Module Title:	Distributed and Concurrent Device Development
Language of Instruction:	English

Credits:	10

NFQ Level:	8

Module Delivered In	No Programmes

Teaching & Learning Strategies:	Learners will be expected to activity participate in class on the materials covered and work throughout each scheduled lab session to accomplish assigned tasks.

Module Aim:	To provide learners with a theoretical knowledge and practical skills of developing concurrent and distributed systems, with particular emphases on the Internet of Things.

Learning Outcomes	
On successful completion of this module the learner should be able to:	
LO1	Assess the different approaches to developing concurrent and distributed systems.
LO2	Design, develop and test concurrent and distributed systems.
LO3	Demonstrate the principles of design and development of Internet of Things systems and applications.
LO4	Evaluate proposed concurrent and distributed architectural designs.

Pre-requisite learning
Module Recommendations   *This is prior learning (or a practical skill) that is recommended before enrolment in this module.*
No recommendations listed
Incompatible Modules   *These are modules which have learning outcomes that are too similar to the learning outcomes of this module.*
No incompatible modules listed
Co-requisite Modules
No Co-requisite modules listed
Requirements   *This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed.*
No requirements listed

Module Content & Assessment

Indicative Content
Architecture Flynn's Taxonomy, Multicore, Manycore and Stream Processors
Concurrency Shared Memory Model, Message Passing Model, Software Transactional Memory and Actors
Distribution Replication, Fault Tolerance, Load Balancing and Scalability
Internet of Things Architecture, Software and middleware platforms, Interfaces, Communication and Cooperation, Security, Sensing, Embedded Devices, Testing and Standardisation
Business Models IoT Governance, Societal and Ethical Implications

Assessment Breakdown	%
Continuous Assessment	30.00%
Practical	30.00%
End of Module Formal Examination	40.00%

Continuous Assessment				
Assessment Type	*Assessment Description*	*Outcome addressed*	*% of total*	*Assessment Date*
Examination	Term Paper	1,3,4	30.00	Sem 1 End

No Project

Practical				
Assessment Type	*Assessment Description*	*Outcome addressed*	*% of total*	*Assessment Date*
Practical/Skills Evaluation	Laboratory Exercises	2	30.00	Every Week

End of Module Formal Examination				
Assessment Type	*Assessment Description*	*Outcome addressed*	*% of total*	*Assessment Date*
Formal Exam	No Description	1,2,3,4	40.00	End-of-Semester

SETU Carlow Campus reserves the right to alter the nature and timings of assessment

Module Workload

Workload: Full Time		
Workload Type	*Frequency*	*Average Weekly Learner Workload*
Lecture	30 Weeks per Stage	3.00
Independent Learning Time	30 Weeks per Stage	0.83
	Total Hours	115.00