# THE EDUCATION UNIVERSITY OF HONG KONG

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## Course Outline

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## Part I

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|---|---|
| **Programme Title** | : All undergraduate programmes |
| **Programme QF Level** | : 5 |
| **Course Title** | : Social Impacts of New Technologies and Artificial Intelligence |
| **Course Code** | : SSC3302 |
| **Department** | : Social Sciences and Policy Studies |
| **Credit Points** | : 3 |
| **Contact Hours** | : 39 hours |
| **Pre-requisite(s)** | : NIL |
| **Medium of Instruction** | : EMI |
| **Course Level** | : 3 |

## Part II

The University's Graduate Attributes and seven Generic Intended Learning Outcomes (GILOs) represent the attributes of ideal EdUHK graduates and their expected qualities respectively. Learning outcomes work coherently at the University (GILOs), programme (Programme Intended Learning Outcomes) and course (Course Intended Learning Outcomes) levels to achieve the goal of nurturing students with important graduate attributes.

In gist, the Graduate Attributes for Sub-degree, Undergraduate, Taught Postgraduate, Professional Doctorate and Research Postgraduate students consist of the following three domains (i.e. in short "PEER & I"):
- **P**rofessional **E**xcellence;
- **E**thical **R**esponsibility; **&**
- **I**nnovation.

The descriptors under these three domains are different for the three groups of students in order to reflect the respective level of Graduate Attributes.

The seven GILOs are:
1. Problem Solving Skills
2. Critical Thinking Skills
3. Creative Thinking Skills
4a. Oral Communication Skills
4b. Written Communication Skills
5. Social Interaction Skills
6. Ethical Decision Making
7. Global Perspectives

## 1. Course Synopsis

This course aims at enabling students to understand and interpret the meanings, developments and social impacts of developing and using new technologies and artificial intelligence from social studies perspectives. It will also focuses on the ethical issues confronting human society about the use of artificial intelligience and new technologies. The course includes an overview of the world today which includes globalization and digtialization, development of artifical intelligence and new technologies, and their social impacts, ethics considerations, and what are our possible responses.

## 2. Course Intended Learning Outcomes (CILO$_s$)

*Upon completion of this course, students will be able to:*

CILO$_1$ demonstrate an understanding of the ideas and meanings of new technologies and artificial intelligence.

CILO$_2$ critically examine the questions of developments and debates around new technologies and artificial intelligence.

CILO$_3$ demonstrate an understanding of the nature and of social impacts of using new technologies and artificial intelligence.

CILO$_4$ apply the human ethics considerations in the consideration of possible social and individual responses.

## 3. Content, CILOs and Teaching & Learning Activities

| Course Content | CILOs | Suggested Teaching & Learning Activities |
|---|---|---|
| **What is the world now? – data revolution, digitalization, globalization, etc. What do you think technology and intelligence is?** Technology affects the way individuals communicate, learn, and think. New technologies and artificial intelligence can be related to computer science, mathematics, cognitive and learning sciences, education, educational technology, psychology, philosophy, sociology, anthropology, linguistics, and many other areas. Algorithms is used in artificial intelligence and digital media, but they may not be fair and transparent. Preventing algorithms may affect people's lives and liberties. | *CILO$_{1,2}$* | Lecture, discussion, video analysis, quizz |
| **What is new technology? Are we entering industrial revolution 4.0? What are its roles and essential elements? How does it develop? How does mobile technology affect our lives?** Can computers think? Can they use reason to develop their own concepts, solve complex problems, and understand languages? Whether machines can reproduce themselves? If machines possess "learning", "life" and "feeling", what is the difference between them and human? Will robots become conscious and actually take over soceity? | *CILO$_{1,2}$* | Lecture, discussion, video analysis, quizz, simulation activities |

| Course Content | CILOs | Suggested Teaching & Learning Activities |
|---|---|---|
| **Social impacts of new technologies – office and working environment and job seeking, society, medical, education, etc.** New technologies bring both **enhancing and disruptive effects on our lives**, e.g. the surveillance by facial recognition and civic liberties, biometrics monitored, etc. <br> **Digital technology jobs** are on the rise, and thus opportunities to work in the digital sector will be expanding and creating jobs faster than others; <br> Employes checking the right talent by technology and social media searching; employers will hire those cultural fit and train them skills later; <br> **Shifting towards flexibility**, relaxing form of dress and atmosphere; collaborative and shared office to promote communication, creativity, and innovation; <br> Flexible working arrangments (e.g. WFH, shared office) to cater for family and individual needs; freelancing for data input and recognition. <br> How can **new roles** (youtubers, Uber drivers, nano medic, driverless care, Vloggers, cloud storage expert, App developer, social media consultant, Java developer, 3D printing engineer, coders, Big Data analysts, Avatar designers, software engineers, cyber security specialists, urban agriclturalist, drone dispatcher, waste data manager, solar/wind turbines repairs specialists, etc.) affect our lives? <br> **Education need to adopt e-learning and digital learning**, and build learning systems that care : from trasnmitting knowledge to affective modelling <br> Question: Will technology cause unemployment and make some people unemployable? | $CILO_{3,4}$ | Lecture, discussion, case study, video analysis, simulation activities, debates, problem solving |
| **What is AI? How does it develop? What are its roles and essential elements? Social Intelligence** <br> **AI is commonly defined** as "a system's ability to interpret external data correctly, to learn from such data, and to use those learnings to achieve specific goals and tasks through flexible adaptation." (Haenlein, M., Kaplan, A., 2019). A.I. causes us to reflect on not only the limits of technology but also on **what it means to be human**. **AI is the ability of machines to do things that people would say require intelligence.** AI research is an attempt to discover and describe aspects of human intelligence that can be simulated by machines. **Human level AI**: problem-solving methods, game playing, automated understanding of natural languages, heuristic search | $CILO_{1,2}$ | Lecture, discussion, video analysis, simulation activities |

| Course Content | CILOs | Suggested Teaching & Learning Activities |
|---|---|---|
| theory, robot systems, heuristic scene analysis, predicate-calculus theorem proving, automatic programming, and other topics. **AI research:** so far only partially successful in giving computers sensing, perceiving, reasoning abilities. They have been partially successful in enabling computers to perform real-life actions and in integrating abilities to make the complete robot. | | |
| **Social impacts of AI – working and job sectors, society, medical, education, professionals, etc.** Question: What are the impacts AI will have on work, war, politics, economics, everyday life and death? Will automation take away jobs? **Change in jobs**: AI need digital talents but replacing some jobs, yet they need control and programming; robots for aerospace, patrolling, and surgery; AI for driving car, shopping, cooking, deliver items, factory work, have conversations. **High risk jobs**: receptionist, kitchen & catering assistants, elementary construction workers, book keepers, payroll, managers, clerks, accountants, etc. AI succeed in constructing machines that can "learn" to produce solutions to certain problems, which can be superior than people. | $CILO_{3,4}$ | Lecture, discussion, case study, video analysis, simulation activities, debates, problem solving |
| **Human ethics, privacy and technological development: Case studies of human ethics and privacy involved in new technologies and AI.** Question: How can we **protect our personal data and privacy**? Is that a need of **new law to regulate the collection and use of data** to protect citizen's privacy? How to **protect your digital identity and DNA data**, especially sale of your personal data? Should we set up laws **limit data ownership**? Question: How will institutions adjust to the **post-truth, post-privacy digitised world**? Question: Will we become **immortal machines ourselves**, e.g. uploading our brains to the cloud? Question: What will be the lives of **homo digitalis** – the people of the not-so-distant future who will be living amongst fully functioning AI? Question: Can we just let the **technology companies regulate themselves**? But technology companies may not act in the way of the society's best interests. We may need greater regulation. | $CILO_{1,\,2,3,4}$ | Lecture, discussion, case study, video analysis, debates, ethical decision making |
| **How should we prepare and protect ourselves?** | $CILO_{1,2,3,4}$ | Lecture, discussion, case |

| Course Content | CILOs | Suggested Teaching & Learning Activities |
|---|---|---|
| Digital citizenship. Embracing technological change, but ensuring that technology changes our lives for the better. The future is the product of the decisions that we make today. Choosing the future we want. **Renegotiating the terms of how data is used**, and the right of the data to be forgotten. Some online platforms are large and may not be competitive. **Healthy competition of digital platforms**. We might have to legislate digital platforms permit competition. Should digital platforms liable for their content? How to deal with fake news? **Beware of mental, psychological and physical impacts** of overuse of technology. **Reflection on coping with AI and technological changes**: positive thinking and values, resilience, emotional intelligence, creativity, critical thinking. | | study, video analysis, debates, ethical decision making |

