MODULE SPECIFICATION
FOR TAUGHT MODULES AT ALL LEVELS

THE UNIVERSITY OF BUCKINGHAM

Name of Module:	**Degree Apprenticeship Project**			**Module Code:**	SPFINDP
Parent School/Dept:	School of Computing				
Programme(s) where module is offered:	MSc Digital and Technology Solutions Specialist – Data Analytics Specialist				
Status:	Compulsory			**Pre-Requisite Modules or Qualifications:**	Research Methods (prior or at the start of the Project)
FHEQ Level:	7	**Unit Value:**	60.00	**Module Coordinator:**	Dr Tuan Nguyen
Terms Taught:	Spring, Summer, Autumn, Winter			**Applicable From:**	January 2019

Educational Aims of the Module

The aim of degree apprenticeship project is to provide the apprentice with an opportunity to obtain in-depth understanding of a specific area relating to data science, apply knowledge acquired from taught modules and exercise judgement in solving a practical problem of a substantial size and complexity. The project is intended to bridge the gap between the apprentice's academic knowledge and understanding of data science and real life problem solving in order to fulfil the competencies of the apprenticeship.

Module Outline/Syllabus

The project runs over three terms and will be supervised jointly by HEI and the employer. Once the title of the project has been agreed between the HEI, employer, apprentice then the project terms of reference are signed by each of these stakeholders.

The Project Report is likely to take around 10 days to complete. The apprentice must be given time to draft the Project Report. The Project Report should be presented in the form of a hard copy printed report, but should also be provided in electronic form (e.g. word document). On completion of the Project Report, the apprentice must provide a signed statement to confirm it is her/his own work.

Content of the Project Report
The apprentice will compose a 10,000 (+/- 10%) written project report in which they will demonstrate all the specialism skills and knowledge as set out in Annex A of the assessment plan.

The Project Report should cover the project terms of reference, the apprentice's responsibilities, the action taken by the apprentice (in planning and executing the project) and results and conclusions. The report should be properly laid out as a business style report with an executive summary.

The report must include an annex containing a maximum of 4 pieces of evidence relating to the project. Example evidence may include software developed, spreadsheets, databases, models and analyses etc. This list is not definitive and other evidence sources are permitted. The annex must include a mapping of the evidence to the knowledge and skills assessed by this assessment method.

Key project deliverables:

1. Project Terms of Reference
2. Project Progress Report
3. Project Poster
4. Project Practical Work
5. Project Report containing the following:
a) Executive summary. (This is no more than one side - which summarizes the content of the report. It must be comprehensible to someone who has not read the rest of the report.)
b) Introduction. (The scope or hypothesis of the project and terms of reference, setting the scene for the remainder of the report.)
c) Background. (A review chapter, describing the background work or research undertaken at the beginning of the project period.)
d) Work undertaken: Several chapters describing the work that has been undertaken.
e) Outputs. A chapter describing the outputs, deliverables or artefacts that have been produced as a result of the project.
f) Further work. (A chapter describing possible ways in which the work could be continued or developed.)
g) Conclusions. (A statement of conclusions relating to the work done, and outputs produced to the initial hypothesis and terms of reference.)
6. E-Portfolio – selection of the appropriate on line portal where the key deliverables will be uploaded

Key tasks within the project are listed as follows:
1. Work on a project proposal and obtain ethical approval
2. Define the project aim and objectives and conduct background investigation into the problem
3. Review literature and conduct a critical evaluation of possible technological solutions to the problem
4. Specify the project main tasks and provide a project plan to carry out them within a specific time
5. Develop and prototype solutions to solve the problem
6. Implement the solutions to suit the scope of the problem
7. Conduct critical evaluations of the solutions against the original aim and objectives outlined
8. Produce required project documentations on time
9. Present project outcomes to both technical and non-technical audiences

Student Engagement Hours

Term	*Type*	*Number per term*	*Duration of each*	*Total Time*
1	**Project Induction Talks**	3	1h 0m	3h 0m
	Project Weekly Supervision	10	1h 0m	10h 0m

2	**Project Weekly Supervision**	10	1h 0m	10h 0m
3	**Project Weekly Supervision**	10	1h 0m	10h 0m
			Total Guided/Independent Learning Hours:	**567h 0m**
			Total Contact Hours:	**33h 0m**
			Total Engagement Hours:	**600h 0m**

Assessment Method Summary				
Type	***Number Required***	***Duration***	***Weighting***	***Timing / Submission Deadline***
Project Terms of Reference	1	500 words	5%	Pre-Project
Project Progress Report	1	2000 words	10%	Project Term 1
Project Poster	1	N/A	10%	Project Term 2
Individual Project Report	1	10000 words 10%	40%	Project Term 3
Project Practical Work	1	N/A	30%	Project Term 3
E-Portfolio	1	N/A	5%	Project Viva

