

# AMITY GLOBAL INSTITUTE

## MODULE SYLLABUS

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| Course                                                   | Master of Science Data Science<br>Awarded by Teesside University                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Module Title                                             | Machine Learning                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Module Syllabus No. (if any)                             | CIS4035-N                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Content                                                  | <p>Machine learning is a subfield of computer science concerned with computational techniques rather than performing explicit programmed instructions. The methodology involves building a model of a given task based on observations in order to make predictions about unseen data. Such techniques are useful when the desired output is known but an algorithm is unknown, or when a system needs to adapt to unforeseen circumstances.</p> <p>Machine learning draws significantly from statistics and probability theory as (though the applications are many and various) the fundamental task is to make inferences from data samples.</p> <p>The contribution from other areas of computer science is also essential for efficient task representation, learning algorithms, and inferences procedures. This module provides students with exposure to a breadth of tasks and techniques in machine learning and will also investigate new developments in Neural Networks and Deep Learning.</p> |
| No. of Teaching Hours                                    | 36 hours                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Teaching Methods                                         | Lectures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Assessment Methods and Weightages                        | 100% coursework                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Skills for Maximising Learning Outcomes                  | Reading and Research                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Dates of Examinations, Major Assessments and Assignments | See University Academic Calendar                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Recommended Text                                         | Machine learning<br>0071154671<br>Mitchell, Tom M.<br>1997                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Additional Reference Texts (if any)                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Additional Remarks (if any)                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

| No. | Learning Outcomes/Aims                                                                                                                                                      |
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| 1   | Select, apply and defend the selection and application of machine learning methodologies and experiments in academic reports.                                               |
| 2   | Demonstrate a systematic understanding of machine learning algorithms and their selection for solving a specific problem.                                                   |
| 3   | Investigate state-of-the-art machine learning algorithms.                                                                                                                   |
| 4   | Design appropriate representations of machine learning problems for input into machine learning packages and critically evaluate their effectiveness.                       |
| 5   | Design and evaluate neural network configurations and learning mechanisms for sample problems.                                                                              |
| 6   | Analyse empirical results of the selected machine learning algorithms and justify the performance.                                                                          |
| 7   | Autonomously implement and evaluate appropriate machine learning technique for particular learning tasks, taking into consideration professional, ethical and legal issues. |
| 8   | Explore the techniques of machine learning. Provide practical experience in developing                                                                                      |

Note: All Information provided to Amity will be kept strictly confidential except for those required under statutory requirements and by government authorities and relevant university partners and accreditation bodies as part of the regulatory or course requirements.

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|  | machine learning algorithms. Develop awareness of good practice in evaluating machine learning tools. |
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