

# PIA3608: DATA ANALYTICS AND VISUALISATION FOR PUBLIC AFFAIRS

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## Effective Term

Semester B 2022/23

## Part I Course Overview

### Course Title

Data Analytics and Visualisation for Public Affairs

### Subject Code

PIA - Public and International Affairs

### Course Number

3608

### 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

Nil

### Precursors

Nil

### Equivalent Courses

Nil

### Exclusive Courses

Nil

## Part II Course Details

### Abstract

This course introduces students to the basic skills and techniques in data analytics and presentation to facilitate evidence-based and data-driven problem solving and decision-making in public affairs. With the use of advanced functions in Excel and other data handling software, it will equip students with skills in data preparation, wrangling, organisation, analysis and visualisation. The course will further enhance students with techniques in sourcing and acquiring big data and informatics and capability of employing story-telling to communicate with different stakeholders. The use of dashboards for managerial decision-making and popular social media for communication will also be explored. Students in this course will have the chance to polish data analytic and visualisation skills with real-life data and projects. Ethical and social issues related to the use and release of data will be critically evaluated.

### Course Intended Learning Outcomes (CILOs)

	CILOs	Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	Identify the approaches in sourcing, acquiring, and organising data for public affairs.			x	
2	Apply techniques in data management for data preparation and analysis.			x	
3	Prepare data presentation for communicating with stakeholders			x	
4	Distinguish the social and ethical issues in the use of public data		x		
5	Generate new perspectives in looking at public policies in globalised cities				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.

### Teaching and Learning Activities (TLAs)

	TLAs	Brief Description	CILO No.	Hours/week (if applicable)
1	Lecture	Introduce key theories and approaches in data analytics and visualisation	1, 2, 3, 4	
2	Class exercise and assignments	Students acquire the skills in data analytics and visualisation and the use of relevant softwares. They are expected to demonstrate the basic competence in such skills	2, 3	

3	Test	Students should demonstrate their understanding and correct application of theories, approaches and skills in in data analytics and visualisation.	1, 2, 3	
4	Team projects	Students are expected to demonstrate their competence in applying in data analytics and visualisation skills in real life data and communicate effectively their findings.	1, 2, 3, 4, 5	

**Assessment Tasks / Activities (ATs)**

ATs	CILO No.	Weighting (%)	Remarks (e.g. Parameter for GenAI use)
1	Class exercise and assignments	1, 2, 3	20
2	Team Project	1, 2, 3, 4, 5	40
3	Presentation and participation	1, 2, 3	10
4	Test	1, 2, 3	30

**Continuous Assessment (%)**

100

**Examination (%)**

0

**Assessment Rubrics (AR)****Assessment Task**

Class exercise and assignments,

**Criterion**

- Identify the approaches in sourcing, acquiring, and organising data for public affairs.
- Apply techniques in data management for data preparation and analysis.

**Excellent (A+, A, A-)**

Demonstrate excellent ability in- Identify the approaches in sourcing, acquiring, and organising data for public affairs.- Apply techniques in data management for data preparation and analysis.

**Good (B+, B, B-)**

Demonstrate good ability in - Identify the approaches in sourcing, acquiring, and organising data for public affairs.- Apply techniques in data management for data preparation and analysis.

**Fair (C+, C, C-)**

Demonstrate adequate ability in - Identify the approaches in sourcing, acquiring, and organising data for public affairs.- Apply techniques in data management for data preparation and analysis.

**Marginal (D)**

Marginally demonstrate ability in - Identify the approaches in sourcing, acquiring, and organising data for public affairs.- Apply techniques in data management for data preparation and analysis.

**Failure (F)**

Demonstrate no ability in - Identify the approaches in sourcing, acquiring, and organising data for public affairs.- Apply techniques in data management for data preparation and analysis.

