Module Details

Module Code:	COMP I8035
Full Title:	Service Oriented Architecture APPROVED
Valid From::	Semester 1 - 2019/20 (June 2019)
Language of Instruction:	English
Duration:	1 Semester
Credits::	5
Module Owner::	Tony McCarron
Departments:	Unknown
Module Description:	This module will show students how to design and build scale-able Service Oriented Architectures from a theoretical and an applied perspective.

Module Learning Outcome	
On successful completion of this module the learner will be able to:	
#	**Module Learning Outcome Description**
MLO1	Assess and critically analyse the Enterprise and Business drivers for developing a service based architecture and its current position in the IT architectural continuum.
MLO2	Be capable of evaluating a number of competing implementation technologies and platforms for services using industry standard architectural criteria.
MLO3	Analyse a small business problem, design and build a service and/or micro service based solution accessible to clients using a REST Api and json.
MLO4	Evaluate and optimise this solution using accepted architecture and software development patterns.

Pre-requisite learning
Module Recommendations *This is prior learning (or a practical skill) that is strongly recommended before enrolment in this module. You may enrol in this module if you have not acquired the recommended learning but you will have considerable difficulty in passing (i.e. achieving the learning outcomes of) the module. While the prior learning is expressed as named DkIT module(s) it also allows for learning (in another module or modules) which is equivalent to the learning specified in the named module(s).*
No recommendations listed

Module Indicative Content	
Service based architectures. Definitions, position in the architectural continuum, architecture of a single service/micro service.	
Available technologies Software development choices for developing services, comparison and analysis of available technology stacks, REST or SOAP, Conway's Law.	
Designing a service. Design and characteristics of a sample service or micro service. REST api design. Evaluation and optimization of the design. Design patterns, use of API gateways, circuit breakers.	
Build and Deploy a service and/or micro service. Build a sample service, test the service and deployment options on chosen cloud platform.	
Communicating microservices. Communicating patterns of multiple micro services to implement a small scale business solution. Scalability of deployment.	
Case studies and trends in microservice architecture. View and analyse a number of real world case studies. Introduction to nano services and future trends.	

Module Assessment

Assessment Breakdown	%
Course Work	60.00%
Final Examination	40.00%

Module Special Regulation

Assessments

Full Time On Campus

Course Work			
Assessment Type	Continuous Assessment	**% of Total Mark**	60
Marks Out Of	100	**Pass Mark**	40
Timing	Every Second Week	**Learning Outcome**	3,4
Duration in minutes	0		
Assessment Description The student will design, build, test and then evaluate a small service-oriented solution to a business problem/task. This is a cumulative project lasting the entire semester with 3 project checkpoints normally at weeks 4 (10 marks), 8 (15 marks) and at the end of the semester making up the 100 available marks (25 marks). It is envisaged that elements of this project will contribute to assessment in other modules.			

No Project

No Practical

Final Examination			
Assessment Type	Formal Exam	**% of Total Mark**	40
Marks Out Of	100	**Pass Mark**	40
Timing	End-of-Semester	**Learning Outcome**	1,2,3,4
Duration in minutes	120		
Assessment Description Formal Written Examination			

Part Time On Campus

Course Work			
Assessment Type	Continuous Assessment	**% of Total Mark**	60
Marks Out Of	100	**Pass Mark**	40
Timing	Every Second Week	**Learning Outcome**	3,4
Duration in minutes	0		
Assessment Description The student will design, build, test and then evaluate a small service-oriented solution to a business problem/task. This is a cumulative project lasting the entire semester with 3 project checkpoints normally at weeks 4 (10 marks), 8 (15 marks) and at the end of the semester making up the 100 available marks (25 marks). It is envisaged that elements of this project will contribute to assessment in other modules.			

No Project

No Practical

Final Examination			
Assessment Type	Formal Exam	**% of Total Mark**	40
Marks Out Of	100	**Pass Mark**	40
Timing	End-of-Semester	**Learning Outcome**	1,2,3,4
Duration in minutes	120		
Assessment Description Formal Written Examination			

Reassessment Requirement
A repeat examination   *Reassessment of this module will consist of a repeat examination. It is possible that there will also be a requirement to be reassessed in a coursework element.*

Module Workload

Workload: Full Time On Campus

Workload Type	Contact Type	Workload Description	Frequency	Average Weekly Learner Workload	Hours
Lecture	Contact	Formal lecture covering the theoretical aspects of the module	Every Week	1.00	1
Lecturer Supervised Learning	Contact	2 lab based practical design and development project hours	Every Week	2.00	2
Directed Reading	Non Contact	References to articles, papers etc relevant to the theory and practical elements of the module.	Every Week	2.00	2
Independent Study	Non Contact	Project development.	Every Week	3.00	3
				Total Weekly Learner Workload	8.00
				Total Weekly Contact Hours	3.00

Workload: Part Time On Campus

Workload Type	Contact Type	Workload Description	Frequency	Average Weekly Learner Workload	Hours
Lecture	Contact	Formal lecture covering theoretical aspects of the module	Every Week	1.00	1
Lecturer Supervised Learning	Contact	2 lab based practical design and development project hours	Every Week	2.00	2
Directed Reading	Non Contact	References to articles, papers etc relevant to the theory and practical elements of the module.	Every Week	2.00	2
Independent Study	Non Contact	Project development	Every Week	3.00	3
				Total Weekly Learner Workload	8.00
				Total Weekly Contact Hours	3.00

Module Resources

Supplementary Book Resources

Thomas Erl. (2016), Service-Oriented Architecture : Concepts, Technology, and Design, Pearson Education Limited, p.792, [ISBN: 9780134524450].

Eberhard Wolff. (2016), Microservices, Flexible Software Architecture, 1st. 15, Addison-Wesley, [ISBN: 0-134-60241-2].

Boris Scholl , Trent Swanson and Daniel Fernandez. (2016), Micro services with Docker on Microsoft Azure, 1st. 8, Addison-Wesley, p.265, [ISBN: 0-672-33749-5].

Matthias Biel. (2016), Restful Api Design, CreateSpace Independent Publishing Platform, p.294, [ISBN: 9781514735169].

This module does not have any article/paper resources

This module does not have any other resources