H8DV: Data Visualization

Module Code:	H8DV
Long Title	Data Visualization APPROVED
Title	Data Visualization
Module Level:	LEVEL 8
EQF Level:	6
EHEA Level:	First Cycle
Credits:	5
Module Coordinator:	ANTHONY PAUL STYNES
Module Author:	Margarete Silva
Departments:	School of Computing
Specifications of the qualifications and experience required of staff	

Learning Outcomes	
On successful completion of this module the learner will be able to:	
#	**Learning Outcome Description**
LO1	Analyse the theory and concepts relating to visualization design and data representation
LO2	Analyze and distinguish between visualization techniques for specific problems to enable effective communication of data analysis.
LO3	Design, develop, and implement processes for data visualization.
LO4	Propose a suitable visualization design for a particular combination of data characteristics and application.

Dependencies
Module Recommendations
No recommendations listed
Co-requisite Modules
No Co-requisite modules listed
Entry requirements

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Module Content & Assessment

Indicative Content

Introduction
What is Data Visualization? Characteristics of Data, Data Types and Information Communication through visualization

Visualization Design
Principles of data visualization Graphical integrity Clarity of data representation Elements of visual design (layout, colour, fonts, labelling etc.)

Data Visualizations
Vector fields and flow data Time-varying data High-dimensional data: dimension reduction, parallel coordinates Non-spatial data: multi-variate, tree/graph structured, text

Evaluation of Visualization Methods
Small and large data sets Suitable visualization design Data and application characteristics

Applications of Visualization
Scientific, medical, mathematical data Flow visualization Spatial Analysis

Assessment Breakdown	%
Coursework	100.00%

Assessments

Full Time

Coursework

Assessment Type:	Project (0050)	% of total:	40
Assessment Date:	n/a	**Outcome addressed:**	2,3,4
Non-Marked:	No		

Assessment Description:
Learning outcomes may be assessed through a project in which learners must choose and acquire a set of raw data; design, develop, and document a process for preparing the data through to implementing an interactive or a number of static data visualizations; analyse the results; and provide an evaluation of the correct use of data and visual techniques that were implemented. Student must then present their project work.

Assessment Type:	Continuous Assessment (0200)	% of total:	60
Assessment Date:	n/a	**Outcome addressed:**	1,2,3,4
Non-Marked:	No		

Assessment Description:
Students are given small sample data sets and are required to work together to develop a basic visualization of some feature of that dataset. Basic domain information will be provided. Complexity of lab assessments will scale appropriately with student learning.

No End of Module Assessment

No Workplace Assessment

Reassessment Requirement

Coursework Only
This module is reassessed solely on the basis of re-submitted coursework. There is no repeat written examination.

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Module Workload				
Module Target Workload Hours 0 Hours				
Workload: Full Time				
Workload Type	*Workload Description*	*Hours*	*Frequency*	*Average Weekly Learner Workload*
Lecture	No Description	12	Every Week	12.00
Tutorial	No Description	12	Every Week	12.00
Independent Learning	No Description	101	Every Week	101.00
			Total Weekly Contact Hours	24.00
Workload: Part Time				
Workload Type	*Workload Description*	*Hours*	*Frequency*	*Average Weekly Learner Workload*
Lecture	No Description	12	Every Week	12.00
Tutorial	No Description	12	Every Week	12.00
Independent Learning	No Description	101	Every Week	101.00
			Total Weekly Contact Hours	24.00

Module Resources

Recommended Book Resources

Kirk, A. (2016), Data Visualization, Sage Publishing, [ISBN: 978147391214].

This module does not have any article/paper resources

This module does not have any other resources

Discussion Note: