



Institiúid Teicneolaíochta Chorcaí
Cork Institute of Technology

Distributed Embedded Software

Module Details

Short Title:	Distributed Embedded Software	DRAFT
Full Title:	Distributed Embedded Software	
Module Id:	4664	
Official Code:		
	NFQ Level:	9
	ECTS Credits:	5

Coordinator:	FERGUS O REILLY
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Description:	This module will allow the student to design and develop software systems using distributed embedded programming concepts and to programme embedded systems within a wider network.
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Learning Outcomes:

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

1. Design and implement a networked programme using client/server principles
2. Critically evaluate, select and implement database connectivity models for embedded systems
3. Design, develop and operate software systems to remotely gather data in a distributed embedded application
4. Select and interface appropriate middleware models and components using the programming definition models and languages
5. Critically evaluate trends and developments in middleware to select the most appropriate for a particular application and future proof system designs

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

- **Distributed Programming Principles**
Client/Server Principles and applications. Distributed/Networking programming with Java, RMI
- **Database Connectivity & Applications**
Connectivity Methods, Database structures, Query Methods, Connection Libraries: ODBC, JDBC
- **Distributed Data Gathering Applications**
Single Hop Gathering, Multi Hop Gathering, Tree construction algorithms, Lifetime optimisation/programming complexity considerations
- **Introduction to Middleware**
Distributed Objects & Components, Object Request Broker Architectures, CORBA, Component Models, Agent Models, Commercial implementations: Java Beans
- **Middleware Component/Service Models**
Rationale, Definitions of components and services, descriptor languages (XML) standard architectures: J2EE and EJB
- **Middleware and the Internet**
Web based distribution and interaction of components. Current trends and developments including SOAP (XML), JAX, Web Services, .Net

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

Coursework Breakdown				
Type	Description	Outcome addressed	% of total	Assessment Date
Project	Mini-Project to develop a network based programming problem solution	1,2,3	40	Week 5
Project	Team Project to design and deliver a middleware/networked software system for the overall course high level project	4,5	60	Sem End

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

Supplementary Book Resources

- Arno Puder, Kay Römer & Frank Pilhofer 2005, *Distributed Systems Architecture: A Middleware Approach*, Morgan Kaufmann [ISBN: 1558606483]

Other Resources

- Web Document: Sun Microsystems 2008, *The Java EE 5 Tutorial*
<http://java.sun.com/javaee/5/docs/tutorial/doc/index.html>