

BMGT299: Applied Cloud Computing in Information Systems

Fall 2020 (1-Credit)

Course Overview:

Cloud computing has become ubiquitous over the last few years. The demand for big data platforms and flexible computational resources has made it important for organizations to build upon cloud computing solutions. This course will explore the fundamentals of cloud computing, and review its adoption within an organizational setting. We will cover topics such as data storage, cloud security, data availability and more.

The course will be centered around exploring the benefits that cloud computing can offer to an organization through the use of Amazon Web Services (AWS), the leading cloud computing provider. Adoption of cloud computing will be examined using several business cases. While we focus on AWS, cloud computing fundamentals will be transferable to other platforms such as Microsoft Azure and Google Cloud.

Demand for individuals with cloud computing skills is very strong. Corporations, governments, small-businesses and nonprofits are all interested in hiring employees with this skill set. This course is intended to provide students with the knowledge necessary to help organizations realize the benefits of cloud computing through strategic planning as well as implementation. Information systems majors with cloud knowledge and/or cloud certifications will stand out for roles such as technology consultants, data analysts and business analysts.

This course will meet once a week for 50 minutes. Out of class work, such as watching the videos in the Udemy course modules and completing labs and quizzes, will be necessary in order for students to complete the in-class exercises and quizzes. This course will also prepare students to take the Amazon Web Service (AWS) Certified Solutions Architect examination.

This course is appropriate for any student, regardless of technical background or exposure to AWS. As long as you are willing to learn and attend all classes, you can perform well.

Course Details:

Lecture Meeting Time: TBD

Lecture Meeting Location: TBD

Professors: Louiqa Raschid & Gorkem Turgut (GT) Ozer

Office Hours: TBD

Office Hours Location: TBD

Course Facilitator: Graham Schuckman

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Office Hours: TBD

Course Facilitator: Nicholas Summers

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Office Hours: TBD

Course Materials:

Udemy AWS (Amazon Web Service) Certified Solutions Architect - Associate 2020 (\$19.99)

<https://www.udemy.com/course/aws-certified-solutions-architect-associate/>

AWS Use Cases and Customer Stories

<https://aws.amazon.com/solutions/case-studies/?customer-references-cards.sort-by=item.additionalFields.publishedDate&customer-references-cards.sort-order=desc&awsf.customer-references-location=location%23americas&awsf.customer-references-segment=customer-segment%23enterprise>

Exam Readiness: AWS (Amazon Web Service) Certified Solutions Architect – Associate (FREE)

<https://www.aws.training/Details/Curriculum?id=20685>

Learning Objectives:

As stated, the purpose of this course is to provide students with the knowledge necessary to become familiar with AWS and be prepared to sit for the Amazon Web Service Certified Solutions Architect Examination. The learning objectives for the examination are listed here:

- Effectively demonstrate knowledge of how to architect and deploy secure and robust applications on AWS technologies
- Define a solution using architectural design principles based on customer requirements
- Provide implementation guidance based on best practices to the organization throughout the life cycle of the project

In addition to Amazon's learning objectives, this course will have additional objectives including:

- Gain an understanding of cloud migration and business transformation
- Understand the economics behind cloud computing and applicability to businesses
- Analyze industry trends in cloud computing and explore business use cases
- Explore methods by which to ensure the security of an organization's digital assets

Grading:

The Smith School of Business offers rigorous, academically challenging courses and provides meaningful feedback on student performance to facilitate learning. Transparency and

consistency in grading are important elements that ensure the integrity of the curriculum. This course will be graded on a pass/fail grading option that will not affect GPA.

Grading Method: Pass/Fail

Grades will be maintained on ELMS.

Late Policy: Assignments that are submitted within 24 hours past the deadline will be assessed a 25% penalty. After 24 hours, no late assignments will be accepted.

Labs (15%): There will be labs outside of class to further a students' understanding of cloud computing and ensure lecture topics are being effectively communicated.

Case Studies (15%): There will be three case studies assigned to students to reinforce understanding of how cloud computing pertains to a real-world business environment. Students will be allowed to choose their case study from the list of Amazon customer stories and will be expected to write a one-page, double-spaced summary on the technology and think critically about how it can be applied elsewhere.

