



Institiúid Teicneolaíochta Chorcaí  
Cork Institute of Technology

## Embedded Networking Technology

### Module Details

<b>Short Title:</b>	Embedded Networking Technology <b>DRAFT</b>		
<b>Full Title:</b>	Technologies for Embedded Networking		
<b>Module Id:</b>	4666		
<b>Official Code:</b>		<b>NFQ Level:</b>	9
		<b>ECTS Credits:</b>	5
<b>Coordinator:</b>	FERGUS O REILLY		
<b>Description:</b>	This module will introduce the student to the current embedded network standards and communication protocol technologies, allowing the student to make informed choice on technology selection for design case studies for networked embedded systems		
<b>Learning Outcomes:</b>			
On successful completion of this module the learner will be able to...			
<ol style="list-style-type: none"> <li>1. critically evaluate the advantages and disadvantages of selected embedded network standards with regards to performance, reliability, cost, etc.</li> <li>2. analyse and specify requirements for network technologies based on example application scenarios</li> <li>3. select suitable network standards based on application requirements</li> <li>4. implement selected communication protocols as part of an application case study of a networked embedded system and analyse the performance of the implementation</li> </ol>			
<b>Pre-requisite learning</b>			
<b>Module Recommendations</b>			
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 CIT 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			
<b>Incompatible Modules</b>			
These are modules which have learning outcomes that are too similar to the learning outcomes of this module. You may not earn additional credit for the same learning and therefore you may not enrol in this module if you have successfully completed any modules in the incompatible list.			
No incompatible modules listed			
<b>Module Requirements</b>			
This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed. You may not enrol on this module if you have not acquired the learning specified in this section.			
No requirements listed			



## Module Content &amp; Assessment

## Indicative Content

**• Standards for embedded networking**

Introduction into current wired and wireless communication protocols for embedded networking: wired technologies such as Fieldbus, CAN bus, LON bus, BACnet, embedded ethernet, etc. wireless technologies such as IEEE802.15 series, Bluetooth, Zigbee, WiHART/ISA100.11a, 6lowpan, Z-wave, etc. selected proprietary technologies

**• Network Design Implementation Case Study**

Continuation of network design case study, evaluating suitable standards based protocols and implementation into a physical network

Assessment Breakdown	%
Course Work	100%
End of Semester Formal Examination	0%

Coursework Breakdown				
Type	Description	Outcome addressed	% of total	Assessment Date
Written Report	Report on analysis and specification of requirements for embedded networking for case study	1,2	40	Week 6
Project	Mini-project to design, implelemtn and analyse a networked embedded system using suitable embedded networking technologies	3,4	60	Week 12

**The institute reserves the right to alter the nature and timings of assessment**



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### Module Workload & Resources

Workload		Full-time mode		
Type	Description	Hours	Frequency	Average Weekly Learner Workload
Lecture	lecture	3	Every Second Week	1.50
Lab	Laboratory	3	Every Second Week	1.50
Independent & Directed Learning (Non-contact)	Directed Learning	4	Every Week	4.00
Total Weekly Learner Workload				7.00
Total Weekly Contact Hours				3.00

Workload		Part-time mode		
Type	Description	Hours	Frequency	Average Weekly Learner Workload
Lecture	Lecture	3	Every Second Week	1.50
Lab	Laboratory	3	Every Second Week	1.50
Independent & Directed Learning (Non-contact)	Directed Learning	4	Every Week	4.00
Total Weekly Learner Workload				7.00

### Resources

#### Other Resources

- website: European Telecommunications Standards Institute *n/a*  
<http://www.etsi.org>
- website: Institute of Electrical & Electronic Engineers *n/a*  
<http://standards.ieee.org>
- website: ZigBee Alliance *n/a*  
<http://www.zigbee.org>
- website: BACnet *n/a*  
<http://www.bacnet.org>