Cloudifying the Curriculum with AWS

Michael Soltys
January 24, 2020

Students we serve with AWS

Computer Science / IT
Undergraduate
Majors

Masters
Computer Science

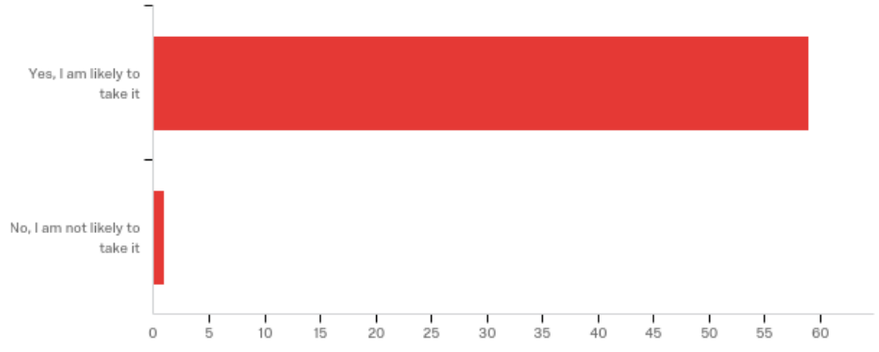
Communication /
Business

Working
Professionals
(Navy, IT industry, etc.)

Computer Science / IT
Undergraduate
Majors

- Cloud Computing certification (AWS Academy)
  COMP 490 *Special Topics*
  Winter 2019
  30 students
  https://prof.msoltys.com/?page_id=5112

- Survey shows great interest:
  https://prof.msoltys.com/?p=5123



Tejas Sachdeva • 1st
Computer Science Senior | Career Peer Mentor | Actively seeking full time Sof...
1w • Edited •

Great start to 2020!

I decided to be productive during winter break and successfully completed the AWS Cloud Foundations course. “Cloud Computing” skills have ranked #1 on LinkedIn and other sites over the last 5 years.
Thank you to Professor Michael Soltys for the lectures.

The next step is the AWS Cloud Computing certification!

#aws #cloudcomputing #cloudtraining #computerscience

33 • 12 Comments

Reactions

+25

Communication / Business Undergraduate Majors

- Online Communication and Society (COMP 347)

Building a Wordpress blog with AWS (AWS Educate)
Summer 2019
30+ students
http://prof.msoltys.com/?page_id=4527

Masters
Computer Science

- Cloud Computing (COMP 529)
  Covered Architecting certification (AWS Educate)
  Spring 2019
  35+ students
  http://prof.msoltys.com/?page_id=4255

- Cybersecurity (COMP 524)
  To cover Security Speciality certification (AWS Academy)
  Summer 2020

- Software Engineering (COMP 550) (AWS Educate)

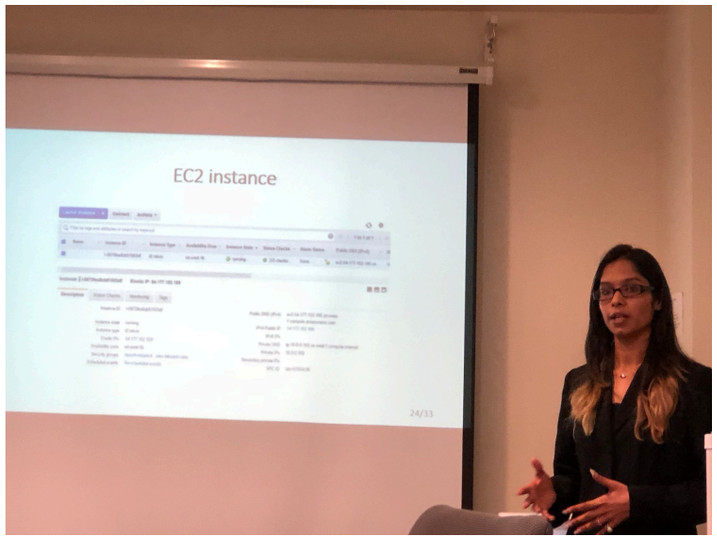
Working Professionals (Navy, IT industry, etc.)

- Cloud Foundations
  Spring 2020 (AWS Academy)
  https://prof.msoltys.com/?p=5203

- Cloud Architecting
  Spring 2020 (AWS Academy)
  https://ext.csuci.edu/programs/professional-community-ed/aws.htm

