Learner Guide 2022
Ethics and Network Architecture
ENA412

CTU
training solutions

Private
Tertiary
Education

Table of Contents

How to use the guide:

The guide will provide an overview of the syllabus and will deliver the learning outcomes of the module. It will indicate each major topic that will be covered, as well as the learning outcomes of each topic.

The study guide is NOT a replacement of textbooks and should be used in conjunction with the required textbooks.

At the end of each study unit there will be a summary, followed by a number of self-assessment questions. These questions will assist you to prepare for the tests and exams. The following icons will be used in the study guide:

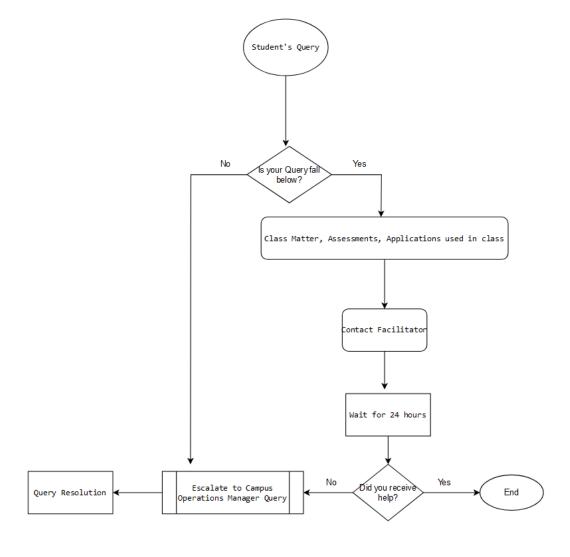|	
	Indicates the sections in the prescribed textbook that the student needs to study
	Indicates activities to be completed
	Indicates group activities to be completed
	Indicates exercises to be completed
	Indicates revision questions to be completed
	Indicates projects to be completed

Introduction

Welcome to Ethics and Network Architecture - ENA412 module. Ethics and Network Architecture is defined as the ethical, physical and logical design of the software, hardware, protocols, and media of the transmission of data. Further, ENA412 describes the field of ethics when applied to the behaviour of software developers.

ICT Programming Department Information

The Programming Department is part of the School of Information Technology, which focuses on providing comprehensive and innovative ICT education, training, and research programs to benefit both the industry and society at large. Our department is committed to fostering Passion, Quality, and Professionalism in all aspects of programming and IT education.

Query Resolution Structure:

```
                        ┌─────────────────┐
                        │  Student's Query │
                        └─────────────────┘
                                 │
                                 ▼
        No              ◇ Is your Query fall ◇      Yes
   ┌────────────────────    below?    ────────────────────┐
   │                        ◇─────────◇                    ▼
   │                                        ┌──────────────────────────────────────────┐
   │                                        │ Class Matter, Assessments, Applications   │
   │                                        │           used in class                   │
   │                                        └──────────────────────────────────────────┘
   │                                                        │
   │                                                        ▼
   │                                              ┌──────────────────┐
   │                                              │ Contact Facilitator│
   │                                              └──────────────────┘
   │                                                        │
   │                                                        ▼
   │                                              ┌──────────────────┐
   │                                              │  Wait for 24 hours │
   │                                              └──────────────────┘
   │                                                        │
   │                                                        ▼
┌──────────────┐   ┌──────────────────────┐   No  ◇ Did you receive ◇  Yes  ┌──────┐
│    Query     │◄──│  Escalate to Campus   │◄──────◇     help?      ◇──────►│ End  │
│  Resolution  │   │ Operations Manager    │       ◇────────────────◇       └──────┘
│              │   │      Query            │
└──────────────┘   └──────────────────────┘
```

The College/Department's contact information per Campus is as follows: (This should be followed when there is a query)

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Purpose of the module

The purpose of this module is to give a background in computer networks mechanisms and advanced concepts used in the design of protocols and network architectures. These mechanisms include protocols and a wide range of technologies either for wired networks or wireless networks. Further, the module will help students to carefully review the social costs and moral problems that have been triggered by the advancement of technology that support this vast information network. Moreover, the module will also stimulate the reader's reflection on the broad issues of Internet governance and its control by the state.

Contact Hours and Indicative Student Workload

Proposed Roll Out Strategy	Credits	Total Notional Hours	Number of	Theory Hours	Practical Hours	Total Contact Sessions Total Hours per week	Formative Assessments (45%):	Summative Assessments (15%): Total Hours
Semester	36	360	13	8	7	15	12	10

Teaching and Learning Methods

Lectures, Flipped Classroom, Webinars, Group and Research, practical classes (role play), and Gamification.

Module Resources

The module introduction with the facilitator will cover:
- Overview of the module, including tasks and activities – expectations
- Timetable
- The Learner Guide
- The Learner Electronic Portfolio of Evidence

- Practical's
- Research
- Group activities
- LABS
- International exams (if applicable)
- Assessments
- The importance of completing all tasks in the EPoE; the neat and orderly submission of evidence in the EPoE; all forms completed and signed
- WIL Component
- The Summative Assessment
- Programme Assessment timetable schedule
- Assessment Policy
- Self-Study time

Please note: Hand out and submission days are clearly indicated on the lesson planner. Students neglecting to submit projects by stated submission days will be penalized as per assessment policy

The semester is divided in sixteen (16) weeks of formal class time. Class sessions are divided into the theoretical, practical, group assignments and research sessions. As part of students' development, there will also be homework as given by the trainer

Prescribed Resources

Prescribed reading:

- Title: Cyberethics, 6th Edition
  ISBN: 9781284081411
- Title: Networking Fundamentals
  ISBN: 9781838643508

Recommended Additional Resources

- CompTIA Network+ Certification Study Guide, Seventh Edition (Exam N10-007), 7th Edition
- 97 Things About Ethics Everyone in Data Science Should Know

Textbook(s)

- Title: Networking Fundamentals
  ISBN: 9781838643508

Video(s)

- Network
- Ethical Issues on Information Technology and Intellectual Property

Software

- N/A

Webinars

- N/A

Assessment Details

The students will need a pass mark of 80% on the Prelim exam to qualify for admission to the international certification exams.

Formative assessment breakdown

Formative 1	Formative 2	Formative 3
Weighting: 33%	Weighting: 33%	Weighting: 34%
Open Book	Open Book	Group Activities
Theory and Practical	Theory and Practical	Theory and Practical

Summative assessment:

Theory and Practical exam
50%

Formative assessments (50%) + Summative assessment (50%) = Final mark

Assessment Preparation Guidelines

	Format of the Assessment	Resources required	Learning Units covered
Formative Assessment 1:	Theory and Practical oriented	Campus Online and O'Reilly Textbook	Unit 1: The Internet and Ethical Values Unit 2: Regulating and Governing the Internet Unit 3: Understanding Local Area Networking Unit 4: Defining Networks with the OSI Model

			Unit 5: Understanding Wide Area Networks Unit 6: Understanding Internet Protocol
Formative Assessment 2:	Theory and Practical oriented	Campus Online and O'Reilly Textbook	Unit 7: Free Speech and Content Controls in Cyberspace Unit 8: Intellectual Property in Cyberspace Unit 9: Implementing TCP/IP in the Command Line Unit 10: Working with Networking Services Unit 11: Understanding Wide Area Networks Unit 12: Defining Network Infrastructure and Network Security
Formative Assessment 3:	Theory and Practical oriented	Campus Online and O'Reilly Textbook	Unit 10: Working with Networking Services Unit 11: Understanding Wide Area Networks Unit 12: Defining Network Infrastructure and Network Security
Summative Exam	Theory and Practical oriented	COLCampus and O'Reilly Textbook	From Unit 1 to Unit 12

Assessment Release and Submission Week

Formative assessment:	Release Week	Submission Week
Formative Assessment 1	Week 1	Week 4
Formative Assessment 2	Week 5	Week 8
Formative Assessment 3	Week 8	Week 11

International Exam:	Boot camp & Prelim	International

N/A	N/A	N/A
Summative assessment:	**Release Week**	**Submission Week**
Summative Assessment	Week 17	Week 18

Please note – There are two (2) steps in the submission process.

- Step 1: Required evidence in the specified formats are submitted on COL Campus to the designated assignment description.

- Step 2: Complete and submit document of authenticity for every formative and summative assessment submitted.

Assessment Strategy

The following assessment activities are applicable to each module:
- Knowledge assessments
- Practical / Research Assignments
- CCFOs (Critical Cross Field Outcomes) / Simulated case studies
- Work Integrated Logbooks

Progression

Students need to achieve a minimum final mark of 70%, to be deemed competent. A final mark of less than 70%, deems a student to fail and the student will be required to repeat the module in the following academic year.

