THE EDUCATION UNIVERSITY OF HONG KONG

Course Outline

Part I

Programme Title	**:**	Certificate in Professional Development Programme on STEAM in Physical Education 教師專業進修課程證書 (體育學與教之科學、科技、工程、藝術及數學範疇)
Programme QF Level	**:**	QF Level 6
Course Title	**:**	New Technology in Sports and Physical Education 創新科技在體育與競技運動之應用
Course Code	**:**	PES5244
Department	**:**	Health and Physical Education
Credit Points	**:**	3
Contact Hours	**:**	30 hours (lecture, workshop, lesson for analysis) + 9 hours (Blended learning)
Pre-requisite(s)	**:**	In-service Primary and Secondary School PE teachers
Medium of Instruction	**:**	Chinese
Course Level	**:**	5

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

The emergence and use of technology in this century is a significant development affecting the learning and teaching of PE. The current education is faced with a new dimension dominated by new technology. The current trend is also reflected by the necessity to improve the learning and teaching in PE. The use of new technology to create more dynamic classes, such as pedometers, heart rate monitors, Apps, video resources, and so on will be explored and examined in enhancing students' engagement in PE lessons in this course. In order to help school students develop understanding beyond technical replication and towards rational and reasoned investigation around their learning in PE, the course aims to provide serving PE teachers with the updates on the new technology used in sports and PE in order to appeal to the interests of diverse students' needs and ability types as well as using new technology to create more activities for PE lessons.

2. Course Intended Learning Outcomes (CILOs)

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

$CILO_1$ examine different technological advances available for application in sports and physical education;

$CILO_2$ apply technologies for monitoring and tracking physical and physiological parameters related to bodily exertion and movement;

$CILO_3$ appraise critically the feasibility of implementing relevant technology in school setting to enrich learning and teaching experiences.

3. Content, CILOs and Teaching & Learning Activities

Course Content	CILOs	Suggested Teaching & Learning Activities
The development of technology in sports and physical education in the 21st century	$CILO_{1,3}$	Lectures and group discussion
Laboratory setting to assess	$CILO_{1,2,3}$	Lectures, group discussion,

parameters related to bodily exertion		demonstration and practical experiment
Field experimental setting to assess parameters related to bodily exertion	*CILO*$_{1,2,3}$	
Using technology to assess sports functional performance (i.e. power, speed, agility)	*CILO*$_{1,2,3}$	
Using technology for motion analysis	*CILO*$_{1,2,3}$	
Using technology to enrich learning and teaching experiences	*CILO*$_{1,2,3}$	
Concerns of applying technology in PE classes	*CILO*$_{1,2,3}$	Lectures and group discussion

4. Assessment

Assessment Tasks	Weighting (%)	CILO
(a) Individual portfolio with not less than 1800 words comprising critical appraisal on the use of new technology in PE.	60%	*CILO*$_{1, 2}$
(b) A group presentation to examine an innovative use of one new technology in a school-based PE curriculum.	40%	*CILO*$_{1, 3}$

5. Required Text(s)

Nil

6. Recommended Readings

Chow, G.C.C., Kong, Y. H., & Pun, W.Y. (2023). The concurrent validity and test-retest reliability of possible remote assessments for measuring countermovement jump: My Jump 2, HomeCourt & Takei Vertical Jump Meter. *Applied Sciences, 13*, 2142. https://doi.org/10.3390/app13042142

Chow, C.C.G., Kong, Y.H., & Wong, C.L. (2022). Reactive-agility in Touch plays an important role in elite playing level: Reliability and validity of a newly developed repeated up-and-down agility test. *Journal of Sports Science and Medicine, 21*, 413–418. https://doi.org/10.52082/jssm.2022.413

Chow, G.C.C., Sun, F., Kam, K.W.K., Kong, Y.H., Zhang, B. (2023). Short vs. long bouts of all-out rope skipping: effects on metabolic and perceptual responses. *Applied Sciences, 13*, 7072. https://doi.org/10.3390/app13127072

Fouché, R. (2017). *Game changer: The technoscientific revolution in sports*. Johns Hopkins University Press.

