H8DSY: Distributed Systems

Module Code:	H8DSY
Long Title	Distributed Systems APPROVED
Title	Distributed Systems
Module Level:	LEVEL 8
EQF Level:	6
EHEA Level:	First Cycle
Credits:	5
Module Coordinator:	ANTHONY PAUL STYNES
Module Author:	Adriana Hava Olariu
Departments:	School of Computing
Specifications of the qualifications and experience required of staff	

Learning Outcomes	
On successful completion of this module the learner will be able to:	
#	**Learning Outcome Description**
LO1	Explain the theory, concepts and principles of distributed systems operation and design
LO2	Demonstrate conceptual, technical and practical skills in the analysis, design and test of distributed systems.
LO3	Explain the theory, concepts and principles of cloud-based distributed systems.
LO4	Demonstrate conceptual, technical and practical skills in the implementation of advanced communication systems.

Dependencies
Module Recommendations
No recommendations listed
Co-requisite Modules
No Co-requisite modules listed

Entry requirements	

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Module Content & Assessment

Indicative Content

Distributed Systems – Concepts and principles
• Distributed Systems Models • Parallel and Distributed Programming Paradigm • Network Programming • Security Options for Distributed Systems

Web Distributed Systems
• Web Services Technologies • Semantic Web • Semantic Web Services • Personalised Web • Distributed Recommender Systems • Socket programming (Client/Server communication, Socketsand threading, Abstract service methods)

Cloud-based Distributed Systems
• Distributed and cloud-based storage architectures and file systems • Services in the Cloud Computing • Programming Distributed systems using Amazon Web Services and Windows Azure

Peer-to-Peer Networks
• Peer-to-Peer concepts • Distributed Hash Tables • Comparison of P2P algorithms • Group Communication • Peer-to-Peer Overlay Networks and Proprieties

Ubiquitous Distributed Systems and the Internet of Things
• Trends in supporting Ubiquitous Computing • Distributed Systems for Social and Professional Networking • Distributed Systems for Multimedia

Internet of Things
• Enabling Technologies for the Internet of Things • Applications of the Internet of Things

Assessment Breakdown	%
Coursework	60.00%
End of Module Assessment	40.00%

Assessments

Full Time

Coursework

Assessment Type:	Project	% of total:	30
Assessment Date:	n/a	Outcome addressed:	2,4
Non-Marked:	No		

Assessment Description:
Sample Project: This project should be done in groups of two. You are required to choose an area of interest to develop a dynamic distributed systems (e.g. online shopping, distributed game, distributed social network, etc.) The system should have 6 main functional requirements and to allow communication to take place using two components such as address book, chatroom etc. You are required to provide personalisation and recommendation to the user, to integrate web services and integrate cloud-based platforms.

Assessment Type:	Assignment	% of total:	30
Assessment Date:	n/a	Outcome addressed:	1,2,3,4
Non-Marked:	No		

Assessment Description:
Series of continuous practical assessments and learning activities given throughout the semester. Sample Practical Assessment - In class test using the P2P Pastry Example Description: Using the code on Moodle (chat source code), modify the application so that the user can enter the text of the specific message they want to send to a specific node.

End of Module Assessment

Assessment Type:	Terminal Exam	% of total:	40
Assessment Date:	End-of-Semester	Outcome addressed:	1,2,3,4
Non-Marked:	No		

Assessment Description:
End-of-Semester Final Examination

No Workplace Assessment

Reassessment Requirement

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.

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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	Per Semester	2.00
Tutorial	No Description	12	Per Semester	1.00
Independent Learning	No Description	89	Per Semester	7.42
			Total Weekly Contact Hours	3.00

Module Resources

Recommended Book Resources

Maarten van Steen,Andrew S. Tanenbaum. (2017), Distributed Systems, Createspace Independent Publishing Platform, p.582, [ISBN: 978-1543057386].

Amy Elser. (2012), Guide to Reliable Distributed Systems, Springer Science & Business Media, p.730, [ISBN: 978-1447124153].

Kai Hwang,Geoffrey C. Fox,J. J. Dongarra. (2012), Distributed and Cloud Computing, Morgan Kaufmann Pub, p.648, [ISBN: 978-0123858801].

Javier Fernández González. Mastering Concurrency Programming with Java 8, [ISBN: 1785886126].

Supplementary Book Resources

Brendan Burns. Designing Distributed Systems, 1st Edition. O'Reilly, [ISBN: 9781491983645].

James Kurose,Keith Ross. (2016), Computer Networking, 7th Edition. Pearson, [ISBN: 978-1292153599].

This module does not have any article/paper resources

This module does not have any other resources

Discussion Note: