

CY 665 Cybersecurity Capstone

School of Technology & Computing

3 Credits, Graduate Course
Summer 2022
Grading Type: Decimal

*Access to the Internet is required.
All written assignments must be in Microsoft-Word-compatible formats.*

See the library's *APA Style Guide tutorial* for a list of resources that can help you use APA style.

Faculty Information

Professional experience information for instructors is found under *Faculty Information* in the online course menu.

Contact Information

Contact information for instructors is found under *Faculty Information* in the online course menu.

Email: [first name] [last name]

Phone: [xxx-xxx-xxxx]

Office Hours and Response Time: [I am available through MS Teams Tuesday and Thursday nights between 7-8 pm. I will respond within 24 hours. I will grade within 3-7 business days after the due date.]

Bio: (keep images under 300px wide)

Course Description

This course creates a Cyber Security capstone project based on knowledge and skills gained from previous coursework in the MSCY program. Topics include a capstone project management methodology, article search, and capstone project components such as problem identification, annotated bibliography, background, related work, approach, use case, design, implementation, data collection, data analysis, findings, conclusions, future work, references, and abstract. Candidates demonstrate their ability to apply cybersecurity principles, tools, and techniques to a specific problem or research study and acquire additional knowledge in a unique domain.

Prerequisite

The final quarter of study

Course Resources

Required and recommended resources to complete coursework and assignments are found on the course [Reading List](#). The reading list can be found under Course Information in Blackboard as well as from the library homepage.

Note: Required resources that must be purchased by the student are tagged "Purchase from a vendor of your choosing." Required resources with a direct link, "Available through CityU Library", are available at no cost to students.

Students in Canada will see required resources they need to purchase tagged “Purchase from the Canadian Bookstore.” Students outside the U.S. and Canada should contact their advisor or textbook coordinator for additional information.

Course Outcomes

As a result of this course, students will know or be able to do the following:

- **Integrate** a foundational knowledge of all areas of advanced cybersecurity (General Cybersecurity Knowledge).
- **Apply** fundamental principles and practices of advanced cybersecurity (Cybersecurity Principles and Practices).
- **Apply** critical and ethical thinking to solve problems in advanced cybersecurity (Critical and Ethical Thinking).
- **Evaluate** data to inform decisions and solve problems in advanced cybersecurity (Quantitative Literacy).
- **Create** the ability to develop and express ideas while applying a variety of delivery models, genres, and styles (Communication).
- **Collaborate** effectively on diverse teams to accomplish a common goal (Collaboration).

Additional Information

Topics covered:

1. Problem Identification, Topic Selection, & Presentation
 - Research and select a problem and its potential solutions to be developed over the remainder of the course.
 - Finish your project iteratively and incrementally.
 - Repeat your project by revising the report, the presentation, and the prototype during each week.
2. Annotated Bibliography & Presentation
 - Research and review articles on the selected problem.
 - Finish your project iteratively and incrementally.
 - Repeat your project by revising the report, the presentation, and the prototype during each week.
3. Related Work & Presentation
 - Be sure the references and citations in APA format.
 - Finish your project iteratively and incrementally.
 - Repeat your project by revising the report, the presentation, and the prototype during each week.
4. Starting Capstone Report & Presentation (Introduction, Background, & Related Work)
 - Complete the Introduction and the Background sections.
 - Finish your project iteratively and incrementally.
 - Repeat your project by revising the report, the presentation, and the prototype during each week.

5. Revising Capstone Report & Presentation (Approach)
 - Complete the Approach section.
 - Finish your project iteratively and incrementally.
 - Repeat your project by revising the report, the presentation, and the prototype during each week.
6. Revising Capstone Report & Presentation (Data Collection)
 - Complete the Data Collection section.
 - Finish your project iteratively and incrementally.
 - Repeat your project by revising the report, the presentation, and the prototype during each week.
7. Revising Capstone Report & Presentation (Data Analysis)
 - Complete the Data Analysis section.
 - Finish your project iteratively and incrementally.
 - Repeat your project by revising the report, the presentation, and the prototype during each week.
8. Revising Capstone Report & Presentation, & Demo (Findings)
 - Complete the Finding section.
 - Finish your project iteratively and incrementally.
 - Repeat your project by revising the report, the presentation, and the prototype during each week.
 - If you are implementing a project, demonstrate your prototype through a short video clip.
9. Revising Capstone Report & Presentation, & Demo (Conclusions & Future Work)
 - Focus on your conclusion and future work.
 - Finish your project iteratively and incrementally.
 - Repeat your project by revising the report, the presentation, and the prototype during each week.
 - If you are implementing a project, demonstrate your prototype through a short video clip.
10. Finalizing Capstone Report & Presentation, & Demo (Abstract & Key Words)
 - Focus on your abstract and keywords.
 - Finish your project iteratively and incrementally.
 - Repeat your project by revising the report, the presentation, and the prototype during each week.
 - If you are implementing a project, demonstrate your prototype through a short video clip.

Grading Scale

The grades earned for the course will be calculated using City University of Seattle's decimal grading system, found in the current University Catalog (<https://www.cityu.edu/catalog/>).

OVERVIEW OF REQUIRED ASSIGNMENTS	% OF FINAL GRADE	POINTS
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<i>Instructor Determined Assignments</i>	<i>20%</i>	
The Muddiest Point (MP)	5%	50 = 5 points * 10 modules
Concept Test (CT)	5%	50 = 5 points * 10 modules
Discussion Board (DB)	10%	100 = 10 points * 10 modules
<i>Major Assignments</i>	<i>80%</i>	
Capstone Project (CP) Presentation	20%	200 = 20 points * 10 modules
Capstone Project (CP) Report	60%	600 = 60 points * 10 modules
TOTAL	100%	1,000 points

Course Assignments and Grading

The instructor will provide grading rubrics that will provide more detail as to how this assignment will be graded.

The Muddiest Point (MP)

Before class, students are required to submit the Muddiest Point (MP) activity. The purpose of this activity is to stimulate student engagement. The instructor uses the MP to assess how students understood the required readings. The instructor also uses the MP to customize the lecture scope to implement Just-in-Time Teaching (JiTT). The MP consists of writing a brief reflective essay (≤ 50 words) identifying the most confusing part (i.e., the MP) of the content covered in the upcoming module. If a student understood all concepts, the student needs to explain the most exciting aspect. There is one multiple-choice question from the required reading to demonstrate that the student understood the required readings.

<i>Criteria</i>	<i>% of Grade</i>
Participation	80%
Correctness	20%
TOTAL	100%

Concept Test (CT)

The instructor poses a problem based on key concepts of a lecture. After reflecting on the problem, students submit their response and the instructor review them without providing a correct answer. Students discuss their thought process and solution with a peer. Students then commit to an answer and re-submits their responses. Instructor reviews responses and thought processes with the correct answer.

<i>Criteria</i>	<i>% of Grade</i>
Engagement	100%
TOTAL	100%

Discussion Board (DB)

All classes are required to use the Discussion Board. Participation through DB is an integral part of this course. It is defined as active engagement in a discussion or other activity. Instructors will determine the type of activities and their due dates; moreover, different DB activities will have different substance and length guidelines. The instructor will provide specific instructions to students.

A student posts an answer to a weekly discussion topic in Discussion Board. The student also posts a response to two other students' posts by the end of each module. Comments and questions should be clear and thoughtful, with correct grammar, spelling, and punctuation. The instructor will grade the quality of your discussion postings on both content and response.

Although the tone of your DB postings can be informal, your instructor will expect the content to be on a professional level. Your comments and questions for discussion should be clear and thoughtful, with correct grammar, spelling, and punctuation. As with written assignments, the quality of your discussion postings will be graded on both content and presentation.

Criteria	% of Grade
Participation	50%
Writing	50%
TOTAL	100%

Capstone Project Presentation

The student will report on the research outcomes, development, or other project efforts to an academically appropriate committee in a public forum. The nature of the presentation content will determine the specific makeup of the audience. The student will choose the format of the presentation, in consultation with the advisor. The layout and design must be appropriate and adequate to represent the outcomes of the effort. While students must make some form of a visual presentation, the presentation of the results may include publishing in a refereed publication, publication in a trade or popular magazine or journal, broadcast in an appropriate medium, or, in exceptional cases, limited dissemination within a closed community.

Each presenter will have 15 minutes for presentation and 5 minutes for questions and answers. Each presenter must keep the total presentation time limit strictly.

Components	% of Grade
Structure	20%
Visual Presentation	30%
Verbal Quality & Engagement	30%
Collaboration*	20%
TOTAL	100%

*Collaboration with any reviewers including either your classmates or instructors.

Capstone Project Report for Module 1 – Module 9

The student will provide a report formatted based on a template provided by the instructor. Students are required to improve the writing iteratively and incrementally every week. The revision will always happen during a quarter. Students will add new required sections to the existing paper every week.

Components	% of Grade
Structure	20%
Content	30%
Writing	30%
Reference	10%
Collaboration*	10%
TOTAL	100%

*Collaboration with any reviewers including either your classmates or instructors.

Capstone Project Final Report for Module 10

The final report is the culmination of applied research and activities conducted throughout the quarter. The final report/paper provides a detailed problem and its solution likely to be encountered by a company or organization described in a case study supplied by the student.

	Criteria	Outcome	% of Grade
1	Context and Purpose	Demonstrates a thorough understanding of context, audience, and purpose that is responsive to the assigned task(s) and focuses all elements of the work.	20%
2	Content Application	Communicates, organizes and synthesizes information from sources to fully achieve a specific purpose with clarity and depth.	30%
3	Organization	Organizational pattern (specific introduction and conclusion, sequenced material within the artifact, and transitions) is clearly and consistently observable.	10%
4	Source and Evidence	Demonstrates consistent use of credible, relevant sources to support ideas that are relevant within the discipline.	10%
5	Language	Demonstrates consistent use of credible, relevant sources to support ideas that are relevant within the discipline.	20%
6	Applied Cybersecurity	Apply the interdisciplinary or multidisciplinary applications in applied cybersecurity.	10%
	TOTAL		100%

Course Policies

Course policies on Late Assignments, Participation, and Professional Writing are found under Course Information in the online course menu. Students are responsible for reviewing and applying these policies while enrolled in this course.

University Policies

You are responsible for understanding and adhering to all of City University of Seattle's academic policies. The most current versions of these policies can be found in the University Catalog that is linked from the CityU Web site.

Antidiscrimination

City University of Seattle and its staff and faculty are committed to supporting our students. We value equity, diversity, and inclusion as a way of life as well as the educational opportunities it provides. City U will not tolerate any form of discrimination based on race, color, ethnicity, sexual orientation, gender identification, socioeconomic status, or religious values. If you have experienced any discrimination based on any of the above, we encourage you to report this to the University. Please report this to your instructor. If you do not feel safe reporting this to your instructor, please report to Dr. Scott Carnz, Provost or to the Vice President of Student Affairs, Melissa Mecham.

Non-Discrimination & Prohibition of Sexual Misconduct

City University of Seattle adheres to all federal, state, and local civil rights laws prohibiting discrimination in employment and education. The University is committed to ensuring that the education environment is bounded by standards of mutual respect and safety and is free from discriminatory practices.

In the U.S., the University is required by Title IX of the Education Amendments of 1972 to ensure that all its education programs and activities do not discriminate based on sex/gender. Sex include sex, sex stereotypes, gender identity, gender expression, sexual orientation, and pregnancy or parenting status. Sexual harassment, sexual assault, dating and domestic violence, and stalking are forms of sex discrimination, which are prohibited under Title IX and by City University of Seattle policy. City University of Seattle also prohibits retaliation against any person opposing discrimination or participating in any discrimination investigation or complaint process internal or external to the institution. Questions regarding Title IX, including its application and/or concerns about noncompliance, should be directed to the Title IX Coordinator. For a complete copy of the policy or for more information, visit <https://my.cityu.edu/titleix> or contact the Title IX Coordinator.

In Canada, in compliance with the British Columbia Human Rights Code, the Alberta Human Rights Act, WorksafeBC, and the Workers' Compensation Board of Alberta, the University believes that its environment should always be supportive and respectful of the dignity and self-esteem of individuals. Discrimination, harassment and bullying conduct, whether through person to person behaviors or via electronic communications such as email or social media is not acceptable and will not be tolerated. As an educational institution, it is our responsibility to cultivate an environment of excellence, equity, mutual respect and to recognize the value and potential of every individual. The University will take all necessary steps to meet or exceed the requirements of the law to prevent discrimination, harassment and bullying. The Respectful Workplace Policy for the prevention of discrimination, harassment and bullying policy and procedure can be found at <https://www.cityu.edu/discover-cityu/about-cityu/> under the Policies section or at <https://www.cityuniversity.ca/about/> .

Religious Accommodations

City University of Seattle has a policy for accommodation of student absences or significant hardship due to reasons of faith or conscience, or for organized religious activities. The University's policy, including more information about how to request accommodation, is available in the University Catalog and on the my.cityu.edu student portal. Accommodations

must be requested by the 20% mark of this course (e.g., day 14 of a ten-week course, day 7 of a 5-week course) using the Religious Accommodations Request Form found on the student dashboard in the my.cityu.edu student portal.

Academic Integrity

Academic integrity in students requires the pursuit of scholarly activity that is free from fraud, deception and unauthorized collaboration with other individuals. Students are responsible for understanding CityU's policy on academic integrity and adhering to its standards in meeting all course requirements. A complete copy of this policy can be found in the [University Catalog](#) in the section titled *Academic Integrity Policy* under *Student Rights & Responsibilities*.

Attendance

Students taking courses in any format at the University are expected to be diligent in their studies and to attend class regularly. Regular class attendance is important in achieving learning outcomes in the course and may be a valid consideration in determining the final grade. For classes where a physical presence is required, a student has attended if they are present at any time during the class session. For online classes, a student has attended if they have posted or submitted an assignment. A complete copy of this policy can be found in the [University Catalog](#) in the section titled Attendance under Student Rights & Responsibilities.

Final Assignments Due Date

Final assignments for each class at CityU must be due on or before the final date of the course as indicated in the university's course information system. Due dates that extend beyond the final date of the course may negatively impact tuition funding for students.

Support Services

Disability Services & Accommodations

Students with a documented disability who wish to request academic accommodation are encouraged to contact Disability Support Services to discuss accommodation requests and eligibility requirements. Please contact Disability Support Services at disability@cityu.edu or 206.239.4752 or visit the [Disability Support Services](#) page in the my.cityu.edu portal. Confidentiality will be observed in all inquiries. Once approved, information about academic accommodation will be shared with course instructors.

Library Services

CityU librarians are available to help students find the resources and information they need to succeed in this course. Contact a CityU librarian through the [Ask a Librarian](#) service, or access [library resources and services](#) online, 24 hours a day, seven days a week.

Smarthinking Tutoring

CityU students have 24/7 access to free online tutoring offered through Smarthinking, including writing support, from certified tutors. Contact CityU's Student Support Center at mycityusupport@cityu.edu to request a username and password.