Title (Units): **COMP3925 Data Analysis Studio (1,0,3)**

Course Aims: (i) To gain hands-on experience on data harvesting, cleaning, storage, analysis and visualization; (ii) to get exposure to the entire lifecycle of data analytics and (iii) to gain essential knowledge on web development and data visualization.

Prerequisite: COMP2865 Fundamentals of Data Analysis and Management
OR
MATH2005 Calculus Probability and Statistics for Computer Science AND
COMP1007 Introduction to Python and Its Applications OR
COMP2045 Programming and Problem Solving

Course Intended Learning Outcomes (CILOs):
Upon successful completion of this course, students should be able to:

No.	Course Intended Learning Outcomes (CILOs)
	Knowledge
1	Describe the fundamental contexts in data analytics
2	Describe the up-to-date software tools and packages for data analytics
3	Explain the concepts and technologies involved in web-based data visualization
	Professional Skill
4	Perform data analytics via data harvesting, cleaning, storage, analysis, and visualization
5	Develop an interactive web-based data visualization to present a finding

Calendar Description: This course aims to introduce to students relevant software tools and packages for data analytics through project-based learning. Students will be exposed to the entire lifecycle of data analytics - data harvesting, cleaning, storage, analysis, and visual presentation. Students will also be equipped with essential knowledge on web development and data visualization.

Teaching and Learning Activities (TLAs):

CILOs	Type of TLA
1,2,4	Students will acquire knowledge and skills on data analytics tools via tutorials, software demonstrations and briefings on worksheets.
3,5	Students will acquire knowledge and skills on web-based data visualization
4,5	Students will practice their skills with guided lab assignments and projects.

Assessment:

No.	Assessment Methods	Weighting	CILOs to be addressed	Description of Assessment Tasks
1	Assignment on Data Analysis and Visualization	30%	1, 2, 4	Assignments will be given to students to assess their proficiency in analyzing and visualizing data using suitable tools and techniques.
2	Assignment on Web-based Data Visualization	30%	3, 5	Assignments will be given to students to assess their proficiency in developing web-based data visualization.
3	Data Storytelling Group Project	40%	1 - 5	Students will work collaboratively to create a compelling data story using visualizations and narrative techniques.

Assessment Rubrics:

	Excellent (A)	Good (B)	Satisfactory (C)	Marginal Pass (D)	Fail (F)
Software Tools for Data Analysis and Visualization	Excellent mastery of software tools for data analysis and visualization	Good mastery of software tools for data analysis and visualization	Acceptable mastery of software tools for data analysis and visualization	Some mastery of software tools for data analysis and visualization	No mastery software to analysis an visualizatio
Web-based Data Visualization	Excellent mastery of web-based data visualization	Good mastery of web-based data visualization	Good mastery of web-based data visualization	Some mastery of web-based data visualization	No mastery based data visualizatio

Course Content and CILOs Mapping:

Content		CILO No.
I	Software Tools for Data Analysis and Visualization	1,2,4
II	Web-based Data Visualization	3,5

References:

[1] A. Loth, Visual Analytics with Tableau. Nashville, TN: John Wiley & Sons, 2019.
[2] S. Murray, Interactive data visualization for the web. Sebastopol, CA: O'Reilly Media, 2017.

Course Content:

Topic

I. Software Tools for Data Analysis and Visualization
   A. Data Harvesting and Cleaning
   B. Data Storage and Analysis
   C. Visual Analytics

II. Web-based Data Visualization
   A. Web technology and data interchange formats
   B. Scalable Vector Graphics (SVG)
   C. Building data-driven visualization with charts, maps and infographics
   D. Single-page application (SPA)