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**Assessment Task**

presentation and participation

**Criterion**

- Prepare data presentation for communicating with stakeholders

**Excellent (A+, A, A-)**

Demonstrate excellent ability in- Prepare data presentation for communicating with stakeholders

**Good (B+, B, B-)**

Demonstrate good ability in- Prepare data presentation for communicating with stakeholders

**Fair (C+, C, C-)**

Demonstrate adequate ability in- Prepare data presentation for communicating with stakeholders

**Marginal (D)**

Marginally demonstrate ability in - Prepare data presentation for communicating with stakeholders

**Failure (F)**

Demonstrate no ability in - Prepare data presentation for communicating with stakeholders

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**Assessment Task**

End of term test

**Criterion**

- Identify the approaches in sourcing, acquiring, and organising data for public affairs.
- Apply techniques in data management for data preparation and analysis.
- Distinguish the social and ethical issues in the use of public data

**Excellent (A+, A, A-)**

Demonstrate excellent ability in- Identify the approaches in sourcing, acquiring, and organising data for public affairs.- Apply techniques in data management for data preparation and analysis.Distinguish the social and ethical issues in the use of public data

**Good (B+, B, B-)**

Demonstrate good ability in – Identify the approaches in sourcing, acquiring, and organising data for public affairs.- Apply techniques in data management for data preparation and analysis.Distinguish the social and ethical issues in the use of public data

**Fair (C+, C, C-)**

Demonstrate adequate ability in – Identify the approaches in sourcing, acquiring, and organising data for public affairs.- Apply techniques in data management for data preparation and analysis.Distinguish the social and ethical issues in the use of public data

**Marginal (D)**

Marginally demonstrate ability in– Identify the approaches in sourcing, acquiring, and organising data for public affairs.- Apply techniques in data management for data preparation and analysis.Distinguish the social and ethical issues in the use of public data

**Failure (F)**

Demonstrate no ability in – Identify the approaches in sourcing, acquiring, and organising data for public affairs.- Apply techniques in data management for data preparation and analysis.Distinguish the social and ethical issues in the use of public data

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**Assessment Task**

Team project report

**Criterion**

- Apply techniques in data management for data preparation and analysis.
- Prepare data presentation for communicating with stakeholders
- Generate new perspectives in looking at public policies in globalised cities

**Excellent (A+, A, A-)**

Demonstrate excellent ability in Apply techniques in data management for data preparation and analysis.Prepare data presentation for communicating with stakeholders Generate new perspectives in looking at public policies in globalised cities

**Good (B+, B, B-)**

Demonstrate good ability in Apply techniques in data management for data preparation and analysis.Prepare data presentation for communicating with stakeholdersGenerate new perspectives in looking at public policies in globalised cities

**Fair (C+, C, C-)**

Demonstrate adequate ability in Apply techniques in data management for data preparation and analysis.Prepare data presentation for communicating with stakeholders Generate new perspectives in looking at public policies in globalised cities

**Marginal (D)**

Marginally demonstrate ability in Apply techniques in data management for data preparation and analysis.Prepare data presentation for communicating with stakeholders Generate new perspectives in looking at public policies in globalised cities

**Failure (F)**

Demonstrate no ability in Apply techniques in data management for data preparation and analysis.Prepare data presentation for communicating with stakeholdersGenerate new perspectives in looking at public policies in globalised cities

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**Part III Other Information**

**Keyword Syllabus**

Evidence and data-driven problem solving and decision making; working with number, big data eco-system; advanced functions in excel; data handling and visualisation software; data sourcing, preparation, wrangling and organisation; basics for data analytics; communicating and story-telling using data; data visualisation; dashboards and basics of database and project management for managerial decision; managing social media for communication; ethical and social issues on big data;

**Reading List****Compulsory Readings**

Title	
1	Ahmed, Mohiuddin and Pathan, Al-Sakib Khan (2019) Data analytics : concepts, techniques, and applications (edition), Boca Raton, FL : CRC Press, Taylor & Francis Group.
2	Data science & big data analytics : discovering, analyzing, visualizing and presenting data EMC Education Services.Indianapolis, Indiana : John Wiley and Sons, 2015
3	Bühlmann, Peter; Drineas, Petros; Kane, Michael; van der Laan, Mark (2016) Handbook of Big Data (edition) Chapman and Hall/CRC
4	Härdle, Wolfgang Karl; Horng, Henry ; Lu, Shing; Shen, Xiaotong (20128) Handbook of Big Data Analytics (edition) Cham : Springer International Publishing : Imprint: Springer, 2018
5	Kirk, Andy (2019) Data visualisation : a handbook for data driven design,2nd edition. London ; Los Angeles : \$ SAGE.
6	Goldmeier, Jordan (2014) Advanced Excel Essentials, Berkeley, CA : Apress : Imprint: Apress.

**Additional Readings**

Title	
1	Nil