

H9IAP1: Intelligent Agents and Process Automation

Module Code:	H9IAP1
Long Title	Intelligent Agents and Process Automation APPROVED
Title	Intelligent Agents and Process Automation
Module Level:	LEVEL 9
EQF Level:	7
EHEA Level:	Second Cycle
Credits:	5
Module Coordinator:	Rejwanul Haque
Module Author:	Shauni Hegarty
Departments:	School of Computing
Specifications of the qualifications and experience required of staff	PhD/Master's degree in a computing or cognate discipline. May have industry experience also.
Learning Outcomes	
<i>On successful completion of this module the learner will be able to:</i>	
#	Learning Outcome Description
LO1	Demonstrate expert knowledge of the theory and concepts underpinning intelligent agents and business process management.
LO2	Determine, design, and document business processes.
LO3	Critically analyse the capabilities and limitations of intelligent agents into business process automation.
LO4	Evaluate and apply principles of intelligent agents to implement automated processes in various real-world business scenarios.
Dependencies	
Module Recommendations	
No recommendations listed	
Co-requisite Modules	
No Co-requisite modules listed	
Entry requirements	Applicants are required to hold a minimum of a Level 8 honours qualification (2.2 or higher) or equivalent on the National Qualifications Framework in either STEM (e.g., Information Management Systems, Information Technologies, Computer Science, Computer Engineer) or Business (e.g., Business Information Systems, Business Administration, Economics) discipline and a minimum of three years of relevant work experience in industry, ideally but not necessarily, in management. Previous numerical and computer proficiencies should be part of their work experience or formal training. Graduates from disciplines which do not have technical or mathematical problem-solving skills embedded in their programme will need to be able to demonstrate technical or mathematical problem-solving skills in addition to their level 8 programme qualifications (Certifications, Additional Qualifications, Certified Experience and Assessment Tests). All applicants for the programme must provide evidence that they have prior Mathematics and Computing module experience (e.g., via academic transcripts or recognised certification) as demonstrated in one mathematics/statistics module and one computing module or statement of purpose must specify numerical and computing work experience. NCI also operates a prior experiential learning policy where graduates with lower, or no formal qualifications, currently working in a relevant field, may be considered for the programme. Applicants must also be able to have their own laptop with the minimum required specification that will be communicated to each applicant through both the admissions and marketing departments.

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Module Content & Assessment			
Indicative Content			
Understanding Business Processes Processes Everywhere; Ingredients of a Business Process; Business Process Management Lifecycle;			
Identifying Business Processes Context of Process Identification; Definition of a Process Architecture; Process Selection			
Business Process Modelling I Process Decomposition; Introduction to BPM			
Business Process Modelling II Branching and Merging; Handling Events; Handling Exceptions			
Identifying Automation Processes Identifying Types of Automation; What to Automate?; Identify Process Requirements; Identify Benefits of Automation			
Designing Automation Processes Understanding the Process Definition Document; Object Model Diagram			
Foundations of Robotic Process Automation (RPA) What is RPA?; Why RPA?; Advantages and Disadvantages of RPA; RPA compared with BPMN; RPA Tools			
Intelligent Agents What are (intelligent) agent?; The basic properties of agents; To use agents or not; Abstract agent architecture			
Simple Agents Reflex Agents; Goal Oriented Agents; Utility Function; Rational Agents			
Knowledge Agents Planning; BDI Architecture; Reasoning and Belief			
Learning Agents Pre-trained Networks; Evaluation Functions; Reinforcement Learning			
RPA Deployment and Testing Testing; Going into Production; Monitoring; Security; Scaling			
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:	Project	% of total:	100
Assessment Date:	n/a	Outcome addressed:	1,2,3,4
Non-Marked:	No		
Assessment Description: Learners will provide a detailed description of one business process of their choice. Learners will have to (1) determine and justify using principles of intelligent agents that this business process can be automated; (2) model the business process using BPMN; (3) describe the process using the Process Definition Document (PDD); (4) implement the process in a RPA tool; and (5) discuss the advantages and disadvantages of the proposed implementation.			
No End of Module Assessment			
No Workplace Assessment			
Reassessment Requirement			
Coursework Only <i>This module is reassessed solely on the basis of re-submitted coursework. There is no repeat written examination.</i>			

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Module Workload

Module Target Workload Hours 0 Hours

Module Resources

Recommended Book Resources

Marlon Dumas, Marcello La Rosa, Jan Mendling, Hajo A. Reijers. (2019), Fundamentals of Business Process Management, Springer, p.527, [ISBN: 978-3662585856].

Tom Taulli. (2020), The Robotic Process Automation Handbook, Apress, p.344, [ISBN: 978-1484257289].

Stuart Russell, Peter Norvig. (2019), Artificial Intelligence, Pearson Higher Education, p.1136, [ISBN: 978-0134610993].

Nandan Mullakara, Arun Kumar Asokan. (2020), Robotic Process Automation Projects, [ISBN: 978-1839217357].

Supplementary Book Resources

Elijah Falode. (2020), The Future of Intelligent Automation, [ISBN: 979-8642979969].

Husan Mahey. (2020), Robotic Process Automation with Automation Anywhere, [ISBN: 978-1839215650].

Walter Surdak. (2020), The Care and Feeding of Bots, [ISBN: 979-8610003634].

Olivier Boissier, Rafael H. Bordini, Jomi Hubner, Alessandro Ricci. (2020), Multi-Agent Oriented Programming, MIT Press, p.264, [ISBN: 978-0262044578].

This module does not have any article/paper resources

This module does not have any other resources

Discussion Note: