

PROG C7008: Web Services

Module Details	
Module Code:	PROG C7008
Full Title:	Web Services APPROVED
Valid From:	Semester 1 - 2019/20 (June 2019)
Language of Instruction:	English
Duration:	1 Semester
Credits:	5
Module Owner::	Peter Gosling
Departments:	Unknown
Module Description:	This course introduces fundamental concepts, principles and techniques for building web services as well as training students in application of the techniques to programming particular web services.

Module Learning Outcome	
On successful completion of this module the learner will be able to:	
#	Module Learning Outcome Description
MLO1	Analyse and model requirements and constraints for the purpose of designing and implementing Web services.
MLO2	Design and implement a Web service that accommodates specified requirements and constraints, based on modeling or requirements specification.
MLO3	Communicate an understanding of web service concepts, relevant alternatives and decision recommendations to IT specialists.
MLO4	Analyze security aspects of web services and design and implement appropriate security techniques and policies.
Pre-requisite learning	
<p>Module Recommendations <i>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).</i></p>	
No recommendations listed	

Module Indicative Content
Web Services Fundamentals Concept, characteristics, QoS, interface, enabling infrastructure.
SOAP: Simple Object Access Protocol Protocol, structure of message, communications model, error handling.
Describing Web Services WSDL, non-functional service descriptions.
Registering and Discovering Web Services Registries, Service Discovery, UDDI.
RESTful Web Services RESTful Clients and WADL Documents, Client APIs, JSON for JavaScript Clients.
Service Composition and Transactions Business Processes, WS-BPEL, Transactions.
Web Services Security and Policies Security considerations and mechanisms, OAuth.
JWT JSON Web Token implementation.
XML Introduction to XML.
OAuth 2.0 Introduction to OAuth2.

Module Assessment	
Assessment Breakdown	%
Course Work	100.00%
Module Special Regulation	

Assessments

Full Time			
Course Work			
Assessment Type	Multiple Choice Questions	% of Total Mark	15
Marks Out Of	0	Pass Mark	0
Timing	Week 4	Learning Outcome	2,3
Duration in minutes	0		
Assessment Description MCQ			
Assessment Type	Continuous Assessment	% of Total Mark	30
Marks Out Of	0	Pass Mark	0
Timing	Week 7	Learning Outcome	1,2,3
Duration in minutes	0		
Assessment Description SOAP Implementation			
Assessment Type	Continuous Assessment	% of Total Mark	30
Marks Out Of	0	Pass Mark	0
Timing	Week 10	Learning Outcome	1,3,4
Duration in minutes	0		
Assessment Description JWT RESTful service assessment			
Assessment Type	Class Test	% of Total Mark	25
Marks Out Of	0	Pass Mark	0
Timing	Week 13	Learning Outcome	1,2,3,4
Duration in minutes	0		
Assessment Description Practical Lab Assessment			

No Project			
No Practical			
No Final Examination			
Part Time			
Course Work			
Assessment Type	Multiple Choice Questions	% of Total Mark	15
Marks Out Of	100	Pass Mark	40
Timing	Week 4	Learning Outcome	2,3
Duration in minutes	0		
Assessment Description MCQ			
Assessment Type	Continuous Assessment	% of Total Mark	30
Marks Out Of	100	Pass Mark	40
Timing	Week 7	Learning Outcome	1,2,3
Duration in minutes	0		
Assessment Description SOAP implementation			
Assessment Type	Continuous Assessment	% of Total Mark	30
Marks Out Of	100	Pass Mark	40
Timing	Week 10	Learning Outcome	2,3,4
Duration in minutes	0		
Assessment Description JWT Service			
Assessment Type	Class Test	% of Total Mark	25
Marks Out Of	100	Pass Mark	40
Timing	End-of-Semester	Learning Outcome	1,2,3,4
Duration in minutes	0		
Assessment Description Practical Lab			
No Project			
No Practical			
No Final Examination			
Reassessment Requirement			
No repeat examination <i>Reassessment of this module will be offered solely on the basis of coursework and a repeat examination will not be offered.</i>			

Module Workload

Workload: Full Time					
<i>Workload Type</i>	<i>Contact Type</i>	<i>Workload Description</i>	<i>Frequency</i>	<i>Average Weekly Learner Workload</i>	<i>Hours</i>
Lecturer-Supervised Learning (Contact)	Contact	Lab-Based Teaching - two two-hour sessions	Every Week	4.00	4
Directed Reading	Non Contact	Case Studies, sample applications, research papers	Every Week	3.00	3
Independent Study	Non Contact	General Reading	Every Week	1.00	1
Total Weekly Learner Workload					8.00
Total Weekly Contact Hours					4.00
Workload: Part Time					
<i>Workload Type</i>	<i>Contact Type</i>	<i>Workload Description</i>	<i>Frequency</i>	<i>Average Weekly Learner Workload</i>	<i>Hours</i>
Lecturer-Supervised Learning (Contact)	Contact	Lab-Based Teaching - one three-hour sessions	Every Week	3.00	3
Directed Reading	Non Contact	Case Studies, sample applications, research papers	Every Week	3.00	3
Independent Study	Non Contact	General Reading	Every Week	2.00	2
Total Weekly Learner Workload					8.00
Total Weekly Contact Hours					3.00

Module Resources

Recommended Book Resources

Michael Papazoglou. (2012), *Web Services and SOA Principles and Technology*, Pearson.

Robery Daigneau. (2011), *Service Design Patterns Fundamental Design Solutions for SOAP/WSDL and RESTful Web Services*.

Lorna Jane Mitchell. (2013), *PHP Web Services: APIs for the Modern Web*, O'Reilly.

Supplementary Book Resources

Martin Kalin. (2013), *Java Web Services: Up and Running, 2*. O'Reilly.

Steve Graham. (2004), *Building Web Services with Java: Making Sense of XML, SOAP, WSDL, and UDDI*, Sams.

This module does not have any article/paper resources

Other Resources

[Website], Apache Web Services Project,
<http://ws.apache.org>

[Website], PHP Web Services,
<http://www.php.net/manual/en/refs.webservice.php>

[Website], RESTful Web Service Programming,
http://docs.oracle.com/cd/E15051_01/wls/docs103/webserv_adv/rest.html

[Website], Web Services W3C,
<http://www.w3.org/DesignIssues/WebServices.html>

cURL,
<http://curl.haxx.se/>

[Youtube], Brandon Jones. (2017), Create and view a WSDL web service in C# Visual Studio 2017,
<https://www.youtube.com/watch?v=plRPBT3h3S8>

[Website], JSON Web Tokens,
<https://jwt.io/>