# Nottingham Trent University

# Module Specification

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|  | Basic module information |  |
| 1 | Module Title: | Artificial Intelligence |
| 2 | Module Code: | ISYS30221 |
| 3 | Credit Points: | 20 cps |
| 4 | Duration: | Full Year |
| 5 | School: | Science and Technology |
| 6 | Campus: | Clifton |
| 7 | Date: | September 2015 |

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| 8 | Pre, Post and Co-requisites: | |  |
|  | These are modules that you must have studied previously in order to take this module, or modules that you must study simultaneously or in a subsequent academic session | | |
|  | Pre, Co, Post | Module Code | Module Title |
|  | Pre |  | Level 5 (Year 2) core modules |
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| 9 | Courses containing the module | | | | |
|  | Level | Core/Option | Mode | Code | Course Title |
|  | 6  6 | Core  Option | SW/FT  SW/FT | COMP009/10  COMP033/34 | Computer Science  Computer Science (Games Technology) |
|  | 6 | Option | SW/FT | COMP004/5 | Software Engineering |
|  | 6  6  6  6 | Option  Option  Option  Option | FT  FT  FT/SW  FT/SW | COMP021  COMP027  COMP023/24  COMP135/6 | Software Engineering (KBU)  Software Engineering (KBU DE)  Computer Studies (up to 2012/13)  Computing (from 2013/14 entry) |
|  | 6 | Core | FT/ SW | COMP164/165 | MComp (Hons) Computer Science |

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| 10 | Overview and Aims |
|  | This module covers the theoretical foundations of Artificial Intelligence (AI), the main methods and techniques, and covers current areas of AI research and development. It includes a number of practical exercises within these areas. The module will give you a solid grounding in the important issues and basic techniques in AI. You will be made aware of current research. The module will enable you to develop your understanding and practical abilities in the field by analysing, exploring and realising, through practical exercises, techniques and systems in some important areas of application of AI techniques.  Current real world applications and research, such as in the fields of Game AI, Wayfinding systems, Chatbots, Natural Language Processing (NLP), Business Intelligence and data mining using AI techniques will be considered. |

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| 11 | Module Content |
|  | * The theoretical foundations of Artificial Intelligence * Main methods and techniques in Artificial Intelligence, and as they are used in various significant application areas * Current research and applications, for example in the fields of Game AI, Natural Language Processing, and Business Intelligence and data mining |

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| 12 | Indicative Reading |
|  | Lucci, S & Kopec, D P, 2013, Artificial Intelligence in the 21st Century, Mercury Learning and Information, Boston, Mass  Millington, I & Funge, J D, 2009, Artificial Intelligence for Games, Morgan Kaufmann, 2nd Ed  Jurafsky, D. & Martin, J. H., 2008, Speech and Language Processing, 2nd edition, International Edition, Pearson Education  Witten, I., Frank, E., and Hall, M, 2011, Data Mining: Practical Machine Learning Tools and Techniques, Morgan Kaufmann; 3 edition (3 Feb 2011) |

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| 13 | Learning outcomes |
|  | Learning outcomes describe what you should know and be able to do by the end of the module |
|  | Knowledge and understanding. After studying this module you should be able to: |
|  | 1. Demonstrate an understanding of the theoretical foundations of AI 2. Demonstrate an understanding of current major application areas of AI, and be able to critically evaluate work in these areas 3. Use, apply and critically evaluate major techniques used in AI 4. Analyse and critically evaluate AI computer applications |
|  | Skills, qualities and attributes. After studying this module you should be able to: |
|  | 1. Critically evaluate different views in the relevant research literature 2. Solve problems involving AI techniques 3. Use and apply basic algorithmic and design approaches 4. Produce written work which is succinct, logical, well-argued and literate |

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| 14 | Teaching and Learning | |
|  | *Range of modes of direct contact* | |
|  | This indicates the range of direct contact teaching and learning methods used on this module, e.g. lectures, seminars | |
|  | 21 x 1 hr lectures  18 x 1 hr lab based tutorials  3 x 1 hr seminars  10 x 1 hr surgeries | |
|  | Total contact hours: | 52 |
|  | *Range of other learning methods* | |
|  | This indicates the range of other teaching and learning methods used on this module, e.g. directed reading, research | |
|  | Directed reading; participation and presentations in seminars; laboratory-based exercises; NTU Online Workspace (NOW) – delivery (on site/distance), communication, managing and instructions, support, selected reading and web links, examples, discussions. You will also be expected to read relevant current research / practice journals  Approximately a third of this to require lab facilities:  30 x 1 hour general purpose computer lab  30 x 1 hour data mining lab | |
|  | Total non-contact hours: | 148 |

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| 15 | Assessment methods | | | | | | |
|  | This indicates the type and weighting of assessment elements in the module | | | | | | |
|  | Element number | | Weighting | Type | Description | |
|  | | 1 | 60% | EXM | | Unseen examination | |
|  | | 2 | 40% | CWK | | Written Assignment | |
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|  | | Diagnostic/ formative assessment | | | | | |
|  | | This indicates if there are any assessments that do not contribute directly to the final module mark | | | | | |
|  | | Seminar presentations, laboratory-based exercises  Formative feedback: verbal comment on seminar presentations and exercises; discussion of exercises and relevant issues | | | | | |
|  | | Further information on assessment | | | | | |
|  | | This section provides further information on the module’s assessment where appropriate | | | | | |
|  | | The coursework will assess material from the first topic – Data Mining – covered in term 1.  The exam will cover the second and third topics – Traditional AI techniques and Natural Language Processing. This will involve producing and/or commenting on worked examples, as explored in the lab-based exercises, and on what they are intended to achieve; explain and critically discuss important theoretical questions; explain and critically discuss approaches and applications; demonstrate knowledge of the main areas and algorithms.  Feedback for summative assessment: group feedback via NOW. | | | | | |

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|  | Document Management |  | |
| 16 | Module Title: | Artificial Intelligence | |
| 17 | Module Code: |  | |
| 18 | Subject (JACS) Code |  | |
| 19 | Cost Centre |  | |
| 20 | School: | Science and Technology | |
| 21 | Academic Team | Computing and Technology | |
| 22 | Campus | Clifton | |
| 23 | Other institutions providing teaching | *Please complete in box 23 a-d - if applicable* | |
|  |  | Institution | % |
| 23a | Other UK Higher Education or Further Education Institution- Please name  Percentage not taught by NTU |  |  |
| 23b | Other public organisation in the UK- Percentage not taught by NTU |  |  |
| 23c | Other private organisation in the UK - Percentage not taught by NTU |  |  |
| 23d | Any other Non-UK organisation - Percentage not taught by NTU |  |  |
| 24 | Date of approval: August 2015 |  | |