Cybersecurity Threat Detection

CSSS-5220

S2 2021  Section 68  3 Credits  03/15/2020 to 05/14/2021  Modified 02/09/2021

Meeting Times

Monday, 5:30 PM to 9:30 PM

Weeks 1-9

- Class begins on Monday
- The instructor will teach this course via Zoom.
- The “Zoom” link is located within the course on the left side of the menu

Contact Information

Instructor: Mr. Michael Segreaves

Email: msegreaves39@webster.edu
Phone: 407-448-6095

Please contact me via the Canvas Inbox as the primary means of communication

Office Hours

- By appointment prior to class or immediately the following class
- Please contact me via the Canvas Inbox

Description

Students will examine various methods used to threaten our Cyber systems such as: viruses; spoofing; denial of service; fraud; theft; phishing; spy bots; spam; Trojan horses; email and active malware attachments; viral applications; hardware (computers and portable storage devices) with built in viruses or trap-doors; fake web sites; as well as eaves dropping via wireless networks; criminal access to national, corporate or personal data; and the growing loss of privacy over social networks.

Requisites

CSSS 5000 Introduction to Cybersecurity (3)

Objectives

This course is designed to give students the technical knowledge and background needed to understand cybersecurity threats, issues, policies, and political impacts on information gathering for positive or negative use.

Outcomes

The student will:
• Formulate and synthesize a broad understanding of the Cybersecurity strategic operations environment, including methods, ethics, laws, policies and procedures.
• Illustrate approaches and describe a technical understanding of secure Cybersecurity communication networks, distributed systems, cloud computing and threats to the three segments (Space, Ground and User), as applicable.
• Describe a basic working knowledge of Cybersecurity strategic operations as well as an awareness of current targets, vulnerabilities, and growing threats.
• Demonstrate skills in ethical hacking, threat detection and analysis, as well as an awareness of proactive measures and adaptive defense methods and Cybersecurity system security assessments.
• Compare and contrast the roles, responsibilities, and tools of a Cybersecurity technician, project and/or program manager.
• Summarize and differentiate the basic knowledge of critical Cybersecurity infrastructures, communications, detection and protection schemes, and potential threats and impacts.
• Classify future trends in Cybersecurity strategic operation issues facing public and private enterprises.
• Categorize the challenges of the Cybersecurity (MS) program and the importance of thinking about the capstone course in terms of their research focus or projects.
• Synthesize and integrate the learning experiences acquired throughout the MS in Cybersecurity program, apply critical thinking and evaluation methods of current and future topics relative to this major.

**Required Textbook**

*Cybersecurity and Cyberwar: What Everyone Needs to Know*

Author: Singer, Friedman
Publisher: Oxford University Press
Edition: 2014
ISBN: 978-0199918119

**Materials**

**SUPPLEMENTAL READINGS:** In this course, there will be a number of additional readings that will be posted on the course's World Classroom / Canvas "files." All materials utilized in this course, and resulting discussions, are restricted to unclassified/open-source information.

**Purchase or Rent textbooks**

Students attending the Melbourne Campus (PALM) or Merritt Island Campus (SPCT) can purchase/rent their textbooks by phone or going online. The preferred ordering method is online at [www.websterubookstore.com](http://www.websterubookstore.com). Required information for ordering - course number and section number e.g. BUSN 5200/W1.

**Buyback Information**

The bookstore buys books daily. The best time to sell textbooks back is prior to finals or immediately following finals.

Webster University Online/Metro Fulfillment Center

Follett Bookstore

314.962.3741

10am-5pm (Monday-Friday)

[www.websterubookstore.com](http://www.websterubookstore.com)

**Deliverables**

• Short lectures will be used to convey an understanding of mandatory topics.
• The instructor will facilitate the discussion of assigned readings.
• The instructor will use moderately complex cases, exercises, and group project assignments to promote analysis,
understanding, and application of concepts and practices covered.
- The instructor may have the student write short-term (research) papers to promote the development of research skills.
- Mid-term and final exams will be facilitated to assess the comprehension of theoretical concepts.

