here frequently.
Generally lectures will be monday and sprint demos will be wednesday

- Week 1: Sept 3: Course Overview
  - Wed Sept 3:
    - Introduction to cloud computing
    - course structure, schedule & Review paper reviewing guidelines, project description guidelines...
- Week 2: Sept 8 - 10: Overview of Cloud Computing
  - Monday Sept 8: Ata Turk - Cloud DCs
    - Quiz 1
    - What is cloud computing
    - The Datacenter as a Computer: An Introduction to the Design of Warehouse-Scale Machines (Chapters 1 through 3)
  - Wed Sept 10: Michael Daitzman - Agile
    - First agile methods lecture, before class read and watch the video in this document (Agile Lecture 1) (1-2 hours)
    - **Fill in the skills survey**
    - **Fill in the project preference from**
    - We will assign project teams by Friday, pls reach out to your team members asap
- Week 3: Sept 15 - 17
  - Mon Sep 15: Second agile methods lecture Michael Daitzman - Agile
    - Before the class read Agile Section 2
  - Wed Sep 17: Ata Turk - Cloud File Systems, Cloud compute platforms
    - Quiz 2
    - The Google File System
    - MapReduce: simplified data processing on large clusters
- Week 4: Sept 22 - Sept 24
  - Mon Sept 22: Ata Turk
  - Quiz 3
    - Spark: Cluster Computing with Working Sets
    - BigTable: A Distributed Storage System for Structured Data
  - **Project descriptions: Due Tue Sept 23rd, update your Readme.md file**
  - Wed Sept 24:
    - **Behind the Scenes of a Distributed Containerized Web Application - Evren Sen (**Lead AWS Principal Solutions Architect**)**
- Week 5: Sept 29 - Oct 1
  - Mon Sept 29:
    - Orran Krieger - Virtualization
      - Quiz 4
      - Xen and the art of virtualization
      - Container-based Operating System Virtualization: A Scalable, High-performance Alternative to Hypervisors
        - Additional reading:

started-fargate.html
    - Take screenshots of each step and share with the TA
    - You have 1 week to complete
- Week 6: Oct 6 - 8
  - Mon Oct 6:
    - Quiz 5
    - Serverless Computation with OpenLambda
    - A Berkeley View on Serverless Computing
      - Additional reading
        - Serverless in the Wild: Characterizing and Optimizing the Serverless Workload at a Large Cloud Provider
        - On-demand Container Loading in AWS Lambda
        - XFaaS: Hyperscale and Low Cost Serverless Functions at Meta
  - Wed Oct 8:
    - Invited Talk: Stefan Mationg, AWS
      - AWS Lambda: Run code without provisioning or managing servers
    - Workshop 2:
      - Go through the following workshop, AWS: Build a Serverless Web Application using Generative AI, take screenshots showcasing you completed the workshop and send them to the TA. You have 1 week to complete.
- Week 7: Oct 14 - 15
  - Mon Oct 13: Indigenous People's Day Holiday, Classes Suspended
  - Tue Oct 14: Substitute Monday schedule of classes
    - Quiz 6
    - Storm@twitter [video (Nathan Marz presenting Storm)]
    - Spark: Discretized Streams: An Efficient and Fault-Tolerant Model for Stream Processing on Large Clusters [video (Tathagata Das presenting the paper)]
      -
  - Wed Oct 15
    - **Sprint demo 2**
- Week 8: Oct 20-22
  - Mon Oct 20:
    - Quiz 7
    - Ceph: a scalable, high-performance distributed file system; also check: CRUSH, data placement algorithm of CEPH and RADOS, underlying object store of CEPH.
    - Flat Datacenter Storage [video (Jeremy Elson presenting the paper)]
  - Wed Oct 22:
    - Spanner: Google's Globally-Distributed Database
    - Quiz 8
- Week 9: Oct 27- Oct 29
  - Mon Oct 27:

showcasing you completed the sections of the workshop and send them to the TA. You have 1 week to complete.

- Wed Oct 29
  - **Sprint demo 3**
- Week 10: Nov 3 - 5
  - Mon: Nov 3 Surya Jayanthi
    - Invited Talk: Ugur Kaynar, Storage Technologist, Chief Technology Office at Dell
      - Presenter: Ugur Kaynar
      - Abstract: Storage requirements of AI workloads (training/inference)
    - Quiz 10
    - Kafka: a Distributed Messaging System for Log Processing
  - Wed Nov 5:
    - Quiz 9
    - Large-scale cluster management at Google with Borg
    - Mesos: A Platform for Fine-Grained Resource Sharing in the Data Center
    - Workshop 2:
      - Go through the following workshop up to the Observability section (first 9 sections), Building Web Applications based on Amazon EKS, take screenshots showcasing you completed the workshop sections and send them to the TA. You have 1 week to complete.
    - Workshop 5:
      - Go through the following workshop, File Streaming with AWS Media Services, take screenshots showcasing you completed the workshop and send them to the TA. You have 1 week to complete.
- Week 11: Nov 10 - 12
  - Mon: Nov 10
    - Invited Talk: Dan Lambright, Apple
      - Dan Lambright has worked the last 4 years in iCloud for Apple. In prior years he worked at Meta, AWS, and Red Hat. He enjoys building file systems and databases. He has an MSCS from the University of Arizona and a BSCS from RPI.
      - This talk will be about one the databases underpinning iCloud (FoundationDB), and the SQL-like layer above it called the Record layer. An overview of the architecture and how applications talk to it will be discussed.
  - Wed: Nov 12
    - **Sprint demo 4**
- Week 12: Nov 17 - 19
  - Monday Nov 17
    - Dynamo: amazon's highly available key-value store
  - Wed Nov 19
    - Quiz 12
    - Lost at C: A User Study on the Security Implications of Large Language Model Code Assistants

    - Characterization of Large Language Model Development in the Datacenter
- Week 13: Nov 24 - 26
    - Monday: Nov 24 LLMs - Ravi Bandaru/Surya Jayanthi
        - **Sprint demo 5**
    - Wed: Nov 26
        - Thanksgiving break
- Week 14: Dec 1 - 3: Cloud Observability - Surya Jayanthi
    - Monday Dec 1:
        - Quiz 13
        - Zero Overhead Monitoring for Cloud-native Infrastructure using RDMA
    - Wednesday Dec 3:
        - Quiz 14
        - The History of Logging @ Facebook (Abridged)
        - Invited Talk: TBD
- Week 15: Dec 8-10
    - Monday Dec 8:
        - Final presentations
    - Wednesday Dec 10:
        - Final presentations

Additional Reading:

- Cloud Backup: Data Domain Cloud Tier: Backup here, backup there, deduplicated everywhere!
- Cloud Tracing: X-trace: a pervasive network tracing framework
- Cloud Datacenter Networks: Data Center TCP (DCTCP)
- Empowering Azure Storage with RDMA
- CICD: AWS CICD blog posts: Automating safe, hands-off deployments, Going faster with continuous delivery, and Ensuring rollback safety during deployments
- Resource Management: Twine: A Unified Cluster Management System for Shared Infrastructure
- Serverless: On-demand Container Loading in AWS Lambda
- Storage for Serverless: Pocket: Elastic Ephemeral Storage for Serverless Analytics
- NoSQL: Cassandra - A Decentralized Structured Storage System
- LLM Checkpointing: Gemini: Fast Failure Recovery in Distributed Training with In-Memory Checkpoints
- BigQuery insides: Overview of BigQuery storage
- Big Metadata: When Metadata is Big Data
- Cloud security: Credit Karma: Understanding Security Implications of Exposed Cloud Services through Automated Capability Inference
- Cloud hw security: The Security Design of the AWS Nitro System
- Cloud DBs: FoundationDB: A Distributed Key Value Store

Workshops to look at:

- AWS: Build a Serverless Web Application using Generative AI
- Amazon EKS
- File Streaming with AWS Media Services
- AWS Observability
- Amazon ECS Cats and Dogs
- Building your first DevOps Blue/Green pipeline with Amazon ECS