CSC 346 Cloud Computing
BIOW 301 - Monday, Wednesday, Friday 8am - 8:50am

Description of Course
This course focuses on cloud programming, with an emphasis on using the cloud to solve problems. The course will not only look at how distributed systems, databases, networks, etc. are used to implement cloud computing platforms and cloud applications, but also the impact of the infinite scalability and pay-as-you-go on the platforms and applications.

Course Prerequisites
CSC 120 or CSC 127B or CSC 227

Instructor and Contact Information
Mark Fischer: he/him/his - fischerm@arizona.edu
Office Hours: TBD
Teaching Assistants:
    Harshita Narnoli: harshitanarnoli@arizona.edu
    Yingjie Ma: ym1014@arizona.edu
Instructors Contact List: csc346-instructors-fall2022@list.arizona.edu

Course Website
https://www2.cs.arizona.edu/classes/cs346/fall22/

Course Format and Teaching Methods
This course will be in-person lecture. There will be weekly homework assignments, and three exams. I encourage questions and class discussion.

Class lectures will be recorded and available on Panopto shortly after the in-person class time.

Obtaining Help

- **Academic advising:** If you have questions about your academic progress this semester, or your chosen degree program, consider contacting your department’s academic advisor(s). Your academic advisor and the Advising Resource Center can guide you toward university resources to help you succeed. **Computer Science major students** are encouraged to email advising@cs.arizona.edu for academic advising related questions.

- **CS Tutor Center:** The Department of Computer Science offers FREE tutoring for students enrolled in CSC courses. You can view tutor schedules and sign up for tutoring sessions by visiting our [CS Tutoring Page](#).

- **CS Help Desk:** The Computer Science IT team can help students with department technology issues including logging into/resetting your Lectura account, printing in the 930 lab, etc. You can submit a ticket for help by visiting the [Computer Science Lab Helpdesk](#) (note, requires UA login).
Life challenges: If you are experiencing unexpected barriers to your success in your courses, please note the Dean of Students Office is a central support resource for all students and may be helpful. The Dean of Students Office can be reached at 520-621-2057 or DOS-deanofstudents@email.arizona.edu.

Physical and mental-health challenges: If you are facing physical or mental health challenges this semester, please note that Campus Health provides quality medical and mental health care. For medical appointments, call (520-621-9202. For After Hours care, call (520) 570-7898. For the Counseling & Psych Services (CAPS) 24/7 hotline, call (520) 621-3334.

Class Recordings

For lecture recordings, which are used at the discretion of the instructor, students must access content in D2L only. Students may not modify content or re-use content for any purpose other than personal educational reasons. All recordings are subject to government and university regulations. Therefore, students accessing unauthorized recordings or using them in a manner inconsistent with UArizona values and educational policies (Code of Academic Integrity and the Student Code of Conduct) are also subject to civil action.

Course Objectives

This course will introduce you to many topics in Cloud Computing. Because of the breadth of topics here, we will not have time to go into great detail on any one topic.

- History of cloud computing, enabling technologies, and common philosophy, including computing as a utility and its implications
- Strategies and patterns for the design and implementation of cloud services
- Underlying technologies of cloud services
- Specific implementations of various cloud services, and how to use them

Expected Learning Outcomes

By the end of the semester, the student will:

- Be able to define what cloud services are: how they differ from legacy models for computing, including tradeoffs
- Understand the basic architecture of a cloud service, and devise a plan of how to deploy available cloud resources to solve a computing problem
- Have a basic familiarity with several cloud service providers; be able to configure them to do simple tasks
- Have a basic familiarity with various technologies important to the cloud, such as databases, authentication, map/reduce, etc.

Absence and Class Participation Policy

Participating in the course and attending lectures and other course events are vital to the learning process. While attendance for this class will not be taken, and attendance is not mandatory, it is strongly suggested that you attend all class lectures. You will have the most success in this class if you attend lectures regularly, and only use the Panopto recordings for review, or to catch a lecture you had no choice but to miss.

8/5/2022
There will not be a separate participation grade for this class, however I strongly encourage questions and in-class discussions.

The UA’s policy concerning Class Attendance, Participation, and Administrative Drops is available at https://catalog.arizona.edu/policy/class-attendance-and-participation

The UA policy regarding absences for any sincerely held religious belief, observance or practice will be accommodated where reasonable:

http://policy.arizona.edu/human-resources/religious-accommodation-policy.

Absences pre-approved by the UA Dean of Students (or dean’s designee) will be honored. See https://deanofstudents.arizona.edu/policies/attendance-policies-and-practices

**Exams**

The three exams will be given in-person during normal lecture and final times. As such, attendance is required at all exams. If you anticipate being absent, are unexpectedly absent, or are unable to participate in class online activities, please contact me as soon as possible. To request a disability-related accommodation to this attendance policy, please contact the Disability Resource Center at (520) 621-3268 or drc-info@email.arizona.edu.

If you are experiencing unexpected barriers to your success in your courses, the Dean of Students Office is a central support resource for all students and may be helpful. The Dean of Students Office is located in the Robert L. Nugent Building, room 100, or call 520-621-7057.

**Illnesses and Emergencies**

- If you feel sick, or may have been in contact with someone who is infectious, stay home. Except for seeking medical care, avoid contact with others and do not travel.
- Notify your instructor(s) if you will be missing up to one week of course meetings and/or assignment deadlines.
- If you must miss the equivalent of more than one week of class and have an emergency, the Dean of Students is the proper office to contact (DOS-deanofstudents@email.arizona.edu). The Dean of Students considers the following as qualified emergencies: the birth of a child, mental health hospitalization, domestic violence matter, house fire, hospitalization for physical health (concussion/emergency surgery/coma/COVID-19 complications/ICU), death of immediate family, Title IX matters, etc.
- Please understand that there is no guarantee of an extension when you are absent from class and/or miss a deadline.

**Statement on compliance with COVID-19 mitigation guidelines:** As we enter the semester, our health and safety remain the university’s highest priority. To protect the health of everyone in this class, students are required to follow the university guidelines on COVID-19 mitigation. Please visit www.covid19.arizona.edu.

**Makeup Policy for Students Who Register Late**

The first week’s assignment will be fairly small, and easy to make up. After the second week of class it will become increasingly difficult to catch up on assignments. If you are thinking about adding or dropping this class do so as soon as possible.
**Course Communications**
Primary course communications will be the in-class lectures. There will be Panopto recordings of all lectures to the best of my ability. However technology challenges happen, and lecture recordings are not guaranteed. Lecture slides will be posted prior to class.

**Required Texts or Readings**
There is no textbook for this course. Reading materials will primarily consist of online technical documentation relating to the specific topics we discuss.

**Required or Special Materials**
Since this is a Cloud Computing class, the only requirement is reliable access to a computer you can install software on, or access to a computer lab with the required software. The main piece of software you will need on your computer will be Docker Desktop. This will be discussed in class.

**Final Examination**
The Final Exam for this class will be **Wednesday, December 14th 8am - 10am in BIOW 301**

Final Exam Regulations and Final Exam Schedule: [https://registrar.arizona.edu/faculty-staff-resources/room-class-scheduling/schedule-classes/final-exams](https://registrar.arizona.edu/faculty-staff-resources/room-class-scheduling/schedule-classes/final-exams)

**Grading Scale and Policies**
This class will be graded on the regular grading scale of A B C D and E.

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<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>A</td>
<td>90%</td>
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<tr>
<td>B</td>
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<td>C</td>
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<td>D</td>
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<td>E</td>
<td>&lt; 60%</td>
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University policy regarding grades and grading systems is available at [http://catalog.arizona.edu/policy/grades-and-grading-system](http://catalog.arizona.edu/policy/grades-and-grading-system)

Grades will come from homework assignments and the exams.

- **Homework:** 60%
- **Exams:** 40%

There will not be a ‘curve’ of any type applied to the course. If everyone completes all the assignments and exams satisfactorily, there is no reason everyone would not receive an A.

**Grading Schedule**
Homework assignments will be graded before the next assignment is due. I will target 6 days to return graded homeworks.

Exams will be graded within 10 days, except for the last exam, which must be graded within 3 days since that’s when final grades are due.

**Department of Computer Science Grading Policy:**
1. Instructors will explicitly promise when every assignment and exam will be graded and returned to students. These promised dates will appear in the syllabus, associated with the corresponding due dates and exam dates.
2. Graded homework will be returned before the next homework is due.
3. Exams will be returned “promptly”, as defined by the instructor (and as promised in the
4. Grading delays beyond promised return-by dates will be announced as soon as possible with an explanation for the delay.

**Incomplete (I) or Withdrawal (W):**

Requests for incomplete (I) or withdrawal (W) must be made in accordance with University policies, which are available at [http://catalog.arizona.edu/policy/grades-and-grading-system#Incomplete](http://catalog.arizona.edu/policy/grades-and-grading-system#Incomplete) and [http://catalog.arizona.edu/policy/grades-and-grading-system#Withdrawal](http://catalog.arizona.edu/policy/grades-and-grading-system#Withdrawal) respectively.

**Honors Credit**

Students wishing to contract this course for Honors Credit should e-mail me to set up an appointment to discuss the terms of the contact and to sign the Honors Course Contract Request Form. The form is available at [http://www.honors.arizona.edu/honors-contracts](http://www.honors.arizona.edu/honors-contracts)

**Scheduled Topics/Activities**

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<tr>
<th>#</th>
<th>Week Of</th>
<th>Topics</th>
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<tbody>
<tr>
<td>1</td>
<td>August 22</td>
<td>Class overview. History of Backend Computing. UNIX Basics, Docker</td>
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<tr>
<td>4</td>
<td>September 12</td>
<td>Web Servers &amp; Applications. HTTP Protocol</td>
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<td>5</td>
<td>September 19</td>
<td>Talk Like A Pirate Day. Python. HTTP Clients</td>
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<td>6</td>
<td>September 26</td>
<td>REST APIs &amp; JSON. Tic Tac Toe basics.</td>
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<td>7</td>
<td>October 3</td>
<td>Passwords, Authentication &amp; Authorization</td>
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<td>8</td>
<td>October 10</td>
<td>Virtual Servers</td>
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<td>9</td>
<td>October 17</td>
<td>Data Storage. SQL Databases. Column Stores. Memcache</td>
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<td>10</td>
<td>October 24</td>
<td>HTTP Cookies &amp; Session Management. Public Key Infrastructure.</td>
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<td>11</td>
<td>October 31</td>
<td>Halloween! Introduction to Amazon Web Services. aws-cli.</td>
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<tr>
<td>12</td>
<td>November 7</td>
<td>API Development &amp; Webhooks.</td>
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<td>13</td>
<td>November 14</td>
<td>Python Flask. Tic Tac Toe API.</td>
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<td>14</td>
<td>November 21</td>
<td>Short Week. Thanksgiving. Intro to Javascript</td>
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<td>16</td>
<td>December 5</td>
<td>Putting it all together. Tic Tac Toe app.</td>
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<td>*</td>
<td>December 12</td>
<td>Last Exam December 14th - 8am - 10am - Our Regular Room: BIOW 301</td>
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**Department of Computer Science Code of Conduct**

The Department of Computer Science is committed to providing and maintaining a supportive educational environment for all. We strive to be welcoming and inclusive, respect privacy and confidentiality, behave respectfully and courteously, and practice intellectual honesty. Disruptive behaviors (such as physical or emotional harassment, dismissive attitudes, and abuse of department resources) will not be tolerated. The complete Code of Conduct is available on our
department web site. We expect that you will adhere to this code, as well as the UA Student Code of Conduct, while you are a member of this class.

Classroom Behavior Policy
To foster a positive learning environment, students and instructors have a shared responsibility. We want a safe, welcoming, and inclusive environment where all of us feel comfortable with each other and where we can challenge ourselves to succeed. To that end, our focus is on the tasks at hand and not on extraneous activities (e.g., texting, chatting, reading a newspaper, making phone calls, web surfing, etc.).

Students are asked to refrain from disruptive conversations with people sitting around them during lecture. Students observed engaging in disruptive activity will be asked to cease this behavior. Those who continue to disrupt the class will be asked to leave lecture or discussion and may be reported to the Dean of Students.

Threatening Behavior Policy
The UA Threatening Behavior by Students Policy prohibits threats of physical harm to any member of the University community, including to oneself. See http://policy.arizona.edu/education-and-student-affairs/threatening-behavior-students.

Accessibility and Accommodations
At the University of Arizona, we strive to make learning experiences as accessible as possible. If you anticipate or experience barriers based on disability or pregnancy, please contact the Disability Resource Center (520-621-3268, https://drc.arizona.edu/) to establish reasonable accommodations.

Code of Academic Integrity
Students are encouraged to share intellectual views and discuss freely the principles and applications of course materials. However, graded work/exercises must be the product of independent effort unless otherwise instructed. Students are expected to adhere to the UA Code of Academic Integrity as described in the UA General Catalog. See https://deanofstudents.arizona.edu/student-rights-responsibilities/academic-integrity.

Uploading material from this course to a website other than D2L (or the class piazza) is strictly prohibited and will be considered a violation of the course policy and a violation of the code of academic integrity. Obtaining material associated with this course (or previous offerings of this course) on a site other than D2L (or the class piazza), such as Chegg, Course Hero, etc. or accessing these sites during a quiz or exam is a violation of the code of academic integrity. Any student determined to have uploaded or accessed material in an unauthorized manner will be reported to the Dean of Students for a Code of Academic Integrity violation, with a recommended sanction of a failing grade in the course.

The University Libraries have some excellent tips for avoiding plagiarism, available at http://new.library.arizona.edu/research/citing/plagiarism.

Selling class notes and/or other course materials to other students or to a third party for resale is not permitted without the instructor’s express written consent. Violations to this and other course rules are subject to the Code of Academic Integrity and may result in course sanctions. Additionally, students who use D2L or UA e-mail to sell or buy these copyrighted materials are subject to Code of Conduct Violations for misuse of student e-mail addresses. This conduct may
also constitute copyright infringement.

Nondiscrimination and Anti-harassment Policy
The University of Arizona is committed to creating and maintaining an environment free of discrimination. In support of this commitment, the University prohibits discrimination, including harassment and retaliation, based on a protected classification, including race, color, religion, sex, national origin, age, disability, veteran status, sexual orientation, gender identity, or genetic information. For more information, including how to report a concern, please see http://policy.arizona.edu/human-resources/nondiscrimination-and-anti-harassment-policy

Our classroom is a place where everyone is encouraged to express well-formed opinions and their reasons for those opinions. We also want to create a tolerant and open environment where such opinions can be expressed without resorting to bullying or discrimination of others.

Additional Resources for Students
UA Academic policies and procedures are available at http://catalog.arizona.edu/policies
Visit the UArizona COVID-19 page for regular updates.

Campus Health
http://www.health.arizona.edu/
Campus Health provides quality medical and mental health care services through virtual and in-person care. Voluntary, free, and convenient COVID-19 testing is available for students on Main Campus. COVID-19 vaccine is available for all students at Campus Health.
Phone: 520-621-9202

Counseling and Psych Services (CAPS)
https://health.arizona.edu/counseling-psych-services
CAPS provides mental health care, including short-term counseling services.
Phone: 520-621-3334

The Dean of Students Office’s Student Assistance Program
https://deanofstudents.arizona.edu/support/student-assistance
Student Assistance helps students manage crises, life traumas, and other barriers that impede success. The staff addresses the needs of students who experience issues related to social adjustment, academic challenges, psychological health, physical health, victimization, and relationship issues, through a variety of interventions, referrals, and follow up services.
Email: DOS-deanofstudents@email.arizona.edu
Phone: 520-621-7057

Survivor Advocacy Program
https://survivoradvocacy.arizona.edu/
The Survivor Advocacy Program provides confidential support and advocacy services to student survivors of sexual and gender-based violence. The Program can also advise students about relevant non-UA resources available within the local community for support.
Email: survivoradvocacy@email.arizona.edu
Phone: 520-621-5767

Campus Pantry
Any student who has difficulty affording groceries or accessing sufficient food to eat every day, or who lacks a safe and stable place to live and believes this may affect their performance in the course, is urged to contact the Dean of Students for support. In addition, the University of Arizona Campus Pantry is open for students to receive supplemental groceries at no cost. Please see their website at: campuspantry.arizona.edu for open times.

Furthermore, please notify me if you are comfortable in doing so. This will enable me to provide any resources that I may possess.

**Pronouns and Preferred Names**

This course affirms people of all gender expressions and gender identities. If you prefer to be called a different name than what is on the class roster, please let me know. Feel free to correct instructors on your pronoun. If you have any questions or concerns, please do not hesitate to contact me directly in class or via email (instructor email). If you wish to change your preferred name or pronoun in the UAccess system, please use the following guidelines:

**Preferred name:** University of Arizona students may choose to identify themselves within the University community using a preferred first name that differs from their official/legal name. A student’s preferred name will appear instead of the person’s official/legal first name in select University-related systems and documents, provided that the name is not being used for the purpose of misrepresentation. Students are able to update their preferred names in UAccess.

**Pronouns:** Students may designate pronouns they use to identify themselves. Instructors and staff are encouraged to use pronouns for people that they use for themselves as a sign of respect and inclusion. Students are able to update and edit their pronouns in UAccess.

More information on updating your preferred name and pronouns is available on the Office of the Registrar site at https://www.registrar.arizona.edu/.

**Safety on Campus and in the Classroom**

Familiarize yourself with the UA Critical Incident Response Team plans: https://cirt.arizona.edu/

Emergency Procedures
https://cirt.arizona.edu/case-emergency/overview

Also watch the video available at https://ua-saem-aiss.narrasys.com/#/story/university-of-arizona-cert/active-shooter

**Confidentiality of Student Records**


**Land Acknowledgement Statement**

We respectfully acknowledge the University of Arizona is on the land and territories of Indigenous peoples. Today, Arizona is home to 22 federally recognized tribes, with Tucson being home to the O’odham and the Yaqui. Committed to diversity and inclusion, the University strives to build sustainable relationships with sovereign Native Nations and Indigenous communities through education offerings, partnerships, and community service.
Subject to Change Statement

Information contained in the course syllabus, other than the grade and absence policy, may be subject to change with advance notice, as deemed appropriate by the instructor.