



Institiúid Teicneolaíochta Chorcaí
Cork Institute of Technology

Embedded Software Networking

Module Details

Short Title:	Embedded Software Networking	DRAFT
Full Title:	Embedded Software Networking	
Module Id:	4663	
Official Code:		
NFQ Level:	9	
ECTS Credits:		5

Coordinator:	FERGUS O REILLY
---------------------	-----------------

Description:	This module will develop skills in programming and methodologies for mobile and embedded networked services using Java and J2ME technologies.
---------------------	-----------------------------------------------------------------------------------------------------------------------------------------------

Learning Outcomes:

On successful completion of this module the learner will be able to...

1. Describe and critically assess a range of embedded development platforms and methodologies/models
2. Specify, configure and use a development environment for an Embedded Networking Programming Language
3. Design, write and deploy a stand alone embedded application in a high level embedded networking language.
4. Select and interface a wireless networking protocol or technology to an embedded electronic system

Pre-requisite learning

Module Recommendations

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

Incompatible Modules

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

Module Requirements

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 & Assessment

Indicative Content

• Networked Embedded Programming Languages

The Evolution of embedded programming languages, C,C++ and the use Java, C#, .Net as programming languages for networked embedded systems.

• Software Development Techniques

Quality Assurance Techniques, Peer Review Processes, Peer programming Agile Methodologies, Extreme Programming, Documentation Standards, Release/Version and Source Management

• Embedded Hardware Platforms

Embedded platforms, Wireless Sensor Nodes, Set-Top Boxes, PDAs, Mobile Phone platforms

• Embedded Software Platforms

Programming Platforms such as : - Windows Mobile, Embedded Linux, Virtual Machine approaches - J2SE, J2ME

• Interfacing External Networking Interfaces

Examination of interfacing an external networking protocol or interface such as Bluetooth or Zigbee with the programming platform

• Programming Languages/Techniques

High Level Programming Language such as Java as applied to a Embedded system, covering: the language, programming structures, interface libraries and embedded application restrictions

Assessment Breakdown	%
Course Work	60%
End of Semester Formal Examination	40%

	Outcome addressed	% of total	Assessment Date
Formal End-of-Semester Examination	1,4	40%	Semester End

Coursework Breakdown				
Type	Description	Outcome addressed	% of total	Assessment Date
Written Report	Mini project to identify the programming platform and configure the tool chains for an embedded application	1,2	30	Week 6
Project	Team Project to implement an embedded software component with a wireless interface, including a report on choices and technologies evaluated.	3,4	30	Week 12

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



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

Recommended Book Resources

- Timothy J. Thompson, C Bala Kumar, Paul Kline 2008, *Bluetooth Application Programming with the Java APIs Essentials Edition*, Morgan Kaufmann [ISBN: 0123743427]

Supplementary Book Resources

- Jonathan Knudsen 2003, *Wireless Java: Developing with J2ME*, 2nd Ed Ed., Apress [ISBN: 1590590775]

Other Resources

- Web Documents/Papers: Sun Microsystems 2008, *Java Documentations*
<http://java.sun.com/reference/docs/>