If this is an online course, the instructor will use the following methodology:

- Assign Weekly discussion board post and replies
- Assign weekly writing assignments in response to the required reading and modules.
- Give a midterm exam
- Give a final exam
- Require a research paper of 12 to 15 pages following APA 6th Edition format

**Mid-Term and Final Exam:**
Examinations will be in essay format, multiple-choice, and fill in the blank type questions. Exams will be “take-home” and “open notes.”

**Written & Oral Brief: Intelligence/Counterintelligence**
Research Paper / Presentation: The research paper and presentation required for this course constitute 25% of the overall grade, and should draw students’ attention and effort accordingly.

The paper/presentation should reflect the graduate-level effort and ability, and both should comply with Webster and APA formatting. Compliance is especially required for the proper quotation and citation of sources.

The paper shall consist of a minimum of 10, maximum of 15, pages in the body of the paper—exclusive of title, abstract, and references/bibliography. Obviously, cybersecurity (and all other) papers submitted to Webster must be written at the unclassified, “open-source” level.

Each student will conduct a professional-level presentation of their project to the class during the 8th week. The presentation should utilize one or more audio/visual aids and clearly walk attendees through the various stages of information collection as well as recommendations for the next steps pertaining to cyber-security strategic operations. Presentations, including questions and answers, should run between 15-20 minutes.

✅ **Evaluation**

| Participation: 25% |  
| Mid-Term Exam: 25% |  
| Final Exam: 25% |  
| Paper and Presentation: 25% |  

**Breakdown**

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<thead>
<tr>
<th>Grade</th>
<th>Range</th>
<th>Notes</th>
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<tbody>
<tr>
<td>A</td>
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<tr>
<td>A-</td>
<td>91-95%</td>
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<tr>
<td>B+</td>
<td>87-90%</td>
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<tr>
<td>B</td>
<td>82-86%</td>
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<tr>
<td>B-</td>
<td>78-81%</td>
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## Schedule

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<tr>
<th>When</th>
<th>Topic</th>
<th>Notes</th>
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<tbody>
<tr>
<td>Week #1 5:30 PM - 9:30 PM</td>
<td>Syllabus and Provided Materials, Lecture &amp; Discussion, Week #1 Modules and Assignments</td>
<td>Introduction, Course Overview, and Expectations, Tactical, vs. Operational, vs. Strategic, Refer to Weekly Course Assignments embedded within the course in the WorldClassRoom</td>
</tr>
<tr>
<td>Week #2 5:30 PM - 9:30 PM</td>
<td>Text, Part I, Lecture &amp; Discussion, Week #2 Modules and Assignments</td>
<td>&quot;How It All Works&quot; --History, Governance, Vulnerabilities, Refer to Weekly Course Assignments embedded within the course in the WorldClassRoom</td>
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<tr>
<td>Week #3 5:30 PM - 9:30 PM</td>
<td>Text, Part II, Lecture &amp; Discussion, Week #3 Modules and Assignments</td>
<td>&quot;Why It Matters&quot; --Threats: Cyber Crime, Cyber Terrorism, Refer to Weekly Course Assignments embedded within the course in the WorldClassRoom</td>
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<tr>
<td>Week #4 5:30 PM - 9:30 PM</td>
<td>Text, Part II (Continued), Lecture &amp; Discussion, Mid-Term Review, Week #4 Modules and Assignments</td>
<td>&quot;Why It Matters&quot; (Continued) --Threats: Evolution of Cyber Warfare and Responses, Mid-Term Review, Refer to Weekly Course Assignments embedded within the course in the WorldClassRoom</td>
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<td>Week #5</td>
<td>Review Text Parts I and II, Provided Materials, Lecture &amp; Discussion</td>
<td>Mid-Term Exam&lt;br&gt;Overview of Text, Part III / Second Half of Course&lt;br&gt;Refer to Weekly Course Assignments embedded within the course in the WorldClassRoom</td>
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<td>Week #5 Modules and Assignments</td>
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<td>Week #6</td>
<td>Text, Part III, Lecture &amp; Discussion</td>
<td>&quot;What Can We Do&quot;&lt;br&gt;--Preparation, Resilience, Continuity, Collaboration&lt;br&gt;Refer to Weekly Course Assignments embedded within the course in the WorldClassRoom</td>
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<td>Week #6 Modules and Assignments</td>
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<td>Week #7</td>
<td>Text, Part III (Continued), Lecture &amp; Discussion</td>
<td>&quot;What Can We Do&quot; (Continued)&lt;br&gt;--CNCI, Other Initiatives, Future Trends&lt;br&gt;Refer to Weekly Course Assignments embedded within the course in the WorldClassRoom</td>
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<td>Week #7 Modules and Assignments</td>
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<td>Week #8</td>
<td>Student Presentations, Lecture &amp; Discussion</td>
<td>Students conduct a presentation of the assigned project to the class&lt;br&gt;Final Exam Review&lt;br&gt;Refer to Weekly Course Assignments embedded within the course in the WorldClassRoom</td>
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<td>Week #8 Modules and Assignments</td>
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<tr>
<td>Week #9</td>
<td>Final Exam</td>
<td>Final Exam&lt;br&gt;Refer to Weekly Course Assignments embedded within the course in the WorldClassRoom</td>
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<td>Week #9 Modules and Assignments</td>
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**Course Policies**

**Attendance and Incomplete Work**

Attendance is expected for the full duration of all class periods. This means being logged in, present, and active by both audio and visual means. When illness, work requirements, military/government-directed service, or emergency circumstances require tardiness, absence, or early departure—this should be communicated, when possible, in advance. Absences are neither "excused" nor "unexcused" but can be mitigated based on circumstance and advance communication. Unmitigated absences, tardiness, or early departures for the equivalent of two or more class periods will result in a full letter grade drop, from that which otherwise earned. Late work receives reduced credit and must be made up by the end of our final class meeting. A grade of "incomplete" is awarded only in extraordinary circumstances. If awarded, "incomplete" work will be accepted within the terms of a "contract" between student and Professor, and within 30 days of the completion of the regular term.

**Originality and Plagiarism**
All Turnitin assignments over 10% will be reviewed which may result in a reduced or incomplete grade. Please ensure you submit work that is your own, and that any sources used are credible and clearly cited.

Deliberate plagiarism is a serious offense that may result in the student failing this course. Plagiarism includes not only copying from a published source or using internet materials without appropriate acknowledgment but also presenting another student's work as your own. For this specific course, the student may not use their own previous work as a submission. All work must be original or properly cited.

APA formatting is the University standard and is enforced throughout this course. It is listed as a requirement on every assignment listing, and as an introductory course, this requirement is heavily enforced.

As a Graduate level course, valuable content is critical. It is not enough to paraphrase entire answers; be sure to demonstrate thorough thought and understanding of the concepts.

Institutional Policies

Academic Policies

Academic policies provide students with important rights and responsibilities. Students are expected to familiarize themselves with all academic policies that apply to them. Academic policies for undergraduate students can be found in the Undergraduate Studies Catalog; graduate students should review the Graduate Studies Catalog.

Undergraduate Studies Catalog

The Undergraduate Studies Catalog contains academic policies that apply to all undergraduate students. The academic policies and information section of the catalog contains important information related to attendance, conduct, academic honesty, grades, and more. If you are an undergraduate student, please review the catalog each academic year. The current Undergraduate Studies Catalog is at:

http://www.webster.edu/catalog/current/undergraduate-catalog/

Graduate Studies Catalog

The Graduate Studies Catalog contains academic policies that apply to all graduate students. The academic policies section of the catalog contains important information related to conduct, academic honesty, grades, and more. If you are a graduate student, please review the catalog each academic year. The current Graduate Studies Catalog is at:

http://www.webster.edu/catalog/current/graduate-catalog/

Grading

The Grades section of the academic catalog outlines the various grading systems courses may use, including the information about the final grade reported for this class.

Undergraduate

http://www.webster.edu/catalog/current/undergraduate-catalog/academic-policies.html#grading

Graduate

http://www.webster.edu/catalog/current/graduate-catalog/academic-policies.html#grades

Incomplete

There are important policies that govern grades of Incomplete (I), including the circumstances under which Incomplete grades are granted, deadlines for completion, and consequences should the remaining course work not be completed. It is the responsibility of a student who requests an Incomplete to ensure that he/she understands and follows the policies.

Grade Appeals
Instructors are responsible for assigning grades, and students should discuss grade issues with the instructor. Policies and procedures for appealing grades are available in the appropriate catalog.

Academic Honesty Policy

Webster University is committed to academic excellence. As part of our Statement of Ethics, we strive to preserve academic honor and integrity by repudiating all forms of academic and intellectual dishonesty, including cheating, plagiarism and all other forms of academic dishonesty. Academic dishonesty is unacceptable and is subject to a disciplinary response. Students are encouraged to talk to instructors about any questions they may have regarding how to properly credit others’ work, including paraphrasing, quoting, and citation formatting. The university reserves the right to utilize electronic databases, such as Turnitin.com, to assist faculty and students with their academic work.

The University’s Academic Honesty Policy is published in academic catalogs:

**Undergraduate**
http://www.webster.edu/catalog/current/undergraduate-catalog/academic-policies.html

**Graduate**
http://www.webster.edu/catalog/current/graduate-catalog/academic-policies.html

As a part of the University commitment to academic excellence, the Academic Resource Center provides student resources to become better acquainted with academic honesty and the tools to prevent plagiarism in its many forms:

http://www.webster.edu/arc/plagiarism_prevention/

Statement of Ethics

Webster University strives to be a center of academic excellence. The University makes every effort to ensure the following:

- The opportunity for students to learn and inquire freely
- The protection of intellectual freedom and the rights of professors to teach
- The advancement of knowledge through scholarly pursuits and relevant dialogue

To review Webster University’s statement of ethics, see the Undergraduate Studies Catalog and the Graduate and Studies Catalog:

**Undergraduate**
http://www.webster.edu/catalog/current/undergraduate-catalog/overview.html#ethics

**Graduate**
http://www.webster.edu/catalog/current/graduate-catalog/ethics.html

Contact Hours for this Course

It is essential that all classes meet for the full instructional time as scheduled. A class cannot be shortened in length. If a class session is cancelled for any reason, the content must be covered at another time.

Important Academic Resources

**Academic Accommodations**

Webster University makes every effort to accommodate individuals with academic/learning, health, physical and psychological disabilities. To obtain accommodations, students must identify themselves and provide documentation from a qualified professional or agency to the appropriate campus designee or the Academic ADA Coordinator at the main campus. The Academic ADA Coordinator may be reached at 314-246-7700 or disability@webster.edu (mailto:disability@webster.edu).
If you have already identified as a student with a documented disability and are entitled to classroom or testing accommodations, please inform the instructor of the accommodations you will require for this class at the beginning of the course.

**Academic Resource Center**

Additional support and resources may be accessed through the Academic Resource Center (ARC). Support and resources include academic counseling, accommodations, assistive technology, peer tutoring, plagiarism prevention, testing center services, and writing coaching. Visit [www.webster.edu/arc](http://www.webster.edu/arc) or Loretto Hall 40 on the main campus for more information.

**Student Success Portal**

Webster University’s Student Success Portal, powered by Starfish, is a communications tool to connect students with faculty members and campus support services. It allows faculty and staff members to communicate with you regarding academic achievements as well as areas where support may be helpful. You may use the portal to contact faculty and staff members for assistance and to arrange meetings. Activity in the portal will be communicated to your Webster University email account. The Student Success Portal is available via your course home page in WorldClassRoom or via Connections. Learn more about the Student Success Portal at [http://www.webster.edu/success/students.html](http://www.webster.edu/success/students.html).

**University Library**

Webster University Library is dedicated to supporting the research needs and intellectual pursuits of students throughout the University’s worldwide network. Resources include print and electronic books, journal articles, online databases, DVDs and streaming video, CDs and streaming music, datasets, and other specialized information. Services include providing materials at no cost and research help for basic questions to in-depth exploration of resources. The gateway to all of these resources and services is [http://library.webster.edu](http://library.webster.edu). For support navigating the library’s resources, see [http://libanswers.webster.edu/](http://libanswers.webster.edu/) for the many ways to contact library staff.

