CEU1, CEQ1a, b CEU2, CEQ2a, b, c, d CEU3, CEQ3a, b 8.1.12.A.3 8.1.12.C.7 8.1.12.D.5 WHST.11-12.1 DOK 4	<p>INTERNAL ASSESSMENT (PROJECT) Criterion A: Initial investigation and initial consultation with client</p> <p>The student is presented with a client and problem that must be addressed through IT. After consulting with the client, the student must describe the inadequacies of the current situation, which may or may not involve the use of an IT system.</p> <p>The following key questions should be considered:</p> <ul style="list-style-type: none"> • Who is the client? • What is the present situation? • What are the inadequacies of the present situation? <p>The students can relay their explanation in a variety of ways including: a written record of the interview (either a summary or transcript), a sound file, a video, questionnaire, or an exchange of emails.</p>

TARGETED STANDARDS		
DECLARATIVE KNOWLEDGE	PROCEDURAL KNOWLEDGE	STANDARDS TO INTRODUCE
authenticity digital citizenship ethical approaches ethical issues globalization and cultural diversity information technology intellectual property ITGS command terms people and machines policies privacy and anonymity reliability and integrity security social and ethical significance social impacts stakeholders standards and protocols surveillance the digital divide and equality of access	Determine the central ideas or conclusions of a text (DOK 1) Summarize complex concepts, processes, or information presented in text (DOK 2) Write arguments introducing a precise, knowledgeable claim (DOK 4) Write arguments creating an organization that logically sequences the claims and counter-claims (DOK 4) Explain the social impacts of IT (DOK 2) Explain the ethical issues of IT (DOK 2) Explain the key components of the ITGS triangle (DOK 2) Identify examples of IT (DOK 2) Analyze a scenario using the ITGS triangle (DOK 3) Identify the stakeholders involved in ITGS (DOK 2) Identify relevant information IT (DOK 1)	RST.11-12.2 Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms. WHST.11-12.1 Write arguments focused on discipline-specific content. 9.2.12.C.7 Examine the professional, legal, and ethical responsibilities for both employers and employees in the global workplace. 8.1.12.D.5 Analyze the capabilities and limitations of current and emerging technology resources and assess their potential to address personal, social, lifelong learning, and career needs. 8.1.12.A.3 Collaborate in online courses, learning communities, social networks or virtual worlds to discuss a resolution to a problem or issue.

UNIT LEARNING GOALS

Students will evaluate IT related problems related to business and employment and develop solutions, taking into account the social and ethical impacts.

UNIT LEARNING SCALE

4	In addition to score 3 performances, the student can review a peer’s work and provide meaningful feedback.
3	<p>The student can:</p> <ul style="list-style-type: none"> • evaluate social and ethical considerations arising from the widespread use of IT by individuals, families, communities, organizations and societies at the local and global level; • describe the technologies used for employee monitoring and surveillance; • evaluate the effectiveness of teleworking; • critique the policies needed to regulate IT in the workplace including privacy and intellectual property, standards, and protocols; • connect appropriate web design and e-commerce techniques; • justify e-marketing techniques; • explain how IT can be used in the transportation industry; • explain how databases, spreadsheets, modeling, and simulations impact business and employment; and • design an independent IT solution for an end user client.
2	The student sometimes needs assistance from a teacher, makes minor mistakes, and/or can do the majority of level 3 performances.
1	The student needs assistance to avoid major errors in attempting to reach score 3 performances.
0	Even with help, the student does not exhibit understanding of performances listed in score 3.

ENDURING UNDERSTANDINGS	ESSENTIAL QUESTIONS
EU1: New technology in business allows for advances in operations.	EQ1a: How has new technology in business operations changed the role and experience for employees? Has it been positive, negative, or both? EQ1b: What is the impact of new operations technology on the success of a business? EQ1c: How can businesses ensure that they are effectively integrating new technology into their operations?
EU2: IT has expanded modern business into the digital world.	EQ2a: How has e-commerce changed the way modern business operates? EQ2b: How do businesses communicate with potential customers? EQ2c: How does technology affect the consumer experience?
EU3: IT use in the workplace will require new regulations as applications continue to advance.	EQ3a: What dangers will employees face as access to information becomes easier? EQ3b: How will businesses regulate use of technology in the future?

COMMON ASSESSMENT	
ALIGNMENT	DESCRIPTION
LG1 EU1, EQ1 a, b, c EU2, EQ2 a, b, c EU3, EQ3 a, b 8.1.12.C.1 8.1.12.F.1 WHST.11-12.1 RST.11-12.2 DOK 3	<p>Students will write an essay using the following criteria on an applied scenario related to business and employment. Applied scenarios may include: the effect of IT on the workplace through new practices such as teleworking; the impact of e-commerce on consumer purchasing trends; or the impact of IT in transportation (e.g., smart cars, mass transit security systems, tracking systems).</p> <p>Criterion A: The issue and the stakeholder(s)</p> <ul style="list-style-type: none"> Describe one social/ethical concern related to the IT system. Describe the relationship of one primary stakeholder to the IT system. <p>Criterion B: The IT concepts and processes</p> <ul style="list-style-type: none"> Describe, step by step, how the IT system works. Explain the relationships between the IT system and the social/ethical concern described in Criterion A. <p>Criterion C: The impact of the social/ethical issue(s) on the relevant stakeholders</p> <ul style="list-style-type: none"> Evaluate the impact of the social/ethical issues on the relevant stakeholders. <p>Criterion D: A solution to a problem arising from the article</p> <ul style="list-style-type: none"> Evaluate one solution that addresses at least one problem identified in Criterion C.
LG1 CEU1, CEQ1a, b CEU2, CEQ2a, b, c, d CEU3, CEQ3a, b 8.1.12.A.3 8.1.12.C.7 8.1.12.D.5 9.2.12.C.6 WHST.11-12.1 DOK 4	<p>INTERNAL ASSESSMENT (PROJECT) Criterion B: Analysis</p> <p>The student must ensure that the proposed IT solution addresses the inadequacies identified in the Internal Assessment from Unit 1. They must write in analysis form and include a completed requirements specification using the first section of the form and justification for the proposed solution using the second section of the form.</p> <p>The following information must be included in the requirements specification (first section of the form):</p> <ul style="list-style-type: none"> system interaction; input and output requirements; processing; security; and specific performance criteria that are evaluated in criterion F to determine the effectiveness of the solution. <p>The following information must be included in the justification of the proposal (second section of the form):</p> <ul style="list-style-type: none"> the rationale behind the choice of the proposed solution; explanation why this particular product is the most effective IT solution; and utilization of the requirements specification in the justification. <p>Other information that can be included in the justification of the proposal:</p> <ul style="list-style-type: none"> whether the student has the IT skills and access to the software required to develop the IT solution; whether the client's hardware and software is compatible with the IT solution; the level of training necessary for the client to use and maintain the proposed IT solution; the extent to which the input and output requirements of the client are met; whether the data required for the IT solution can be obtained by either the client or the student; and the resolution of security implications for the development and operation of the IT solution.

TARGETED STANDARDS		
DECLARATIVE KNOWLEDGE	PROCEDURAL KNOWLEDGE	STANDARDS TO INTRODUCE
acceptable use policy conversion rate data mining direct payment e-commerce EFT e-marketing employee monitoring fleet management full body scanners GPS location based service mobile commerce online businesses package tracking price comparison sites teleworking traditional businesses transportation businesses viral advertising web hosting	Create an argument for or against the expanding use of technology in the workplace (DOK 4)	WHST.11-12.6 Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.
	Evaluate the polices needed to regulate IT in the workplace (DOK 3)	8.1.12.D.1 Demonstrate appropriate application of copyright, fair use and/or Creative Commons to an original work.
	Explain the technologies used for employee monitoring (DOK 2)	8.1.12.F.1 Evaluate the strengths and limitations of emerging technologies and their impact on educational, career, personal and or social needs.
	Evaluate the effectiveness of teleworking (DOK 2)	
	Discuss e-marketing techniques (DOK 1)	
	Explain how IT can be used in the transportation industry (DOK 2)	
	Discuss appropriate web design and e-commerce techniques (DOK 1)	9.2.12.C.6 Investigate entrepreneurship opportunities as options for career planning and identify the knowledge, skills, abilities, and resources required for owning and managing a business.
	Investigate entrepreneurship opportunities (DOK 1)	
	Identify the knowledge, skills, abilities, and resources required for owning and managing a business (DOK 1)	

DECLARATIVE KNOWLEDGE	PROCEDURAL KNOWLEDGE	STANDARDS TO FURTHER DEVELOP
authenticity digital citizenship digital divide/equality of access ethical approaches ethical issues globalization/cultural diversity information technology intellectual property ITGS command terms people and machines policies privacy and anonymity reliability and integrity security social and ethical significance social impacts stakeholders standards and protocols surveillance	Determine the central ideas or conclusions of a text (DOK 1)	RST.11-12.2 Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.
	Summarize complex concepts, processes, or information presented in text (DOK 2)	WHST.11-12.1 Write arguments focused on discipline-specific content.
	Write arguments introducing a precise, knowledgeable claim(s) (DOK 4)	
	Write arguments creating an organization that logically sequences the claims and counter-claims (DOK 4)	9.2.12.C.7 Examine the professional, legal, and ethical responsibilities for both employers and employees in the global workplace.
	Explain the social impacts of IT as related to business transactions (DOK 2)	
	Explain the ethical issues of IT as related to business transactions (DOK 2)	8.1.12.D.5 Analyze the capabilities and limitations of current and emerging technology resources and assess their potential to address personal, social, lifelong learning, and career needs.
	Explain the key components of the ITGS triangle (DOK 2)	
Identify examples of IT currently used in the business environment (DOK 1)		
Analyze a business scenario using the ITGS triangle (DOK 3)	8.1.12.A.3 Collaborate in online courses, learning communities, social networks or virtual worlds to discuss a resolution to a problem or issue.	
Identify the stakeholders involved (DOK 1)		
Identify the relevant IT used in various business applications (DOK 1)		

UNIT LEARNING GOALS

Students will evaluate IT problems related to the healthcare field and develop solutions taking into account the social and ethical impacts.

UNIT LEARNING SCALE

4	In addition to score 3 performances, the student can review a peer’s work and provide meaningful feedback.
3	<p>The student can:</p> <ul style="list-style-type: none"> • evaluate social and ethical considerations arising from the widespread use of IT by individuals, families, communities, organizations and societies at the local and global level; • analyze the ways IT can be used in patient diagnosis; • assess the ways IT can be used in surgery; • critique the ways IT can be used in patient treatment; • discuss the consequences of technology addiction; • investigate the availability and authenticity of online medical advice; • discuss how to prevent overuse injuries; • Explain how databases, spreadsheets, modeling, and simulations impact healthcare; and • design an independent IT solution for an end user client.
2	The student sometimes needs assistance from a teacher, makes minor mistakes, and/or can do the majority of level 3 performances.
1	The student needs assistance to avoid major errors in attempting to reach score 3 performances.
0	Even with help, the student does not exhibit understanding of performances listed in score 3.

ENDURING UNDERSTANDINGS	ESSENTIAL QUESTIONS
EU1: IT is changing the way we deliver and receive healthcare. These changes can lead to reliability and integrity issues.	EQ1a: How do you predict IT will change healthcare in the future? EQ1b: Technology has changed the role of the doctor and the office visit. Are these changes positive? EQ1c: What are the ethical issues that come from using technology to manage healthcare? EQ1d: Should you trust your health to medical Internet sites and programs?
EU2: Technology advancements are leading to new health developments.	EQ2a: What are the psychological and physical effects of technology? EQ2b: Where are medical collaborations, such as the human genome project, leading to? EQ2c: How will technology dependency impact our culture going forward?

COMMON ASSESSMENT	
ALIGNMENT	DESCRIPTION
LG1 EU1, EQ1 a, b, c, d EU2, EQ2 a, b, c 8.1.12.D.5 8.1.12.F.1 WHST.11-12.1 RST.11-12.2 DOK 3	<p>Students will write an essay using the following criteria on an applied scenario related to business and employment. Applied scenarios may include: diagnostic and therapeutic tools, medical information administration, medical research, or the psychological and physical considerations of technology.</p> <p>Criterion A: The issue and the stakeholder(s)</p> <ul style="list-style-type: none"> Describe one social/ethical concern related to the IT system. Describe the relationship of one primary stakeholder to the IT system. <p>Criterion B: The IT concepts and processes</p> <ul style="list-style-type: none"> Describe, step by step, how the IT system works. Explain the relationships between the IT system and the social/ethical concern described in Criterion A. <p>Criterion C: The impact of the social/ethical issue(s) on the relevant stakeholders</p> <ul style="list-style-type: none"> Evaluate the impact of the social/ethical issues on the relevant stakeholders. <p>Criterion D: A solution to a problem arising from the article</p> <ul style="list-style-type: none"> Evaluate one solution that addresses at least one problem identified in Criterion C.
LG1 CEU1, CEQ1a, b CEU2, CEQ2a, b, c, d CEU3, CEQ3a, b 8.1.12.D.5 8.1.12.F.1 WHST.11-12.1 RST.11-12.2 DOK 4	<p>INTERNAL ASSESSMENT (PROJECT) Criterion C: Project Schedule Requirements</p> <p>Using the project schedule form, students will create a project schedule for the proposal in the Unit 2 Internal Assessment. The schedule should factor in the following: stakeholders, software, hardware, network requirements, data input and output, processes, and policies. The schedule should also address the key events in planning, designing, developing, testing, and implementing the product and any issues that may arise and affect the schedule.</p>

TARGETED STANDARDS		
DECLARATIVE KNOWLEDGE	PROCEDURAL KNOWLEDGE	STANDARDS TO INTRODUCE
addiction centralized database clinical decision support cybernetics diagnostic and therapeutic tools electronic data interchange electronic medical records e-prescriptions human genome project marketing and sales medical administration medical information medical research neural control prosthetics psychological and physical considerations repetitive strain injury system telehealth telemedicine tele-surgery	Discuss the consequences of technology addiction (DOK 1)	8.1.12.E.1 Produce a position statement about a real world problem by developing a systematic plan of investigation with peers and experts synthesizing information from multiple sources.
	Evaluate the ability of online medical advice (DOK 3)	
	Explain how to prevent overuse injuries (DOK 1)	8.1.12.F.1 Evaluate the strengths and limitations of emerging technologies and their impact on educational, career, personal and or social needs.
	Evaluate the ways IT can be used in patient diagnosis (DOK 3)	
	Evaluate the ways IT can be used in surgery (DOK 3)	
	Evaluate the ways IT can be used in patient treatment (DOK 3)	

DECLARATIVE KNOWLEDGE	PROCEDURAL KNOWLEDGE	STANDARDS TO FURTHER DEVELOP
authenticity digital citizenship digital divide/equality of access ethical approaches ethical issues globalization/cultural diversity information technology intellectual property ITGS command terms people and machines policies privacy and anonymity reliability and integrity security social and ethical significance social impacts stakeholders standards and protocols surveillance	Determine the central ideas or conclusions of a text (DOK 1)	RST.11-12.2 Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.
	Summarize complex concepts, processes, or information presented in text (DOK 2)	
	Write arguments introducing a precise, knowledgeable claim(s) (DOK 4)	WHST.11-12.1 Write arguments focused on discipline-specific content.
	Write arguments creating an organization that logically sequences the claims and counter-claims (DOK 4)	
	Explain the social impacts of IT as related to healthcare (DOK 2)	9.2.12.C.7 Examine the professional, legal, and ethical responsibilities for both employers and employees in the global workplace.
	Explain the ethical issues of IT as related to healthcare (DOK 2)	
	Explain the key components of the ITGS triangle (DOK 2)	8.1.12.D.5 Analyze the capabilities and limitations of current and emerging technology resources and assess their potential to address personal, social, lifelong learning, and career needs.
Identify examples of IT currently used in the healthcare environment (DOK 1)		
Analyze a healthcare scenario using the ITGS triangle (DOK 3)	8.1.12.A.3 Collaborate in online courses, learning communities, social networks or virtual worlds to discuss a resolution to a problem or issue.	
Identify the stakeholders involved (DOK 1)		
Identify the relevant IT used in various healthcare applications (DOK 1)		