Prifysgol Wrecsam
Wrexham University

Module specification

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Module Code	COM578
Module Title	Data Visualisation Tools and Techniques
Level	5
Credit value	20
Faculty	FACE
HECoS Code	100755
Cost Code	GACP
Pre-requisite module	None

Programmes in which module to be offered

Programme title	Core/Optional/Standalone
BSc (Hons) Computing for Buiness	Core

Breakdown of module hours

Learning and teaching hours	15 hrs
Placement tutor support hours	0 hrs
Supervised learning hours e.g. practical classes, workshops	15 hrs
Project supervision hours	0 hrs
Active learning and teaching hours total	**30** hrs
Placement hours	0 hrs
Guided independent study hours	170 hrs
Module duration (Total hours)	**200** hrs

Module aims

This module aims to develop students' understanding of the key concepts and principles of data visualisation, enabling them to transform complex datasets into clear, actionable, and insightful visual representations. Students will gain practical experience using industry standard tools such as Tableau, Power BI, and Python-based libraries (e.g., Matplotlib, Seaborn), applying them to real world business scenarios. The module also fosters analytical and evaluative skills, allowing students to interpret and critically assess visualisations, communicate insights effectively to both technical and non-technical audiences, and design user centred, accessible representations that support data driven decision making.

Module Learning Outcomes

At the end of this module, students will be able to:

1	Explore and evaluate the fundamental principles and concepts of data visualisation, justifying their use through an assessment of their effectiveness for analytical, communicative, and business purposes.
2	Apply industry-standard tools and software to create visual representations of data for various business scenarios.
3	Interpret and evaluate data visualisations, examining their clarity, communicative effectiveness, and alignment with business objectives

Assessment

Indicative Assessment Tasks:

This section outlines the type of assessment task the student will be expected to complete as part of the module. More details will be made available in the relevant academic year module handbook.

The teaching and learning strategies for the module align with the WGU Active Learning Framework (ALF), emphasizing inclusive, engaging, and flexible approaches. These strategies encompass engaging lectures and presentations that incorporate multimedia resources and real-world examples

The assessment strategy for this module adopts a coursework-based approach, designed to assess students' knowledge, skills, and understanding of data visualisation tools and techniques. Throughout the module, students will complete a variety of tasks aimed at reinforcing and expanding their learning experiences. These tasks will provide opportunities for students to demonstrate their ability to apply data visualisation techniques, critically assess visual representations, and communicate findings effectively. The assessment will include a mix of components such as practical exercises, written reflections, project-based work, and presentations, all aligned with the module's learning outcomes.

Portfolio assessments may comprise multiple pieces of work that collectively demonstrate a student’s knowledge and skills developed throughout the module. These may take the form of one or two substantial tasks, or a series of smaller tasks, typically ranging from one to eight across the duration of the module.

Assessment number	Learning Outcomes to be met	Type of assessment	Duration/Word Count	Weighting (%)	Alternative assessment, if applicable
1	1, 2, 3	Portfolio	4000 Words or Equivalent	100%	N/A

Derogations

N/A

Learning and Teaching Strategies

In line with the Active Learning Framework, this module will be blended digitally with both a VLE and online community. Content will be available for students to access synchronously and asynchronously and may indicatively include first and third-party tutorials and videos, supporting files, online activities any additional content that supports their learning. As this module progresses, the strategies will change to best support a diverse learning environment. For each week, a topic will be started with tutor-led demonstrations, and practical-based sessions will be given to ensure that the students get to practice what they have been taught in relevant concepts. Sessions will be intertwined between instructional explanation and practical depending on the specific indicated syllabus necessities.

Welsh Elements

This module is designed to support Welsh-speaking students in line with the Welsh Language Standards. While the primary delivery will be in English, students will have the opportunity to submit assessments, including coursework and projects, in Welsh if preferred. Relevant module materials, such as reading lists, key texts, and guidance, will be available bilingually upon request, ensuring accessibility for all students. Additionally, where possible, guest speakers, case studies, or examples may include references to the Welsh business context, especially in areas such as data use in local industries and Welsh public sector organisations.

The department encourages students to develop bilingual digital skills by incorporating Welsh-language datasets, tools, and resources where appropriate, offering an inclusive learning environment. We also support the development of bilingual visualisation techniques, enabling students to create digital outputs that reflect the Welsh language, should they wish to do so.

Indicative Syllabus Outline

- Introduction to Data Visualisation
- Principles of effective data visualisation
- Advanced Visualisation Techniques
- Data Preparation and Cleaning for Visualisation
- Visualising complex data sets
- Data Visualisation in a business context
- Evaluating data visualisations
- Communicating Data Insights
- Emerging trends

Indicative Bibliography

Please note the essential reads and other indicative reading are subject to annual review and update.

Essential Reads:

- Wilke, C.O., 2019. *Fundamentals of Data Visualization*. O'Reilly Media.

Other indicative reading:

- Knaflic, C.N., 2024. *Storytelling with Data: A Data Visualization Guide for Business Professionals*. 2nd ed. Wiley.
- Yau, N., 2023. *Data Points: Visualization That Means Something*. Wiley.
- Few, S., 2023. *Information Dashboard Design: The Effective Visual Communication of Data*. 2nd ed. O'Reilly Media.
- Healy, K., 2018. *Data Visualization: A Practical Introduction*. Princeton University Press.
- Dougherty, J. & Ilyankou, I., 2021. *Hands-On Data Visualization: Interactive Storytelling from Spreadsheets to Code*. O'Reilly Media.
- Schwabish, J., 2023. *Data Visualization in Excel: A Guide for Beginners, Intermediates, and Wonks*. O'Reilly Media.

Administrative Information

For office use only	
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