

## THE EDUCATION UNIVERSITY OF HONG KONG

### Co-Curricular and Service Learning Course Outline

#### Part I

|                              |   |
|------------------------------|---|
| <b>Programme Title</b>       | : All Undergraduate Programmes  |
| <b>Programme QF Level</b>    | : 5   |
| <b>Course Title</b>          | : Enhancing Leadership by Organizing Mathematics Activities   |
| <b>Course Code</b>           | : CSL1005/GEM1020   |
| <b>Department</b>            | : Mathematics and Information Technology  |
| <b>Credit Points</b>         | : 3   |
| <b>Contact Hours</b>         | : Lectures: 9<br>Experience-based activities: 36<br>(counted as 24 contact hours)<br>Presentations and discussions: 6 |
| <b>Pre-requisite(s)</b>      | : Nil   |
| <b>Medium of Instruction</b> | : Chinese   |
| <b>Course Level</b>          | : 1   |

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#### 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 Undergraduate, Taught Postgraduate and Research Postgraduate students consist of the following three domains (i.e. in short "PEER & I"):

- Professional Excellence;
- Ethical Responsibility; &
- Innovation.

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 course provides an opportunity for the student teachers to develop their leadership abilities and establish their social networks via participations in organizing and involvement in mathematics tutoring activities in local schools. The course is designed to enrich their mathematical experience, develop their leadership abilities, and provide opportunities for them to develop to become an independent learner in mathematics education. Students are expected to assist in tutoring small learning groups of senior primary school students, providing support to design mathematical activities, working closely with the school teachers, performing self-reflections on lesson observations and involvement in related activities that are beneficial to learning and teaching of mathematics at schools.

### 2. Course Intended Learning Outcomes (CILOs)

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

- CILO<sub>1</sub> acquire the basic concepts of leadership, experiential education and service-learning;
- CILO<sub>2</sub> evaluate the community needs, develop plans and implement relevant tasks to echo the educational goals of the attached primary / secondary schools, and/or NGOs;
- CILO<sub>3</sub> acquire the relevant mathematics content knowledge, positive attitudes and skills in community development, and the first-hand service experience in schools;
- CILO<sub>4</sub> reflect critically on their own leadership, planning and organizing abilities so as to develop plans for further improvements.

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

| Course Content                              | CILOs               | Suggested Teaching & Learning Activities            |
|---|---------------------|---|
| Leadership and Organizing Abilities         | CILO <sub>1,4</sub> | Lecture and discussions;<br>Individual consultation |
| Experiential Education and Service-Learning | CILO <sub>1,3</sub> | Lecture and discussions;<br>Group presentations     |

|                                     |                           |  |
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| Community Needs and School Services | <i>CILO<sub>2,4</sub></i> | Organizing mathematics activities in schools<br>Examples: organizing and conducting tutorial classes for students with weak mathematical backgrounds; designing interesting mathematics problems and solving them with the students together; discovering the fun of mathematics in daily life; introducing the mathematical ideas from the historical and the cultural perspectives; helping students to develop positive attitudes towards mathematics, etc. |
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#### 4. Assessment

| Assessment Tasks   | Weighting (%) | CILO                        |
|--|---------------|-----------------------------|
| <p>(a) Proposal of Service</p> <p>Students will prepare in groups to make the service proposals based on the needs of the attached schools or service centers. The proposal is a record of all necessary information including: (i) the aims and initiatives; (ii) the details of all proposed service-based activities such as the schedule, the content and the contribution of each group member in the activities involved, etc., and; (iii) the design rationale of the activities.</p>   | 20            | <i>CILO<sub>1,2,3</sub></i> |
| <p>(b) Individual Presentation</p> <p>Each student will conduct an oral presentation after the service-based learning activities. The presentation, with at least one planned/organized activity for illustration, will be assessed by the (i) initial ideas; (ii) philosophy; (iii) directions in planning the mathematics activity; (iv) strategies; and (v) challenges and solutions in organizing and implementing the activity. In addition, students are expected to complete an evaluation with the school students and/or the school teacher to collect their feedback and comments to the organized activities.</p> | 40            | <i>CILO<sub>1,2,4</sub></i> |
| <p>(c) Individual Reflective Journal (about 2,400 words)</p> <p>Each student will write a reflective journal for: (i) recording all the service-based activities that have been organized in the attached schools or service centers; (ii) reflecting upon the</p>   | 40            | <i>CILO<sub>1,2,4</sub></i> |

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| participations in the organized activities; and (iii) self-analysis on the practical experiences gained for development and enhancement of his/her own leadership capacities. |  |  |
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## 5. Required Text(s)

Nil

## 6. Recommended Readings

### Books

- Albert, M. H., Nawakowski, R. J., & Wolfe, D. (2007). *Lessons in Play: An Introduction to Combinatorial Game Theory*. A K Peters, Ltd., Wellesley, MA.
- Aldridge, S., & Badham V. (1993). *Beyond just a game*. Pamphlet Number 21. Primary Mathematics Association.
- Berry, H. A., & Chisholm, L. A. (1999). *Service-Learning in Higher Education around the World: Initial Look*. International Partnership for Service-Learning, NY.
- David, B. (1995). *The role of games in mathematics*. Square One. Vol.5. No.2.
- Gough, J. (1999). *Playing mathematical games: When is game not a game?* Australian Primary Mathematics Classroom. Vol.4. No. 2.
- Gould, R. J. (2015). *Mathematics in Games, Sports, and Gambling: The Games People Play* (2<sup>nd</sup> ed.). CRC Press, Taylor & Francis Group.
- Jacoby, B. (1996). Service Learning in Today's Higher Education. In Jacoby, B (Ed.) *Service Learning in Higher Education: Concepts and Practices* (pp. 3-25). San Francisco: Jossey-Bass.
- Lai, K. H. (2010). Building Students' Total Learning Experience through Integrating Service-Learning into the Teacher Education Curriculum. In Jun Xing & Carol Ma (Eds.), *Service Learning in Asia: Curricular Models and Practices* (pp. 47-61). Hong Kong: Hong Kong University Press.
- Mochizuki, T., & Hitazawa, T. (2009). *Designing a Learning Community for the Pre-Service Teacher Training Using the Social Networking Service*. Proceedings of the 17<sup>th</sup> International Conference on Computers in Education (pp. 316-320). Hong Kong: Asia-Pacific Society for Computers in Education.
- Oldfield, B. (1991). *Games in the learning of mathematics*. Mathematics in Schools. January.
- Seaton, E.S., & Backman, C.A. (1975). Games and puzzles for elementary and middle school mathematics: readings from the Arithmetic teacher. National Council of Teachers of Mathematics.
- Zlotkowski, E. (1998). A New Model of Excellence. In E. Zlotkowski (Ed.), *Successful Service-learning Programs: New Models of Excellence in Higher Education* (pp. 1-14). Bolton, MA: Anker Publishing.

### Journal Articles

- Baldwin, S. C., & Buchanan, A. M. (2007). What Teacher Candidates Learned about Diversity, Social Justice, and Themselves from Service-learning Experiences. *Journal of Teacher Education*, 58, 315-327.
- Bragg, L. A. (2012). Testing the Effectiveness of Mathematical Games as a Pedagogical Tool for Children's Learning. *International Journal of Science and Mathematics Education*, 10(6), 1445-1467.
- Bringle, R. G., & Hatcher, J. A. (1999). Reflection in Service Learning: Making Meaning of Experience. *Educational Horizons*, 77(4), 179-185.
- Brownlee, J., & Chak, A. (2007). Hong Kong student teachers' beliefs about children's learning: Influences of a cross-cultural early childhood teaching experience. *Australian Journal of Educational & Developmental Psychology*, 7, 11-21.
- He, M. (2001). Organizing and Practicing of the Extracurricular Activities in Mathematics in the Middle School. *Journal of Mathematics Education*, 10(1), 34-37.
- Kielsmeier, J. C., Scales, P. C., Roehlkepartain, E. C., & Neal, M. (2004). Community Service and Service-Learning in Public Schools. *Reclaiming Children and Youth: The Journal of Strength-based Interventions*, 13(3), 138.
- Lai, K. H. (2009). Developing Leadership and Cultural Competency through Service Exposure Attachment Program. *New Horizons in Education*, 57(3), Special Issue, December 2009, 105-118.
- Ngai, S. Y., Cheung, C. K., Ngai, N. P., & Chan, K. B. (2009). Building Reciprocal Partnerships for Service-Learning: The Experiences of Hong Kong Secondary School Teachers. *Child & Youth Services*, 31, 170-187.
- Stachowski, L. L., & Mahan, J. M. (1998). Cross-Cultural Field Placements: Student Teachers Learning From Schools and Communities. *Theory Into Practice*, 37(2), 155-162.
- Wallace, J. D., Nesbit, C. R., & Miller, A. S. (1999). Six Leadership Models for Professional Development in Science and Mathematics. *Journal of Science Teacher and Education*, 10(4), 247-268.
- Wessner, M., Shumar, W., Stahl, G., Sarmiento, J., Muhlfordt, M., & Weimar, S. (2006). Designing an online service for a math community. *ICLS '06 Proceedings of the 7th international conference on Learning sciences*, 818-824.

## 7. Related Web Resources

Strengthening STEM Education through Service Learning

<http://mncampuscompact.org/wp-content/uploads/sites/30/2016/04/Strengthening-STEM-through-SL.pdf>

A Blog about How To Organize Your Guided Math Games

<http://guidedmathstudygroup.blogspot.hk/2012/11/guided-math-games-organization.html>

A Collection of Math Games

<http://pinterest.com/mathmojo/math-games/>

EdB Resource - Examples on STEM Learning and Teaching Activities

<http://www.edb.gov.hk/en/curriculum-development/kla/ma/res/STEMexamples.html>

EdUHK SAO Leadership and Service-Learning Web

<https://www.eduhk.hk/sao/?p=971>  
History and Pedagogy of Mathematics  
<http://wwwold.math.ntnu.edu.tw/history/history.html>  
National Service-Learning Clearinghouse  
<https://gsn.nylc.org/clearinghouse>  
Office of Service-Learning, Lingnan University  
<http://www.ln.edu.hk/osl>  
Probability Games  
<http://www.betweenwaters.com/probab/probab.html>

## **8. Related Journals**

Journal of College Student Development  
Journal of Mathematics Education  
Journal of Science Teacher and Education  
Journal of Teacher Education  
Mathematics and Computer Education  
The Mathematics Teacher

## **9. Academic Honesty**

The University adopts a zero tolerance policy to plagiarism. For the University's policy on plagiarism, please refer to the *Policy on Academic Honesty, Responsibility and Integrity with Specific Reference to the Avoidance of Plagiarism* by Students (<https://www.eduhk.hk/re/modules/downloads/visit.php?cid=9&lid=89>). Students should familiarize themselves with the Policy.

## **10. Others**

Nil

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