

Diploma of Cybersecurity (LDCS)

Course Outline

Version: 1

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Diploma of Cybersecurity (LDIT)

1. Summary Information

Program Title	Diploma of Cybersecurity (LDCS)
Home campus:	Bundoora
Award “ownership”	La Trobe College Australia
Year and trimester of introduction	Trimester 1 2024
Total Credit Points	120 Credit points
Mode of Delivery	Face to Face on Campus
Intake Trimesters	Trimester 1 and 2 and 3
Duration	28 weeks (Full time) or equivalent
Articulation options	La Trobe University: Bachelor of Information Technology Bachelor of Cybersecurity

2. Course Overview

The Diploma of Cybersecurity provides a broad introduction to computing, after which you will progress to a more specialised area during your degree such as artificial intelligence, cloud analytics, data analytics, information systems, network engineering and software engineering.

3. Course learning outcomes

CLO	Diploma of Cybersecurity Learning Outcomes
1	Learn the basic principles and best practices of cybersecurity. Understand how it mitigates cyber vulnerabilities and protects confidential information.
2	Gain evaluation techniques to assess the security of network configuration and apply these skills to defend against network-based threats.
3	Explore the widely used Python programming language and learn how algorithms are used to solve cybersecurity challenges.
4	Study the architecture of computer networks and the internet, and examine protocols and services used in the defence of online information.
5	Learn the frameworks for cybersecurity governance and risk mitigation based on your emerging understanding of business strategy and risk appetite.

4. Level of Award

This is a Higher Education, Australian Qualifications Framework Level AQF 5.

5. Program Duration

The program can be completed in two or three trimesters.

6. Entry requirements

(a) Academic Entry Requirements:

- Completion of Year 12 with satisfactory ATAR score or completion of Foundation Studies program.

(b) Minimum age requirement:

- 17 years

(c) English language requirement:

- IELTS Academic overall score of 5.5 (no band less than 5.5)
- Language Development Module is compulsory for International Students with an IELTS score under 6

(d) Pre-requisite / assumed knowledge:

- Units 3 and 4: satisfactory completion of any English.

7. Program approval

La Trobe College Australia Academic Board and TEQSA.

8. Program Structure

Trimester	Unit Code	Name of Unit	Core / Elective	Credit points
1	LTM1AIM	Academic Integrity Module	Required	0
1	LDM100	Language Development Module	Required*	0
1	SSTA1DCT	Data-based Critical Thinking	Core	15
1	TCSE1ICB	Introduction to Cybersecurity	Core	15
1	TCSE1IIT	Inside Information Technology	Core	15
2	TCSE1PEXS	Programming for Engineers and Scientists	Core	15
2	TCSE2NEF	Network Engineering Fundamentals	Core	15
1 or 2	TCSE1CPR	Cyber Security in Practice	Core	15
1 or 2	HSTM1001	Making Sense of Data	Elective	15
1 or 2	BMGT1OBE	Organisational Behaviour	Elective	15

* Language Development Module is compulsory for International Students with an IELTS score under 6.

a) Recommended Study Plans:

All diploma students enrol into an online, zero credit point module, LTM1AIM Academic Integrity Module. This module is compulsory, and in addition to your eight required subjects. All students must complete this module in their first trimester.

An elective is a subject from any other diploma course.

Recommended study plan to complete your diploma in three trimesters:

Year 1 (Diploma)	LTM1AIM Academic Integrity Module Compulsory online module that must be completed in the first trimester. LDM 100 is compulsory for International Students with an IELTS score under 6			
	First Trimester	SSTA1DCT Data Based Critical Thinking	TCSE1ICB Introduction to Cybersecurity	TCSE1CPR
	Second Trimester 2	TCSE1IIT Inside Information Technology	TCSE1PEXS Programming for Engineers and Scientists	ELECTIVE
	Third Trimester	TCSE2NEF Network Engineering Fundamentals	ELECTIVE	

Recommended study plan to complete your diploma in two trimesters:

Year 1 (Diploma)	LTM1AIM Academic Integrity Module Compulsory online module that must be completed in the first trimester. LDM 100 is compulsory for International Students with an IELTS score under 6				
	First Trimester	SSTA1DCT Data Based Critical Thinking	TCSE1ICB Introduction to Cybersecurity	TCSE1IIT Inside Information Technology	TCSE1CPR
	Second Trimester	TCSE1PEXS Programming for Engineers and Scientists	TCSE2NEF Network Engineering Fundamentals	ELECTIVE	ELECTIVE

b) Overview of Subjects:

SSTA1DCT Data-based Critical Thinking

This subject helps the student evaluate data-based evidence encountered in everyday life. It provides the fundamental numeracy skills required by business people, lawyers, nurses, journalists, social scientists, teachers and other professionals who need to evaluate data-based arguments, whether found in newspapers, television or on-line websites. This is achieved by a combination of studying newsworthy topics introduced in lectures, computer laboratory classes which encourage engagement with others and on-line quizzes that assess numeracy skills. The four themes covered in this subject are gathering useful data, turning data into information, probability and from data to decision making. These themes are designed for students who do not have any background in mathematics, statistics or probability.

Subject Learning Outcomes

1. Critically analyse the results from statistical-based research studies in regards to sampling and study design.
2. Convert data into information by using appropriate numerical and graphical summaries.
3. Calculate probabilities by applying the basic rules of probability and recognise some of the misperceptions of probability.
4. Identify and apply basic statistical inference methods for unbiased decision making.
5. Compute, display and interpret numerical and graphical summaries and basic statistical inference procedures using the Excel software package.
6. Apply basic numeracy skills to the calculation of various quantities in statistics.

Class requirements

Timetabled hours per week (4 hours)

- One 2-hour lecture/tutorial per week
- One 2-hour lab/workshop per week

Assessments

Assessment Piece	Weighting	Week Due (exact date on LMS)	Subject Learning Outcome(s)	Course Learning Outcome(s)
Numeracy Quizzes	10%	12	10%	4,5
Five Assignments	30%	4,6,8,10,12	30%	4,5
Examination	60%	13 Exam week	60%	4,5

TCSE1ICB Introduction to Cybersecurity

In the modern Internet era, industries and organizations need to be prepared to defend against cyber threats and attacks. Stakeholders should be familiar with basic principles and best practices of cybersecurity to protect their businesses and personal information. In this subject, these principles and strategies for future cyber security are explored. Key topics include information security, ethical and legal practices, mitigating cyber vulnerabilities, and the process of incident response and analysis. The subject introduces broad discipline of cybersecurity and outlines how to ensure the privacy, reliability, confidentiality and integrity of information systems and fight against cyber threats and risks.

Subject Learning Outcomes

1. Describe key emerging cybersecurity practices, regulations, and standards.
2. Demonstrate foundation skills in safeguarding data, systems, and networks.
3. Compare approaches for cyber risk management used to address real world problems.
4. Identify approaches to digital forensics, application security and network security in the context of cyberspace.
5. Show understanding of data security, web security and cryptography and possible solutions to cyber threat.

Class requirements

Timetabled hours per week (4 hours)

- One 2-hour lecture per week
- One 2-hour lab/workshop per week

Assessments

Assessment Piece	Weighting	Week Due (exact date on LMS)	Subject Learning Outcome(s)	Course Learning Outcome(s)
Malware Analysis	25%	4	1,2	1,2,3,5
Threat Assessment	25%	8	2,3,4	1,2,3,5
Assignment	30%	11	1,2,3,4	2,5
Final Quiz	10%	12	All	1,2,5
Weekly Labs	10%	2-12	All	1,2,3,5

TCSE1IIT Inside Information Technology

In this subject, students will be provided with a general and practical introduction to information technology for students in a range of disciplines. This subject will guide students to implement the IT skills to their field of study. It covers: fundamental principles of computer operation, the main hardware components of the computer, data storage and retrieval, introduction to system software, introduction to data communications, computer networks, the Internet; operating systems, file management systems, security, introduction to information systems; application software modules: spreadsheets, database packages, the World Wide Web.

Subject Learning Outcomes

1. Describe the functions of the main hardware and software components of a computer.
2. Design and construct basic web pages using HTML and style sheets to solve a practical problem in their field of study.
3. Develop and interpret simple database tables, queries and reports to solve practical problem in their field of study.
4. Solve practical problems in their field of study using knowledge gained during the lecture

Class requirements

Timetabled hours per week (4 hours)

- One 2-hour lecture per week
- One 2-hour lab/workshop per week

Assessments

Assessment Piece	Weighting	Week Due (exact date on LMS)	Subject Learning Outcome(s)	Course Learning Outcome(s)
Database Lab Assignment	20%	6	3,4	1,2,4
Web Development Assignment	20%	11	2,4	All
Theory Test (Online Quiz)	20%	12	1-4	1,2,3,5
Weekly Quizzes	20%	2-12	1-4	1,2,3,5
Weekly Lab Submissions	20%	Weeks 2-12	1-4	1,2,3,5

TCSE2NEF Networking Fundamentals

In this subject we introduce the architecture, structure, functions, components, and models of the Internet and other computer networks. We also look at OSI and TCP/IP layer models to examine the nature and roles of protocols and services at the application, network, data link, and physical layers. The fundamentals of IP addressing and basic concepts of Ethernet are also studied.

Subject Learning Outcomes

1. Describe the overall OSI model and how layers interact with adjacent layers in the model.
2. Identify functions of each OSI layer and apply this knowledge to build a Network.
3. Describe the evolution of Local Area Network (LAN) technology with focus on Ethernet based Layer 2.
4. Describe the network physical standards for different network scenarios.
5. Describe TCP/IP based network protocol suite and compare with OSI model.
6. Design and implement LAN IP address scheme.

Class requirements

Timetabled hours per week (4 hours)

- One 2-hour lecture per week
- One 2-hour lab/workshop per week

Assessments

Assessment Piece	Weighting	Week Due (exact date on LMS)	Subject Learning Outcome(s)	Course Learning Outcome(s)
Test 1	15%	7	1 - 5	2,5
Test 2	15%	12	1 - 5	2,5
Lab Exam	20%	11	6	2,5
Final Exam	50%	13	1 - 5	2,5

TCSE1PEXS Programming for Engineers and Scientists

In this subject students learn and apply fundamental programming concepts. Students analyse, design, construct, and document solutions to simple programming problems. Python programs are developed using online and desktop Python IDE and other tools.

Subject Learning Outcomes

1. Analyse a given problem and construct data structure and a logical solution.
2. Use appropriate programming tools to develop solutions in python code.
3. Accurately determine the output of a given python program.
4. Apply the 3 basic programming constructs of sequence, selection, and iteration.
5. Use basic data structures such as lists, sets and dictionaries.
6. Format and comment python code following rules and conventions.

Class requirements

Timetabled hours per week (4 hours)

- One 1-hour lecture per week
- One 3-hour lab per week

Assessments

Assessment Piece	Weighting	Week Due (exact date on LMS)	Subject Learning Outcome(s)	Course Learning Outcome(s)
Quizzes	25%	1-8	1 to 6	1,4
Assignment	5%	12	1 to 6	1,4
Progress Test	30%	9	1 to 6	1,3,4,5
Final Exam	40%	13	1 to 6	1,3,4,5

Suggested Electives

HSTM1001 MAKING SENSE OF DATA

This subject introduces students to modern data analytics, visualisation, and statistics. It equips students with the skills required to take advantage of powerful computing for the analysis and visualisation of complex data. These skills are used to solve problems in areas such as the biological sciences, medical sciences, agricultural sciences, nutrition, health sciences, education, and business. Students will become familiar with data visualisation and computing, descriptive statistics, statistical modelling, and data-based decision making. Using statistical computing packages is an integral part of this subject. This subject allows further study in second-year subjects in statistics and data science.

Subject Learning Outcomes

- 1.Convert data into useful information by using appropriate numerical and graphical summaries.
- 2.Calculate probabilities and other quantities from discrete and continuous probability distributions.
- 3.Identify and apply appropriate statistical inference methods for decision making.
- 4.Compute, display, and interpret numerical and graphical summaries, probabilities and various statistical inference procedures using one or more statistical software package(s).
- 5.Apply data visualisation skills and/or statistical knowledge in a chosen applied field of study.

Class requirements

Timetabled hours per week (6 hours)

- One 2-hour lecture per week
- One 2-hour tutorial per week
- One 2-hour lab per week

Assessments

Assessment Piece	Weighting	Week Due (exact date on LMS)	Subject Learning Outcome(s)	Course Learning Outcome(s)
Quiz	30%	2-7	1-4	4
Assignment	45%	7,10,12	3,4,5	4
Final Exam	25%	13	1-4	4
				4

BMGT1OBE Organisational Behaviour

Organisational Behaviour will introduce individual characteristics, interpersonal relationships, and group processes, as they relate to individual behaviour and outcomes in organisations. Organisational behaviour theory and concepts will be applied to current organisational problems relating to motivation, decision-making, teamwork, leadership, and diversity. In the workshops students will develop the capabilities to work effectively in teams and lead teams to achieve their goals.

Subject Learning Outcomes

1. Review your own interpersonal skills and self-diagnose strategies where improvement is desired.
2. Lead a multicultural team in defining and committing to the goals, roles and norms via which it can successfully achieve its objectives.
3. Manage conflict resolution within a team through negotiation and mediation.
4. Explain the forces that affect behaviour in organisations with reference to the theory of organisational behaviour.
5. Analyse and resolve contemporary organisational challenges through the application of the theory of organisational behaviour.

Class requirements

Timetabled hours per week (4 hours)

- One 2-hour lecture per week
- One 2-hour tutorial per week

Assessments

Assessment Piece	Weighting	Week Due (exact date on LMS)	Subject Learning Outcome(s)	Course Learning Outcome(s)
In Class Quizzes (10)	20%	2-11	1, 2, 4	1, 2, 4, 5
Individual Assignment	20%	6	1 & 3	1, 2, 4
Group Assignment	20%	9	2, 3, 4	1, 2, 4, 5
Individual Assignment	40%	12	3 & 4	1, 2, 4

TCSE1CPR Cybersecurity in Practice

Every organization/business that intends to protect itself from threats of cyberattacks needs to know current practices in cyber defence. This subject will broadly introduce the technologies including firewalls, intrusion detection systems, intrusion prevention systems, and honeypots that can be used to identify and mitigate threats. This subject will also introduce incident response process and simple ways to incorporate secure programming practices to make computer programs less vulnerable to attacks

Subject Learning Outcomes

1. Investigate, evaluate and apply current cybersecurity technologies that protect against cyber threats.
2. Describe the process of threat and vulnerability identification in cybersecurity environments.
3. Formulate and coordinate basic cyber incident responses.
4. Employ secure software design practices when working in teams.

Class requirements

The subject is delivered over a 12-week teaching period, consisting of 1 x 2-hour lecture per week and 1 x 2-hour tutorial per week.

Assessments

Assessment Piece	Weighting	Week Due (exact date on LMS)	Subject Learning Outcome(s)	Course Learning Outcome(s)
Assessment 1: Passwords as an identity validator	10%	2	1	1,2,5
Assessment 2: Responding to a data breach	15%	9	2	1,2,5
Assessment 3: Software vulnerabilities	25%	12	3	1,2,5
Weekly Lab Submissions	10%	2-12	1,2,3,4	1,2,5
Final Exam	40%	12	1,2,3,4	1,2,5

9. Rules for Program Completion

Students need to successfully complete 120 credit points comprising 5 core and 3 elective units.

10. Program articulations

Graduates of this program can articulate with credit for all of the 8 units into Bachelor of Cybersecurity and Bachelor of Information Technology and at La Trobe University.

Students must successfully pass all subjects with an average score of 60 in their diploma course in order to be accepted into the Bachelor of Cybersecurity. Students must successfully pass all subjects with an average score of 60 in their diploma course in order to be accepted into the Bachelor of Cybersecurity.

11. Facilities and Resources

Type of facilities and resources required	Explanation
Teaching rooms	<p>There is one lecture theatre (capacity 90) and three computer labs capacity 25.</p> <p>The college has seminar style classrooms that are designed as team-work hubs. Each room has audio visual equipment including, data projectors with multiple screens wireless microphones, visualisers, high speed Wi-Fi and desk-based power points.</p> <p>Seminar rooms:</p> <p>5 capacity 50 7 capacity 40 3 capacity 30 21 capacity 20</p>
Computer Laboratory	<p>Students have access to three dedicated computer laboratories and access to a shared computer hub. All are equipped to a standard equivalent to those provided at the partner University. This includes wireless computer access, printers and scanners. All computers contain a range of specialist software and the MS Office Suite. All hardware is replaced on a three-year cycle.</p> <p>Computer labs:</p> <p>2 capacity 20 2 capacity 30</p>
Library	<p>Students have access to the LTU library which supports ELICOS and pathways programs. The library facilities include a specific lending collection aligned to programs offered, student computers, quiet study areas, access to online resources and library staff for research assistance and direction.</p>

Type of facilities and resources required	Explanation
Learning Management System	<p>The Learning Management system (Moodle) contains all subject information for students including subject outline, assessments, tutorial activities, and collaborative learning activities. LTCA delivers all subjects using the face to face delivery mechanism, onsite for all students onshore on a student visa. For Domestic students, a blended learning model and approach is available stemming out of the transformation to online learning starting January 2020 due to the pandemic. A number of online learning tools have been added. These include, but are not limited to:</p> <ul style="list-style-type: none"> • Virtual classrooms • Synchronous and Asynchronous sessions • Interactive whiteboards • Discussion forums • Podcasts and screencasts • Embeddable external platforms (Kahoot, Socrative, Quizlet, H5P etc.)

12. Measurement of student outcomes

(a) Grading Scale

The Grading Scale is included in every course outline. The assessment grade is a measure of the extent to which the desired learning outcomes have been achieved in the units of the program. Grades the students achieve are descriptive rather than numeric and are officially defined as:

Grade	Percentage Range
A	80 - 100
B	70 - 79
C	60 – 69
D	50 - 59
N	0-49

(b) Student Feedback on Assessment Tasks

Students are typically provided with marking rubrics and sufficient feedback for formative assessments on how to improve in future assessments.

Students can also request a walkthrough for major assessment pieces to further clarify areas for improvement.

Feedback shall be provided verbally in class ,via Turn it in and may include Text ,Voice or Quick marks ,students shall receive feedback within two weeks of the assignment due date.

13. Articulation options

This diploma will provide students with the basic skills to enter the Cybersecurity and Information technology industries in an entry level position. With this Diploma students are eligible for entry to the second year of the Bachelor of Information Technology and Bachelor of Cybersecurity. Upon completion of the degree students are ready to register with professional bodies such as: Australian Computer Society (ACS).

14. Student Feedback on Assessment Tasks

Students are typically provided with marking rubrics and sufficient feedback for formative assessments on how to improve in future assessments.

Students can also request a walkthrough for major assessment pieces to further clarify areas for improvement. Feedback shall be provided verbally in class, via Turn it in and may include Text, Voice or Quick marks ,studetns shall receive feedback within two weeks of the assignment due date.