Weekly Quizzes (25%): There will be short (approximately 10 minutes) weekly quizzes due at 11:59 PM on the day of each lecture to test students' knowledge of cloud computing concepts.

Participation (15%): In-class participation will be of key importance and will factor into a student's overall grade. Surveys will be administered at the end of each lecture for points.

Final Exam (30%): There will be a final exam administered in-class during the last session to test a student's comprehension of the course material and determine certification readiness.

Critical Thinking Standards:

Intellectual excellence is one of the key pillars of the undergraduate program at the Robert H. Smith School of Business. At Smith and in your professional life after Smith, you will need to excel at meeting the following six critical thinking standards, which are hallmarks of rigorous and evidence-based decision making:

- **Clarity:** Use words that are easy to understand (not overly complex or full of jargon)
- **Accuracy:** Apply concepts and frameworks correctly. Support claims with compelling evidence.
- **Precision:** Provide sufficient detail to fully flesh out the idea.
- **Relevance:** Distinguish between high and low priority issues. Explicitly link points back to the focal issues and make connections between related concepts.
- **Depth:** Identify root causes. Uncover underlying complexity, including anticipating and addressing objections.

- **Breadth:** Consider multiple viewpoints (e.g., views of multiple stakeholders) and multiple responses to the problem. Situate the discussion within the broader context and acknowledge other factors that can play a role.

Use of Computer and Information Technologies in the Classroom:

Students are allowed to use laptops in the classroom for academic purposes related to the course. All other use of electronic devices is prohibited. Audio and video recordings are prohibited without the instructor's consent.

Incomplete Grades Policy:

A grade of 'Incomplete' may be awarded to students who have a legitimate reason for needing additional time to complete a course. Legitimate reasons include emergencies or extenuating circumstances that prevent a student from completing the course requirements within the normal time frame. Students must initiate the request for an incomplete prior to the end of the semester. In no case will a grade of incomplete be awarded to someone seeking more time to master the course material in order to improve his or her grade. However, under all circumstances, an 'I' will be awarded at the discretion of the instructor.

Score/Grade Appeals:

You must make the appeal in writing. However, score changes are the discretion of the instructor and may be up or down based upon a complete review of the work in question. It is important to recognize that a grade rejects another person's judgement of your work. In this case, all grading is subjective. Appealing scores is discouraged.

Course Evaluations:

If you have a suggestion for improving this class, don't hesitate to tell the instructor or TAs during the semester. At the end of the semester, please don't forget to provide your feedback using the campus wide CourseEvalUM system. Your comments will help make this class better.

Academic Integrity and Misconduct:

The Robert H. Smith School of Business fosters an environment of academic integrity and development of thoughtful and sound analysis. Faculty and students will hold each other accountable to meeting intellectual standards demonstrating clarity of thought, articulating statements based on evidence, present relevant arguments, and engaging in logical reasoning. By adhering to these standards, students will develop essential critical thinking skills to be demonstrated in both their oral and written work.

The University's Code of Academic Integrity is designed to ensure that the principles of academic honesty and integrity are upheld. All students are expected to adhere to this Code. The Smith School does not tolerate academic dishonesty. All acts of academic dishonesty will be dealt with in accordance with the provisions of this code. Please visit the following website for more information on the University's Code of Academic Integrity: www.shc.umd.edu. On each assignment you will be asked to write out and sign the following pledge. "I pledge on my honor that I have not given or received any unauthorized assistance on this exam/assignment."

Excused Absence and Academic Accommodations:

See the section titled "Attendance, Absences, or Missed Assignments" available at [Course Related Policies](#).

Disability Support Accommodations:

See the section titled "Accessibility" available at [Course Related Policies](#).

Right to Change Information:

Although every effort has been made to be complete and accurate, unforeseen circumstances arising during the semester could require the adjustment of any material given here. Consequently, given due notice to students, the instructor reserves the right to change any information on this syllabus or other course materials.

