

## Course list for Cross-Institutional Course Enrolment (Semester 2, 2025/26)

Faculty of Education  
The University of Hong Kong

Last update: November 24, 2025

Course Code	Course Title	Level (RPG/TPG)	Pre-requisites	Class Dates	Class Time	Venue	Quota for Non-HKU Students (if any)	Course Syllabus URL	Contact Information (Name & Email)	Remarks (Please specify if the medium of instruction is NOT English)
EDUR7074	Quantitative Longitudinal Research I: Theories and Designs	RPG	Satisfactory completion of EDUR6020 Quantitative Research Methods I or EEDD6701 Research Methods I	Mar 2, 9, 23 and 30, 2026 (Mondays)	18:30 - 21:30	RM205	NA	Please refer to the attached course outline	Ms. Triffic Cheung trifficc@hku.hk	Nil
EDUR7075	Quantitative Longitudinal Research II: Measurement and Data Analysis	RPG	Satisfactory completion of EDUR7074 Quantitative Longitudinal Research I: Theories and Designs	Apr 13, 20, 27; and May 4, 2026 (Mondays)	18:30 - 21:30	MW549	NA	Please refer to the attached course outline	Ms. Triffic Cheung trifficc@hku.hk	Nil
EDUR7078	Item Response Theory (Modern Psychometric Theory): Part A	RPG	1. EDUR7102 Statistical Analysis with R; or 2. EDUR6021 Quantitative Research Methods II; or 3. A course on R programming or equivalent is required.	Feb 24; Mar 3, 17 and 24, 2026 (Tuesdays)	18:30 - 21:30	KKLG105	NA	Please refer to the attached course outline	Ms. Triffic Cheung trifficc@hku.hk	Nil

EDUR7079	Item Response Theory (Modern Psychometric Theory): Part B	RPG	1. EDUR7102 Statistical Analysis with R; or 2. EDUR6021 Quantitative Research Methods II; or 3. EDUR7078 Item Response Theory (Modern Psychometric Theory): Part A; or 4. Course(s) on the basics of IRT and R programming or equivalent is required.	Mar 31; Apr 14, 21 and 28, 2026 (Tuesdays)	18:30 - 21:30	CPD-LG.62	NA	Please refer to the attached course outline	Ms. Triffic Cheung trifficc@hku.hk	Nil
EDUR7110	Hierarchical Linear Models	RPG	• Sound knowledge of linear regression analysis (demonstrated through evidence of passing a course that covered simple and multiple linear regression theory and applications) • Sound knowledge of ANOVA (demonstrated through evidence of passing a course that covered ANOVA theory and applications)	Mar 5, 12, 19 and 26, 2026 (Thursdays)	18:30 - 21:30	CPD-3.41	NA	Please refer to the attached course outline	Ms. Triffic Cheung trifficc@hku.hk	Must meet course prerequisite OR other eligibility criteria.
EDUR7116	Qualitative Survey Design	RPG	Nil	Apr 13, 20, 27; and May 4, 2026 (Mondays)	18:30 - 21:30	RM205	NA	Please refer to the attached course outline	Ms. Triffic Cheung trifficc@hku.hk	Nil
EDUR7124	Quantitative Ethnography	RPG	At least one qualitative method course (i.e. EDUR6010 Qualitative Research Methods I, EEDD6702 Research Methods II, or any electives categorised as qualitative RM courses)  or upon the course teacher's approval.	Mar 2, 9, 23 and 30, 2026 (Mondays)	18:30 - 21:30	CPD-4.17	NA	Please refer to the attached course outline	Ms. Triffic Cheung trifficc@hku.hk	Nil

EDUR7125	Effective Analysis and Argumentation in Educational Research	RPG	Nil	Jan 19, 26; Feb 2 and 9, 2026 (Mondays)	18:30 - 21:30	RM205	NA	Please refer to the attached course outline	Ms. Triffic Cheung trifficc@hku.hk	Prior consultation with the teacher.
EDUR8501	Designing Positive Learning Experiences for Diverse Learners: Theoretical and Research Evidence	RPG	Nil	Jan 20, 27; Feb 3, 24; Mar 3, 17, 24 and 31, 2026 (Tuesdays)	18:30 - 21:30	MB113G	NA	Please refer to the attached course outline	Ms. Triffic Cheung trifficc@hku.hk	Nil

**THE UNIVERSITY OF HONG KONG**  
**Faculty of Education**  
**Academic Year 2025-26**

**EDUR7074 Quantitative Longitudinal Research I: Theories and Designs**

**Introduction**

In the educational context, change processes can be observed within different units of interest, including, but not limited to, students, parents, teachers, classrooms, and schools. Many areas within education that have historically tended to study fixed, static, trait-like processes are now becoming increasingly interested in change processes over time within their respective units of analysis, such how and why these units change over time. Understanding these change processes will contribute to the design of educational interventions that will eventually lead to meaningful changes in schools, families, and students.

Over the past decades, the field has begun to develop sophisticated theories about the complex, dynamic nature of developmental systems and methodological techniques for conducting longitudinal research and studying change. This course is designed to introduce to MPhil/PhD/EdD students basic concepts of quantitative longitudinal research and to assist them in acquiring the ability to use a variety of design options to address different developmental system theories in the educational context.

**Teacher(s)**

Professor Xiao ZHANG

**Course objectives**

This course has four major goals:

1. To introduce to students basic concepts, advantages and disadvantages of quantitative longitudinal research; to help students think about the nature of individual development and learning, explore various types of change, and apply various types of change in thinking about educational research;
2. To introduce basic concepts of causal inferences to students, to guide them to explore various theories of change, and to help them apply causal inferences and theories of change in thinking about educational research;
3. To introduce design options for studying change to students, to guide them to explore how to deal with time in quantitative longitudinal research, to help them apply various longitudinal design options in addressing causal inferences and theories of change in educational research, and to facilitate their evaluation of how current design options may or may not fit well with causal inferences and theories of change in educational research; and
4. To introduce to students variable-based vs. person-oriented approaches in quantitative longitudinal research, and to help them apply person-oriented approaches in addressing causal inferences and theories of change in educational research.

