

PIA6204: DATA SCIENCE FOR PUBLIC POLICY AND MANAGEMENT

Effective Term

Semester A 2026/27

Part I Course Overview

Course Title

Data Science for Public Policy and Management

Subject Code

PIA - Public and International Affairs

Course Number

6204

Academic Unit

Public and International Affairs (PIA)

College/School

College of Liberal Arts and Social Sciences (CH)

Course Duration

One Semester

Credit Units

3

Level

P5, P6 - Postgraduate Degree

Medium of Instruction

English

Medium of Assessment

English

Prerequisites

Nil

Precursors

Nil

Equivalent Courses

Nil

Exclusive Courses

Nil

Part II Course Details

Abstract

This course introduces Master's students to basic statistical concepts using real-world examples and hands-on exercises. Students will learn the science and art of appreciating the uses of statistics in social science, public policy, management, and everyday life. The course explores topics that include descriptive statistics (e.g., mean, standard deviation, variance, correlation, chi-square) to inferential statistics (e.g., multiple regression, logistic regression, factor analysis, ANOVA/MANOVA, conjoint analysis), with a particular focus on understanding the conditions under which various statistical techniques may be properly used. Given the importance of computing tools and software for statistical analysis, a portion of the class time will be devoted to helping students become familiar with statistical packages. SPSS will be the main software used in the course while R will also be introduced at some point in the course. At the end of this course, students will 1) be able to interpret statistical findings of various kinds, 2) become a qualified "consumer" of statistics presented in scholarly journals, and 3) prepare themselves for future research/capstone projects with a quantitative component.

Course Intended Learning Outcomes (CILOs)

CILOs	Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	Demonstrate a good understanding of major quantitative techniques often used in social sciences research	x	x	
2	Become conversant with statistical software	x	x	
3	Interpret and communicate quantitative results to lay readers		x	x
4	Think critically about statistical data discussed in reports and newspapers	x	x	x
5	Apply analytical skills learned in the class to solving real problems in workplace			x

A1: Attitude

Develop an attitude of discovery/innovation/creativity, as demonstrated by students possessing a strong sense of curiosity, asking questions actively, challenging assumptions or engaging in inquiry together with teachers.

A2: Ability

Develop the ability/skill needed to discover/innovate/create, as demonstrated by students possessing critical thinking skills to assess ideas, acquiring research skills, synthesizing knowledge across disciplines or applying academic knowledge to real-life problems.

A3: Accomplishments

Demonstrate accomplishment of discovery/innovation/creativity through producing /constructing creative works/new artefacts, effective solutions to real-life problems or new processes.

Learning and Teaching Activities (LTAs)

LTAs	Brief Description	CILO No.	Hours/week (if applicable)
1	Structured seminars/ computing lab sessions	Structured seminars/ computing lab sessions	1, 2, 3
2	Preparation of materials for discussion in seminars/ computing lab sessions	Preparation of materials for discussion in seminars/ computing lab sessions	1, 3, 4
3	Individual consultation and inquiry together with teachers	Individual consultation and inquiry together with teachers	2, 3, 5

4	Poster presentation	Assess students' ability to analyse, report and interpret a dataset that involves statistics in a poster presentation format; as well as their digital skills in poster design and visualization.	1, 3, 4, 5	
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Assessment Tasks / Activities (ATs)

	ATs	CILO No.	Weighting (%)	Remarks ("- " for nil entry)	Allow Use of GenAI?
1	Individual Assignment	1, 3, 5	40	Individual work	No
2	Poster Presentation in digital posters, with in-person class presentations in groups, with teachers giving feedback and debriefing	1, 2, 3, 5	50	Group work (group size will be decided by the course examiner depending on class size)	No
3	Class Participation	1, 2, 4	10	-	No

Continuous Assessment (%)

100

Assessment Rubrics (AR)**Assessment Task**

Individual Assignment (for students admitted before Semester A 2022/23 and in Semester A 2024/25 & thereafter)

Criterion

Ability to synthesize, critique and offer recommendations to improve a piece of research that uses statistics.

Excellent

(A+, A, A-) Excellent ability to synthesize, critique and offer recommendations to improve a piece of research that uses statistics.

Good

(B+, B, B-) Good ability to synthesize, critique and offer recommendations to improve a piece of research that uses statistics.

Fair

(C+, C, C-) Basic ability to synthesize, critique and offer recommendations to improve a piece of research that uses statistics.

Marginal

(D) Weak ability to synthesize, critique and offer recommendations to improve a piece of research that uses statistics.

Failure

(F) Very weak ability to synthesize, critique and offer recommendations to improve a piece of research that uses statistics.

Assessment Task

Poster Presentation (for students admitted before Semester A 2022/23 and in Semester A 2024/25 & thereafter)

Criterion

Using a poster to demonstrate the ability to analyse, report, and interpret a dataset using statistical tools and concepts covered in the course. Poster design and visuals are an integral part of the digital skills assessment.

Excellent

(A+, A, A-) Excellent demonstration of the ability to analyse, report, and interpret a dataset using statistical tools and concepts covered in the course. Poster design and visuals demonstrating evidence of excellent digital skills.

Good

(B+, B, B-) Good demonstration of the ability to analyse, report, and interpret a dataset using statistical tools and concepts covered in the course. Poster design and visuals demonstrating evidence of good digital skills.

