Unit Outline (Higher Education)

Institute / School:	Institute of Innovation, Science & Sustainability
Unit Title:	DATA ANALYTICS FOR CYBER THREAT INTELLIGENCE
Unit ID:	ITECH7614
Credit Points:	15.00
Prerequisite(s):	(ITECH5104 or ITECH7611)
Co-requisite(s):	Nil
Exclusion(s):	Nil
ASCED:	019903

Description of the Unit:

Security operations today involve massive cyberspace data, which includes not only networking data such as TCP/IP packet, system logs, URLs, HTML scripts, and Darknet traffic, but also data from e-commerce, m-commerce, e-mail and social media data such as facebook, Linkedin and Twitter data. This unit focuses on structured analysis in order to amplify existing cyber threat analytics skills with machine learning, natural language processing, data mining, and other artificial intelligence techniques.

Grade Scheme: Graded (HD, D, C, P, MF, F, XF)

Work Experience:

No work experience: Student is not undertaking work experience in industry.

Placement Component: No

Supplementary Assessment: Yes

Where supplementary assessment is available a student must have failed overall in the Unit but gained a final mark of 45 per cent or above, has completed all major assessment tasks (including all sub-components where a task has multiple parts) as specified in the Unit Description and is not eligible for any other form of supplementary assessment

Course Level:

Level of Unit in Course	AQF Level of Course					
	5	6	7	8	9	10
Introductory						
Intermediate						
Advanced					✔	

Learning Outcomes:

Knowledge:

K1. Articulate the importance and privacy and ethical implications of cyber data analytics for threat detection, incident response and prevention.

K2. Investigate information from domains, external datasets, transport layer security/secure sockets layer certificates.

K3. Discuss the implementation of cyber space intelligence through clustering, classification, prediction and association rule mining.

K4. Explore the usages of open-source and proprietary tools for computational cyber space data analytics.

K5. Evaluate computational data analytic skills in tactical and operational level of threat detection intelligence.

Skills:

S1. Identify and create intelligence requirements through practices such as threat modeling.

S2. Discover the different sources in cyber space to integrate adversary data for incident analytics.

S3. Develop threat intelligence to detect, forecast, and respond to targeted attacker or victim.

S4. Generate association rules to help with incident response and security operations.

S5. Apply system logs filtering to identify abnormal usage of system resources.

Application of knowledge and skills:

A1. Apply initiative and judgment to adapt algorithms to diverse contexts of cyber risks.

A2. Research and interpret appropriate solution developments for cyber security.

Unit Content:

Topics may include:

- Harvest multiple source cyber space data
- Filter system logs and detect compromise using key Windows events
- Identify internal pivoting activity using system logs
- Apply long tail analysis to identify abnormal program usage
- Automatic threat Intelligence extraction from unstructured sources
- Phishing Identification in social media and other platforms
- Vulnerability exploit prediction
- Cyber event forecasting by discovering signals from web
- Automatic identification of indicators of compromise
- Characterizing activity on the dark web
- Incident response facilitation using automatic text processing

FEDTASKS

Federation University Federation recognises that students require key transferable employability skills to

prepare them for their future workplace and society. FEDTASKS (**T**ransferable **A**ttributes **S**kills and **K**nowledge) provide a targeted focus on five key transferable Attributes, Skills, and Knowledge that are be embedded within curriculum, developed gradually towards successful measures and interlinked with cross-discipline and Co-operative Learning opportunities. *One or more FEDTASK, transferable Attributes, Skills or Knowledge must be evident in the specified learning outcomes and assessment for each FedUni Unit, and all must be directly assessed in each Course.*

FEDTASK attribute and descriptor		**Development and acquisition of FEDTASKS in the Unit**	
		Learning Outcomes (KSA)	**Assessment task (AT#)**
FEDTASK 1 Interpersonal	Students at this level will demonstrate an advanced ability in a range of contexts to effectively communicate, interact and work with others both individually and in groups. Students will be required to display high level skills in-person and/or online in: • Using and demonstrating a high level of verbal and non-verbal communication • Demonstrating a mastery of listening for meaning and influencing via active listening • Demonstrating and showing empathy for others • High order skills in negotiating and conflict resolution skills • Demonstrating mastery of working respectfully in cross-cultural and diverse teams.	Not applicable	Not applicable
FEDTASK 2 Leadership	Students at this level will demonstrate a mastery in professional skills and behaviours in leading others. • Creating and sustaining a collegial environment • Demonstrating a high level of self -awareness and the ability to self-reflect and justify decisions • Inspiring and initiating opportunities to lead others • Making informed professional decisions • Demonstrating initiative in new professional situations.	A1	AT1, AT2, AT3
FEDTASK 3 Critical Thinking and Creativity	Students at this level will demonstrate high level skills in working in complexity and ambiguity using the imagination to create new ideas. Students will be required to display skills in: • Reflecting critically to generate and consider complex ideas and concepts at an abstract level • Analysing complex and abstract ideas, concepts and information • Communicate alternative perspectives to justify complex ideas • Demonstrate a mastery of challenging conventional thinking to clarify complex concepts • Forming creative solutions in problem solving to new situations for further learning.	A1	AT1, AT2, AT3
FEDTASK 4 Digital Literacy	Students at this level will demonstrate high level skills in working in complexity and ambiguity using the imagination to create new ideas. Students will be required to display skills in: • Reflecting critically to generate and consider complex ideas and concepts at an abstract level • Analysing complex and abstract ideas, concepts and information • Communicate alternative perspectives to justify complex ideas • Demonstrate a mastery of challenging conventional thinking to clarify complex concepts • Forming creative solutions in problem solving to new situations for further learning.	K2	AT1, AT2

FEDTASK attribute and descriptor		Development and acquisition of FEDTASKS in the Unit	
		Learning Outcomes (KSA)	Assessment task (AT#)
FEDTASK 5 sustainable and Ethical Mindset	Students at this level will demonstrate high level skills in working in complexity and ambiguity using the imagination to create new ideas. Students will be required to display skills in: • Reflecting critically to generate and consider complex ideas and concepts at an abstract level • Analysing complex and abstract ideas, concepts and information • Communicate alternative perspectives to justify complex ideas • Demonstrate a mastery of challenging conventional thinking to clarify complex concepts • Forming creative solutions in problem solving to new situations for further learning.	S4, A1	AT1, AT2, AT3

Learning Task and Assessment:

Learning Outcomes Assessed	Assessment Tasks	Assessment Type	Weighting
K1 - K5, S1 - S5, A1 - A2	Participate in lectures and labs/tutorials, read and summarise theoretical and practical aspects of the unit.	Assignment(s)	20% - 30%
K1 - K5, S1 - S5, A1 - A2	Develop skills in the analysis and practical application of content introduced.	Project and Presentation(s)	30% - 50%
K1 - K5, S1 - S5, A1 - A2	Study course material, read and summarise theoretical aspects of the unit	Test/Examination(s)	30% - 40%

Adopted Reference Style:

APA

Refer to the library website for more information

Fed Cite - referencing tool