**Course duration**

12 hours

## Course topics

### Topic 1: Introduction to quantitative longitudinal research and various types of change

- To introduce basic concepts, advantages and disadvantages of quantitative longitudinal research;
- To explore various types of change; and
- To apply various types of change in thinking about educational research.

### Topic 2: Causal inferences and theories of change

- To introduce basic concepts of causal inferences;
- To explore various theories of change; and
- To apply causal inferences and theories change in thinking about educational research.

### Topic 3: Design options in quantitative longitudinal research

- To introduce design options for studying change;
- To explore how to deal with time in longitudinal and microgenetic research; and
- To apply various quantitative longitudinal design options in thinking about educational research.

### Topic 4: Variable-based vs. person-oriented approaches in quantitative longitudinal research

- To introduce variable-based vs. person-oriented approaches in quantitative longitudinal research; and
- To explore how to apply person-oriented approaches in thinking about educational research.

## Course learning outcomes

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

1. Describe a variety of concepts and theories of individual development and change;
2. Understand basic concepts of quantitative longitudinal research, its advantages and disadvantages, and various design options for studying change over time;
3. Apply critical concepts and design options in developing quantitative longitudinal projects and addressing developmental system theories in educational research; and
4. Gain hands-on experience designing a quantitative longitudinal study.

## Key readings

- Taris, T. W. (2000). *A primer in longitudinal data analysis*. Thousand Oaks, CA: Sage.
- Menard, S. (2002). *Longitudinal research* (2nd ed.). Thousand Oaks, CA: Sage.
- Ruspini, E. (2002). *Introduction to longitudinal research*. London: Routledge.
- Collins, L. M., & Horn, J. L. (Ed.). (1991). *Best methods for the analysis of change*. Washington, DC: American Psychological Association.
- Frees, E. (2004). *Longitudinal and panel data: Analysis and applications in the social sciences*. New York, NY: Cambridge University Press.
- Baltes, P.B., Lindenberger, U., & Staudinger, U. (2006). Life-span theory in developmental psychology. In W. Damon & R. M., Lerner (Eds.) *Handbook of child psychology (6th Edition, Vol. 1)* (pp. 569-664). Hoboken, NJ: John Wiley & Sons.
- Sameroff, A. J. (2000). Developmental systems and psychopathology. *Development and Psychopathology, 12*, 297-312.
- Bergman, L.R., Von Eye, A., & Magnusson, D. (2006). Person-oriented research strategies in developmental psychopathology. In D. Cicchetti & D.J. Cohen (Ed.), *Developmental psychopathology: Vol 1 - Theory and method (2nd Ed.)* (pp. 850-888). Hoboken, NJ: John Wiley & Sons.

- Kazdin, A.E., Kraemer, H.C., Kessler, R.C., Kupfer, D.J., & Offord, D.R. (1997). Contributions of risk-factor research to developmental psychopathology. *Clinical Psychology Review*, 17, 375-406.
- Mitchell, T.R., & James, L.R. (2001). Building better theory: Time and the specification of when things happen. *Academy of Management Review*, 26, 530-547.
- Lavelli, M., Pantoja, A.P.F., Hsu, H, Messinger, D., & Fogel, A. (2005). Using microgenetic designs to study change processes. In D.M. Teti, (Ed.), *Handbook of research methods in developmental science* (pp. 40-65). Malden, MA: Blackwell.

### Assessment methods

Assessment (weighting of each assessment)	Learning outcome(s) to be assessed
<p><b>Theory of Change Paper (50%)</b></p> <p>The student will write a paper (<math>\approx</math> 5 pages, word limit: 1500, including references) on his or her own specific theory of development/change for a domain/construct of particular interest to him or her. The student is expected to articulate his or her conception of change in the construct of interest and refer to as many of the relevant terms and concepts discussed in class to date as possible. This paper has to be on the same construct that is the topic of the research proposal. <b>A softcopy should be submitted.</b></p>	Outcomes 1, 2, 3 and 4
<p><b>Research proposal: Oral presentation (50%)</b></p> <p>Students will orally present a quantitative longitudinal research proposal (research questions, hypotheses, design and data collection, and data analytic strategies) for 10 mins in class. There is NO need to write up the research proposal in a paper format.</p>	Outcomes 1, 2, 3 and 4

Note:

1. The paper will be due one week after the end of the course and the oral presentation will be held in the last session.
2. Students have to pass both assessments in order to pass the course.

### Minimum attendance requirement

100%

(Students who fail to fulfil the minimum attendance requirement will fail the course regardless of their performance.)

### Course pre-requisite

Satisfactory completion of EDUR6020 Quantitative Research Methods I or EEDD6701 Research Methods I

(Version of July 10, 2025)

**THE UNIVERSITY OF HONG KONG**  
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**EDUR7075 Quantitative Longitudinal Research II: Measurement and Data Analysis**

**Introduction**

Change is the only constant thing in the world. Longitudinal research aims to study and analyze change over time. Many research areas within the field of education are also trying to answer the questions of how and why different units of interest, including, but not limited to, students, parents, teachers, classrooms, and schools, change over time. Understanding these change processes will contribute to the design of educational interventions that will eventually lead to meaningful changes in schools, families, and students.

Over the past decades, the field has begun to develop many methodological and statistical techniques for conducting quantitative longitudinal research and studying change. Educational scientists who are interested in change over time must understand and be equipped with as many methodological and statistical techniques as possible that are currently available to the science. Focusing on quantitatively measuring and analyzing individual-level change, this course is designed to assist students as they grapple with such techniques.

**Teacher(s)**

Professor Xiao ZHANG

**Course objectives**

This course has four major goals:

1. To introduce to students a variety of measurement options for studying change over time, to guide them to understand the importance of measurement invariance over time and how to conduct measurement invariance analysis in quantitative longitudinal research, and to help them apply various measurement options in thinking about educational research;
2. To introduce to students various classic [attrition analysis, paired-samples t test, general linear modeling-repeated measures, regression analysis, and moderation and mediation analysis] and relatively new (hierarchical linear modeling, cross-lagged panel modeling, growth curve modeling, growth mixture modeling) longitudinal data analysis techniques, and to help them apply these techniques in analyzing quantitative longitudinal data using statistical software such as SPSS, Mplus and R; and
3. To introduce to students a variety of tips for conducting quantitative longitudinal research, and to facilitate them to reflect the methodological, conceptual, and practical challenges in conducting quantitative longitudinal research.

**Course duration**

12 hours

## Course topics

### Topic 1: Measurement options and measurement invariance in quantitative longitudinal research

- To explore measurement options for studying change;
- To introduce measurement invariance in longitudinal research; and
- To apply various measurement options in thinking about educational research.

### Topic 2: Analysis of longitudinal data (1)

- To introduce traditional longitudinal data analysis, including attrition analysis, regression analysis, and moderation and mediation analysis; and
- To explore how to analyze longitudinal data in educational research using statistical software such as SPSS.

### Topic 3: Analysis of longitudinal data (2)

- To introduce modern longitudinal data analysis, including measurement invariance analysis, hierarchical linear modeling, cross-lagged modeling, and growth curve modeling; and
- To explore how to analyze longitudinal data in educational research using statistical software such as R and Mplus.

### Topic 4: Other Techniques for Analyzing Longitudinal Data, and Methodological Challenges in Longitudinal Designs

- To introduce other techniques for analyzing longitudinal data; and
- To explore methodological, conceptual, and practical challenges in longitudinal designs.

## Course learning outcomes

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

1. Describe and apply various measurement options for studying change over time;
2. Understand various classic and relatively new statistical methods available for analyzing change over time;
3. Understand how different theories of change can or cannot be addressed with current longitudinal measurement and statistical methods;
4. Understand the methodological, conceptual, and practical challenges in conducting quantitative longitudinal research; and
5. Gain hands-on experience analyzing a longitudinal data set from start to finish.

## Key readings

- Taris, T. W. (2000). *A primer in longitudinal data analysis*. Thousand Oaks, CA: Sage.
- Menard, S. (2002). *Longitudinal research* (2nd ed.). Thousand Oaks, CA: Sage.
- Ruspini, E. (2002). *Introduction to longitudinal research*. London: Routledge.
- Rogosa, D. (1995). Myths and methods: "Myths about longitudinal research" plus supplemental questions. In J.M. Gottman (Ed.), *The analysis of change* (pp. 3-66). Mahwah, NJ: Erlbaum.
- Singer, J. D., & Willett, J. B. (2003). *Applied longitudinal data analysis: Modeling change and event occurrence*. New York, NY: Oxford University Press.
- 劉紅雲, 張雷. (2005). *追蹤資料分析方法及其應用*. 北京: 教育科學出版社.
- Collins, L. M., & Horn, J. L. (Ed.). (1991). *Best methods for the analysis of change*. Washington, DC: American Psychological Association.

- Hoffman, L. (2014). *Longitudinal analysis: Modeling within-person fluctuation and change*. New York, NY: Taylor & Francis.
- Little, T. D. (2013). *Longitudinal structural equation modeling*. New York, NY: Guilford Press.

**Assessment methods**

Assessment (weighting of each assessment)	Learning outcome(s) to be assessed
<p><b>Data analysis project (80%)</b></p> <p>The main assignment in this course is for students to analyze a longitudinal, developmental data set from beginning to end: from coming up with a brief theory of change for the phenomenon, to deciding on questions and hypotheses, to deciding on the data analysis techniques and statistical procedures needed to do the analyses, to running the procedures, to interpreting the results, to writing the research report. Students may use their own data set (if one is available to them, if it is longitudinal, with at least two time points AND if it is approved by the instructor), an open data set, or one provided by their supervisor. Because of the depth of the work and the fact that the end result of this project may be eventually worthy of publication, students are encouraged to obtain a data set with which they have some reasonable personal interest/commitment. <b>The softcopy should be submitted.</b></p>	Outcomes 1 , 2, 3, 4 and 5
<p><b>Data analysis: Oral presentation (20%)</b></p> <p>Students will give an oral presentation to their fellow class members briefly summarizing their course project, including a brief introduction to the topic, a brief method and procedures section, an expanded results section (in which you describe what was done, and why, and what was found), and a brief discussion section. Each student’s presentation will last for 10 minutes.</p>	Outcomes 1 , 2, 3, 4 and 5

Note:

1. The paper will be due six weeks after the end of the course and the oral presentation will be held in the last session.
2. Students have to pass both assessments in order to pass the course.

**Minimum attendance requirement**

100%

(Students who fail to fulfil the minimum attendance requirement will fail the course regardless of their performance.)

**Course pre-requisite**

Satisfactory completion of EDUR7074 Quantitative Longitudinal Research I: Theories and Designs.

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**EDUR7078 Item Response Theory (Modern Psychometric Theory): Part A**

**Introduction**

This two-part course is an introduction to the principles and applications of item response theory (IRT), which is equivalent to modern psychometric theory, and models that encompass a class of probabilistic measurement models commonly used in the educational and organizational settings. It will cover both theoretical knowledge and practical applications, as well as implementations of IRT procedures in select computer packages. The goals of the course are to help students:

1. understand IRT as a modern and comprehensive psychometric framework;
2. be familiarized with some of the most common IRT models;
3. recognize various practical educational and organizational testing applications of IRT; and
4. implement software packages for IRT analysis.

**Teacher(s)**

Professor Jinsong CHEN

**Course objectives**

This is Part A of a two-part series. Part A has four (4) meetings each for three (3) hours. For each meeting, majority of the time will be devoted to lectures; in addition, a portion of the time will be devoted to the computer laboratory.

The course will introduce students to the foundations and assumptions underlying IRT, similarities and differences between commonly used IRT models, various applications of IRT to practical testing situations, and implementations of IRT procedures in select computer packages.

**Course duration**

12 hours

**Course topics**

The module consists of 4 sessions of 3-hour duration each. In each session, there will be a lecture followed by in-class activities and/or discussion.

Session 1. Classical Psychometric Analysis

Session 2. Assumptions and IRT Models for Dichotomous Data

Session 3. IRT Models for Polytomous Data and Metric of Scale

Session 4. Person and Item Parameter Estimation

## Course learning outcomes

1. To provide students with knowledge that will allow them to recognize the use of appropriate IRT models and procedures for psychometric analysis; and
2. To provide students with the skills that will allow them to implement computer packages that perform IRT analysis.

## Key readings

- Embretson, S. E., & Reise, S. P. (2000). Item response theory for psychologists. Mahwah, NJ: Erlbaum.
- de Ayala, R. J. (2009). The theory and practice of item response theory. New York: Guilford.
- DeMars, C. (2010). Item response theory. New York: Oxford University Press.

- **Computer Software:**

Statistical software R will be used throughout the course. R (and its editor Rstudio) is free of charge.

R can be downloaded from <https://cran.r-project.org/>;

Rstudio can be downloaded from <https://posit.co/download/rstudio-desktop/>.

## Assessment methods

Assessment (weighting of each assessment)	Learning outcome(s) to be assessed
Students will have to complete four homework assignments for the materials covered in the four meetings. An assignment will be given after each meeting and <u>will be due the week after</u> . The homework assignments will consist of problems pertaining to conceptual and analytical aspects, computer implementation, and interpretation of results. Each homework assignment will be worth 25% of the final score.	Outcomes 1 and 2

## Minimum attendance requirement

3 out of 4 sessions

## Course pre-requisite

1. EDUR7102 Statistical Analysis with R; or
2. EDUR6020 Quantitative Research Methods I; or
3. A course on R programming or equivalent is required.

The course is open to all MPhil/PhD and EdD students.

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**THE UNIVERSITY OF HONG KONG**  
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**EDUR7079 Item Response Theory (Modern Psychometric Theory): Part B**

**Introduction**

This two-part course is an introduction to the principles and applications of item response theory (IRT), which is equivalent to modern psychometric theory, and models that encompass a class of probabilistic measurement models commonly used in the educational and organizational settings. It will cover both theoretical knowledge and practical applications, as well as implementations of IRT procedures in select computer packages. The goals of the course are to help students:

1. understand IRT as a modern and comprehensive psychometric framework;
2. be familiarized with some of the most common IRT models;
3. recognize various practical educational and organizational testing applications of IRT; and
4. implement software packages for IRT analysis.

**Teacher(s)**

Professor Jinsong CHEN

**Course objectives**

This is Part B of a two-part series. Part B has four (4) meetings each for three (3) hours. For each meeting, majority of the time will be devoted to lectures; in addition, a portion of the time will be devoted to the computer laboratory.

The course will introduce students to various methods for assessing model fit within IRT and validating IRT model assumptions. It will also explain the item information function (IIF), its relationship to item parameters, how IIF contributes to the test information function (TIF), the construction of tests using IRT, the role of TIF, and procedures for aligning different test forms on the same scale. Other topics include measurement invariance, test score comparability, test bias, differential item functioning (DIF), the use of computerized adaptive testing, and multidimensional IRT.

**Course duration**

12 hours

**Course topics**

The module consists of 4 sessions of 3-hour duration each. In each session, there will be a lecture followed by in-class activities and/or discussion.

Session 1. Model Fit and Assessment

Session 2. Item Information and Test Construction

Session 3. Test Linking, Equating, and Differential Item Functioning

Session 4. Multidimensional Models and Special Topics

## Course learning outcomes

1. To provide students with knowledge that will allow them to recognize the use of appropriate IRT models and procedures for psychometric analysis; and
2. To provide students with the skills that will allow them to implement computer packages that perform IRT analysis.

## Key readings

- Embretson, S. E., & Reise, S. P. (2000). Item response theory for psychologists. Mahwah, NJ: Erlbaum.
- de Ayala, R. J. (2009). The theory and practice of item response theory. New York: Guilford.
- Reckase, M. D. (2009). Multidimensional Item Response Theory. Springer Science & Business Media.

- **Computer Software:**

Statistical software R will be used throughout the course. R (and its editor Rstudio) is free of charge.

R can be downloaded from <https://cran.r-project.org/>;

Rstudio can be downloaded from <https://posit.co/download/rstudio-desktop/>.

## Assessment methods

Assessment (weighting of each assessment)	Learning outcome(s) to be assessed
Students will have to complete four homework assignments for the materials covered in the four meetings. An assignment will be given after each meeting and <u>will be due the week after</u> . The homework assignments will consist of problems pertaining to conceptual and analytical aspects, computer implementation, and interpretation of results. Each homework assignment will be worth 25% of the final score.	Outcomes 1 and 2

## Minimum attendance requirement

3 out of 4 sessions

## Course pre-requisite

1. EDUR7102 Statistical Analysis with R; or
2. EDUR6021 Quantitative Research Methods II; or
3. EDUR7078 Item Response Theory (Modern Psychometric Theory): Part A; or
4. Course(s) on the basics of IRT and R programming or equivalent is required

The course is open to all MPhil/PhD and EdD students.

*(Version of July 10, 2025)*

**THE UNIVERSITY OF HONG KONG**  
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**EDUR7110 Hierarchical Linear Models**

**Introduction**

Multilevel models (also called hierarchical linear models or linear mixed models) are often necessary to analyze clustered data, such as when students are nested within classrooms and schools, or when the effects of country characteristics are to be examined in international large-scale assessments. This course introduces multilevel modeling as a tool for analyzing clustered data. It aims to enable students to understand and use multilevel modeling to analyze cross-sectional data.

The course will be conducted over four meetings (each 3 hours). Students will learn theoretical knowledge of multilevel models and acquire the skills to implement common multilevel models. Worked examples will be used and students will have the opportunity to implement multilevel models in a software application (mostly using R and with additional examples for implementation in Mplus). Students will also discuss empirical articles and complete homework assignments.

By the end of the course, students will: 1) have the conceptual and statistical knowledge needed to understand and examine different multilevel models; 2) understand the assumptions, requirements and limitations of multilevel modeling; 3) be able to perform the analysis of clustered data using a statistical software package; and 4) be able to interpret the statistical results.

**Teacher(s)**

Professor Frank REICHERT

**Course objectives**

This course introduces multilevel modeling as a tool for analyzing clustered data. It aims to enable students to understand and use multilevel modeling to analyze cross-sectional data.

**Course duration**

12 hours

**Course topics**

Meeting 1: Introduction to multilevel models

During this meeting, students will learn about clustered data / data hierarchies, multilevel theories, and when multilevel modeling is and is not appropriate / required. Similarities and differences between multilevel models and (single level) linear regression as well as analysis of variance will be discussed. Partitioning of variance in an outcome and basic two-level model specification will be covered.

Meeting 2: Two-level models

During this meeting, students will learn different two-level models. Specifically, random intercept models, random slopes (coefficients) models, and two-level models with cross-level interactions will be discussed in detail.

### Meeting 3: Centering variables and evaluating multilevel models

The third meeting will cover centering strategies and composition variables in multilevel models. Students will also learn more about model estimation (e.g., estimation methods), how to evaluate model fit and parameter estimates, and how to compare multilevel models.

### Meeting 4: Assumptions, reporting, and extensions

In the final meeting, students will learn model building strategies, what the assumptions of the hierarchical linear model are, and how to examine whether the assumptions are met. We will also discuss issues related to sample size and power and how to report the results from multilevel analysis. The meeting will also offer a brief outlook on extensions of the two-level model (e.g., three-level models, cross-classified and multiple membership data structures).

## **Course learning outcomes**

Upon completion of this course, students should have the:

1. Ability to critically evaluate when it is appropriate to use multilevel models
2. Understanding of the conceptual and mathematical basis of multilevel models;
3. Capacity to model a variety of clustered data and estimate different multilevel models in a software package; and
4. Skills in interpreting and communicating results of the multilevel analyses.

## **Key readings**

### Mandatory readings

- Enders, C. K., & Tofighi, D. (2007). Centering predictor variables in cross-sectional multilevel models: A new look at an old issue. *Psychological Methods, 12*(2), 121–138. <https://doi.org/10.1037/1082-989X.12.2.121>
- Huang, F. L. (2018). Multilevel modeling myths. *School Psychology Quarterly, 33*(3), 492–499. <http://dx.doi.org/10.1037/spq0000272>
- McCoach, D. B. (2018). Multilevel modeling. In G. R. Hancock, L. M. Stapleton, & R. O. Mueller (Eds.), *The reviewer's guide to quantitative methods in the social sciences* (2nd ed., pp. 292–312). Routledge.
- Peugh, J. L. (2010). A practical guide to multilevel modeling. *Journal of School Psychology, 48*(1), 85–112. <https://doi.org/10.1016/j.jsp.2009.09.002>
- Snijders, T. A. B., & Bosker, R. J. (2012). *Multilevel analysis: An introduction to basic and advanced multilevel modeling* (2nd ed.). Sage. (only selected chapters)
- Stegmueller, D. (2013). How many countries for multilevel modeling? A comparison of frequentist and Bayesian approaches. *American Journal of Political Science, 57*(3), 748–761. <https://doi.org/10.1111/ajps.12001>

### Optional/supplementary readings

- Brincks, A. M., Enders, C. K., Llabre, M. M., Bulotsky-Shearer, R. J., Prado, G., & Feaster, D. J. (2017). Centering predictor variables in three-level contextual models. *Multivariate Behavioral Research, 52*(2), 149–163. <https://doi.org/10.1080/00273171.2016.1256753>
- Finch, W. H., Bolin, J. E., & Kelley, K. (2024). *Multilevel modeling using R* (3rd ed.). CRC Press. (only selected chapter)
- Fielding, A., & Goldstein, H. (2006). *Cross-classified and multiple membership structures in multilevel models: An introduction and review*. University of Birmingham. <http://dera.ioe.ac.uk/6469/1/RR791.pdf>

- Garson, G. D. (2020). *Multilevel modeling: Applications in Stata®*, *IBM® SPSS®*, *SAS®*, *R*, & *HLM™*. Sage. (only selected chapters)
- Goldstein, H. (2011). *Multilevel statistical models* (4th ed.). Wiley. (only selected chapters)
- Heck, R. H., & Thomas, S. L. (2020). *An introduction to multilevel modeling techniques: MLM and SEM approaches* (4th ed.). Routledge. (only selected chapters)
- Hox, J. J., Moerbeek, M., & van Schoot, R. de (2017). *Multilevel analysis: Techniques and applications* (3rd ed.). Routledge. (only selected chapters)
- Humphrey, S. E., & LeBreton, J. M. (Eds.) (2019). *The handbook of multilevel theory, measurement, and analysis*. APA. (only selected chapters)
- Kreft, I. G. G., & Leeuw, J. de (1998). *Introducing multilevel modeling*. Sage. (only selected chapters)
- Peugh, J. L. (2014). Conducting three-level cross-sectional analyses. *Journal of Early Adolescence*, 34(1), 7–37. <https://doi.org/10.1177/0272431613498646>
- Rabe-Hesketh, S., & Skrondal, A. (2006). Multilevel modeling of complex survey data. *Journal of the Royal Statistical Society: Series A (Statistics in Society)*, 196(4), 805–827. <https://doi.org/10.1201/9781420035889.ch15>
- Raudenbush, S. W., & Bryk, A. S. (2002). *Hierarchical linear models: Applications and data analysis methods* (2nd ed.). Sage. (only selected chapters)
- Rights, J. D., & Sterba, S. K. (2019). Quantifying explained variance in multilevel models: An integrative framework for defining R-squared measures. *Psychological Methods*, 24(3), 309–338. <https://doi.org/10.1037/met0000184>
- Rights, J. D., & Sterba, S. K. (2020). New recommendations on the use of r-squared differences in multilevel model comparisons. *Multivariate Behavioral Research*, 55(4), 568–599. <https://doi.org/10.1080/00273171.2019.1660605>
- Shaw, M., & Flake, J. K. (no date). *Introduction to multilevel modelling*. <https://www.learn-mlms.com/>

