

## H9MAS: Mobile Architecture and Security

Module Code:	H9MAS
Long Title	Mobile Architecture and Security <b>AWAITING MODULE COORDINATOR</b>
Title	Mobile Architecture and Security
Module Level:	LEVEL 9
EQF Level:	7
EHEA Level:	Second Cycle
Credits:	10
Module Coordinator:	MICHAEL BRADFORD
Module Author:	Cheryl Cooney
Departments:	School of Computing
Specifications of the qualifications and experience required of staff	
<b>Learning Outcomes</b>	
<i>On successful completion of this module the learner will be able to:</i>	
<b>#</b>	<b>Learning Outcome Description</b>
LO1	Analyse the challenges associated with the development of mobile applications and determine architectural solutions to overcome these challenges
LO2	Devise and implement technical strategies to support secure mobile application requirements.
LO3	Investigate and evaluate design patterns and architectural patterns for mobile applications
LO4	Investigate and evaluate infrastructural requirements to facilitate the deployment, performance, and security of mobile applications.
<b>Dependencies</b>	
<b>Module Recommendations</b>	
No recommendations listed	
<b>Co-requisite Modules</b>	
No Co-requisite modules listed	
<b>Entry requirements</b>	

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Module Content & Assessment			
Indicative Content			
<b>Mobile Application Architecture (15%)</b> • Key mobile application components • Design considerations for mobile applications • Performance considerations • Architectural patterns and design patterns applicable to mobile solutions • Implementation technologies.			
<b>Architectural Components (15%)</b> • Design principles of application architecture • Architectural reference frames and exploration of key application components • Strategies to support application requirements (e.g., caching, message-based communications, exception management, instrumentation) • Authentication and authorisation • Mapping requirements to patterns • Layered architecture.			
<b>Presentation Layer (10%)</b> • Presentation layer requirements • Choice of UI technology • MVC, MVP, Presentation Model architectural patterns • Input validation • Presentation layer security.			
<b>Business Logic Layer (10%)</b> • Business layer requirements • Business entities • Business layer architectural patterns • Workflow and business rules implementation • Business layer security.			
<b>Data Access Layer (10%)</b> • Data Access layer requirements • Local and non-local storage of data • Structured, semi-structured, non-structured data • External service integration • Approaches to performance optimisation and data transfer strategies • Data access layer security.			
<b>Service Layer (15%)</b> • Service interface types • Web service technologies (e.g., REST, SOAP) • Service oriented architecture • Service layer patterns (e.g., messaging patterns, application integration patterns) • Service design considerations (e.g., handling requests idempotently, handling loss of connection) • Service layer security.			
<b>Mobile Communications (15%)</b> • Distributed applications and communication infrastructure requirements • Direct communication vs. Message based communication • Data formats, serialisation and communication protocols • Synchronisation • Security considerations • Performance and reliability considerations.			
<b>Deployment (10%)</b> • Factors influencing deployment • Physical environments • Security and performance • Deployment of application components to mobile devices • Distributed and non-distributed deployment options • Scale-up vs. Scale-out • Load-balancing • Network infrastructure • Cloud based deployment options.			
Assessment Breakdown			%
Coursework			50.00%
End of Module Assessment			50.00%
Assessments			
Full Time			
Coursework			
<b>Assessment Type:</b>	Project	<b>% of total:</b>	50
<b>Assessment Date:</b>	n/a	<b>Outcome addressed:</b>	1,4
<b>Non-Marked:</b>	No		
<b>Assessment Description:</b> Learners will be assessed through a project with both practical and research elements			
End of Module Assessment			
<b>Assessment Type:</b>	Terminal Exam	<b>% of total:</b>	50
<b>Assessment Date:</b>	End-of-Semester	<b>Outcome addressed:</b>	1,4
<b>Non-Marked:</b>	No		
<b>Assessment Description:</b> End-of-Semester Final Examination			
No Workplace Assessment			

## H9MAS: Mobile Architecture and Security

Module Workload				
Module Target Workload Hours 0 Hours				
Workload: Full Time				
Workload Type	Workload Description	Hours	Frequency	Average Weekly Learner Workload
Lecture	No Description	24	Every Week	24.00
Tutorial	No Description	24	Every Week	24.00
Independent Learning Time	No Description	202	Every Week	202.00
Total Weekly Contact Hours				48.00
Workload: Part Time				
Workload Type	Workload Description	Hours	Frequency	Average Weekly Learner Workload
Lecture	No Description	24	Every Week	24.00
Practical	No Description	24	Every Week	24.00
Independent Learning Time	No Description	202	Every Week	202.00
Total Weekly Contact Hours				48.00

Module Resources	
<i>Recommended Book Resources</i>	
<p>Dino Esposito. (2012), Architecting Mobile Solutions for the Enterprise, Microsoft Press.</p> <p>Robert Daigneau. (2011), Service Design Patterns: Fundamental Design Solutions for SOAP/WSDL and RESTful Web Services, Addison-Wesley Professional.</p>	
<i>Supplementary Book Resources</i>	
<p>Brian Fling. (2009), Mobile Design and Development: Practical Concepts and Techniques for Creating Mobile Sites and Web Apps, O'Reilly Media.</p> <p>Anup Kumar, Bin Xie. (2012), Handbook of Mobile Systems Applications and Services, Auerbach Publications.</p> <p>Martin Fowler. (2003), Patterns of Enterprise Application Architecture, Addison-Wesley Professional.</p> <p>Microsoft Patterns and Practices Team. (2009), Microsoft Application Architecture Guide (Note: available for free download at <a href="http://www.microsoft.com/en-us/download/details.aspx?id=16236">http://www.microsoft.com/en-us/download/details.aspx?id=16236</a>), 2nd Edition. Microsoft Press.</p>	
<i>This module does not have any article/paper resources</i>	
<i>Other Resources</i>	
<p>[Website], MSDN Architecture Centre,  <a href="http://msdn.microsoft.com/en-us/architecture/">http://msdn.microsoft.com/en-us/architecture/</a></p> <p>[Paper], Convergence Mobile Application Architecture on Requirement View,  <a href="http://msdn.microsoft.com/en-us/architecture/">http://msdn.microsoft.com/en-us/architecture/</a> <a href="http://www.sersc.org/journals/IJMUE/vol8_no3_2013/13.pdf">http://www.sersc.org/journals/IJMUE/vol8_no3_2013/13.pdf</a></p> <p>[Journal], Service Oriented Computing and Applications,  <a href="http://www.springer.com/computer/communication+networks/journal/11761">http://www.springer.com/computer/communication+networks/journal/11761</a></p> <p>[Journal], Mobile Networks and Applications,  <a href="http://www.springer.com/engineering/signals/journal/11036">http://www.springer.com/engineering/signals/journal/11036</a></p>	
Discussion Note:	