Weekly Planner

Week	Learning Units to be covered	Resources required	Class activity
Week 1 to Week 6	Unit 1: The Internet and Ethical Values Unit 2: Regulating and Governing the Internet Unit 3: Understanding Local Area Networking Unit 4: Defining Networks with the OSI Model Unit 5: Understanding Wide Area Networks Unit 6: Understanding Internet Protocol	Campus Onlines and Prescribed Textbook (O'Reilly)	Group Activities on Campus Online (GA1 and GA2)
Week 7 to Week 10	Unit 7: Free Speech and Content Controls in Cyberspace Unit 8: Intellectual Property in Cyberspace	Campus Onlines and Prescribed Textbook (O'Reilly)	Group Activities on Campus Online (GA3 and GA4)

	Unit 9: Implementing TCP/IP in the Command Line Unit 10: Working with Networking Services Unit 11: Understanding Wide Area Networks Unit 12: Defining Network Infrastructure and Network Security		
Week 11 to Week 11	From Unit 1 to Unit 12	Campus Online and Prescribed Textbook (O'Reilly)	Revision and Summative

Module Content

LU 1	**The Internet and Ethical Values**
	• Cyberethics and the "Law of the Horse" • Ethical Values and the Digital Frontier • Postscript on Moral Theory • Normative Principles
LU 2	**Regulating and Governing the Internet**
	• The Internet's Current Architecture • Net Neutrality • The World Wide Web • Gatekeepers and Search Engines • Social Networking • Internet Governance • Contested Sovereignty in Cyberspace
LU 3	**Understanding Local Area Networking**
	Learning Objectives: • Examining Local Area Networks, Devices, and Data Transfer • Identifying Network Topologies and Standards
LU 4	**Defining Networks with the OSI Model**
	Learning Objectives: • Understanding OSI Basics • Defining the Communications Subnetwork • Defining the Upper OSI Layers

LU 5	**Understanding Wide Area Networks**
	Learning Objectives: • Recognizing Wired Networks and Media Types • Understanding Wireless Networks
LU 6	**Free Speech and Content Controls in Cyberspace**
	Learning Objectives: • Speech and Internet Architecture • Pornography in Cyberspace • Hate Speech and Online Threats • Anonymous Speech • The Ethics of Blogging • Spam as Commercial Free Speech • Government Censorship and the Fate of Political Speech
LU 7	**Intellectual Property in Cyberspace**
	Learning Objectives: • Background on Intellectual Property • Issues for the Internet and Networking Technologies • Digital Books and E-Books
LU 8	**Understanding Internet Protocol**
	Learning Objectives: • Working with IPv4 • Working with IPv6
LU 9	**Implementing TCP/IP in the Command Line**
	Learning Objectives: • Using Basic TCP/IP Commands • Working with Advanced TCP/IP Commands
LU 10	**Working with Networking Services**
	Learning Objectives: • Setting Up Common Networking Services • Defining More Networking Services • Defining Name Resolution Techniques
LU 11	**Understanding Wide Area Networks**

	Learning Objectives: • Understanding Routing • Understanding Quality of Service (QoS) • Defining Common WAN Technologies and Connections
LU 12	***Defining Network Infrastructure & Network Security***
	Learning Objectives: • Understanding Networks Outside the LAN • Configuring VPN Connections and Authentication • Understanding Security Devices and Zones

Students will complete 4 group activities for this module. The group activities will be available on Campus Online and release in a set of 2. The first 2 will be released in between week 1 and week 6 and the last two will further be released between week 7 and week 10 with formative assessment 2.

Question 1

What is the right standard for determining an online threat, and why is this issue more complicated in the world of interactive social media?

Question 2

Briefly discuss when is a Facebook Post a Real Threat?

Question 3

Complete Chapter 3 and 4 SELF TEST of CompTIA Network+ Certification Study Guide, Seventh Edition 7th Edition
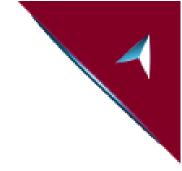
Revision will take place in Week 13

Twitter, Free Speech, and Terrorism

1. How do you assess Twitter's broad free speech policies? Visit Twitter.com/rules and take a look at the company's "content boundaries." Do you think these are too broad, too narrow, or just right?

2. Should the company be more proactive in removing objectionable content that violates its policies? [Chapter 4 and 5 of Cyberethics, 6th Edition)]

Bibliography

Hofmann, M. and Beaumont, L.R., 2005. Content networking: architecture, protocols, and practice. Elsevier.

Spinello, R., 2010. Cyberethics: Morality and law in cyberspace. Jones & Bartlett Learning.

West, J., 2021. CompTIA Network+ guide to networks. Cengage Learning.