*Specific book chapters and additional weekly readings (for weekly forum posts) will be announced during the course.*

## Assessment methods

Assessment (weighting of each assessment)	Learning outcome(s) to be assessed
<p><b>Four homework assignments (60%) (15% each)</b></p> <p>Students will have to complete four homework assignments for the materials covered in the four meetings. An assignment will be given after each meeting. Each assignment will be due before the next course meeting. The homework assignments will consist of problems pertaining to computation, computer implementation, and interpretation of results. Each homework assignment will be worth 15% of the final score.</p>	Outcomes 1, 2, 3 and 4
<p><b>Forum posts after each meeting (40%) (10% each)</b></p> <p>During the week after each meeting, students will have to read one theoretical article or a short empirical article reporting an application of the multilevel method or concept discussed in the respective meeting and then submit short forum posts. Forum posts need to relate to methodological issues and can be, for instance, questions about the methods or analysis, methodological criticism and suggestions for improvement of the analysis, clarifications of the reported analysis, as well as responses to other students' questions (e.g., corrections or answers to questions on the analysis). Each week these posts will be worth 10% of the final score; at least two short posts are required each week and they will be assessed based on their quality and on the diversity over the entire semester (e.g., a student should not only post questions but also respond to questions).</p>	Outcomes 1, 2 and 4

## Minimum attendance requirement

100%

## Course pre-requisite

- Sound knowledge of linear regression analysis (demonstrated through evidence of passing a course that covered simple and multiple linear regression theory and applications)
- Sound knowledge of ANOVA (demonstrated through evidence of passing a course that covered ANOVA theory and applications)

Other eligibility criteria:

Although examples will be given in different software packages, R is the most flexible software application. Therefore, students are encouraged to become familiar with R (e.g., by attending the R course offered in Semester 1). ***Students who have successfully completed (passed) an R course are exempt from the course pre-requisite.***

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**THE UNIVERSITY OF HONG KONG**  
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**EDUR7116 Qualitative Survey Design**

**Introduction**

This course focuses on qualitative survey design. Survey design is an extremely popular way to conduct educational research, but guidebooks dominantly focus on quantitative research designs. Moreover, even though mixed methods surveys have been used to collect open-ended responses for a long time, very little is known about surveys that are not only designed for collecting qualitative data but that prioritize qualitative values and worldviews (Braun et al., 2021). This course focuses exactly on this. The course will address in-depth qualitative data collection methods through online surveys.

**Teacher(s)**

Professor Lukas LIU

**Course objectives**

The Course Objectives (COs) are as follows:

1. Introduction to qualitative survey design for both inductive (data-driven) and deductive (theory-driven) research.
2. Qualitative item design for nuanced, in-depth responses.
3. Qualitative surveys for sensitive topics (e.g., sexuality).
4. Introduction to the analysis of qualitative survey data.

**Course duration**

12 hours

**Course topics**

- Introduction: what kinds of research questions can be answered through qualitative survey design?
- Sampling in qualitative surveys.
- Piloting surveys.
- Survey design.
- Sensitive survey design.
- Introduction to qualitative data analysis (specifically for qualitative surveys).

**Course learning outcomes**

The course Learning Outcomes (LOs) are linked directly to the four COs, of which the first one is introductory. After the course, the participants are able to:

1. Analyse when to use qualitative surveys (compared to, for example, interviews);
2. Design survey items for nuanced, in-depth responses;

3. Conduct qualitative surveys on sensitive topics; and
4. Understand the premises of analysing qualitative survey data.

**Key readings**

- Braun, V., Clarke, V., Boulton, E., Davey, L., & McEvoy, C. (2021). The online survey as a qualitative research tool. *International Journal of Social Research Methodology*, 24(6), 641-654.
- Terry, G., & Braun, V. (2017). Short but often sweet: The surprising potential of qualitative survey methods. In V. Braun, V. Clarke, & D. Gray (Eds.), *Collecting qualitative data: A practical guide to textual, media and virtual techniques* (pp. 15–44). Cambridge University Press.

**Assessment methods**

Assessment (weighting of each assessment)	Learning outcome(s) to be assessed
Critical analysis of an earlier qualitative survey study (40%)	Outcomes 1, 2, 3 and 4
Group project: Qualitative survey project (60%)	Outcomes 1, 2, 3 and 4

**Minimum attendance requirement**

The participants are required to attend all sessions.

**Course pre-requisite**

Nil

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**EDUR7124 Quantitative Ethnography**

**Introduction**

This course is designed to introduce you to quantitative ethnography (QE) as an emerging methodology in educational research. QE bridges the divide between quantitative versus qualitative research paradigms and helps us understand how to make sense of our increasingly data-rich world through a mixed-method approach. In this course, students will examine the theoretical foundations of QE through research and practice examples and explore QE modeling approaches such as Epistemic Network Analysis, automated data coding, discourse segmentation, etc.

**Teacher(s)**

Professor Lukas LIU

**Course objectives**

1. Explore the foundations and practical use of quantitative ethnography.
2. Discuss the interconnection between quantitative and qualitative perspectives of data analysis in a quantitative ethnographic framework.
3. Apply quantitative ethnographic techniques including epistemic network analysis, automated coding, writing research memos, etc. to understand the patterns and meanings behind complex data.
4. Write up quantitative ethnographic analysis results to address specific research questions.

**Course duration**

12 hours

**Course topics**

- Week 1: Introduction to QE: Theoretical Foundations
- Week 2: Data Coding, Segmentation, and Interpretation in QE
- Week 3: Applied QE: Epistemic Network Analysis
- Week 4: Advanced QE: Ordered Network Analysis, Multimodal QE, Learning Progression, etc.

**Course learning outcomes**

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

1. Explore the foundations and practical use of quantitative ethnography.
2. Discuss the interconnection between quantitative and qualitative perspectives of data analysis in a quantitative ethnographic framework.
3. Apply quantitative ethnographic techniques including epistemic network analysis, automated coding, writing research memos, etc. to understand the patterns and meanings behind complex data.
4. Write up quantitative ethnographic analysis results to address specific research questions.

