

new/minor/major

## Napier University Module Descriptor

Module Number  Credit Value :

Module Title

Module Leader

School  Date of Approval

**Indicative Student Workload** [in Notionally Efficient Student Hours (NESH)]

	Contact	Flexible	Weighting of Assessment Components		
Lectures	<input type="text"/>	<input type="text" value="24"/>	Supervised	<input type="text"/>	%
Tutorials/Seminars	<input type="text"/>	<input type="text" value="0"/>	Continuous	<input type="text" value="100"/>	%
Practical	<input type="text"/>	<input type="text" value="12"/>	<b>Indicative Assessment Catalogue</b>	Week (s)	LO's Covered
Supervised assessment	<input type="text"/>	<input type="text" value="2"/>	<input type="text" value="Assessment 1"/>	<input type="text" value="4"/>	<input type="text" value="L1"/>
Student cent'd learning	<input type="text"/>	<input type="text" value="112"/>	<input type="text" value="Assessment 2"/>	<input type="text" value="8"/>	<input type="text" value="L2, L3"/>
Other (specify)	<input type="text"/>	<input type="text"/>	<input type="text" value="Assessment 3"/>	<input type="text" value="12"/>	<input type="text" value="L4, L5"/>
<b>TOTAL WORKLOAD</b>	<input type="text"/>	<input type="text" value="150"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

### Timetable Details:

**Prerequisite(s)** [400 characters, normally module numbers and titles]

Computer Systems 2, or equivalent.

### Aims of Module

The aims of the module are:

- A1. To develop a structured approach to analysing networks in an abstract way.
- A2. To develop an in-depth understanding of how data transfers from one computer to another over interconnected networks.
- A3. To outline the component parts of network programs and these can be used to design networking-related programs.
- A4. To illustrate methods used to implement security, and the main parameters involved.

**Learning Outcomes** [maximum 5, contained in 1000 characters]

- L1. To illustrate the key elements of network infrastructures, and how different networking technologies operate.
- L2. To develop a deep understanding of network addressing, and how networks can be subnetted.
- L3. To understand the fundamentals of network programming, and identify the key elements of a client/server and a peer-to-peer program.
- L4. To identify the key elements used to implement network security and methods used to overcome network intrusion.
- L5. To identify the main elements, and parameters involved, in networks which have mobile devices.

**Description of Module Content** [maximum 100 words contained in 500 characters]

- **Network fundamentals.** Topologies, networking elements (switches, routers, bridges, and so on), ARP, network infrastructure.
- **Networking types:** Ethernet, ATM, vLANs, VPNs, mobile networking, wireless networks.
- **Network addressing:** IP format, IP addressing, routing, subnetting, subnet design, subnet masks, IPv6, NAT.
- **Transport protocols.** TCP; UDP; Three-way handshaking; WinSock; Event-driven and object-oriented network programming; client/server programming; peer-to-peer programming.
- **Session layer programming.** Using typical session layer protocols, such as FTP and HTTP.
- **Security.** Security methods, firewalls and security equipment.

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**Notes** [maximum 340 characters]

Formal Examination Y/N - If yes, duration in Hrs/Mins : - No

LTA Approach:

The LTA will split into two main parts:

- **Academic material.** The academic part of the module will be delivered with an integrated teaching pack. This will include notes, related WWW material, presentation slides, lecture text, tutorials, and exercises. All the material will be also be available on-line.
- **Laboratory material.** This will involve an integrated lab development, where students follow set practical exercises.

The taught material will involve a mixture of traditional teaching, with slides, animations, and lectures, and a series of demonstrations of networking technology.

Students will be assessed using on-line assessments. The main elements of the tests will be:

- Tests will assess knowledge, analytical skills and design skills.
- On-line assessment results will be scaled to a normal distribution with an average mark of between 55% and 60%, with a typical standard deviation. Students will receive a graded mark in the form of A+ (100%), A, A-, B+, B, B-, C+, C, C- (40%), D, E and F (2.5%). The overall mark will be an average of the three assessments.
- Students who receive an overall mark of less than 40%, will be allowed to take an overall test which is a compilation of all the material. A pass in this test will gain a final mark of 40%.
- Students will be informed of their performance after each test.

Laboratory resources:

[1] Integrated multimedia package.

Indicative references:

- [1] Computer Networks and Distributed Systems, W.Buchanan, McGraw-Hill, ISBN: 0-07-709583-9.
- [2] Mastering Networks, W.Buchanan, Palgrave, ISBN: 0-333-748042.