香港科技大學
THE HONG KONG
UNIVERSITY OF SCIENCE
AND TECHNOLOGY

School of Engineering Course - ENGG 2900H

Course Title: Community Services Project: STEAM Project for the Community

Duration: Summer Semester (2023-24), and Fall Semester (2024-25)

Project Introduction and Guideline

This Project course (ENGG2900H) allows undergraduate students the opportunity to work in teams, to serve identified community groups (i.e. primary and secondary school students/South Asian youths, etc.), to understand the limitations of the served groups, and to learn how to apply STEAM related knowledge on education. Throughout the development of the project, undergraduate students will learn how to manage the project starting from their idea, and developing their prototype from the sketch. Thus they not only work as workshop developers but also act as tutors/assistants transferring their skills to the participants. Besides, undergraduate students will also learn the skills how to manage the project from start to end.

i) Topics

- Project Management Basics
- STEAM (Science, Technology, Engineering, Art, and Mathematics) Education
- Relationship between the 21st century skill and STEM education
- The Basics of STEM elements – hardware and software
- Design of the workshop and the serious and fun games for education
- Outreach services on servicing the community

ii) Grading Scheme

This is a two-credit course, graded Pass or Fail. To achieve a passing grade, each student must complete all (the service for the community (60%), and the other course works including the proposal, the teaching material, the design plan, and finally the self-reflective report (40%)) on time and meet the course requirements. Also, the required tasks must be satisfied by both the Project Supervisor(s) and the School's Project Coordinator for students from respective Schools.

iii) **References**

a. Course Materials
b. McBride, M. (2016). Project management basics. Apress.
c. Felder, R. M., & Brent, R. (2024). Teaching and learning STEM: A practical guide. John Wiley & Sons.
d. Hynes, M., Portsmore, M., Dare, E., Milto, E., Rogers, C., Hammer, D., & Carberry, A. (2011). Infusing engineering design into high school STEM courses.
e. C. Sik-Lanyi and J. Ara, "Serious and Fun Games: Introduction to the Special Thematic Session," in Computers Helping People with Special Needs, Cham: Springer International Publishing, 2022, pp. 67–72.
f. Widya, R. Rifandi, and Y. Laila Rahmi, "STEM education to fulfil the 21st century demand: a literature review," Journal of physics. Conference series, vol. 1317, no. 1, pp. 012208-, 2019, doi: 10.1088/1742-6596/1317/1/012208.

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