Module Outcomes

Intended Learning Outcomes

Intended Learning Outcomes:
At the end of the project, apprentice should be able to:
1. Acquire, organise and present knowledge and apply the knowledge in solving an identified practical problem.
2. Obtain skills to analyse datasets and create suitable tools to understand the data.
3. Critically analyse, compare, and select suitable methodologies, approaches and methods, especially machine learning methods, in solving the problem from the literature.
4. Develop, implement and test solutions, Show innovation and creativity in the process of developing the solutions. Consider effective deployment of the solutions in practice.
5. Establish high levels of performance in digital and technology solutions used in the project
6. Exercise initiative and sustained effort to set and achieve a clear set of objectives within stated deadlines.
7. Effectively use a particular language and/or software tools for solving the problem.
8. Show awareness of ethical, social, professional and legal issues regarding the solution development and its deployment in practice.

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Teaching/Learning Strategy

Teaching/Learning Strategy:
All ILOs are achieved through a combination of the following strategies:
1. Weekly supervision sessions between the apprentice and the supervisory team to follow up progress in the project developments.
2. Application of methods and knowledge from Research Methods module for collecting and managing dataset, identifying problems, creating and executing project plans.
3. Application of skills from Scripting for Data Analysis and Data Exploration and Visualisation modules in analysing and writing tools to understand data.
4. Translate and visualise data and result into comprehensible formats.
5. Leadership and Innovation in Data Science workshops/seminars
6. Apply critical evaluation knowledge from Research Methods module into critiquing the project findings.
7. Self-directed learning and evaluation of new techniques and methods including machine learning approaches to be used.
8. Systematic management of project activities according to project plan.
Besides this project syllabus, apprentice will be provided with a project leaflet detailing all aspects of the project ranging from project selection to final project examination, from project proposal to final project report and project viva.
All projects must be approved by the Ethics Committee for School of Science. Ethics forms must be submitted for approval at the very beginning stage of the project.

Intended Learning Outcomes Intended Learning Outcomes: At the end of the project, apprentice should be able to: 1. Acquire, organise and present knowledge and apply the knowledge in solving an identified practical problem. 2. Obtain skills to analyse datasets and create suitable tools to understand the data. 3. Critically analyse, compare, and select suitable methodologies, approaches and methods, especially machine learning methods, in solving the problem from the literature. 4. Develop, implement and test solutions, Show innovation and creativity in the process of developing the solutions. Consider effective deployment of the solutions in practice. 5. Establish high levels of performance in digital and technology solutions used in the project 6. Exercise initiative and sustained effort to set and achieve a clear set of objectives within stated deadlines. 7. Effectively use a particular language and/or software tools for solving the problem.	>	***Assessment Strategy*** Assessment Strategy: The project works are assessed via the following framework: 1 Continuous assessment: (a) Project Terms of Reference (b) Project Progress Report (c) Project Poster 2. Project Examination: (a) Project Report (b) Project Practical Work and Results (c) E-Portfolio Elements 1(a) & 1(b) are assessed by the project supervisor, element 1(c) by a panel of staff and peers. Element 2(a-c) are assessed by both the project supervisor and an internal second marker. A provisional mark for each element is recorded. All the provisional marks are withheld from apprentices. For continuous assessment, students are informed of being satisfactory or not satisfactory. Detailed feedback for improvement is given.
Cognitive (thinking) Skills	>	***Teaching/Learning Strategy***
	>	***Assessment Strategy***
Transferable/Practical Skills and other attributes Transferable/Practical Skills and other attributes: At the end of the project, apprentice should be able to gain a wide range of skills including: 1. Problem solving skills 2. Critical evaluation skills 3. Solution development skills in design, implementation and testing 4. Project management skills 5. Information gathering, filtering, and presentation skills 6. Be results and outcomes driven 7. Skills to inspire and motivate team members to deliver excellent outcomes and build positive relationships.	>	***Teaching/Learning Strategy*** Teaching/Learning Strategy: The following strategies are deployed for achieving all the transferable skills list: • Case studies • Literature surveys • Research activities • Project development activities
	>	***Assessment Strategy*** All transferable skills (1 – 6) are assessed through deliverables of the project, and supervisor's feedback comments.

Key Texts and/or other learning materials	
	RECOMMENDED READING MATERIALS FROM THE SUPERVISORS **DECIDED BETWEEN THE APPRENTICE AND THE SUPERVISOR**
H. Du 2018	**MSC DEGREE APPRENTICESHIP PROJECT: PROJECT MANUAL**

Please note: This specification provides a concise summary of the main features of the module and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. More detailed information on the learning outcomes, content and teaching, learning and assessment methods of each module and programme can be found in the departmental or programme handbook. The accuracy of the information contained in this document is reviewed annually by the University of Buckingham and may be checked by the Quality Assurance Agency.

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