Course Syllabus

CPSC 4973 -- Cloud Computing (3 credits)

Auburn University Online Computer Science

Description

This course introduces the basics of cloud computing. Topics in Cloud Computing are covered at both the conceptual level and through direct application on a cloud computing platform. By the end of this course, the student will be able to:

- Differentiate types of Cloud Computing services;
- Compare and contrast platforms provided by cloud computing providers;
- Configure/Launch and manage compute, storage, database, and network systems on cloud computing platforms;
- Create container-ized applications and deploy them on cloud computing platforms;
- Manage a group of deployed containers that function cohesively as a cloud-deployed application.

Prerequisite: None

Texts

- **Optional (Ansible is only used during one module and free resources are available):** *Ansible for Devops,* Jeff Geerling, LeanPub 2020, ISBN 978-0-9863934-0-2. **https://leanpub.com/ansible-for-devops (https://leanpub.com/ansible-for-devops)**

Amazon Web Services

All students will be required to create and maintain an Amazon Web Services (AWS) account for this course. This account must be associated with your Auburn University email address. Creation of this account will require a valid credit card. All students will be provided with educational credits towards the use of AWS services however these credits are very limited. All course material can be completed with this credit however i**t is entirely the student's responsibility to monitor their AWS usage to ensure that they do not exhaust their credits prematurely.** Once your credits are exhausted, **Amazon will charge you for AWS usage!** You will not receive any notification when this happens. If you are not careful you can incur significant costs which are entirely your responsibility to pay. During the first module we will cover how to monitor your AWS usage and set up alerts to avoid running over your free credits.

Contents

These are the topics covered:

- Cloud computing terminology
- Compute services (EC2, Lambda, Batch)

- Linux command shell basics (bash)
- Block and object-level storage (S3, EBS, EFS)
- Database storage (RDS, DynamoDB)
- Virtual private networks on cloud platforms (VPC)
- System monitoring (CloudWatch, alarms)
- Notifications (SNS)
- Security and user management (IAM, security groups, gateways and NAT)
- Docker container creation, execution and management (docker)
- Introduction to container orchestration (docker swarm or kubernetes)

Grading

Please review the **University Grade Policies (https://www.auburn.edu/cosam/departments/student-services/academic-policies.htm)** which apply to this course.

Letter grades are assigned based on the percentage, rounded to the nearest integer, of the available points that you receive. The grading scale is fixed. **I do not curve.** The grading scale is as follows:

Letter	Percentage
A	90-100
B	80-89
C	70-79
D	60-69
F	0-59

Exams

This course is entirely project-based. There are no exams.

Projects

There is one project per module. While projects are largely an individual endeavor, you are encouraged to ask questions in the public Piazza forum. Significant learning can come from cooperation of this form as long as you are not relying on others to complete the projects and you are reading and contributing answers to questions from your classmates. All projects have a due date/time associated with them. Late submissions **will not be accepted!**

Expect to spend a substantial amount of time on projects.

Turning in projects

Most projects involve creating a configuration within AWS. In order to submit your project, you will need to give the instructor access to the AWS resources associated with the project. Details are provided in the

project descriptions.

Online Student Learning Expectations

All students in this course are expected to have all the equipment and software needed to be successful in the course. The equipment requirements are described on this course's Canvas pages.

All students are expected to contribute to their own learning as active and well-prepared participants. Weekly modules will provide various opportunities for reading, reflection, applied experiences, collaboration, and writing. Since these activities are woven through the entire week and generally do not require your “electronic presence” at any particular time or day, there should be no need to "miss" class. You should plan on spending the same amount of preparation and “in class” time on this course as you would if you were taking the course face-to-face.

You should log on to the course website regularly (several times per week) to work through course materials and participate in course discussions.

Communicating with your Instructor/TA's

We have provided a course forum where you may post questions for classmates or the instructor. You can send messages directly to your instructor via e-mail or direct-messaging within the forum tool. Your instructor will indicate what communication method they prefer.

One of the best ways to be effective as a student is to understand the instructor’s expectations and operate within those boundaries. Students should give the instructor **48 hours** to get back to them on any communication, and **one week** for grading turnaround time on major assignments. **The instructor reserves the right to alter these feedback parameters due to contingencies such as holidays, course progress, campus emergencies, weather, holidays, professional activities, etc. with notice provided.** If students have concerns about communication or feedback, they should always go to the professor first. Students should explain their concern as clearly as possible without judgment or emotion. Effective communication is an important skill, and every interaction in their program is an opportunity to develop this skill.

Your Auburn University email address is the university-approved form of communication between instructors and students. Follow the steps **in the video linked here (https://community.canvaslms.com/videos/1072)** to set your notifications preferences and specify that all course alerts are routed to your Auburn University email address (userid@auburn.edu). You can contact **Auburn University's OIT Help Desk (http://www.auburn.edu/oit/helpdesk/)** for assistance forwarding mail sent to your Auburn email address to a different email address that you regularly check. Additionally, it is your responsibility to read course announcements sent by your instructor. These are posted in Canvas, and you can configure your notification preferences to receive an email each time a new announcement is posted.

This course will be supported by Auburn University’s Canvas platform. The syllabus, class assignments, occasional lectures, test grades, final grades, and important announcements will be posted to the Canvas site for this course. Check the Canvas site for this course frequently.

Academic Integrity

Auburn University has adopted an Honor System proposed by its students and faculty to promote academic integrity and has enacted the following code:

> *"We, the faculty, instructors, and students of the (University course here) pledge to fulfill our mutual responsibilities to each other and the academic community at large with honor and integrity in order to build and maintain a climate of respect and trust that will enhance our research, teaching, and learning. We will support the Honor System of the School, and will not tolerate activities that undermine academic integrity."*

Academic dishonesty is an offense that will be reported to the Academic Honesty Committee. Please refer to the following document for further information regarding academic honesty: **Auburn University Student Academic Honesty Code (https://sites.auburn.edu/admin/universitypolicies/policies/academichonestycode.pdf)**

Accessibility

Students who need accommodations are asked to electronically submit their approved accommodations through AU Access and to arrange a meeting during office hours the first week of classes, or as soon as possible if accommodations are immediately needed. If you need accommodations but have not established them, make an appointment with the Office of Accessibility, 1228 Haley Center, 334-844-2096.

Course Summary:

Date	Details	
Sun May 31, 2020	**M1: Project (https://auburn.instructure.com/courses/1290971/assignments/9039756)**	due by 11:59pm