H9AIFF: AI for Finance

Module Code:	H9AIFF
Long Title	AI for Finance APPROVED
Title	AI for Finance
Module Level:	LEVEL 9
EQF Level:	7
EHEA Level:	Second Cycle
Credits:	10
Module Coordinator:	Rohit Verma
Module Author:	Andrea Del Campo Dugova
Departments:	School of Computing
Specifications of the qualifications and experience required of staff	Lecturer PhD/Master's degree in a computing or cognate discipline. May have industry experience also. Tutor PhD/Master's degree in a computing or cognate discipline. May have industry experience also.

Learning Outcomes	
On successful completion of this module the learner will be able to:	
#	**Learning Outcome Description**
LO1	Develop a systematic understanding of AI related terminologies such ML, Data Science and Big Data and their associated process flows.
LO2	Critically explore the major applications of AI and the technological disruptions brought about by AI to Finance
LO3	Research the challenges and evolving opportunities for AI in the finance world
LO4	Demonstrate advanced technical and interpersonal skills for developing an AI in Finance application

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

Entry requirements	Programme entry requirements must be satisfied.

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Module Content & Assessment

Indicative Content

Introduction to AI
Terminologies, Data, Process Flow, Opportunities, Challenges Overview, Regulatory Technology (RegTech)

AI Technologies (1)
Machine Learning – Overview of ML types namely supervised, unsupervised, and reinforcement learning, ML Process flow, ML tools overview

AI Technologies (2)
Deep Learning- Big Idea, Tools, Constraints, Applications, Opportunities, Challenges

AI Technologies (3)
An overview, general applications, opportunities, and challenges related to Computer Vision, Natural Language Processing and Recommendation System

Operationalizing AI
Understanding the infrastructure needs for deploying AI in Industry/ Real-world applications

AI for Portfolio Management
Portfolio Management; Critically analyse AI models for Portfolio Management

AI for Banking Fraud Detection
Understand Banking fraud and how AI models can be used for detecting fraud and develop compliance methods.

AI for Improving Customer Services for Banking Needs
Understanding Customer Services and explore and analyse how AI tools such as NLP and recommendation systems be leveraged for improving customer services

Applications of Robotic Process Automation to Finance
Robotic Process Automation

Credit Scoring Using AI Models
Understanding Credit Scoring and developing and critically evaluating AI models for credit scoring

AI Models for Insurance Pricing
Develop an understanding of Insurance policies; explore and analyse AI based insurance models

Challenges for AI in Finance
Regulatory Implications, Ethics for using AI in Finance including Transparency and Bias

Assessment Breakdown	%
Coursework	100.00%

Assessments

Full Time

Coursework

Assessment Type:	Formative Assessment	**% of total:**	Non-Marked
Assessment Date:	n/a	**Outcome addressed:**	1,2,3,4
Non-Marked:	Yes		

Assessment Description:
Formative assessment will be provided on the in-class individual or group activities. Feedback will be provided in written or oral format, or on-line through Moodle. In addition, in class discussions will be undertaken as part of the practical approach to learning.

Assessment Type:	Continuous Assessment	**% of total:**	40
Assessment Date:	n/a	**Outcome addressed:**	1,2,3
Non-Marked:	No		

Assessment Description:
Critical review of a paper at the intersection of AI and FinTech

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

Assessment Description:
Critical analyses of the requirements and the challenges of the application of an AI technology for a finance problem and the proposal of an end-to-end AI system design for this application.

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.

Reassessment Description
The repeat strategy for this module is by repeat assessment/project that covers all learning outcomes.

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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	Classroom and demonstrations	24	Per Semester	2.00
Tutorial	Mentoring and small-group tutoring	24	Per Semester	2.00
Independent Learning	Independent learning	202	Per Semester	16.83
		Total Weekly Contact Hours		4.00

Workload: Blended

Workload Type	Workload Description	Hours	Frequency	Average Weekly Learner Workload
Lecture	Classroom and demonstrations	12	Per Semester	1.00
Tutorial	Mentoring and small-group tutoring	12	Per Semester	1.00
Directed Learning	Directed e-learning	24	Per Semester	2.00
Independent Learning	Independent learning	202	Per Semester	16.83
		Total Weekly Contact Hours		4.00

Workload: Part Time

Workload Type	Workload Description	Hours	Frequency	Average Weekly Learner Workload
Lecture	Classroom and demonstrations	24	Per Semester	2.00
Independent Learning	ndependent learning	202	Per Semester	16.83
Tutorial	Mentoring and small-group tutoring	24	Per Semester	2.00
		Total Weekly Contact Hours		4.00

Module Resources

Recommended Book Resources

Arslanian, Henri, and Fabrice Fischer.. (2019), The future of finance: The impact of FinTech, AI, and crypto on financial services, Springer.

Chishti, Susanne.. (2020), The AI Book: The Artificial Intelligence Handbook for Investors, Entrepreneurs and FinTech Visionaries., John Wiley & Sons.

Supplementary Book Resources

Alpaydin, Ethem.. (2016), Machine learning: the new AI., MIT press.

John D. Kelleher, Brian Mac Namee, and Aoife D'Arcy,. (2015), Fundamentals of Machine Learning for BI and Consumer Relationship Data Analytics: Algorithms, Worked Examples, and Case Studies, The MIT Press.

Koren, Y.. (2010), The Global Manufacturing Revolution:Product-Process-Business Integration and Reconfigurable Systems,, Wiley.

Nightingale, D. J. and D. H. Rhodes. (2015), Architecting the Future Enterprise, MIT Press.

This module does not have any article/paper resources

Other Resources

[Website article],
https://ai-finance.org

Discussion Note: