

Course Outline

Part I

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|------------------------------|---|
| Programme Title | : All Undergraduate Programmes |
| Course Title | : Coding Literacy: Design Principles and Practice |
| Course Code | : GEH1044 |
| Department | : Mathematics and Information Technology |
| Credit Point | : 3 |
| Contact Hours | : 39 |
| Medium of Instruction | : English |
| Level | : 1 |

Part II

1. Synopsis

Coding literacy includes the ability of individuals to understand and create computer programming code. More importantly, it refers to the capability of making digital technology do what people need and fit their purposes. This new form of literacy intersects with many twenty-first century skills like critical thinking, communication, creativity and collaboration. This course is designed specifically for participants with little or no computing background to develop their knowledge and skills which are essential to designing and building user-friendly applications. It also aims to provide participants with an understanding of the implications of coding literacy on the personal, social, economic and political development in the twenty-first century.

2. Course Intended Learning Outcomes (CILOs)

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

- CILO₁: Describe the characteristics, potential and challenges of coding literacy
- CILO₂: Analyze the implications of coding literacy on different aspects of everyday life in the twenty-first century
- CILO₃: Identify the fundamental knowledge and skills in coding
- CILO₄: Apply understandings of design principles and coding skills to develop computer/mobile applications

3. Content, CILOs and Teaching & Learning Activities

| Course Content | CILOs | Suggested Teaching & Learning Activities |
|--|---------------------------|--|
| Characteristics and importance of coding literacy <ul style="list-style-type: none"> - The relationship between digital technology and coding literacy - Features and elements of coding literacy - Arguments for and against coding literacy - Potential and challenges of coding literacy | <i>CILO₁</i> | Lectures, class exercises, case studies and group discussion |
| Real-world examples and implications of coding literacy <ul style="list-style-type: none"> - Personal development - Social development - Economic development - Political development | <i>CILO₂</i> | Lectures, class exercises, case studies and group discussion |
| Fundamental design principles and coding Skills <ul style="list-style-type: none"> - Overview of design and development process - Integrated development environment - Design principles for coding - Coding structures and methods - Running, testing and debugging | <i>CILO_{3,4}</i> | Lectures, class exercises, demonstrations and group discussion |

4. Assessment

| Assessment Tasks | Weighting (%) | CILO |
|---|---------------|-------------------------------|
| a. Conduct a group presentation (2-3 students per group) on the elements of coding literacy and their implications on the society. Each member in the group is required to prepare and present a specific aspect of coding literacy. | 30% | <i>CILO_{1,2}</i> |
| b. Individually develop a new computer/mobile application, and write a report (not less than 1,400 words) to describe the background, design and functions of the application. The report should also discuss how the application would benefit the personal, social, economic or political development in the society. | 70% | <i>CILO_{1,2,3,4}</i> |

5. Required Text(s)

Nil

6. Recommended Readings

- Abraham, N. (2015). *Coding for dummies*. Hoboken, NJ: John Wiley & Sons.
- Burnette, E. (2010). *Hello, Android: Introducing Google's mobile development platform* (3rd ed.). Raleigh, NC: Pragmatic Bookshelf.
- Farrell, J. (2013). *Programming logic and design: Comprehensive version* (7th ed.). Boston, Mass.: Course Technology.
- Feiler, J. (2014). *iOS app development for dummies*. Hoboken, NJ: John Wiley & Sons.
- Henderson, H. (2015). *How mobile devices are changing society (science, technology, and society)*. San Diego, CA: ReferencePoint Press.
- Kloss, J. H. (2012). *Android apps with App Inventor: The fast and easy way to build Android apps*. Upper Saddle River, NJ: Addison-Wesley.
- McGrath, M. (2012). *Building Android apps in easy steps*. Warwickshire, UK: In Easy Steps.
- Meisel, W. (2013). *The software society: Cultural and economic impact*. Bloomington, IN: Trafford.
- Ribble, M. (2011). *Digital citizenship in schools* (2nd ed.). Eugene, Or.: International Society for Technology in Education.
- Rogers, Y., Sharp, H., & Preece, J. (2011). *Interaction design: Beyond human-computer interaction* (3rd ed.). Hoboken, NJ: John Wiley & Sons.
- Traxler, J., & Kukulska-Hulme (2015). *Mobile learning: The next generation* (2nd revised ed.). London, UK: Routledge.
- Tyler, J. (2011). *App Inventor for Android: Build your own apps-no experience required!* Hoboken, NJ: John Wiley & Sons.
- Ufituwe, M. (2015). *How to sell products and services with mobile apps: The blueprint to marketing on 5.4 billion mobile devices*. Bonn, Germany: Ecommerce Maurice Victor.
- Walter, D., & Sherman, M. (2014). *Learning MIT App Inventor: A hands-on guide to building your own android apps*. Upper Saddle River, NJ: Addison-Wesley.
- Wang, P. S. (2015). *From computing to computational thinking*. Boca Raton, Fla.: CRC.
- West, D. M. (2014). *Going mobile: How wireless technology is reshaping our lives*. Washington, DC: Brookings Institute Press.
- Wolber, D., Abelson, H., Spertus, E., & Looney, L. (2014). *App Inventor 2* (2nd ed.). Sebastapol, CA: O'Reilly Media.
- Yarmosh, K., & Jantsch, J. (2010). *App savvy: Turning ideas into iPad and iPhone apps customers really want*. Sebastapol, CA: O'Reilly Media.

7. Related Web Resources

Why Coding?

- This is Why Kids Need to Learn to Code
<http://dmlcentral.net/blog/doug-belshaw/why-kids-need-learn-code>
- Four Reasons Why Kids Should Learn Programming
<http://www.tynker.com/blog/articles/ideas-and-tips/four-reasons-why-kids-should-learn-programming/>
- What Most Schools Don't Teach
<https://www.youtube.com/watch?v=nKlu9yen5nc>

How Mobile Apps Are Changing the World?

- How mobile messaging apps are changing social behavior in Asia
<http://www.scmp.com/comment/insight-opinion/article/1758826/how-mobile-messaging-apps-are-changing-social-behaviour-asia>
- Why mobile learning apps are the future of education
<https://www.examtme.com/blog/mobile-learning-apps-future-of-education/>

- How mobile applications can improve your business
<http://randomtype.ca/blog/mobile-applications-improve-business/>
- How mobile apps will empower health care consumers
<http://www.brookings.edu/blogs/health360/posts/2015/04/20-mobile-apps-and-health-care-consumers-butler>

Tools / Tutorials

- Learn to Code (Code Academy), <https://www.codecademy.com>
- Anybody Can Learn (Code.org), <https://code.org>
- Android, <https://www.android.com>
- MIT App Inventor Set-Up, <http://appinventor.mit.edu/explore/ai2/setup.html>
- MIT App Inventor Tutorial, <http://appinventor.mit.edu/explore/ai2/tutorials.html>

8. Related Journals

Computers in Human Behavior
Human-Computer Interaction
Technology in Society
Computers & Education

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.ied.edu.hk/re/modules/downloads/visit.php?cid=9&lid=89>). Students should familiarize themselves with the Policy.

10. Other

Nil