Syllabus (Revised 10/23/2019)

Section DL1: Asynchronous Distance Learning Section *
Instructor: Pouyan Ahmadi
Office: Online using Blackboard tools by appointment
Phone:
Email: pahmadi@gmu.edu

GTA: Aneesha Chegoni
Office: by appointment
Office Hours: by appointment
Email: achegoni@gmu.edu

* Asynchronous Distance Learning Section:

This is an online asynchronous distance learning section. Students will take the midterm and the final exams at home using the Respondus Lockdown Browser/Monitor.

Midterm Exam:
The midterm exam will be “closed book”– no reference materials will be permitted.

Final Exam:
The final exam will be comprehensive. The final exam will be “closed book”– no reference materials will be permitted. Final exams are retained by the AIT Department and are not returned to students.
Prerequisite:
IT341, Math108 or Math125 or permission of the instructor

Lecture Textbooks:
- Also, students are required to download and read all reading assignments as specified in the weekly assignment under the Course Content.

Slides:
Class lectures

Lecture:
Pre-recorded lecture posted to the Blackboard.

Course Materials at:
https://mymasonportal.gmu.edu

This course will cover cloud computing essentials. It is designed to familiarize students with cloud technologies behind cloud computing with the focus in Amazon Web Services (AWS). A combination of lectures and hands-on lab assignments expose the student to the leading cloud computing paradigms and services (e.g., EC2, VPC, S3, etc). In addition, lectures provide an overview of the underlying Networking concepts that make cloud computing possible (e.g. IPv4/6, virtualization, scalability, fault tolerance, security). By the end of this course students will be able to discuss cloud networking products and how they work together to meet your application needs.

- Provides an introduction to the cloud computing platform
- Describe and use of different cloud storages
- Describe custom-defined virtual network within cloud
- Covers essential cloud-based database concepts
- Getting familiar with a concept of highly available, highly scalable, and fault-tolerant systems
- Examine how to import/export VM images
- How to deploy and manage resources in a hybrid cloud architecture
- Understand IPv6 basics, addressing and security
- Describe MPLS networks
- Understand and use VPN for secure remote access

Grading:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Homework/Lab Assignment</td>
<td>35%</td>
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<tr>
<td>Mid Term</td>
<td>20%</td>
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<tr>
<td>Final Exam</td>
<td>25%</td>
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<tr>
<td>Discussion Board</td>
<td>5%</td>
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<tr>
<td>Quizzes</td>
<td>15%</td>
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<tr>
<td>Session</td>
<td>Content</td>
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<tr>
<td>1</td>
<td>Introduction to AWS  &lt;br&gt;What is Cloud Computing?  &lt;br&gt;EC2 Basics</td>
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<tr>
<td>2</td>
<td>Amazon Machine Images (AMI)  &lt;br&gt;Security Group (SG)</td>
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<td>3</td>
<td>Cloud Storage  &lt;br&gt;Amazon Elastic Block Storage (EBS)</td>
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<td>4</td>
<td>Amazon Elastic File System (EFS)  &lt;br&gt;Amazon Glacier</td>
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<td>5</td>
<td>Amazon Simple Storage Service (S3) – Part 1</td>
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<tr>
<td>Week</td>
<td>Topic</td>
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| 6    | Amazon Simple Storage Service (S3) – Part 2 | **Due: Sep 29**  
- Quiz 4  
- Lab assignment 5  
**Released on: Sep 29**  
- Quiz 5  
- Lab assignment 6  
- Recorded Lecture |
| 7    | Amazon Virtual Private Cloud (VPC) – Part 1 | **Due: Oct 6**  
- Quiz 5  
- Lab assignment 6  
**Released on: Oct 6**  
- Quiz 6  
- Lab assignment 7  
- Recorded Lecture  
- Midterm Exam Review |
| 8    | **Take-home Midterm Exam**  
Oct 13th, 2019 from 10:00 AM – 1:00 PM  
(Located on Blackboard using Respondus LockDown Browser/Monitor) |  
| 9    | Amazon Virtual Private Cloud (VPC) – Part 2 | **Due: Oct 20**  
- Quiz 6  
- Lab assignment 7  
**Released on: Oct 20**  
- Quiz 7  
- Lab assignment 8  
- Recorded Lecture |
<table>
<thead>
<tr>
<th>Week</th>
<th>Course Content</th>
<th>Due</th>
<th>Released on</th>
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<tbody>
<tr>
<td>10</td>
<td>Databases and AWS– Part 1</td>
<td>Oct 27</td>
<td>Oct 27</td>
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<tr>
<td>11</td>
<td>Databases and AWS– Part 2</td>
<td>Nov 3</td>
<td>Nov 3</td>
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<td>12</td>
<td>IPv6 Essentials &amp; Implementation MPLS</td>
<td>Nov 10</td>
<td>Nov 10</td>
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<td>13</td>
<td>Open VPN VPN in AWS</td>
<td>Nov 17</td>
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<td>14</td>
<td>Thanksgiving Break</td>
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<td></td>
<td>No class</td>
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<td>15</td>
<td>Hybrid Architecture, Virtualization</td>
<td>Due: Dec 1</td>
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<td>• Final Exam Practice Quiz</td>
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<td>• Lab assignment 12</td>
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<td>Released on: Dec 1</td>
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<td>• Recorded Lecture</td>
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<td>16</td>
<td>Take-home Final Exam</td>
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<td>Dec 8th, 2019</td>
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<td>10:00 AM – 1:00 PM</td>
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<td>(on Blackboard using Respondus LockDown Browser/Monitor)</td>
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Grades will be awarded in accordance with the GMU Grading System for undergraduate students. For details, refer to [http://www.gmu.edu/catalog/apolicies/](http://www.gmu.edu/catalog/apolicies/)