## 4. Assessment

| Assessment Tasks | Weighting (%) | CILO |
|---|---|---|
| (a) Participation in e-learning discussion forum (2 discussion questions, 150 words each) | 10% | $CILO_{1,2,3,4}$ |
| (b) An indvidual short essay on impacts and ethics of developing and using new technologies and AI on society and individuals (1,500 words) | 50% | $CILO_{1,2,3,4}$ |
| (c) A group produced short video (about 15-20 minutes) on a self-chosen topic related to any topic of contents in this course, which is agreed by the course instructor. Group members (about 3 or 4 persons in a group) are required to work as a team and make an ethical and critical analysis. During the oral presentation, group members should detail their understanding, analysis, and reflection on the topic. | 40% | $CILO_{1,2,3,4}$ |

## 5. Required Text(s)
NIL

## 6. Recommended Readings
Bauman, Z. (2007). *Liquid times: Living in an age of uncertainty*. Cambridge: Polity.

Brooks, R. & Hodkinson, P. (2008). Special issue: Young people, new technologies and political engagement. *Journal of Youth Studies*, *11*(5): 473-479.

Chassignol, M., Khoroshavin, A., Klimova, A., Bilyatdinova, A. (2018). Artificial Intelligence trends in education: a narrative overview. *Procedia Computer Science*, 136: 16-24.

Gleason, B. (2016). Teens' participatory play: Digital media learning through civic engagement. In C. Greenhow, J. Sonnevend, & C. Agur (Eds.), *Education and social media: Toward a digital future* (pp. 231-238). Cambridge, MA: MIT Press.

Harari, Yuval Noah (2018). *21 Lessons for the 21st Century* (First edition). New York: Random House.

Harari, Yuval Noah (2017). Reboot for the AI revolution. *Nature* (London), 550(7676): 324-327.

Heenlein, M. & Kaplan, A. (2019). A brief history of Artificial Intelligence: On the past, present, and future of Artifiicial Intelligence. *Califorinia management review*, *61*(4): 5-14.

Jackson, P.C. (2019). *Introduction to artificial intelligence* (Third edition). Mineola, New York: Dover Publications.

Karsenti, T. (2019). Acting as ethical and responsible digital citizens: The teacher's key role. *Formation et profession*, *27*(1), 105-111.

Lachney, M., Boltz, L.O., Dillman, B., Robertson, C. and Yadav, A. (2018). Local classrooms, global technologies: Toward the integration of sociotechnical macroethical issues into teacher education. *Bulletin of Science, Technology & Society*, *38*(1-2):13 –22.

Montgomery, K. C., Gottlieb-Robles, B., & Larson, G. O. (2004). *Youth as e-citizens: Engaging the digital generation*. Washington, DC: Center for Social Media.

Mossberger, K., Tolbert, C. J., & Hamilton, A. (2012). Broadband adoption measuring digital citizenship: Mobile access and broadband. *International Journal of Communication*, *6*(37): 2492-2528.

Mossberger, K. (2009). Toward digital citizenship: Addressing inequality in the information age. In Chadwick, A. & Howard, P.N. (2009). *Routledge handbook of internet politics* (pp.173-185). London: Routledge.

New York Times (2019). *Looking Forward – Artifical Intelligence.* New York: New York Times Educational Publishing.

OECD (2016). *OECD recommendations of the council on consumer protection in e-commerce*. Paris: OECD Publishing.

Ribble, M. (2015). *Digital citizenship in schools: Nine elements all students should know*. International Society for Technology in Education.

Rich, E. & Knight, K. (1991). *Artificial intelligence*. New York: McGraw-Hill.

Walsh, T. (2018). *2062: The world AI made*. Carlton, VIC: La Trobe University Press.

## 7. Related Web Resources

Artificial intelligence (Wikipedia)
https://en.wikipedia.org/wiki/Artificial_intelligence

Education Bureau of Hong Kong SAR - Technology Education - References & Resources
https://www.edb.gov.hk/en/curriculum-development/kla/technology-edu/resources/index.html

Negative effects of technology: What to know
https://www.medicalnewstoday.com/articles/negative-effects-of-technology

Technology in the Social Studies Classroom
https://www.techinpedagogy.com/archives/1664

8.  **Related Journals**
    *AI & Society: Knowledge, Culture and Communication*
    *Educational Technology & Society*
    *Journal of Business Ethics*
    *Journal of Youth Studies*
    *Procedia Computer Science*
    *Social Media and Society*
    *Youth & Society*

9.  **Academic Honesty**
    The University upholds the principles of honesty in all areas of academic work. We expect our students to carry out all academic activities honestly and in good faith. Please refer to the *Policy on Academic Honesty, Responsibility and Integrity* (https://www.eduhk.hk/re/uploads/docs/0000000016336798924548BbN5). Students should familiarize themselves with the Policy.

10. **Others**
    Nil

*Updated December 2023*