

Cybersecurity in Cloud Computing

CSSS-5270

S2 2021 Section FL 3 Credits 03/15/2021 to 05/14/2021 Modified 01/31/2021

Meeting Times

Monday, 6:00 PM to 10:00 PM, Ft. Belvoir or Zoom - NOTE: Time reflects Eastern

Contact Information

Instructor: Don George

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Office: (703) 909-2740

Please feel free to text or call me if you have issues during the semester. I'll get back to you in the most timely manner possible.

Description

This course begins with an introduction to cloud computing and security and then provides an examination of cloud security architecture. The essential characteristics of cloud computing are discussed using the National Institute of Standards and Technology (NIST) Cloud Computing Model, SPI cloud service models and the different cloud delivery models. With this background, key strategies and best practices for cloud security are developed, including data protection methods, cloud security controls and countermeasures, virtualization, security management, and securing of data at rest and in motion. In addition, legal and regulatory considerations for different types of clouds are presented. Based on the cloud security requirements, the course defines the steps for an organization to use in selecting an external cloud service provider (CSP). In addition to commercial selection requirements, the U.S. Department of Defense Enterprise Cloud Service Broker Cloud Security Model, which specifies what controls the CSP must implement in the military environment, is reviewed. *Prerequisites: CSSS 5000 – Introduction to Cybersecurity and CSSS 5110 – Cybersecurity Communications.*

Outcomes

The student will:

- Summarize and demonstrate an understanding of Cloud Computing Service and deployment models such as: Software-as-a-Service (SaaS), Platform-as-a-Service (PaaS), and Infrastructure-as-a-Service (IaaS)
- Acquire and differentiate a broad understanding of Cloud Computing Security and Privacy benefits: Staff Specialization, Platform Strengths, Resource Availability, Backup & Recovery, Mobile Endpoints and Data Concentration
- Acquire and differentiate a broad understanding of Cloud Computing Security and Privacy concerns: System Complexities, Shared Multi-tenant Environments, Internet-facing Services, and Loss of Control
- Explain the basic knowledge of key security and privacy issues: Governance, Compliance (law & regulations, data location, and electronic discover), Trust (insider access, data ownership, composite services, visibility, ancillary data, risk management), Architecture (attack surface, virtual network protection, virtual machine images, client side protection), Identity and Access Management (authentication and access control), Software Isolation (hypervisor complexity, attack vectors), Data Protection (value concentration, data isolation, data sanitization), Availability (temporary outages, prolonged/permanent outages, denial of service), Incident Response (data availability, incident analysis and resolution)

- Differentiate the scope of Public Cloud Outsourcing to include: General concerns with inadequate policies and practices, Weak Confidentiality and Integrity Sureties. Performing planning activities, assess security and privacy risks, assess the competency of the cloud provider, establish contractual obligations, assess performance

Required Textbook

Securing the Cloud: Cloud Computer Security Techniques and Tactics

Author: Winkler
Publisher: Syngress
Edition: 1st
ISBN: 978-1597495929

Materials

Securing the Cloud: Cloud Computer Security Techniques and Tactics

- **Author:** Winkler
- **Publisher:** Syngress
- **Edition:** 1st
- **ISBN:** 978-1597495929

Deliverables

Please see the Evaluation section

Evaluation

Breakdown

Class Participation

This is 10 percent of your grade

This means that you'll be attending class, being responsive in class, etc...

Midterm Exam

This is 30 percent of your grade

This is usually assigned in Week 5. You'll have a week to complete this work. It's a take home exam based on short essays. Please pay attention to grammar, spelling, and completeness.

Cloud Computing Demonstration

This is 20 percent of your grade.

As opposed to writing term papers, we will be using concepts we've learned in class to build a cloud computing platform (AWS, Azure, Google...) of your very own. You will be responsible for building a demonstration environment that you'll present to your fellow students.

This will be presented in Week 9. You'll have all semester to build a cloud computing sandbox environment. We will discuss this more in Week 1

Final Exam

This is 40 percent of your grade

This is usually assigned in Week 9. You'll have a week to complete this work. It's a take home exam based on short essays. Please pay attention to grammar, spelling, and completeness.

Grade	Range	Notes
A	94 - 100	
A-	90 - 93	
B+	87 - 89	
B	83 - 86	

Schedule

When	Topic	Notes
Week 1	Lecture	<p>Chapters 1 and 2</p> <p>Homework assigned below and collected in Week 2</p> <p>Please review the following article and provide a 1 page summary on your observations and what security concerns you'd have and how you would address them.</p> <p>https://www.washingtonpost.com/technology/2019/12/17/what-does-your-car-know-about-you-we-hacked-chevy-find-out/</p>
Week 2	Lecture	Chapter 3
Week 3	Lecture	Chapter 4
Week 4	Lecture	Chapter 5
Week 5	Lecture	Chapter 6 and Midterm Assigned
Week 6	Lecture	Chapter 7
Week 7	Lecture	Chapter 8
Week 8	Lecture	Chapter 9
Week 9	Lecture	<p>Chapter 10 and presentation of your cloud computing demonstration platform</p> <p>ONLINE EVALUATION: https://evaluation.webster.edu - <i>available weeks 8 & 9</i>, posted in WorldClassroom as well.</p>

* Course Policies

Please silence all cell phones during class (set to vibrate for emergency calls is acceptable).

- **Originality and Plagiarism:** All Turnitin assignments over 25% 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.
- **Late Assignments:** Assignments will be accepted up to one week past the due date with a 10% grade deduction. Please coordinate with me in advance if you need an extension.
- **Formatting and Content:** APA formatting is the University standard and is enforced throughout this course.

- 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/> (<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/> (<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>
(<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>
(<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 student 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>
(<http://www.webster.edu/catalog/current/undergraduate-catalog/academic-policies.html>)

Graduate

<http://www.webster.edu/catalog/current/graduate-catalog/academic-policies.html>
(<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/ (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>
(<http://www.webster.edu/catalog/current/undergraduate-catalog/overview.html#ethics>)

Graduate

<http://www.webster.edu/catalog/current/graduate-catalog/ethics.html> (<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

<http://www.webster.edu/catalog/current/undergraduate-catalog/enrollment.html>
(<http://www.webster.edu/catalog/current/undergraduate-catalog/enrollment.html>)

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

<http://www.webster.edu/catalog/current/undergraduate-catalog/tuition.html>
(<http://www.webster.edu/catalog/current/undergraduate-catalog/tuition.html>)

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:

<http://www.webster.edu/student-handbook/> (<http://www.webster.edu/student-handbook/>)

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/>)

Campus Information

Joint Base Myer/Henderson Hall:

[Building 29, Room 108](#)

[1555 Southgate Road](#)

[Arlington, Virginia 22214](#)

Phone (844) 347-0568

hendersonhall@webster.edu

Please contact Rosemary Kelley, Assistant Director, rkelley@webster.edu for any questions regarding base access or directions.

Classroom is room 102 in Henderson Hall. Please check your Webster email for directives from the site on directions and base access.

Additional Items

Emerson Library: library.webster.edu

There is a live chat feature - home page, contact a librarian (middle of page, middle box): Chat with a librarian on left side (might have to scroll down a bit) - accessible 24 hours a day.

The WSBT subject librarian is:

Business & Management	Mary Anne Erwin	800-985-4279	maerwin@webster.edu
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Please use these excellent resources