

Science, Technology, and Health Programs

ICT 212 – 3 – 5.5

Cybersecurity Analysis

New course

Rationale:

Business organizations are redefining their IT security postures away from a secure perimeter model to a much expanded toolbox that allows them to define secure operations end-to-end and to involve their entire workforces in security issues. New frameworks such as the zero-trust model have arisen. These changes to business structure result in changes to job offerings. ICT 212 provides ICT graduates with the opportunity to acquire the knowledge and skills needed to successfully compete for entry level positions in the areas of Security Operations, Cyber Security Analysis, and Information Security.

Calendar description:

This course introduces the student to an analytics-based approach to cybersecurity operations. It teaches core security skills needed for monitoring, detecting, investigating, and responding to security events. Industry-standard technologies, tools, regulations, and frameworks are applied to prepare for, monitor, detect, investigate, analyze and respond to security incidents. Theoretical concepts are practically applied to develop skills for securing and

Prerequisites:

ICT 127, ICT 137

Course outline:

Course Outline

Professor:

Office Location

Office Phone

Email

Credit Hours 3.0

Presentation format Lecture 3 hrs/wk, Lab 2.5 hrs/wk,

Prerequisite: ICT 127, ICT 137

Co-requisite N/A

Description:

This course introduces the student to an analytics-based approach to cybersecurity operations. It teaches core security skills needed for monitoring, detecting, investigating, and responding to security events. Industry-standard technologies, tools, regulations, and frameworks are applied to prepare for, monitor, detect, investigate, analyze, and respond to security incidents.

Final Exam	40%
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Assignments will consist of study guide and online assessment tasks based on the assigned reading.

	ARP Cache Poisoning Route Manipulation Password Wireless
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Describe potential weaknesses and vulnerabilities (including

	Resource exhaustion Traffic fragmentation Protocol-level misinterpretation Traffic substitution and insertion Pivoting
	Use packet captures for intrusion analysis
	Use Netflow as a tool for anomaly detection
	Use Netflow as a tool for data leak detection and prevention

Security Operations, Policies, and Procedures Models and standards for incident handling	Apply the Identity and Access Lifecycle
	Recognize and document an attack scope
	Prepare an incident response plan including: Preparation phase Detection and analysis phase Containment, Eradication, and Recovery phase Post-Incident Activity
	Given an incident, act as a member of a Computer Security Incident Response Team (CSIRT) in accordance with industry norms
	Explain the significance of compliance frameworks such as the Payment Card Industry Data Security Standard (PCI DSS) or standards regulating PII and PHI.
	Perform basic data and event analysis including normalizing data and mapping threat intelligence with DNS and other artifacts
	Explain a cyber attack using the Diamond Model of Intrusion
	Prepare an attack graph for a cyber incident according to the cyber kill chain model

NTEN DEPARTMENT POLICIES

NTEN Department Passing Grade Requirements Policy

Students must obtain a passing grade (at least 50%) in both the lecture/written component and the laboratory/practical component of the course. **If the student receives a failing grade (less than 50%) in either the lab or lecture component, the final mark for the whole course will be no more than 49%.**

NTEN

OKANAGAN COLLEGE POLICIES

Okanagan College Academic Integrity Policy:

Okanagan College requires that all students are informed of the Academic Integrity Policy included in the College Calendar which can be found at the following link:

<http://webapps-5.okanagan.bc.ca/ok/Calendar/AcademicIntegrity>

Okanagan College Student Conduct Policies:

Okanagan College requires that students are informed of acceptable Student Conduct Policies included in the College Calendar which can be found at the following link:

<http://webapps-5.okanagan.bc.ca/ok/Calendar/StudentConduct>

Implementation date: September 2021

Cost: N/A

Infrastructure and Computer Technology Diploma

Program revision:

Addition of courses

Resequencing of courses/program outline

Rationale:

The recent rise in the importance of cyber security to businesses, governments, and organizations has driven a review of market fit for ICT graduates. Current demand emphasizes an awareness of cyber security and this program

ICT 128 Scripting for Network and System Administrators	ICT 128 Scripting for Network and System Administrators	
One elective (3 credits)	One elective (3 credits)	
Extended Semester (2 weeks)	Extended Semester (2 weeks)	
ICT 199 Topics in Internetworking	ICT 199 Topics in Internetworking	
Second Year		
Semester Three		
ICT 207 Enterprise Telecommunications	ICT 207 Enterprise Telecommunications	
ICT 211 Virtualization for Enterprise System Administrators	ICT 211 Virtualization for Enterprise System Administrators	
	ICT 212 Cybersecurity Analysis	
ICT 217 Routing and Switching II	ICT 217 Routing and Switching II	
ICT 219 Linux Server Management	ICT 219 Linux Server Management	
Two electives (6 credits)	One elective (3 credits)	
Semester Four		
ICT 225 Internetwork Security I	ICT 225 Internetwork Security I	
ICT 227 Carrier Telecommunications		
ICT 223 Internet of Things	ICT 223 Internet of Things	
ICT 299 Network Project	ICT 299 Network Project	

Okanagan College to UBC Okanagan Electrical Engineering Bridge

Program revision:

Addition of courses

Removal of courses

Rationale:

UBC Okanagan has requested that we change the Math 212 Calculus III to Math 221 Introduction to Linear Algebra. This would better suit the math programs within the UBC Okanagan Civil Engineering program

Addition of courses:

MATH 221

Removal of courses:

MATH 212

Implementation date: August 2021

Cost: N/A

Okanagan College to UBC Okanagan Mechanical Engineering Bridge

Program revision:

Addition of courses

Removal of courses

Rationale:

The Mechanical Engineering Bridge students were taking a Calculus III course in the Bridge at OC, then taking a very similar Calculus III course once they got to UBC-O. This change will eliminate repeating Calc III. So, MATH 212 Calculus III is to be removed to avoid duplication at UBC-O.

UBC-O requires a higher level math course in the Bridge and it has been agreed that MATH 221 Introduction to Linear Algebra will be a suitable substitute for MATH 212. This change was initiated by UBC-O, as noted in the attached email from Dr. Yang Cao.

Addition of courses:

MATH 221

Removal of courses:

MATH 212

Implementation date: August 2021

Cost: N/A

DSCI 315 – 3 – 4

Dashboards and Analytic Reporting

New course

Rationale:

This course will be part of the Post baccalaureate Diploma in Health Analytics.

Calendar description:

This course is an introduction to dashboard reporting. Students will learn how to use Power Query to clean, transform and refine data before incorporating it into a data model or dashboard. Learners will also learn how to create scalable models using Power Pivot. Finally, students will build interactive visualizations.

Prerequisites:

Third year standing

Course outline:

Dashboards and Analytic Reporting

Fall 2023

Professor Information

Professor:	Name
Campus:	Campus
Office:	Room
Phone:	Phone No
E-mail:	name@okanagan.bc.ca Office
Hours:	Hours

Section Information

Section: 001
Class Times:

Calendar Description

DSCI 315-3-4

Dashboards and Analytic Reporting with Power BI

This course is an introduction to dashboard reporting. Students will learn how to use Power Query to clean, transform and refine data before incorporating it into a data model or dashboard. Learners will also learn how to create scalable models using Power Pivot. Finally, students will build interactive visualizations. (4,0,0)

Prerequisites:

Third year standing

Transfer Information

Please refer to the transfer guide, available online at <http://www.bctransferguide.ca>. Students are encouraged to save a copy of current transfer information for their own records.

Course Evaluation

Your grade in this course will be broken down as follows:

Assignments

New course

Rationale:

This course will be part of the Post baccalaureate Diploma in Health Analytics.

Calendar description:

Data analytics plays an increasingly greater role in health care organizations. This course provides a background to how analytics is used in the healthcare industry. Students will work hands-on with healthcare data to transform it into value through predictive analytics. This course provides learners a sense of how analytics is used in a broad range of roles (both clinical and non-clinical), and how to effectively gather and communicate information from data analytics. The goal of this course is to help students understand how analytics can be used to improve clinical outcomes and reduce healthcare costs.

Prerequisites:

Third year standing.

Course outline:

Dsci 321

Health Care Analytics

Winter 2022

Professor Information

Professor: Name
Campus: Campus
Office: Room
Phone: Phone No
E-mail:
 name@okanagan.bc.ca Office
Hours: Hours

Section Information

Section: 001
Class Times:

Calendar Description

DSCI 321-3-4

Health Care Analytics

Data analytics plays an increasingly greater role in health care organizations. This course provides a background to how analytics is used in the healthcare industry. Students will work hands-on with healthcare data to transform it into value through predictive analytics. This course provides learners a sense of how analytics is used in a broad range of roles (both clinical and non-clinical), and how to effectively gather and communicate information from data analytics. Students will use analytics to improve clinical outcomes and reduce healthcare costs. (4,0,0)

Prerequisites:

Third year standing

Transfer Information

Please refer to the transfer guide, available online at <http://www.bctransferguide.ca>. Students are encouraged to save a copy of current transfer information for their own records.

Learning Outcomes

Upon successful completion of the course, students will be able to:

1. Appreciate the role of analytics in healthcare.
2. Discuss payer, patient and provider analytics.

Final Exam	40%
Total	100%

Assignments: Assignments will be assigned biweekly.

Tests: Tests will be announced in advance during class.

The Final Exam: The final exam will be cumulative and held at a time and place set by the College. The final exam schedule is generally made available approximately half way through the semester.

OkanaganCollegePolicies

Final Exam Policy: The procedures relating to final exams are significantly different than those that involve midterms. Final exam policy is determined by the college and a much more formal process is invoked should a student be unable to write the final exam. It is stated in the final exam policy that student travel plans are not a valid reason for writing an out-of-time final exam. As such, it is essential that you do not make travel plans prior to the final exam schedule being posted. The full final exam policy can be found at the following link.

<http://webapps->

5.okanagan.bc.ca/ok/Calendar/Examinations

The final exam schedule is determined by the Office of the Registrar and posted at the following link sometime around the middle of the semester.

<https://www.okanagan.bc.ca/office-of-the-registrar/scheduling-office/scheduling-office#finalexam>

Academic Integrity Policy: Okanagan College requires that all students are informed of the Academic Integrity Policy included in the College Calendar which can be found at the following link:

<http://webapps->

government, and economy will be examined to compare the healthcare systems so learners can gain insight into how data and data science can be best used to improve health related outcomes, facilities, workforce, technology, cost, quality, and access. Data privacy across countries is also examined.

Prerequisites:

Third year standing.

Course outline:

DSCI322

Comparative Health Systems

Fall2022

4. Compare the history of healthcare in a variety of

particularly important for public health practitioners. The course focuses on epidemiological study design as well as the tools needed to interpret the results of studies. Ethical conduct is emphasized through the course. (4,0,0)

Prerequisites:

Third year standing

TransferInformation

Please refer to the transfer guide, available online at <http://www.bctransferguide.ca>. Students are encouraged to save a copy of current transfer information for their own records.

CourseEvaluation

Your grade in this course will be broken down as follows:

Assignments	15%
Tests	45%
Final Exam	40%
Total	100%

Assignments: Assignments will be distributed on a biweekly basis.

Tests: Tests will be announced in advance during class.

Final Exam: The final exam will be cumulative and held at a time and place set by the College. The final exam schedule is generally made available approximately half way through the semester.

LearningOutcomes

Upon successful completion of the course, students will be able to:

1. Define and discuss the goals of public health.
2. Discuss how epidemiology (and data related to epidemiology) contributes to the health of our society.
3. Discuss how data and statistics plays a role in epidemiological research.
4. Discuss epidemiological study design.
5. Develop the tools needed to interpret study results.
6. Discuss the role of ethics in epidemiology.

CourseMaterials

The required text for this course is:

Aschengrau, Seage, **Essentials of Epidemiology in Public Health**
Jones and Bartlett Learning, 2020, ISBN: #2018023772

CourseContent

Final Exam Policy: The procedures relating to final exams are significantly different than those that involve midterms. Final exam policy is determined by the college and a much more formal process is invoked should a student be unable to write the final exam. It is stated in the final exam policy that student travel plans are not a valid reason for writing an out-of-time final exam. As such, it is essential

ProfessorInformation

Professor: Name
Campus: Campus
Office: Room
Phone: Phone No
E-mail: name@okanagan.bc.ca Office
Hours: Hours

SectionInformation

Section: 001
Class Times:

CalendarDescription

DSCI 324-3-4
Health Care Information Systems

This course offers the fundamental tools and knowledge to manage information and information resources effectively within health care organizations. It reviews the forces that shape the health information landscape, offers guidance on the implementation, evaluation, and management of health care information systems, and reviews laws, regulations, and standards that impact health care information systems. (4,0,0)

Prerequisites:

Third year standing

TransferInformation

CourseContent

DSCI 420 – 3 – 4

Mathematics for Machine Learning

New course

Rationale:

This course will be part of the Post baccalaureate Diploma in Health Analytics.

Calendar description:

This course provides learners with the mathematics behind the four pillars of machine learning: regression, dimensionality reduction, density estimation and classification. While these algorithms will be discussed, the main goal of the course is to equip learners with the mathematical skills necessary to understand future algorithms in data science as the industry is ever-changing.

Prerequisites:

MATH 314

Tests: Tests will be announced in advance during class.

Final Exam: The final exam be cumulative and held at a time and place set by the college. The final exam schedule is generally made available approximately half way through the semester.

CourseMaterials

The required text for this course is:

Deisenroth, Faisal, Ong, **Mathematics for Machine Learning**

Cambridge University Press, 2020, Available on github: <https://mml-book.github.io/book/mml-book.pdf>

CourseContent

In

College Student Conduct Policies: Okanagan College requires that students are

credit unions including Valley First and Interior Savings also have analytics department and are looking for employees. These employers advise us that it is difficult to recruit employees for these departments and IHA advises they fully support the development of this program at Okanagan College.

Calendar description:

This two-year post-baccalaureate diploma (60 credit/20 course) is aimed at students with a bachelor degree in any nursing, science, engineering, psychology business or management program who wish to pursue a career in Health Analytics. Students will receive thorough training in statistics and data science. Term one of this program sets the mathematical and statistical foundation for higher level learning in the health and data science areas. In subsequent terms, students build on, and apply, these foundational skills to a diverse set of areas. While many of the applications have a health focus, the mathematical, statistical, and data science concepts learned are universally applicable to a wide range of disciplines.

Program Learning Outcomes

At the end of this program students will:

1. Apply mathematical, statistical and machine learning techniques to support organizational decisions as well as to identify new data driven opportunities.
2. Manage and manipulate data and create data visualizations using a variety of mathematical and statistical software.
3. Participate in the planning and execution of a data science project culminating in recommendations based on the results of the analysis.
4. Evaluate, define and explain data-analytic problems that offer the greatest opportunities for organizational benefits.
5. Understand healthcare systems in a variety of countries including how their history, geography, government and economy and privacy laws impact the healthcare system.
6. Understand the relevant laws, regulations and standards involved with health data.

Admission requirements:

Successful completion of a recognized Bachelor Degree in any science, nursing, engineering, psychology, or management program. A post-secondary basic calculus course, or equivalent, is highly recommended.

A student who has completed a recognized undergraduate degree in a program different than those listed above may be admitted to the program provided they pass the Okanagan College Basic Algebra Proficiency Test with a minimum score of 20/25 AND the Calculus Readiness Test with a minimum score of 16/25.

Graduation requirements:

Successful completion of the prescribed and elective courses as listed in the program outline with a minimum graduating grade average of 60%.

Program outline:

Semester 1

DSCI 300 DATA WRANGLING AND VISUALIZATION
DSCI 310 MATHEMATICAL COMPUTATION
DSCI 321 HEALTH CARE ANALYTICS
STAT 230 ELEMENTARY APPLIED STATISTICS
MATH 314 CALCULUS AND LINEAR ALGEBRA FOR BUSINESS

Semester 2

DSCI 400 MACHINE LEARNING I
DSCI 322 COMPARATIVE HEALTH SYSTEMS
BUAD 283 MANAGEMENT INFORMATION SYSTEMS
MATH 251 INTRODUCTION TO DISCRETE STRUCTURES
STAT 240 APPLIED STATISTICS II

Semester 3

DSCI 401 MACHINE LEARNING II

DSCI 324 HEALTH CARE INFORMATION SYSTEMS
DSCI 420 MATHEMATICS FOR MACHINE LEARNING
STAT 310 REGRESSION ANALYSIS
ELECTIVE ANY 3 CREDIT ACADEMIC COURSE

Schedules

(as approved at the November 20, 2020 Ed Co Operations Committee meeting)

Office Administration Schedule 2021 - 2022

Accounting/Bookkeeping Certificate (20 weeks)

Kelowna

2021

September 6	Labour Day (no classes)
September 7	Orientation
September 8	Classes start
October 11	Thanksgiving Day (no classes)
November 11	Remembrance Day (no classes)
November 12	No classes
December 22	Last day of classes before Christmas break
December 24	College closes at 3 p.m.
December 25 - January 3	Christmas Closure (no classes) Okanagan College closed to the public

2022

January 4	Classes resume
February 16	Classes end

Administrative Assistant Certificate (37 weeks)

Kelowna, Salmon Arm, Vernon, Penticton

2021

September 6	Labour Day (no classes)
September 7	Orientation
September 8	Classes start
October 11	Thanksgiving Day (no classes)
November 11	Remembrance Day (no classes)
November 12	No classes
December 22	Last day of classes before Christmas break
December 24	College closes at 3 p.m.
December 25 - January 3	Christmas Closure (no classes) Okanagan College closed to the public

2022

January 4	Classes resume
February 21	Family Day (no classes)
March 28 - April 1	Mid-Semester Break (no classes)
April 15 - 18	Easter (no classes)
May 23	Victoria Day (no classes)
June 21	Classes end

Office Assistant Certificate (17 weeks)

Kelowna, Salmon Arm, Vernon, Penticton

2021

September 6	Labour Day (no classes)
September 7	Orientation
September 8	Classes start
October 11	Thanksgiving Day (no classes)
November 11	Remembrance Day (no classes)
November 12	No classes 2

Legal Administrative Assistant Certificate (Corporate/Conveyancing 19 weeks)

Kelowna only

2022

January 28	Classes start
February 21	Family Day (no classes)
April 15 - 18	Easter (no classes)
May 23	Victoria Day (no classes)
June 20	Classes end

Health Care Assistant Certificate

Fall 2021 Kelowna

August 23	Classes start
September 6	Labour Day (no classes)
October 11	Thanksgiving Day (no classes)
November 11	Remembrance Day (no classes)
December 13	Classes end
December 24	College closes at 3 p.m.
December 25 – January 3	Christmas closure (no classes)

Summer 2022 (Kelowna and Salmon Arm)

April 25	Classes start
May 23	Victoria Day (no classes)
July 1	Canada Day
August 1	BC Day (no classes)
September 5	Labour Day (no classes)
October 10	Thanksgiving Day (no classes)
October 20	Classes end