## Key readings

- [Suggested textbook] Shaffer, D. W. (2017). Quantitative Ethnography. Cathcart Press.
- Irgens, G. A., & Eagan, B. (2023). The foundations and fundamentals of quantitative ethnography. In: Damşa, C., Barany, A. (Eds.), Advances in quantitative ethnography: ICQE 2022. Springer. [https://doi.org/10.1007/978-3-031-31726-2\\_1](https://doi.org/10.1007/978-3-031-31726-2_1)
- QE Zotero Library: [https://www.zotero.org/groups/2456859/quantitative\\_ethnography/library](https://www.zotero.org/groups/2456859/quantitative_ethnography/library)

## Assessment methods

Assessment (weighting of each assessment)	Learning outcome(s) to be assessed
<b>QE Labs (40%)</b>  During in-class workshops, students will engage in guided activities to explore and practice related techniques and tools in QE.	Outcomes 1, 2 and 3
<b>QE Applied Assignments (30%)</b>  Two applied assignments are designed to facilitate students' learning through completing the coding and analysis steps for the QE process.	Outcome 3
<b>QE analysis write-up (20%)</b>  To integrate all components of applied assignments into a final write-up that demonstrates students' ability to complete a QE analysis.	Outcomes 2 and 4
<b>Peer Critique (10%)</b>  Students are encouraged to provide peer feedback and critiques evaluating each other's work.	Outcomes 1 and 2

## Minimum attendance requirement

100%

## Course pre-requisite

At least one qualitative method course (i.e. EDUR6010 Qualitative Research Methods I, EEDD6702 Research Methods II, or any electives categorised as qualitative RM courses) or upon the course teacher's approval.

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**EDUR7125 Effective Analysis and Argumentation in Educational Research**

**Introduction**

High-quality educational research articulates significant questions and provides persuasive answers. To provide valuable findings which can have an impact, scholars must engage in effective analysis and argumentation. These skills go beyond technical processes of gathering data and subjecting data to favored tools of analysis in the abstract. Educational researchers are more than expert coders and statisticians. Instead, powerful methods of analysis require that we provide compelling arguments to support our methodology and its use and our understanding of concepts and conceptual frameworks. Through effective argumentation, researchers must connect the dots from past literature to present methodology, from epistemology to empirical claims and findings, and from empirical statements ('what is') to normative statements 'what should be'. This course will strengthen students' capacities in analysis and argumentation to extend skills of data gathering and analysis and enable the development of more holistic expertise in communicating about research with authority. Students across methodologies in this course will become stronger in analysis and argumentation, essential qualities for completing a research program.

**Teacher(s)**

Professor Liz JACKSON

**Course objectives**

This course aims to strengthen students' skills of analysis and argumentation to complete a high-quality research project. Going beyond introducing or evaluating qualitative or quantitative methods of data gathering, it enables students to justify their methods and draw effective arguments in empirical and normative forms as necessary for conducting rigorous educational research.

First the course introduces students to formal logic and related forms of argumentation as they relate to empirical, scientific, theoretical, conceptual, and normative methods of inquiry and scholarly discourse. Understanding arguments is vital for conducting a quality literature review and successfully identifying a research gap. Next, the course enables students to identify, understand, articulate their personal, academic, and disciplinary assumptions and biases and competently manage and communicate about issues related to bias, objectivity, and reflexivity. Additionally, it will help students to expertly reflect upon and convey their voice and interest in ethical, practical, political, and related matters of significance and impact related to their research. Through such capacities students will become more insightful, aware, and articulate in defending, justifying, and arguing for their methodology and findings and the overall value and quality of their research.

**Course duration**

12 hours

## Course topics

1. Evaluating arguments: Argument forms, literature reviews, and document analysis
2. Sorting out and connecting empirical, theoretical, conceptual, and normative issues
3. Navigating scholarly values, assumptions, and bias: Analyzing perspectives in texts
4. Developing impactful research: Illuminating research gaps and justifying methods

## Course learning outcomes

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

1. Understand the differences between and key features of formal logic and other forms of scholarly argumentation;
2. Appreciate the value of literature review and document analysis in educational research;
3. Articulate and distinguish the relevance and relationships among empirical, theoretical, conceptual, and normative components of research;
4. Elaborate on the nature of one's position and bias, including the assumptions and values they bring into their research, in a balanced and productive way; and
5. Persuade peers (fellow academics) regarding the overall significance (or impact) of one's research.

## Key readings

- Armstrong, Key methods used in qualitative document analysis
- Biesta, *Educational Research: An Unorthodox Approach*, excerpts
- Curtis, [Rules of argumentation](#)
- Duke University Writing Studio, [Because I said so: Effective use of first-person perspective](#)
- Fendler, Why generalizability is not generalizable
- Jackson, Purposes of education
- Jackson, *Understanding Philosophy of Education*, excerpts
- Johnson, [How to write a philosophy paper](#)
- Lau, [\[A\] Argument analysis](#)
- Lau, [\[L\] Basic logic](#)
- Lau, [\[F\] Fallacies and biases](#)
- Lau, [\[M\] Meaning analysis](#)
- Lau, [\[S\] Scientific methodology](#)
- Lau, [\[U\] Values](#)
- Robeyns, Three models of education: Rights, capabilities and human capital
- Setzer, [Introductory logic](#)
- Smeyers, The relevance of irrelevant research: The irrelevance of relevant research
- Stone, Kuhnian science and education research: Analytics of practice and training
- Walden University: [Scholarly voice: Writing in the first person](#)

### **Assessment methods**

Assessment (weighting of each assessment)	Learning outcome(s) to be assessed
Write an essay indicating your positionality in your research with regard to your research questions and approach and how your biases and assumptions relate to its scholarly value. (1500-2000 words)	Outcomes 1, 2, 3, 4 and 5
Write an essay indicating why and how your research has impact. (1500-2000 words)	Outcomes 1, 2, 3, 4 and 5

### **Minimum attendance requirement**

3 out of 4 sessions – Students who fail to attend at least three sessions will fail the course.

