# UNIVERSITY OF NORTHAMPTON

# MODULE SPECIFICATION

This document forms the definitive overview as to the nature and scope of this module and is used in the University’s quality assurance processes. The information in this document cannot be changed without approval (except for the Indicative Content).

[A glossary of key terms is available.](https://www.northampton.ac.uk/ilt/current-projects/defining-contact-time/types-of-student-contact-time/)

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| **FACULTY** | Faculty of Art, Science & Technology |
| **SUBJECT AREA** | Technology |
| **SUBJECT FIELD** | Computing |
| **MODULE TITLE** | Advanced AI and Applications |

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| **MODULE CODE** | CSY3060 |
| **LEVEL** | 6 |
| **CREDIT VALUE** | 20 |
| **MODULE LEADER** | Dr Mu Mu |

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| **DELIVERY MODE(S)** | Standard |
| **DELIVERY LOCATION(S)** | UON |

**PRE-REQUISITES:**

None

**CO-REQUISITES:**

None

**RESTRICTIONS:**

None

**SUPPLEMENTARY REGULATIONS**:

This module has supplementary regulations **No**

**MODULE OVERVIEW:**

The purpose of this module is to: teach students the fundamental theories and practical applications of advanced artificial intelligence techniques including artificial neural networks, image classification and object detection. The underpinning concepts will be introduced, followed by examples of how responsible and ethical artificial intelligence applications are developed and tested.

**INDICATIVE CONTENT:**

* Artificial neural networks and deep learning
* Data handling and processing
* Image classification
* Object detection
* Ethics and responsible AI
* Use case study

**LEARNING OUTCOMES:**

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| **Module Learning Outcomes** |
| **On successful completion of the module, limited guidance students will be able to** |
| **Subject-Specific Knowledge, Understanding & Application** |
| 1. Critically apply the theoretical background to enable the development of responsible artificial intelligent applications. |
| 1. Evaluate and articulate the difference between various artificial intelligence methods, including during the development of intelligent systems. |
| 1. Critically appraise various artificial intelligence methods, considering their appropriateness, advantages and disadvantages in particular contexts and requirements. |
| 1. Design, develop and evaluate a range of typical complex applications using artificial intelligence methods. |
| **Employability & Changemaker Skills** |
| 1. Implement an ethically sound solution to a complex problem. |
| 1. Critically analyse techniques and resources for meeting the prioritised requirements of a complex task. |

**Readers are referred to the Programme Specification document for the list of PSRB requirements met by this module.**

**TYPICAL LEARNING, TEACHING AND ASSESSMENT HOURS (for the module as delivered on-site at the University of Northampton):**

[View this table on how learning, teaching and assessment hours map to the KIS Categories.](https://www.northampton.ac.uk/ilt/current-projects/defining-contact-time/kis-guidance/)

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| **Learning and teaching information for this module when delivered off-site by UN partners is available from the partner institution’s NILE site (or equivalent). Any variation in study hours must be approved by the University of Northampton before students are enrolled, ensuring that study hours provision is always appropriate to support student achievement of the module learning outcomes.** |

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| **Learning, Teaching and Assessment activities** | **Study hours** |
| **Contact hours: (total)**  Comprising face-to-face and online contact hours as follows: | **48** |
| * **Face-to-face (total) -** this may include the following: * Face to face interactive large group session (e.g. team-based learning). * Face to face interactive small group session (generic space in groups of approx. 30 e.g. seminars/workshops/tutorials). * Specialist space (e.g. laboratories, studio space). | 36 |
| * **Online contact hours** **(total)**  (comprising online activities with mediated tutor input) | 12 |
| **Guided independent study hours**  **(including hours for assessment preparation)** | **152** |
| **Module Total** | **200** |

**ALIGNMENT OF LEARNING OUTCOMES AND ASSESSMENTS:**

**University of Northampton:**

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| **Assessment Activity** | | | **Learning Outcomes** | **Weighting (%)** |
| **Code** | **Assessment Type** | **Assessment Deliverables** |  |  |
| PJ1 | Project Report | A written report on literature research and small project based on AI  2,000 words | a, b, c | 50% |
| PJ2 | Project Report | A written report on literature research, design, development and evaluation of an AI application.  2,000 words | c, d, e, f | 50% |

The assessment items listed above are graded and contribute to the overall module grade (assessment *of* learning). In addition, there are opportunities for formative assessment (assessment *for* learning), which are ungraded, to support students in achieving the module learning outcomes. These are NOT listed.

**APPROVAL/ REVIEW DATES:**

**Version: 1 (was CSY3025)**

Date of approval: