

## NETW C7020: Internetworking

| Module Details           |  |
|--------------------------|--|
| Module Code:             | NETW C7020   |
| Full Title:              | Internetworking <b>APPROVED</b>  |
| Valid From::             | Semester 1 - 2019/20 ( June 2019 )   |
| Language of Instruction: | English  |
| Duration:                | 2 Semesters  |
| Credits::                | 10   |
| Module Owner::           | Paula Duffy  |
| Departments:             | Unknown  |
| Module Description:      | The aim of this module is to provide the student with a thorough knowledge of key networking technologies and have the ability to configure and troubleshoot Local Area and Wide Area Networks |

| Module Learning Outcome  |  |
|--|--|
| On successful completion of this module the learner will be able to:   |  |
| #  | Module Learning Outcome Description  |
| MLO1   | Discuss in detail, the IP protocol:- its operation, structure and addressing.  |
| MLO2   | Design, Calculate and apply IPv4 subnet masks and addresses to fulfil given network requirements.  |
| MLO3   | Explain static and dynamic routing, how link state and distance vector routing protocols operate, and be able to determine how a router will forward traffic based on the contents of a routing table. |
| MLO4   | Configure and troubleshoot routers in a LAN and WAN and use monitoring tools on an Ethernet LAN.   |
| MLO5   | Discuss the role and operation of the ICMP protocol in networking.   |
| MLO6   | Detail how spanning tree operates and outline the benefits of it.  |
| MLO7   | Configure and troubleshoot Switches, Vlans, Spanning Tree Protocol and Trunking.   |
| MLO8   | Outline the purpose and operation of Transport Layer Protocols.  |
| MLO9   | Configure and troubleshoot DHCP and DNS.   |
| Pre-requisite learning   |  |
| <b>Module Recommendations</b><br><i>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 DkIT module(s) it also allows for learning (in another module or modules) which is equivalent to the learning specified in the named module(s).</i> |  |
| No recommendations listed  |  |

| Module Indicative Content  |
|--|
| <b>IP addressing</b><br>IP address review, subnetting and VLSM.  |
| <b>Routing Concepts</b><br>Operations of a router, routing tables and route lookup process.                          |
| <b>Static and default routing</b><br>Understand, configure, troubleshoot and implement static and dynamic routing.   |
| <b>Distance vector routing protocols</b><br>Configure, troubleshoot and implement distance vector routing protocols. |
| <b>Link State routing protocols</b><br>Configure, troubleshoot and implement link state routing protocols.           |
| <b>Transport Layer Protocols</b><br>TCP and UDP.   |
| <b>Introduction to Switched Networks</b><br>Basic switching concepts and configuration.                              |
| <b>VLANs</b><br>Introduction to VLAN concepts, VLAN configuration and troubleshooting, Inter-VLAN routing.           |
| <b>LAN redundancy</b><br>Understand and describe spanning tree technologies.   |
| <b>Application Technologies</b><br>Configure and troubleshoot DHCP and DNS.  |

| Module Assessment         |        |
|---------------------------|--------|
| Assessment Breakdown      | %      |
| Course Work               | 40.00% |
| Final Examination         | 60.00% |
| Module Special Regulation |        |
|                           |        |

## Assessments

| Full Time On Campus   |                       |                  |                 |
|---|-----------------------|------------------|-----------------|
| Course Work   |                       |                  |                 |
| Assessment Type   | Class Test            | % of Total Mark  | 10              |
| Marks Out Of  | 100                   | Pass Mark        | 40              |
| Timing  | Week 13               | Learning Outcome | 1,2,3,4         |
| Duration in minutes   | 120                   |                  |                 |
| Assessment Description<br>A practical evaluation of the students ability to configure and troubleshoot an Internetwork    |                       |                  |                 |
| Assessment Type   | Class Test            | % of Total Mark  | 5               |
| Marks Out Of  | 100                   | Pass Mark        | 40              |
| Timing  | Week 13               | Learning Outcome | 1,2,3           |
| Duration in minutes   | 120                   |                  |                 |
| Assessment Description<br>Wriiten test to assess knowledge of IP and routing at the end of semester 1.                    |                       |                  |                 |
| Assessment Type   | Continuous Assessment | % of Total Mark  | 5               |
| Marks Out Of  | 100                   | Pass Mark        | 40              |
| Timing  | Every Second Week     | Learning Outcome | 1,2,3,4,5       |
| Duration in minutes   | 60                    |                  |                 |
| Assessment Description<br>Biweekly short assessments used to monitor students progress commencing in week 3               |                       |                  |                 |
| Assessment Type   | Class Test            | % of Total Mark  | 5               |
| Marks Out Of  | 100                   | Pass Mark        | 40              |
| Timing  | Week 20               | Learning Outcome | 3,5,9           |
| Duration in minutes   | 120                   |                  |                 |
| Assessment Description<br>Class test in week 20   |                       |                  |                 |
| Assessment Type   | Class Test            | % of Total Mark  | 15              |
| Marks Out Of  | 100                   | Pass Mark        | 40              |
| Timing  | Week 26               | Learning Outcome | 1,2,3,4,5,6,7,9 |
| Duration in minutes   | 120                   |                  |                 |
| Assessment Description<br>A practical evaluation of the students ability to implement switching and routing technologies. |                       |                  |                 |
| No Project  |                       |                  |                 |
| No Practical  |                       |                  |                 |
| Final Examination   |                       |                  |                 |
| Assessment Type   | Formal Exam           | % of Total Mark  | 60              |
| Marks Out Of  | 100                   | Pass Mark        | 40              |
| Timing  | End-of-Semester       | Learning Outcome | 1,2,3,4,5,6,7,8 |
| Duration in minutes   | 180                   |                  |                 |
| Assessment Description<br>End of year formal exam   |                       |                  |                 |

| Part Time On Campus    |            |                         |         |  |
|------------------------|------------|-------------------------|---------|--|
| Course Work            |            |                         |         |  |
| <b>Assessment Type</b> | Class Test | <b>% of Total Mark</b>  | 10      |  |
| <b>Marks Out Of</b>    | 0          | <b>Pass Mark</b>        | 0       |  |
| <b>Timing</b>          | Week 13    | <b>Learning Outcome</b> | 1,2,3,4 |  |

|  |                       |                         |               |
|--|-----------------------|-------------------------|---------------|
| <b>Duration in minutes</b>   | 0                     |                         |               |
| <b>Assessment Description</b><br>A practical evaluation of the students ability to configure and troubleshoot an Internetwork  |                       |                         |               |
| <b>Assessment Type</b>   | Continuous Assessment | <b>% of Total Mark</b>  | 5             |
| <b>Marks Out Of</b>  | 100                   | <b>Pass Mark</b>        | 40            |
| <b>Timing</b>  | Every Second Week     | <b>Learning Outcome</b> | 1,2,3,4,5     |
| <b>Duration in minutes</b>   | 0                     |                         |               |
| <b>Assessment Description</b><br>Biweekly short assessments used to monitor students progress commencing in week 3   |                       |                         |               |
| <b>Assessment Type</b>   | Class Test            | <b>% of Total Mark</b>  | 5             |
| <b>Marks Out Of</b>  | 100                   | <b>Pass Mark</b>        | 40            |
| <b>Timing</b>  | Sem 1 End             | <b>Learning Outcome</b> | 1,2,3         |
| <b>Duration in minutes</b>   | 60                    |                         |               |
| <b>Assessment Description</b><br>Written test to assess knowledge of IP and routing at the end of semester 1.  |                       |                         |               |
| <b>Assessment Type</b>   | Class Test            | <b>% of Total Mark</b>  | 5             |
| <b>Marks Out Of</b>  | 100                   | <b>Pass Mark</b>        | 40            |
| <b>Timing</b>  | Week 20               | <b>Learning Outcome</b> | 3,5,9         |
| <b>Duration in minutes</b>   | 60                    |                         |               |
| <b>Assessment Description</b><br>Class test in week 20   |                       |                         |               |
| <b>Assessment Type</b>   | Class Test            | <b>% of Total Mark</b>  | 15            |
| <b>Marks Out Of</b>  | 100                   | <b>Pass Mark</b>        | 40            |
| <b>Timing</b>  | Week 26               | <b>Learning Outcome</b> | 1,2,3,4,6,7,9 |
| <b>Duration in minutes</b>   | 120                   |                         |               |
| <b>Assessment Description</b><br>A practical evaluation of the students ability to implement switching and routing technologies.   |                       |                         |               |
| No Project   |                       |                         |               |
| No Practical   |                       |                         |               |
| <b>Final Examination</b>   |                       |                         |               |
| <b>Assessment Type</b>   | Formal Exam           | <b>% of Total Mark</b>  | 60            |
| <b>Marks Out Of</b>  | 100                   | <b>Pass Mark</b>        | 40            |
| <b>Timing</b>  | End-of-Semester       | <b>Learning Outcome</b> | 1,2,3,5,6,7,8 |
| <b>Duration in minutes</b>   | 180                   |                         |               |
| <b>Assessment Description</b><br>Final exam  |                       |                         |               |
| <b>Reassessment Requirement</b>  |                       |                         |               |
| <b>Reattendance</b><br><i>The assessment of this module is inextricably linked to the delivery. Therefore reassessment on this module will require the student to reattend (i.e. retake) the module in its entirety.</i> |                       |                         |               |

## Module Workload

### Workload: Full Time On Campus

| <i>Workload Type</i> | <i>Contact Type</i> | <i>Workload Description</i> | <i>Frequency</i> | <i>Average Weekly Learner Workload</i> | <i>Hours</i> |
|----------------------|---------------------|-----------------------------|------------------|--|--------------|
| Lecture              | Contact             | No Description              | Every Week       | 1.00                                   | 1            |
| Tutorial             | Contact             | No Description              | Every Week       | 1.00                                   | 1            |
| Practical            | Contact             | No Description              | Every Week       | 2.00                                   | 2            |
| Directed Reading     | Non Contact         | No Description              | Every Week       | 1.00                                   | 1            |
| Independent Study    | Non Contact         | No Description              | Every Week       | 3.00                                   | 3            |
|                      |                     |                             |                  | Total Weekly Learner Workload          | 8.00         |
|                      |                     |                             |                  | Total Weekly Contact Hours             | 4.00         |

### Workload: Part Time On Campus

| <i>Workload Type</i> | <i>Contact Type</i> | <i>Workload Description</i> | <i>Frequency</i> | <i>Average Weekly Learner Workload</i> | <i>Hours</i> |
|----------------------|---------------------|-----------------------------|------------------|--|--------------|
| Lecture              | Contact             | No Description              | Every Week       | 1.00                                   | 1            |
| Tutorial             | Contact             | No Description              | Every Week       | 1.00                                   | 1            |
| Practical            | Contact             | No Description              | Every Week       | 2.00                                   | 2            |
| Directed Reading     | Non Contact         | No Description              | Every Week       | 1.00                                   | 1            |
| Independent Study    | Non Contact         | No Description              | Every Week       | 3.00                                   | 3            |
|                      |                     |                             |                  | Total Weekly Learner Workload          | 8.00         |
|                      |                     |                             |                  | Total Weekly Contact Hours             | 4.00         |

## Module Resources

### *Recommended Book Resources*

Behrouz A Forouzan. (2012), Data Communications and Networking, 5e. McGraw-Hill Higher Education, [ISBN: 0071315861].

### *This module does not have any article/paper resources*

### *Other Resources*

Website, Cisco Inc.. Home Page,  
<http://www.cisco.com>