

IB2AD-15 Data Science & Generative AI

26/27

Department

Warwick Business School

Level

Undergraduate Level 2

Module leader

Richard White

Credit value

15

Module duration

10 weeks

Assessment

100% coursework

Study location

University of Warwick main campus, Coventry

Description

Introductory description

Generative AI has already begun to massively disrupt business practices and call into question the work of whole industries. In combination with modern, advanced data science techniques, these technologies and techniques offer genuine transformative potential that will shape business strategy and practice. This module will introduce participants to machine learning techniques and the development and use of generative AI technologies. The module will incorporate hands-on, practical experience using the latest frameworks and technologies.

This is an elective module available for WBS and non-WBS students*. To find detailed availability and to apply for this module, log in to my.wbs.ac.uk using your normal IT login details and apply via the my.wbs module application system. Once you've secured a place on my.wbs you should apply via your home department's usual process, which usually takes place via eVision.

Note that you do not require the module leader's permission to study a WBS module, so please do not contact them to request it.

*Please note that Computer Science students not on a Computer Science with Business Studies Joint Honours course are unable to take this module due to content covered on other Computing modules.

[Module web page](#)

Module aims

Machine learning and artificial intelligence are key components of modern data science and various other data professions. This module will give participants practical exposure to working with a variety of cutting edge machine learning algorithms, frameworks and technologies. This will include:

- Scikit-learn, Pandas and Numpy;
- PyTorch;
- GenerativeAI models and technologies.

The module will give practical exposure to the full data science lifecycle including business requirements/context; data preparation; modelling; evaluation; and deployment. Additionally, the module will focus on how these technologies and techniques can be applied in a variety of business settings, providing both students with both a technical competence, and the ability to conceptualise and apply these approaches to create new business value.

Outline syllabus

This is an indicative module outline only to give an indication of the sort of topics that may be covered. Actual sessions held may differ.

The module will cover the following topics:

- Classical machine learning methods;
- Deep learning and neural networks;
- Generative AI.

Each topic will be covered with a mixture of theoretical exploration and hands-on practical work.

Learning outcomes

By the end of the module, students should be able to:

- Apply best practices in modern data and feature and engineering techniques.
- Demonstrate a theoretical and practical understanding of key models in classical machine learning, deep learning and generative AI.
- Evaluate ESG concerns within the context of artificial intelligence systems.
- Critically appraise machine learning and artificial intelligence applications in a variety of business contexts.
- Apply appropriate problem solving skills.
- Demonstrate critical and logical thinking.
- Employ an analytical mindset to a range of problems.

Indicative reading list

[Reading lists can be found in Talis](#)

Subject specific skills

Demonstrate computing and programming skills in this domain.

Apply best practice in machine learning.

Demonstrate and understanding of the design and application of generative AI.

Transferable skills

Demonstrate applied computing skills.

Demonstrate numerical and analytical skills.

Effectively communicate analytical models and projects with effective presentation skills.

Study

Study time

Type	Required
Lectures	10 sessions of 1 hour (7%)
Seminars	9 sessions of 1 hour (6%)
Online learning (independent)	10 sessions of 1 hour (7%)
Private study	48 hours (32%)
Assessment	73 hours (49%)
Total	150 hours

Private study description

Directed reading; seminar preparation, private study.

Costs

No further costs have been identified for this module.

Assessment

You do not need to pass all assessment components to pass the module.

Assessment group A1

	Weighting	Study time	Eligible for self-certification
Assessment component			
Individual Assignment	80%	58 hours	Yes (extension)

Reassessment component is the same

Assessment component

	Weighting	Study time	Eligible for self-certification
Class Test	20%	15 hours	No

In-person online class test - designed to be a time-limited session where students will carry out a task specifically using (or with the option to use) generative AI.

Reassessment component

Individual Assignment			Yes (extension)
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Individual Assignment to replace the class test.

Feedback on assessment

Feedback via My.WBS.

Availability

Pre-requisites

Please note that Computer Science students not on a Computer Science with Business Studies Joint Honours course are unable to take this module due to content covered on other Computing modules.

Courses

This module is Optional for:

- Year 2 of UIBA-NN02 BSC International Management with Marketing
- Year 2 of UIBA-NN01 BSC Management with Marketing
- Year 2 of UIBA-NN03 BSC Management with Marketing (With Placement Year)
- Year 2 of UECA-L1N3 BSc Economics and Management with Placement Year
- UIBA-N20B BSc in Management
 - Year 2 of N20B Management

- Year 2 of N20B Management
- Year 2 of N23K Management with Accounting
- Year 2 of N234 Management with Digital Business
- Year 2 of N235 Management with Entrepreneurship
- Year 2 of N232 Management with Finance
- Year 2 of N252 Management with Marketing
- Year 2 of N23L Management with Strategy and Organisation
- Year 2 of UIBA-N400 Undergraduate Accounting and Finance
- UIBA-N404 Undergraduate Accounting and Finance (with Foundation Year and Placement/Undergraduate Partnership Programme)
 - Year 3 of N4N7 Accounting and Finance (Foundation Year and Intercalated)
 - Year 3 of N404 Accounting and Finance (Foundation Year and Placement)
 - Year 3 of N405 Accounting and Finance (Foundation Year and UPP)
 - Year 3 of N403 Accounting and Finance (with Foundation Year)
- Year 3 of UIBA-N403 Undergraduate Accounting and Finance (with Foundation Year)
- UIBA-N401 Undergraduate Accounting and Finance (with Placement Year/Undergraduate Partnership Programme)
 - Year 2 of N401 Accounting and Finance (Placement)
 - Year 2 of N402 Accounting and Finance (Undergraduate Partnership Programme)
- Year 1 of UIOA-EEU Undergraduate EU Exchange
- Year 2 of UECA-L1N2 Undergraduate Economics and Management
- Year 2 of UGEA-RN21 Undergraduate German and Business Studies
- Year 2 of UIPA-L8N1 Undergraduate Global Sustainable Development and Business
- Year 2 of UIPA-L8N2 Undergraduate Global Sustainable Development and Business Studies (with Intercalated Year)
- UIBA-N20F Undergraduate International Management
 - Year 2 of N20F International Management
 - Year 2 of N20F International Management
 - Year 2 of N20S International Management (with Accounting)
 - Year 2 of N20T International Management (with Chinese)
 - Year 2 of N20P International Management (with Entrepreneurship)
 - Year 2 of N20M International Management (with Finance)
 - Year 2 of N20U International Management (with French)
 - Year 2 of N20L International Management (with Marketing)
 - Year 2 of N20V International Management (with Spanish)
 - Year 2 of N20W International Management (with Strategy and Organisation)
 - Year 2 of N20N International Management with Digital Business
 - Year 2 of N20E Management (with Foundation Year)
 - Year 2 of N234 Management with Digital Business
- UIBA-N220 Undergraduate International Management (with Foundation Year)
 - Year 3 of N220 International Management (with Foundation Year)
 - Year 3 of N221 International Management with Accounting (with Foundation Year)
 - Year 3 of N226 International Management with Chinese (with Foundation Year)
 - Year 3 of N223 International Management with Digital Business (with Foundation Year)
 - Year 3 of N224 International Management with Entrepreneurship (with Foundation Year)

- Year 3 of N222 International Management with Finance (with Foundation Year)
- Year 3 of N227 International Management with French (with Foundation Year)
- Year 3 of N225 International Management with Marketing (with Foundation Year)
- Year 3 of N228 International Management with Spanish (with Foundation Year)
- Year 3 of N229 International Management with Strategy and Organisation (with Foundation Year)
- UIBA-N20J Undergraduate Management (with Foundation Year and Placement Year/Undergraduate Partnership Programme)
 - Year 3 of N20J Management (Foundation Year and Placement)
 - Year 3 of N20K Management (Foundation Year and UPP)
 - Year 3 of N23H Management with Digital Business (with Foundation Year and Placement Year)
 - Year 3 of N23J Management with Entrepreneurship (with Foundation Year and Placement Year)
 - Year 3 of N23G Management with Finance (with Foundation Year and Placement Year)
 - Year 3 of N255 Management with Marketing (with Foundation Year and Placement Year)
- UIBA-N20E Undergraduate Management (with Foundation Year)
 - Year 3 of N20E Management (with Foundation Year)
 - Year 3 of N23N Management with Accounting (with Foundation Year and Placement Year)
 - Year 3 of N23M Management with Accounting (with Foundation Year)
 - Year 3 of N23E Management with Digital Business (with Foundation Year)
 - Year 3 of N23F Management with Entrepreneurship (with Foundation Year)
 - Year 3 of N23D Management with Finance (with Foundation Year)
 - Year 3 of N252 Management with Marketing
 - Year 3 of N254 Management with Marketing (with Foundation Year)
 - Year 3 of N23P Management with Strategy and Organisation (with Foundation Year)
- UIBA-N20C Undergraduate Management (with Placement Year/Undergraduate Partnership Programme)
 - Year 2 of N20M International Management (with Finance)
 - Year 2 of N20B Management
 - Year 2 of N20D Management (Undergraduate Partnership Programme)
 - Year 2 of N20C Management (with Placement Year)
 - Year 2 of N20Q Management with Accounting (with Placement Year)
 - Year 2 of N236 Management with Digital Business (with Placement Year)
 - Year 2 of N237 Management with Entrepreneurship (with Placement Year)
 - Year 2 of N232 Management with Finance
 - Year 2 of N233 Management with Finance (with Placement Year)
 - Year 2 of N253 Management with Marketing (with Placement Year)
 - Year 2 of N23L Management with Strategy and Organisation
 - Year 2 of N20R Management with Strategy and Organisation (with Placement Year)
- UIOA-EOS Undergraduate Overseas Exchange
 - Year 1 of UEOS Undergraduate Overseas Exchange
 - Year 1 of UEOS Undergraduate Overseas Exchange

- Year 1 of UIOA-EUS Undergraduate USA Exchange