

Course Outline

Part I

Programme Title	: Doctor of Education
Programme QF Level	: 7
Course Title	: Rasch Measurement for Educational Research I: Scale Building
Course Code	: EMA7002
Department	: Psychology
Credit Points	: 3
Contact Hours	: 39
Pre-requisite(s)	: Nil
Medium of Instruction	: EMI
Course Level	: 7

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

Researchers are often required to select or develop a measurement instrument in the educational or psychological context. The course enables candidates to recognize and evaluate major psychometric properties of an instrument, and to construct a new instrument following Rasch measurement theory professionally. The construction of measurement, and the Rasch models for dichotomous items and polytomous items will be introduced. Computer programs for Rasch analysis will be demonstrated. Procedures for test development will be outlined.

2. Course Intended Learning Outcomes (CILOs)

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

- CILO₁ Identify major psychometric properties of an instrument;
- CILO₂ Understand and apply the ‘Four Building Blocks’ approach to constructing measures in a professional and ethical manner;
- CILO₃ Evaluate the instrument critically to ensure reliability and validity;
- CILO₄ Apply appropriate IRT models to answer innovative research questions;
- CILO₅ Report statistical results in accordance with APA standards and conventions.

3. Content, CILOs and Teaching & Learning Activities

Course Content	CILOs	Suggested Teaching & Learning Activities
The principle of measurement	CILO ₁₋₂	Lectures
“Four Building Blocks” approach to construct measures	CILO ₁₋₂	Lectures
The Rasch models	CILO ₃₋₄	Lectures; Data analysis exercises
IRT model evaluation	CILO ₃₋₄	Lectures; Data analysis exercises
Differential item functioning	CILO ₃₋₅	Lectures; Data analysis exercises
Applications of IRT models	CILO ₃₋₅	Discussion
IRT program: Winsteps	CILO ₃₋₅	Demonstration and exercises
Research project	CILO ₁₋₅	Presentation, data analysis

4. Assessment

Assessment Tasks	Weighting (%)	CILO
a. Oral Presentation	10%	CILO ₁₋₄

Each student will choose one paper/chapter from the reading material and orally present to the class		
b. Mid-term exam The in-class and open-book mid-term exam will cover the first half of the course contents. It will mainly consist of short-answer questions and essay questions.	40%	CILO ₁₋₄
c. Project Report Each student will write a report (around 1500 words) to demonstrate how to apply Rasch measurement in education context.	50%	CILO ₁₋₅

5. Required Text(s)

Nil

6. Recommended Readings

- Cervellione, K. L., Lee, Y.-S., & Bonanno, G. A. (2009). Rasch modeling of the self-deception scale of the balanced inventory of desirable responding. *Educational and Psychological Measurement, 69*, 438-458.
- Kamata, A., & Vaughn, B. K. (2004). An introduction to differential item functioning analysis. *Learning Disabilities - A Contemporary Journal, 2*(2), 49-69.
- Kim, D.-H., Wang, C., & Ng, K.-M. (2010). A Rasch rating scale modeling of the Schutte Self-Report Emotional Intelligence Scale in a sample of international students. *Assessment, 17*, 484-496.
- Linacre, J. M. (2002). Optimizing rating scale category effectiveness. *Journal of Applied Measurement, 3*(1), 85-106.
- Linacre, J. M. (2016). *Winsteps® Rasch measurement computer program User's Guide*. Beaverton, Oregon: Winsteps.com.
- Liu, O. L., Lee, H.-S., Hofstetter, C., & Linn, M. (2008). Assessing knowledge integration in science: Construct, measurement, and evidence. *Educational Assessment, 13*, 33-55.
- Sanford-Moore, E. E., Baker, R. & Johnson, A. (2015). *Investigating differential item functioning of Lexile® items: Implications for English as a foreign language students*. MetaMetrics, Inc.
- Wang, W.-C. (2004). Rasch measurement theory and application in education and psychology. *Journal of Education and Psychology, 27*, 637-694. (in Chinese)
- Wang, W.-C. (2008). Assessment of differential item functioning. *Journal of Applied Measurement, 9*, 387-408.
- Wilson, M. (2005). *Constructing measures: An item response modeling approach*. London: Lawrence Erlbaum Associates Publishers. (ebook is available at: <http://site.ebrary.com/lib/hkied/docDetail.action?docID=10103833>)
- Yao, J., & Mok, M. M. C. (2013). Implementing assessment for learning: An application of the Rasch model for the construction of a mathematics assessment to inform learning. *Assessment and Learning, 2*, 29-50.

7. Related Web Resources

Websites

- <http://edres.org/irt>
- <http://www.rasch.org>
- <http://www.winsteps.com/index.htm>

Videos

- <https://www.youtube.com/watch?v=SlivnjxbHqs>
- <https://www.youtube.com/watch?v=VINt8jqcPZw>
- <https://www.youtube.com/watch?v=8Z5TU-0h7hE>
- https://www.youtube.com/watch?v=ReCQo1_9W6Y
- https://www.youtube.com/watch?v=OSmRyV42a2Q&index=3&list=PL2qW81hrAp_fObpUq1oxyrkXKyEfgum0
- <https://www.youtube.com/watch?v=Wb25Zv8VImI>

8. Related Journals

Applied Psychological Measurement

Educational and Psychological Measurement

Educational Measurement: Issues and Practice

Journal of Applied Measurement

Journal of Educational Measurement

Measurement: Interdisciplinary Research and Perspectives

Psychometrika

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