Tentative Course Schedule:

Week	Topic	Assignment
1	Introduction & Amazon Overview	Quiz 0: Overview of AWS and Cloud Computing & Lab 0: AWS Account
2	Identity Access Management (IAM)	Quiz 1: IAM & Lab 1: Create IAM Groups & Policies
3	Simple Storage Service (S3)	Quiz 2: S3 & Lab 2: Serverless Website
4	Elastic Compute Cloud (EC2)	Quiz 3: EC2 & Case Study 1
5	Elastic Compute Cloud (EC2)	Quiz 4: EC2 Continued & Lab 3: CloudWatch
6	Databases	Quiz 5: Databases & Lab 4: RDS
7	Route53	Quiz 6: Route53 & Case Study 2
8	Virtual Private Clouds (VPCs)	Quiz 7: VPCs & Lab 5: VPCs
9	Virtual Private Clouds (VPCs)	Quiz 8: VPCs Continued
10	High Availability Architecture	Quiz 9: HAA & Lab 6: WordPress
11	High Availability Architecture	Quiz 10: HAA Continued & Lab 7: Autoscaling
12	Applications	Quiz 11: Applications & Lab 8: SNS
13	Serverless, Next Steps & Getting Certified	Quiz 12: Serverless & Case Study 3
14	Thanksgiving Break	None: Enjoy the Break!
15	Guest Lecture	Study!
16	Final Exam	Final Exam

Note: If the workload exceeds what is expected and reasonable for a one-credit course, the instructors will make an adjustment to reduce the material to be covered.

Course Schedule

Week 1	<ul style="list-style-type: none">● Course & Facilitator Introductions● Define Cloud Computing● Benefits of Cloud Computing● Overview of AWS Services● Deployment Models (ex. Full vs. Hybrid Deployment)● Infrastructure as a Service (IaaS)● Platform as a Service (Paas)● Software as a Service (Saas)
Week 2	<ul style="list-style-type: none">● What is Data Accessibility?● Importance of Data Accessibility Rules● Multi-Factor Authentication● Importance of Quality Password Policies● How can an organization ensure that data is accessed by authorized personnel?● Identity Access Management in AWS Labs
Week 3	<ul style="list-style-type: none">● How can an organization store its data as effectively as possible?● How can an organization minimize data storage costs?● How do data storage methods affect cost, performance and availability?● Introduction to the life cycle of data● Archiving Data● How can an organization put data into the cloud?● Simple Storage Service Lab
Week 4	<ul style="list-style-type: none">● How could an organization benefit from virtual machines/servers?● Who should be able to access a virtual machine/server?● Introduce elastic cloud compute● How does AWS elastic cloud compute serve business needs?
Week 5	<ul style="list-style-type: none">● How should a virtual machine/service be configured to serve business needs?● How can an organization connect to its server?● AWS Elastic Cloud Compute Lab
Week 6	<ul style="list-style-type: none">● Should our organization share resources (server space) with other organizations?● When is it economically and technically viable to have your own server?● What policies can ensure our servers are secure?● How can cloud servers be used to deploy our applications?
Week 7	<ul style="list-style-type: none">● Overview of relational databases● Can and how databases be stored in the cloud?● Importance of relational databases in decision support systems● How can an organization secure its data assets in the cloud?● Databases Lab
Week 8	<ul style="list-style-type: none">● Basics of Domain Name Servers

	<ul style="list-style-type: none"> ● How can an organization make its virtual assets easily accessible to end users online? ● Route 53 Labs
Week 9	<ul style="list-style-type: none"> ● Introduce Virtual Private Cloud ● How does a private cloud differ from a public cloud? ● Are there different market leaders in private vs public cloud services? ● How can an organization use private clouds to better protect their digital assets?
Week 10	<ul style="list-style-type: none"> ● Benefits of Virtual Private Cloud ● How should a Virtual Private Cloud be configured to serve organization needs?
Week 11	<ul style="list-style-type: none"> ● What is high availability of data? ● Why is high availability important? ● How is high availability measured/quantified? ● How can a system be configured to ensure high availability? ● High availability labs
Week 12	<ul style="list-style-type: none"> ● What type of architectures support high availability? ● How do these architectures differ and how are they similar? ● Which type of architecture best serve our organization needs?
Week 13	<ul style="list-style-type: none"> ● Why store applications on the cloud? ● How can our applications stay protected on the cloud? ● How can we store our applications as inexpensively as possible? ● How can we ensure our applications are available?
Week 14	<ul style="list-style-type: none"> ● Introduction to Serverless ● How to Prep for the Final ● How to Prep for the Certification Exam ● Cloud Computing Trends
Week 15	<ul style="list-style-type: none"> ● Final Exam