Hilvoorde, I. van, & Koekoek, J. (Eds.). (2018). *Digital technology in physical education: Global perspectives*. Routledge. https://doi.org/10.4324/9780203704011

Kerr, R. (2016). *Sport and technology: An actor-network theory perspective (Globalizing Sport Studies).* Manchester: Manchester University Press.

Mohnsen, B. (2010). *Using technology in physical education* (7th ed.). Bonnie's Fitware.

Schmidt, S. L. (2020). *21st Century sports: How technologies will change sports in the digital age* (1st ed.). Springer International Publishing AG.

課程發展議會 (2022)：《進行網上體育課安全措施及學與教資源》，香港，課程發展議會。https://www.edb.gov.hk/tc/curriculum-development/kla/pe/web_based_teaching/index.html

課程發展議會 (2017)：《體育學習領域課程指引(小一至中六)》，香港，課程發展議會。

課程發展議會 (2015)：《推動 STEM 教育－發揮創意潛能》，香港，課程發展議會。

課程發展議會與香港考試及評核局 (2007)：《體育課程及評估指引(中四至中六)》，香港，課程發展議會。

7. Related Web Resources

Education Bureau Website
http://www.edb.gov.hk/

PE Summer School
http://www.ied.edu.hk/pesummerschool/

8. Related Journals

Balsalobre-Fernández, Tejero-González, Del Campo-Vecino, & Bavaresco. (2014). The Concurrent Validity and Reliability of a Low-Cost, High-Speed Camera-Based Method for Measuring the Flight Time of Vertical Jumps. *Journal of Strength and Conditioning Research, 28*(2), 528-533.

Chakraborty, T. R. & Cooperstein, D. F. (2017), Exploring anatomy and physiology using iPad applications. *American Association of Anatomists.* doi:10.1002/ase.1747

Düking, P. Holmberg, H., & Sperlich, B. (2017). Instant biofeedback provided by wearable sensor technology can help to optimize exercise and prevent injury and overuse. *Frontiers In Physiology*. https://doi.org/10.3389/fphys.2017.00167

Mertz, L. (2013). Technology comes to the Playing field: New world of sports promises fewer injuries, better performance. *Pulse, IEEE, 4*(5), 12-17.

Nation-Grainger, S. (2017). "It's Just PE 'till' It Felt Like a Computer Game": Using Technology to Improve Motivation in Physical Education. *Research Papers in Education, 32*(4), 463-480.

Romero-Franco, N., Jiménez-Reyes, P., Castaño-Zambudio, A., Capelo-Ramírez, F., Rodríguez-Juan, J., González-Hernández, J., . . . Balsalobre-Fernández, C. (2017). Sprint performance and mechanical outputs computed with an iPhone app: Comparison with existing reference methods. *European Journal of Sport Science, 17*(4), 386-392.

Seshadri, D., Drummond, C., Craker, J., Rowbottom, J., & Voos, J. (2017). Wearable Devices for Sports: New Integrated Technologies Allow Coaches, Physicians, and Trainers to Better Understand the Physical Demands of Athletes in Real time. *Pulse, IEEE, 8*(1), 38-43.

Simperingham, K.D., Cronin, J. B., Pearson, S. N., & Ross, A. (2017). Reliability of horizontal force–velocity–power profiling during short sprint-running accelerations using radar technology. *Sports Biomechanics*. DOI: 10.1080/14763141.2017.1386707

Tran, J. F., & Finch, C. (2014). Are implementation science advances and digital technology developments important in sports medicine? Sports medicine Australia thinks so. *British Journal of Sports Medicine, 48*(8), 675-676.

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/00000000001633679892454 8BbN5). Students should familiarize themselves with the Policy.

10. Others

Nil