**Drops and Withdrawals**

Drop and withdrawal policies dictate processes for students who wish to unenroll from a course. Students must take proactive steps to unenroll; informing the instructor is not sufficient, nor is failing to attend. In the early days of the term or semester, students may DROP a course with no notation on their student record. After the DROP deadline, students may WITHDRAW from a course; in the case of a WITHDRAW, a grade of W appears on the student record. After the WITHDRAW deadline, students may not unenroll from a course. Policies and a calendar of deadlines for DROP and WITHDRAW are at:

- **Undergraduate**

- **Graduate**
  [http://www.webster.edu/catalog/current/graduate-catalog/enrollment.html](http://www.webster.edu/catalog/current/graduate-catalog/enrollment.html)

- **Academic Calendar** - [http://www.webster.edu/academics/academic-calendar/](http://www.webster.edu/academics/academic-calendar/)

Current tuition rates, policies, and procedures, including details of pro-rated tuition refunds, are available in the “Tuition, Fees, and Refunds” section of Webster’s Academic Catalogs:

- **Undergraduate**

- **Graduate**
  [http://www.webster.edu/catalog/current/graduate-catalog/tuition.html](http://www.webster.edu/catalog/current/graduate-catalog/tuition.html)

**Student Handbook and Other Important Policies**
Student handbook and other non-academic policies may apply to you and may impact your experience in this class. Such policies include the student code of conduct, privacy, technology and communications, and more. Please review the handbook each year and be aware of policies that apply to you. The handbook is available at:


Sexual Assault, Harassment, and Other Sexual Offenses

Webster University makes every effort to educate the community to prevent sexual assault, harassment, and other sexual offenses from occurring, and is committed to providing support to those affected when this behavior does occur. To access information and resources or to review the Policy on Sexual Assault, Harassment, and Other Sexual Offenses, visit:

[http://www.webster.edu/sexual-misconduct/](http://www.webster.edu/sexual-misconduct/)

Research on Human Subjects

The Webster University Institutional Review Committee (IRB) is responsible for the review of all research on human subjects. The IRB process applies to all Webster University faculty, staff, and students and must be completed prior to any contact with human subjects. For more information on the IRB, visit:

[http://www.webster.edu/irb/index.html](http://www.webster.edu/irb/index.html)

Course Evaluations

At the end of this course, you will have the opportunity to provide feedback about your experience. Your input is extremely valuable to the university, your instructor, and the department that offers this course. Please provide your honest and thoughtful evaluation, as it helps the university to provide the best experience possible for all of its students.

Important Technology Information

Connections Accounts

Webster University provides all students, faculty, and staff with a University email account through Connections. Students are expected to activate their Connections account and regularly check incoming University email. Students may choose to have their University email forwarded to an alternate email address. Connections account holders can call the Help Desk (314-246-5995 or toll free at 1-866-435-7270) for assistance with this setup. Instructions are also provided on the Information Technology website at:

[http://www.webster.edu/technology/service-desk/](http://www.webster.edu/technology/service-desk/)

WorldClassRoom

WorldClassRoom is Webster’s Learning Content Management System (LMS). Your instructor may use WorldClassRoom to deliver important information, to hold class activities, to communicate grades and feedback, and more. WorldClassRoom is available using your Connections ID at:

[https://worldclassroom.webster.edu/](https://worldclassroom.webster.edu/)

Webster Alerts

Webster Alerts is the University’s preferred emergency mass notification service, available free to current students, faculty and staff at all US campuses. By registering a valid cell phone number and email address, you will receive urgent campus text, voice mail and email communications. Valuable information concerning a range of incidents affecting you - from weather-related campus closures, class delays and cancellations, to more serious or life-threatening events - are immediately and simultaneously delivered through multiple communication channels. To register for Webster Alerts, visit:

[http://www.webster.edu/technology/services/webster-alerts/](http://www.webster.edu/technology/services/webster-alerts/)

校園資訊

感恩您的友好訪問。如果您有任何問題，請隨時聯繫我們。

[http://www.webster.edu/technology/services/webster-alerts/](http://www.webster.edu/technology/services/webster-alerts/)