CORE 1203
Spring 2022-23
Information Technology Revolution: Past, Present and Future
[IT Revolution] (3 units)

Course Description

This course introduces the basics concepts in information technology and explores the many applications of information technology in our daily life from consumer electronics to internet to various sectors including medicine, business, and social networking, etc. Key technology breakthroughs throughout the development of information technology and its impact to various aspect of our society will be studied. These include the invention of the 1st transistor, concept of computing machine, representation of information in digital formats, miniaturization via Very-Large-Scale Integration (VLSI) technology, computer systems and software, electronic communications from telephony and mobile phones over the telecom network to email, instant messaging and video skype over the internet, protection of information, and emerging applications including social networking, big data, and autonomous and intelligent systems. The focus is to identify the key technological advances in Information Technology and understand how these advances led to revolutionary changes in our life and society.

Course Objectives

- To understand the major breakthroughs in the development of Information Technology in the past 100 years including theory, devices, software and systems, their significance and impacts in both the technology development and the social implications.

- To trace the historical journey of the development and to understand how they shaped various sectors in the society.

- To allow students to expand using their creativity in imaging how IT will continue to develop and what changes it may have in our future.

Intended Learning Outcomes

Students taken this course are expected to be able to

1. Identify the key advances in information technology and related enabler in various technology.
2. Describe how advances in information technology are applied to different fields and the revolutionary changes they brought to those fields.
3. Evaluate the key benefits and potential drawback or issues underlying these changes.
4. Recognize the future trend in information technology development and possible benefits and issues associated with these development trends.

Instructor Prof. Wong, Albert Kai-Sun
Email: eealbert@ust.hk
Rm: 2424 (Lift 17-18)
Office Hours: By Appointment

Teaching Assistant Mr. Lavigne, Paul
Email: egpaul@ust.hk
Rm: 6583 (Lift 27-28)
Office Hours: By Appointment

Miss Fung, Grace
Email: eggrace@ust.hk
Rm: 6583 (Lift 27-28)
Office Hours: By Appointment

Grading

Post-Lecture Online Quizzes	9%	(Best 6 out of 8 quizzes from Lecture 2 to Lecture 9)
In-lecture Quizzes	6%	
Topical Studies		
• Group presentation	10%	(in sub-total)
- Notes (in notes view) should be added to the PowerPoint slides		(6% presentation content; group-basis) (2% questions/ comments submission; group-basis) (2% peer evaluation) *[zero mark for an activity if absent without pre-justification]*
Every member in a group must have some parts in presentation during the semester. *There should be no silent member.*		Group PPT Due: 2 days before each presentation begins. Late submission not accepted.
• Individual Topic Study	35%	(in sub-total; sign-up for topical area before)
- Proposal Write-up		(2%)
- Paper		(25%)
- PPT and Presentation		(5%)
- Review and comment on 3 papers		(3%)
Exam	40%	(Date: TBC)

Late Submissions
A deduction of up to 10 marks from the assignment grade will be taken for each day that the assignment is late (weekends are also counted). Assignments submitted later than 5 days after the due date will receive a zero mark.

Outline of Topics

- Dawn of a Revolution
- The Transistor and Power of 0 and 1
- Claude Shannon and Information Theory
- The Silicon Revolution
- Five Generations of Computing
- Wired and Wireless Communications
- The Internet and World Wide Web
- Information Security
- Computing Problems and Algorithmic
- Emerging Trends in IT
- Entrepreneurship

Recommended Text

Hey, T., Pápay G. (2015). The computing universe: a journey through a revolution. New York, USA: Cambridge University Press. (Available at HKUST Library e-resources: Access via Books24x7)