Fair

(C+, C, C-) Basic demonstration of the ability to analyse, report, and interpret a dataset using statistical tools and concepts covered in the course. Poster design and visuals demonstrating evidence of basic digital skills.

Marginal

(D) Weak demonstration of the ability to analyse, report, and interpret a dataset using statistical tools and concepts covered in the course. Poster design and visuals demonstrating evidence of weak digital skills.

Failure

(F) Very weak demonstration of the ability to analyse, report, and interpret a dataset using statistical tools and concepts covered in the course. Poster design and visuals demonstrating evidence of very weak digital skills.

Assessment Task

Class Participation (for students admitted before Semester A 2022/23 and in Semester A 2024/25 & thereafter)

Criterion

Level and depth of class participation during thirteen weeks of the course.

Excellent

(A+, A, A-) An excellent level and depth of class participation during the thirteen weeks of the course.

Good

(B+, B, B-) A good level and depth of class participation during the thirteen weeks of the course.

Fair

(C+, C, C-) A basic level and depth of class participation during the thirteen weeks of the course.

Marginal

(D) A weak level and depth of class participation during the thirteen weeks of the course

Failure

(F) A very weak level and depth of class participation during the thirteen weeks of the course.

Assessment Task

Individual Assignment (for students admitted from Semester A 2022/23 to Summer Term 2024)

Criterion

Ability to synthesize, critique and offer recommendations to improve a piece of research that uses statistics.

Excellent

(A+, A, A-) Excellent ability to synthesize, critique and offer recommendations to improve a piece of research that uses statistics.

Good

(B+, B) Good ability to synthesize, critique and offer recommendations to improve a piece of research that uses statistics.

Marginal

(B-, C+, C) Basic to weak ability to synthesize, critique and offer recommendations to improve a piece of research that uses statistics.

Failure

(F) Very weak ability to synthesize, critique and offer recommendations to improve a piece of research that uses statistics.

Assessment Task

Poster Presentation (for students admitted from Semester A 2022/23 to Summer Term 2024)

Criterion

Using a poster to demonstrate the ability to analyse, report, and interpret a dataset using statistical tools and concepts covered in the course. Poster design and visuals are an integral part of the digital skills assessment.

Excellent

(A+, A, A-) Excellent demonstration of the ability to analyse, report, and interpret a dataset using statistical tools and concepts covered in the course. Poster design and visuals demonstrating evidence of excellent digital skills.

Good

(B+, B) Good demonstration of the ability to analyse, report, and interpret a dataset using statistical tools and concepts covered in the course. Poster design and visuals demonstrating evidence of good digital skills.

Marginal

(B-, C+, C) Basic to weak demonstration of the ability to analyse, report, and interpret a dataset using statistical tools and concepts covered in the course. Poster design and visuals demonstrating evidence of basic digital skills.

Failure

(F) Very weak demonstration of the ability to analyse, report, and interpret a dataset using statistical tools and concepts covered in the course. Poster design and visuals demonstrating evidence of very weak digital skills.

Assessment Task

Class Participation (for students admitted from Semester A 2022/23 to Summer Term 2024)

Criterion

Level and depth of class participation during thirteen weeks of the course.

Excellent

(A+, A, A-) An excellent level and depth of class participation during the thirteen weeks of the course.

Good

(B+, B) A good level and depth of class participation during the thirteen weeks of the course.

Marginal

(B-, C+, C) A basic to weak level and depth of class participation during the thirteen weeks of the course.

Failure

(F) A very weak level and depth of class participation during the thirteen weeks of the course.

Part III Other Information**Keyword Syllabus**

Descriptive Statistics; Basic Concepts of Multivariate Analysis; Hypotheses Testing; Factor Analysis; Bivariate Regression and Multiple Regression; Analysis of Variance (ANOVA); Multivariate Analysis of Variance (MANOVA), and Conjoint Analysis.

Reading List**Compulsory Readings**

	Title
1	Field, Andy (2017). <i>Discovering Statistics Using IBM SPSS Statistics: North American Edition</i> . 5th Edition. Sage Publications.
2	Sheridan Coakes. (2013). <i>SPSS: Analysis Without Anguish: Version 20.0 for Windows</i> . John Wiley and Sons.
3	Andy Field, Jeremy Miles, Zoe# Field. (2012). <i>Discovering Statistics using R</i> . Sage.

Additional Readings

	Title
1	Babbie, Earl R. 2010. <i>The Practice of Social Research</i> . Belmont, Calif: Wadsworth Cengage.
2	Wang, Xiaohu, 2010, <i>Performance Analysis for Public and Nonprofit Organizations</i> . Jones and Bartlett Publishers
3	Berry, W. D. (1993). <i>Understanding Regression Assumptions: Series Quantitative Applications in the Social Sciences</i> . Thousand Oaks.
4	Cohen, J., Cohen, P., West, S., & Aiken, L. (2002). <i>Applied Multiple Regression/Correlation for Behavioral Sciences</i> . (3rd ed.). New York: Lawrence Erlbaum Associates
5	SPSS Conjoint 17.0. https://www.sussex.ac.uk/its/pdfs/SPSS_Conjoint_17.0.pdf