Cluster	Subject Title	Instructor	Credit	Semester		
S-P	Utilization of International Large-scale Assessment Data for Education Research	Pey-Yan Liou	3	Summer 2025		
Subject Description	Subject Description					
The course will enable students to develop an understanding of survey research methods and quantitative methods for analyzing international large-scale assessment (ILSA) data. Moreover, the goals of this course are to provide students with the skill sets needed to pose researchable educational questions, locate existing large-scale datasets to answer the questions, understand the data documentation, analyze the existing data appropriately, and communicate the findings in a manner consistent with the standards of the education research community. This course will use the <i>Trends in International Mathematics and Science Study</i> (TIMSS) and the <i>Programme for International Student Assessment</i> (PISA) as a demonstration. TIMSS provides rich information about the 4th and 8th graders' mathematics and science achievement achievement and contextual factors, while PISA assesses science, mathematics, and reading literacy with a focus on the particular year.						
Objective						
 Through participating in the course, students will be able to: understand what ILSAs represent and their trends comprehend how ILSAs are developed, how are being used, and their limitations is important for understanding educational evaluation and the possibilities and restrictions for educational policy identify suitable statistical methods for given research questions. utilize SPSS and IDB Analyzer for statistical computations. demonstrate sufficient statistical knowledge to conduct educational research based on individual research interests. 						
Learning Method						
The teaching and learning processes are listed as follows. - reading required course materials - listening to the contents delivered by the instructor - practicing how to get statistical outputs by using SPSS - finishing assignments independently - delivering presentations to enhance communication skills and knowledge synthesis - listening to the contents delivered by the instructor and assimilating insights from peer presentations						
Content						
 Introduction to ILSA data Introduction to survey design of ILSAs (e.g., sampling weight, sampling errors) Introduction to measurement issues (e.g., plausible values) of ILSAs Basic statistics (e.g., descriptive statistics, multiple regression) The SPSS and IDB Analyzer environment and application The use of ILSAs data to inform educational policy 						
Requirement						
It is strongly recommended that students have basic knowledge about statistics and students should also have access to the Statistical Package for the Social Sciences (SPSS) during the course.						

Note. If students are interested in *Mplus*, the instructor will also provide extra materials to these students with advanced knowledge in the field.

Evaluation

5% of the grade for class attendance, preparation, and participation.

35% of the grade for the course designated questions at the end of each day.

10% of the grade for the group presentation reflections/notes (less than one page).

30% of the grade for the group oral presentation. 2-3 students will form a group to present one article that involves the secondary data analysis from one of the ILSAs.

20% of your overall learning reflection and plan for the future (less than one page).

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Final Score	Letter Grade
95-100	A+
90-94	A
85-89	B+
80-84	В
Below 80	F

Textbook and reference

Field, A. (2018). Discovering statistics using IBM SPSS Statistics (5th ed). London: Sage Publications.

Rutkowski, L., Gonzalez, E., Joncas, M. & von Davier, M. (2010). International large-scale assessment data: Issues in secondary analysis and reporting. Educational Researcher, 39(2), 142–151.

*Class schedule may be modified based on arranged cultural events, students' backgrounds, expectations, and performance.

AELC 2025 Summer Course

Utilization of International Large-scale Assessment Data for Education							
Research							
	Day 1	Day 2	Day 3				
9:30-	Welcome & Agenda	ILSA survey design I	An introduction to				
11:00			multilevel modeling				
	Refreshing basic statistical						
	concepts I						
11:00-	Tea break						
11:15							
11:15-	Refreshing basic statistical	ILSA survey design II	Group oral presentation I				
12:30	concepts II						
	Introduction to SPSS and						
12.20	IDB Data Analyzer						
12:30-	Lunch break						
12.20	Introduction to	Moasuromont issues in	Group and procentation II				
15.30-	internetional large cools		Group or al presentation in				
15.50	International large-scale	ILSAS					
	assessments (ILSA) data						
	Access to TIMSS and PISA						
	data						
15:30-	Tea break						
15:45							
15:45-	Data analysis activities	Data analysis activities	Closing remarks				
17:00							
	Group discussion	Group discussion					

Note. Class schedules may be modified based on arranged cultural events, students' backgrounds, expectations, and performance.