FALT: Bias in Computational Systems

Module Title:	Bias in Computational Systems
Language of Instruction:	English

Credits:	5

NFQ Level:	8

Module Delivered In	5 programme(s)

Teaching & Learning Strategies:	Content will be delivered to learners through lectures with class interaction; discussion around case studies and role playing; through the use of and application of bias toolkits; supported by practical sessions with reflection and critiquing of practical session outcomes; learners will be expected to actively participate in class and work throughout to accomplish assigned tasks.

Module Aim:	To develop learners' theoretical knowledge of bias in computational systems and the harm it can cause; to provide practical skill to perform analyses to detect and mitigate or compensate for bias in everyday tools learners use to support their own decision making, and to design human-centric and fair computational systems.

Learning Outcomes	
On successful completion of this module the learner should be able to:	
LO1	Identify and describe how bias may present in real-world computational systems
LO2	Devise a strategy to mitigate bias in a real-world computational system
LO3	Evaluate the ongoing final year project to identify potential bias and formulate a plan to address and mitigate it, to ensure fairness in its outcome

Pre-requisite learning
Module Recommendations *This is prior learning (or a practical skill) that is recommended before enrolment in this module.*
No recommendations listed
Incompatible Modules *These are modules which have learning outcomes that are too similar to the learning outcomes of this module.*
No incompatible modules listed
Co-requisite Modules
No Co-requisite modules listed
Requirements *This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed.*
No requirements listed

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Module Content & Assessment

Indicative Content
Understanding bias Bias and poor decision making; examples of bias in business and everyday life; is all bias unfair?; can we be influenced to make biased decisions?
Identifying bias in computational systems Case studies; who is being harmed?; stakeholder analysis; critical thinking; bias detection strategies.
Machine Learning and Bias Brief introduction to machine learning; algorithmic bias; bias toolkits.
Mitigating bias in computational systems Compensating for bias in computational systems.
Designing fair computational systems Human-centred vs. data-centred algorithm design; bias impact statements.

Assessment Breakdown	%
Continuous Assessment	60.00%
Project	40.00%

Continuous Assessment				
Assessment Type	*Assessment Description*	*Outcome addressed*	*% of total*	*Assessment Date*
Multiple Choice Questions	n/a	1	10.00	Week 3
Case Studies	n/a	1	20.00	Week 6
Written Report	n/a	2	20.00	Week 8
Other	Contribution to in-class discussions	1,2,3	10.00	n/a

Project				
Assessment Type	*Assessment Description*	*Outcome addressed*	*% of total*	*Assessment Date*
Project	n/a	3	40.00	n/a

No Practical

No End of Module Formal Examination

SETU Carlow Campus reserves the right to alter the nature and timings of assessment

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Module Workload

Workload: Full Time		
Workload Type	*Frequency*	*Average Weekly Learner Workload*
Lecture	12 Weeks per Stage	2.00
Independent Learning	15 Weeks per Stage	5.13
Practicals	12 Weeks per Stage	2.00
	Total Hours	125.00

Module Delivered In

Programme Code	Programme	Semester	Delivery
CW_KCCGD_B	Bachelor of Science (Honours) in Computer Games Development	8	Group Elective 1
CW_KCIAD_B	Bachelor of Science (Honours) in Computing in Interactive Digital Art and Design	8	Elective
CW_KCCYB_B	Bachelor of Science (Honours) in Cyber Crime and IT Security	8	Elective
CW_KCCIT_B	Bachelor of Science (Honours) in Information Technology Management	8	Group Elective 1
CW_KCSOF_B	Bachelor of Science (Honours) in Software Development	8	Group Elective 1

Discussion Note:	This module is proposed as an elective in the final year of the semesterised BSc (Hons) degree programmes offered by the Department of Computing.