### **Course pre-requisite**

Nil

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**EDUR8501 Designing Positive Learning Experiences for Diverse Learners:  
Theoretical and Research Evidence**

**Introduction**

How can educators create learning environments where all students —regardless of background, ability, or challenges— can thrive academically and psychologically? Basic (e.g., primary and secondary schools) and higher education contexts continue to face a wide range of challenges in addressing the unique academic and socio-emotional needs of diverse learners. This course aims to provide our PhD/EdD/MPhil students with conceptual, empirical, and practical toolkits on how to promote effective and holistic learning climates for students with diverse learning and ability backgrounds (e.g., students from disadvantaged family backgrounds, students with mental health issues, and gifted students). Some foundational concepts on identifying students’ needs are discussed. Modules will also centre around the use of scientifically supported, interactive, strength-based, and innovative tools —such as character strengths development, arts-based interventions, and technology-enhanced learning— to craft high-quality and supportive learning contexts. In addition, this course intends to facilitate interactive discourse on the application of psychology, learning science, educational technology, positive education, and inclusive education to address the unique learning and socio-emotional needs of diverse learners in various educational contexts. Recent theoretical advancements and scientific findings on the most optimal approaches to engage learners are integrated to identify research and practical directions about effective building positive learning climates.

**Teacher(s)**

Professor Jesus Alfonso D. DATU

**Course objectives**

This course is designed to provide doctoral students in education subdisciplines with theoretical and empirical backbone and practical strategies to support diverse learners in classroom contexts. It has the following objectives:

1. To promote understanding of diverse learners’ unique academic and socio-emotional needs;
2. To enrich knowledge about recent theories and research findings on identifying the needs of diverse learners;
3. To increase students’ repertoire of practical toolkits to support students with diverse learning and socio-emotional needs;
4. To evaluate the cultural applicability of various learning theories and practices in various cultural contexts;

**Course duration**

24 hours

## Course topics

1. **Introduction:** Foundational concepts in students with diverse needs; Understanding students with diverse needs; Identifying diverse learners' academic and socio-emotional needs; Basics of inclusive education/psychology; Foundational theories in educational psychology, inclusive education, and positive education
2. **Cultivating academic persistence and resilience**
3. **Boosting students' creativity**
4. **Leveraging arts for students' mental health**
5. **Promoting school kindness**
6. **Harnessing technologies to support diverse learners**
7. **Cultural applicability of learning interventions**
8. **Current trends in supporting students with diverse needs and group presentations**

## Course learning outcomes

At the end of the course, students are expected to:

1. Demonstrate knowledge of diverse learners' unique academic and socio-emotional needs;
2. Incorporate foundational theories in inclusive education, psychology, and positive education in identifying the needs of diverse learners;
3. Recognize practical interventions to support students with diverse learning needs in classroom contexts; and
4. Evaluate the cultural applicability of theories, empirical findings, and interventions that support the academic and socio-emotional needs of diverse learners;

## Key readings

- Datu, J. A. D., Chiu, M. M., Mateo, N. J., & Yang, L. (2024). Persisting in tough times: Links of grit to subsequent achievement goal orientation, and academic engagement in science. *International Journal of STEM Education*, 11(2). <https://doi.org/10.1186/s40594-024-00462-x>
- Datu, J. A. D., & Park, N. (2024). Does school kindness lead to greater school engagement? Cross-sectional and longitudinal evidence in the Philippine context. *Journal of Positive Psychology*, 19(6), 1051–1065. <https://doi.org/10.1080/17439760.2023.2297200>
- Darewych, O. H. (2022). Cultivating Psychological Well-Being through Arts-Based Interventions. In *The Oxford Handbook of the Positive Humanities*. <https://doi.org/10.1093/oxfordhb/9780190064570.013.8>
- Education Bureau. (2021). *Whole school approach to integrated education*. <https://sense.edb.gov.hk/en/integrated-education/principles/whole-school-approach.html>
- Grecu, Y. V. (2023). Differentiated instruction: Curriculum and resources provide a roadmap to help english teachers meet students' needs. *Teaching and Teacher Education*, 125. <https://doi.org/10.1016/j.tate.2023.104064>
- Park, N., & Peterson, C. (2006). Moral competence and character strengths among adolescents: the development and validation of the Values in Action Inventory of Strengths for Youth. *Journal of adolescence*, 29(6), 891–909. <https://doi.org/10.1016/j.adolescence.2006.04.011>
- Ruiz, B., Fernández, F. D., y Arco, J. L. (2022). Creativity training programs in primary education: A systematic review and meta-analysis. *Thinking Skills and Creativity*, 46. <https://doi.org/10.1016/j.tsc.2022.101172>

- Seligman, M. E. P., Ernst, R. M., Gillham, J., Reivich, K., & Linkins, M. (2009). Positive education: positive psychology and classroom interventions. *Oxford Review of Education*, 35, 293–311. <https://doi.org.10.1080/03054980902934563>
- Sternberg, R. J., & Ambrose, D. (2021). *Conceptions of giftedness and talent*. Springer International Publishing.
- Wang, Y., Liu, W., Yu, X., Li, B., & Wang, Q. (2024). The impact of virtual technology on students’ creativity: A meta-analysis. *Computers & Education*, 215, 1-19. <https://doi.org/10.1016/j.compedu.2024.105044>

**Assessment methods**

Assessment (weighting of each assessment)	Learning outcome(s) to be assessed
<b>Group Presentations (40%)</b>	Outcomes 1, 2, 3 and 4
<p><b>Learning Intervention Proposal (60%)</b></p> <p>Each student will be asked to prepare a positive learning intervention proposal for diverse learners. The proposal includes a critical review of literature on cognate topics that are relevant to addressing the unique academic and socio-emotional needs of diverse learners, rationale of intervention proposal, theoretical backbone, and methodological details. The estimated length of the paper should be around 3,600 to 4,000 words.</p>	Outcomes 1, 2, 3, and 4

**Minimum attendance requirement**

At least 80% of the course sessions, i.e. 7 out of 8 sessions

**Course pre-requisite**

Nil

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