

PIA3607: ADVANCED RESEARCH METHODOLOGY

Effective Term

Semester B 2025/26

Part I Course Overview

Course Title

Advanced Research Methodology

Subject Code

PIA - Public and International Affairs

Course Number

3607

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

B1, B2, B3, B4 - Bachelor's Degree

Medium of Instruction

English

Medium of Assessment

English

Prerequisites

POL/PIA 2603 Social Science Research Methods / AIS/PIA2012

Precursors

Nil

Equivalent Courses

POL3607 Advanced Research Methodology

Exclusive Courses

Nil

Part II Course Details

Abstract

This course is the second of a two-semester sequence that introduces students to the vocabulary, concepts, and methods of social research with application to policy analyses. Having acquired a solid conceptual grasp of different approaches to identifying and synthesizing pertinent literature, different paradigms of policy inquiries, and various techniques for conducting scientifically and ethically sound research in the first part of the sequence, this second course focuses on (i) hands-on skills in managing and analyzing quantitative data, (ii) statistical research designs and analysis for causal inference. Serving as a compulsory course for all candidates pursuing the Bachelor's degree in Public Policy and Politics, this course ultimately aims to hone students' knowledge of and practical skills in choosing appropriate strategies and procedures to collect, manage, analyze, interpret, and report quantitative data in social research. Upon completion of this course, students will be capable of employing suitable methods to address the key empirical puzzles raised in their independent research (i.e., final-year capstone project).

Course Intended Learning Outcomes (CILOs)

CILOs		Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	Identify research questions and determine to what extent they can be answered with data and identify the kind of data that can shed light on these research questions.		x	x	x
2	Identify, collect, process, and manage data to allow for analysis.		x	x	x
3	Describe and visualize data using software.		x	x	x
4	Identify appropriate ways of analysing a given data set to answer a research question and conduct the analysis using software.		x	x	x
5	Critically assess assumptions and consider alternative explanations.		x	x	x
6	Communicate insights from data analysis effectively and engagingly.		x	x	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	1	Introduction of basic knowledge and skills in lectures	1, 2, 3, 4, 5, 6	
2	2	Case examples and in-class exercises in lecture	1, 2, 3, 4, 5, 6	

3	3	Class interaction and feedback sessions in lectures	1, 2, 3, 4, 5, 6	
4	5	Individual and group study outside scheduled classes and tutorials	1, 2, 3, 4, 5	

Additional Information for LTAs

Software Requirements

The methods covered in this course require the use of software. To provide all students with a toolset that they will be able to use beyond their studies and be able to access from a device of their choice, the course will rely on the R/Python language and its packages for data management and analysis. The software is freely available to anyone. The instructor will guide students on how to access and use it through cloud-based resources, freeing students of the need to install the software locally. The instructor will, however, also instruct students how to install it on their computers. Whichever approach students choose, they will need to bring a laptop or tablet with a keyboard to all class meetings, as the instructor will make frequent use of R/Python during meetings, including for interactive exercises.

Assessment Tasks / Activities (ATs)

	ATs	CILO No.	Weighting (%)	Remarks ("-" for nil entry)	Allow Use of GenAI?
1	Attendance and participation	1, 2, 3, 4, 5, 6	10	Engagement with the lectures and course materials. Frequency and quality of contributions in discussions and classroom activities.	No
2	Exercises	2, 3, 4, 5, 6	10	In-class and after-class exercises practicing the statistical methods and data skills from the lectures and reading materials.	No
3	Problem sets	1, 2, 3, 4	20	Problem sets containing typical statistical questions	Yes
4	Midterm test	1, 2, 3, 4	30	This Test, which involves questions about materials covered in lectures, in-class exercises, and readings, examines students' understanding of the core concepts and skills in the analysis of quantitative data.	No

5	Final project and presentation	1, 2, 3, 4, 5, 6	30	Research project using methods and programming skills covered in the course	Yes
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Continuous Assessment (%)

100

Examination (%)

0

Assessment Rubrics (AR)**Assessment Task**

Attendance and participation

Excellent (A+, A, A-)

Demonstrates excellent level of engagement with lectures and reading materials. Actively participates in class discussions and activities.

Good (B+, B, B-)

Demonstrates good level of engagement with lectures and reading materials. Participation in class discussions and activities is above average.

Fair (C+, C, C-)

Demonstrates satisfactory level of engagement with lectures and reading materials. Participation in class discussions and activities is below average.

Marginal (D)

Demonstrates poor level of engagement with lectures and reading materials. Participation in class discussions and activities is well below average.

Failure (F)

Indicates that through poor learning or lack of effort, the student has failed to maintain even minimal attendance and participation levels.

Assessment Task

Exercises

Excellent (A+, A, A-)

Excellent understanding of course content. Answers and responses demonstrating excellent critical thinking and analysis skills.

Good (B+, B, B-)

Good understanding of course content. Some minor errors or gaps in answers and responses.

Fair (C+, C, C-)

Basic understanding of course content. Answers and responses are inconsistent or overly general.

Marginal (D)

Limited understanding of course content; answers and responses are unclear, incomplete, or largely incorrect.

Failure (F)

Major gaps in understanding; answers and responses are missing, off-topic, or show evidence of academic dishonesty.

Assessment Task

Problem Sets

Excellent (A+, A, A-)

All important concepts, cases, and learning materials are very clearly understood. Demonstration of excellent critical thinking and analysis skills. Excellent ability to select and apply appropriate econometric tools to answer any given question.

Good (B+, B, B-)

All important concepts, cases, and learning materials are understood. Demonstration of very good critical thinking and analysis skills. Very good ability to select and apply appropriate econometric tools to answer any given question.

Fair (C+, C, C-)

All important concepts, cases, and learning materials are adequately understood. Demonstration of good critical thinking and analysis skills. Good ability to select and apply appropriate econometric tools to answer any given question.

Marginal (D)

All important concepts, cases, and learning materials are marginally understood. Demonstration of some critical thinking and analysis skills. Some ability to select and apply appropriate econometric tools to answer any given question.

Failure (F)

All important concepts, cases, and learning materials are hardly understood. Demonstration of little or no critical thinking and analysis skills. Fail to select and apply appropriate econometric tools to answer any given question.

Assessment Task

Midterm Test

Excellent (A+, A, A-)

Same as above

Good (B+, B, B-)

Same as above

Fair (C+, C, C-)

Same as above

Marginal (D)

Same as above

Failure (F)

Same as above

Assessment Task

Final Project

Excellent (A+, A, A-)

Strong ability to identify the problem so that it can be addressed with econometrics. Highly successful user of quantitative empirical analysis (collect suitable data, select the appropriate methodology, and perform the analysis with statistical

software). Excellent ability to evaluate the credibility, validity and robustness of quantitative research arguments. Demonstration of excellent research, teamwork, and presentation skills.

Good (B+, B, B-)

Sufficient ability to identify the problem so that it can be addressed with econometrics. Successful user of quantitative empirical analysis (collect suitable data, select the appropriate methodology, and perform the analysis with statistical software). Very good ability to evaluate the credibility, validity and robustness of quantitative research arguments. Demonstration of very good research, teamwork, and presentation skills.

Fair (C+, C, C-)

Some ability to identify the problem so that it can be addressed with econometrics. Competent user of quantitative empirical analysis (collect suitable data, select the appropriate methodology, and perform the analysis with statistical software). Good ability to evaluate the credibility, validity and robustness of quantitative research arguments. Demonstration of good research, teamwork, and presentation skills.

Marginal (D)

Poor ability to identify the problem so that it can be addressed with econometrics. Limited user of quantitative empirical analysis (collect suitable data, select the appropriate methodology, and perform the analysis with statistical software). Limited ability to evaluate the credibility, validity and robustness of quantitative research arguments. Demonstration of some research, teamwork, and presentation skills.

Failure (F)

Unable to identify a researchable problem that can be addressed with econometrics. Poor user of quantitative empirical analysis (collect suitable data, select the appropriate methodology, and perform the analysis with statistical software). Little or no ability to evaluate the credibility, validity and robustness of quantitative research arguments. Demonstration of little or no research, teamwork, and presentation skills.

Part III Other Information

Keyword Syllabus

Data management, data analysis, regression, causal inference

Reading List

Compulsory Readings

Title	
1	Imai, Kosuke. 2018. Quantitative Social Science: An Introduction. Princeton University Press.
2	Blackwell, Matthew. 2024. A User's Guide to Statistical Inference and Regression.
3	Angrist, Joshua D., and Jörn-Steffen Pischke. 2008. Mostly Harmless Econometrics: An Empiricist's Companion. Princeton University Press.
4	Wickham, Hadley and Garrett Grolemund. 2023. R for Data Science: Import, Tidy, Transform, Visualize, and Model Data. O'Reilly
5	Gelman, Andrew, Jennifer Hill, and Aki Vehtari. 2020. Regression and Other Stories. Cambridge University Press

Additional Readings

Title	
1	Freedman, David A., Robert Pisani, and Roger A. Purves. 2007. Statistics. 4th edition. New York: W.W. Norton & Co.
2	Gujarati, D. 2012. Econometrics by Example, McGraw-Hill Education
3	Angrist, Joshua D. and Jörn-Steffen Pischke. 2015. Mastering 'Metrics: The Path from Cause to Effect. Princeton, NJ: Princeton University Press.

4	Cunningham, Scott. 2021. Causal Inference: The Mixtape. Yale University Press
5	Wooldridge, Jeffrey M. Introductory Econometrics: A Modern Approach (7th Edition). Cengage Learning