Grading Scale:

97 – 100% A+
93 – 96% A
90 – 92% A-
87 – 89% B+
83 – 86% B
80 – 82% B-
76 – 79% C+
70 – 75% C
60 – 69% D
0 – 59% F
Raw scores may be adjusted by the Instructor to calculate final grades.

Homework/lab assignment assignments are in Blackboard. Each homework/lab assignment will be released for viewing 7 days prior to the due date. **Late homework assignment will not be accepted** – if accepted, a penalty will be applied. Late submission will not be accepted under any circumstances if it is submitted 7 days after due date. Acceptance of late homework/lab assignment, and retake of missed exam will be at the sole discretion of the Instructor. All assignments will be turned in through Blackboard. **Emailed homework/lab assignment are not accepted.**

While students are encouraged to discuss solutions to homework/lab assignment and project problems, each student must submit their own, original, work. Students are expected to abide by the [George Mason University Honor System and Code](https://www.gmu.edu/about/gmu-honor-system-and-code/) (which contains a definition of plagiarism, amongst other things). Further related information is available from IEEE, ACM.

Note that we reserve the right to submit student homework/lab assignment and projects for automated testing against other submitted projects to confirm a submission’s originality.

**Schedule (Subject to Change):**

The reading assignment shown for each lecture is to be completed prior to that lecture.

*This schedule is subject to revision before and throughout the course.*

*Registered students should see the Blackboard Learning System for the latest class schedule.*

**Important Dates**

- **Last day to add classes:** Refer to the link below
- **Final drop deadline with 67% tuition penalty:** Refer to the link below
- **Last day of classes:** Refer to the link below

Copy the following link into your browser:

https://registrar.gmu.edu/calendars/spring-2019/

**Religious Holidays**

A list of religious holidays is available on the [University Life Calendar page](https://www.gmu.edu/about/university-life-calendar). Any student whose religious observance conflicts with a scheduled course activity must contact the Instructor at least 1 week in advance of the conflict date in order to make alternative arrangements.
**Attendance Policy**

Departmental policy requires students to take exams at the scheduled time and place, unless there are truly compelling circumstances supported by appropriate documentation. Except in such circumstances, failure to attend a scheduled exam will result in a score of zero (0) for that exam, in accordance with Mason policy on final exams. Students should not make travel plans or other discretionary arrangements that conflict with scheduled classes and/or exams. If the University is closed due to weather or other unforeseen conditions, final exams may be rescheduled – students are strongly advised not to make plans that would prevent them from attending exams that may be rescheduled during the entire exam period.

**Communications**

Registered students will be given access to a section of the Blackboard Learning System for this course. Blackboard will be used as the primary mechanism to disseminate course information, including announcements, lecture slides, homework and other assignments, and scores for homework and exams.

Communication with the Instructor on issues relating to the individual student should be conducted using GMU email, via telephone, or in person - not in the public forums on Blackboard. GMU email is the preferred method – for urgent messages, you should also attempt to contact the Instructor via telephone. Federal privacy law and GMU policy require that any communication with a student related in any way to a student's status be conducted using secure GMU systems – if you use email to communicate with the Instructor you MUST send messages from your GMU email account.

Lecture slides are complements to the lecture process, not substitutes for it - access to lecture slides will be provided in Blackboard.

All course materials (lecture slides, assignment specifications, etc.) are published on Blackboard. This allows users of most computing platforms to view and print these files. Microsoft Word (or a compatible word processing application) is required for preparing assignments – it is available on computers in the Mason open labs.

**Privacy**

Instructors respect and protect the privacy of information related to individual students above, issues relating to an individual student will be discussed via email, telephone or in person. Instructors will not discuss issues relating to an individual student with other students (or anyone without a need to know) without prior permission of the student.

Assessable work other than final exams will be returned to individual students directly by the Instructor (or by a faculty or staff member or a Teaching Assistant designated by the Instructor or via another secure method). Under no circumstances will a student’s graded work be returned to another student. Faculty and staff will take care to protect the privacy of each student’s scores and grades.

**Disability Accommodations**

The Office of Disability Services (ODS) works with disabled students to arrange for appropriate accommodations to ensure equal access to university services. Any student with a disability of any kind is strongly encouraged to register with ODS as soon as possible and take advantage of the services offered.
Accommodations for disabled students must be made in advance – ODS cannot assist students retroactively, and at least one week’s notice is required for special accommodations related to exams. Any student who needs accommodation should contact the Instructor during the first week of the semester so the sufficient time is allowed to make arrangements.

Honor Code

All members of the Mason community are expected to uphold the principles of scholarly ethics. Similarly, graduating students are bound by the ethical requirements of the professional communities they join. The ethics requirements for some of the communities relevant to Applied IT graduates are available via the following links:

ACM Code of Ethics and Professional Conduct

IEEE Code of Ethics

ECCouncil Code of Ethics

On admission to Mason, students agree to comply with the requirements of the GMU Honor System and Code.¹ The Honor Code will be strictly enforced in this course. Honor Code cases are heard by a panel consisting of students – students who meet the requirements are encouraged to nominate themselves to serve on the Honor Committee.

Any use of the words or ideas of another person(s), without explicit attribution that clearly identifies the material used and its source in an appropriate manner, is plagiarism and will not be tolerated. The Instructor reserves the right to use manual and/or automated means (including such services as Turnitin.com) to detect plagiarism in any work submitted by students for this course, and to direct Teaching Assistants and/or other faculty and/or staff members to do likewise in support of this course.

For this course, the following requirements are specified:

All assessable work is to be prepared by the individual student, unless the Instructor explicitly directs otherwise.

All work must be newly created by the individual student for this course for this semester.

Any usage of work developed for another course, or for this course in a prior semester, is strictly prohibited without prior approval from the instructor. Students may seek assistance with assigned work (and are encouraged to do so if they feel the need), provided:

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¹ Available at www.gmu.edu/catalog/apolicies and related GMU Web pages.
▪ The directions for the assigned work do not prohibit such assistance.

▪ Such assistance is acknowledged in the submitted work, clearly identifying the person(s) giving assistance and the nature of the assistance given.

▪ Any work to be submitted is prepared entirely and exclusively by the student submitting it. Students are expressly prohibited from sharing any assessable work for this course in any manner with other students (except students assigned as Teaching Assistants or Undergraduate Peer Mentors to this course and the student’s section), unless all students involved have had their work graded and returned by the Instructor, or the Instructor has explicitly approved such sharing.