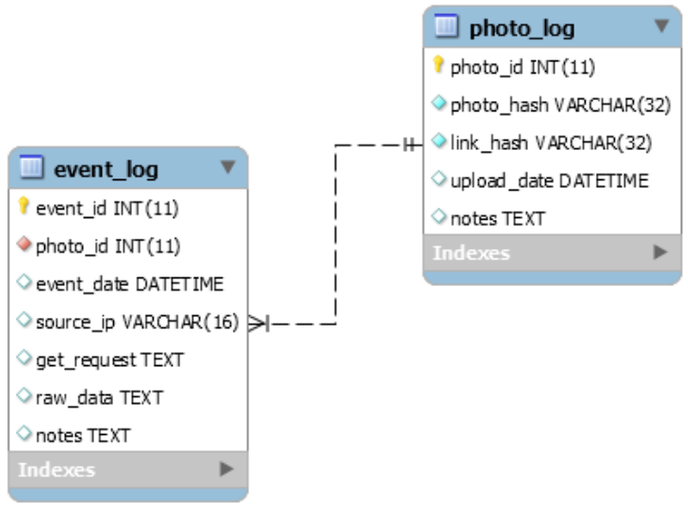
Research with AWS

https://prof.msoltys.com/aws



Wavelet Image Hashing

https://prof.msoltys.com/?p=4128



Voyager: invisible bit

https://prof.msoltys.com/?p=4011

Password breaking

https://prof.msoltys.com/?p=3968

SEAKER

https://prof.msoltys.com/?p=4790

```
~/EdgeGraph/EdgeGraph$ time python3 cover_vs_edges.py
How many vertices? 7
Generating graphs...
Filtering isomorphisms...
Sorting graphs...
Checking up to 21 edges...
0 / 21 edges complete.
1 / 21 edges complete.
2 / 21 edges complete.
3 / 21 edges complete.
4 / 21 edges complete.
5 / 21 edges complete.
6 / 21 edges complete.
7 / 21 edges complete.
8 / 21 edges complete.
9 / 21 edges complete.
10 / 21 edges complete.
11 / 21 edges complete.
12 / 21 edges complete.
13 / 21 edges complete.
14 / 21 edges complete.
15 / 21 edges complete.
16 / 21 edges complete.
17 / 21 edges complete.
18 / 21 edges complete.
19 / 21 edges complete.
20 / 21 edges complete.
21 / 21 edges complete.
elapsed time: --- 96.4 seconds ---

real 1m40.000s
user 1m36.812s
sys 0m0.113s
```

Clique Covers

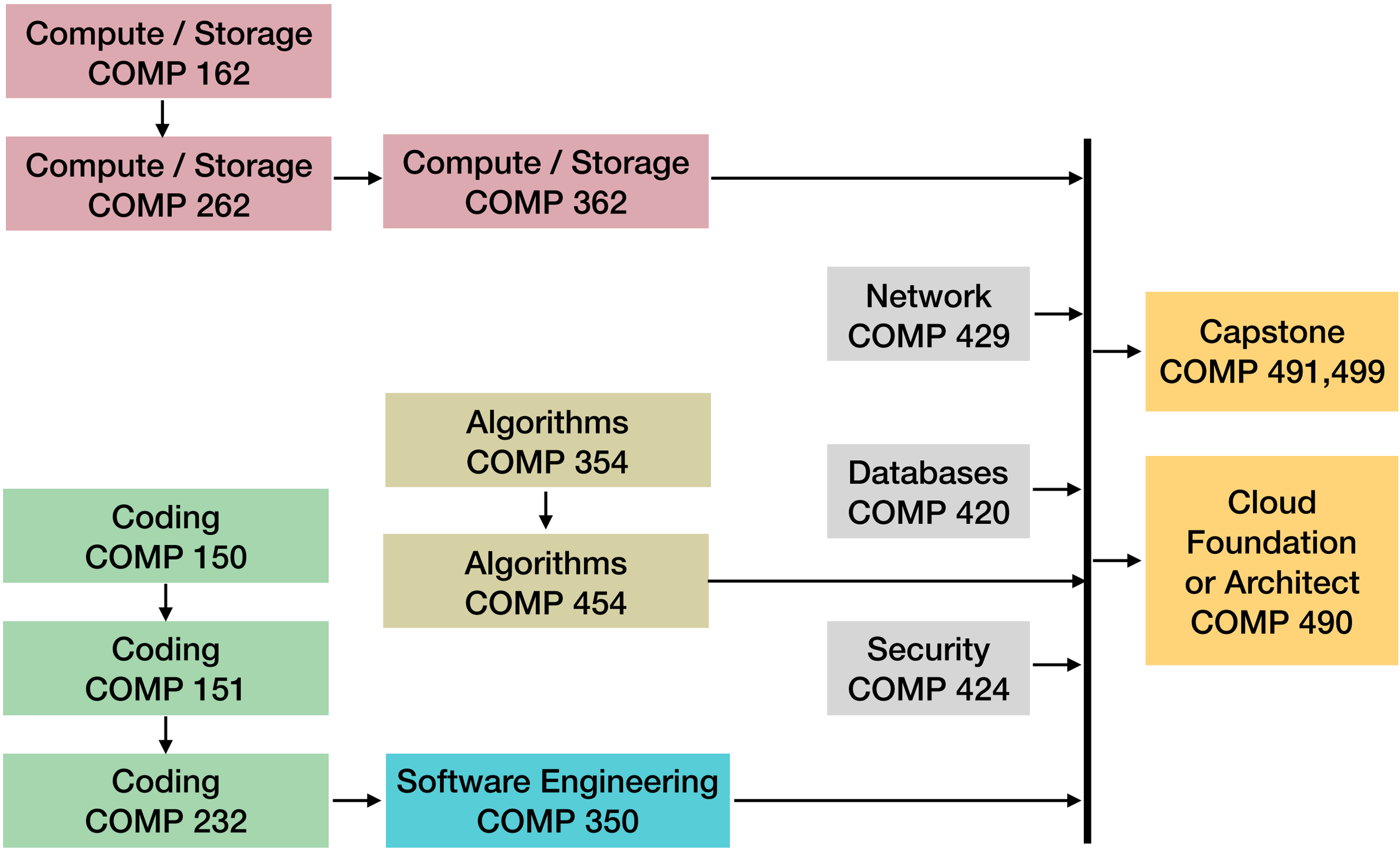
http://prof.msoltys.com/?p=3252

Majors & Minors

http://math.csuci.edu http://compsci.csuci.edu

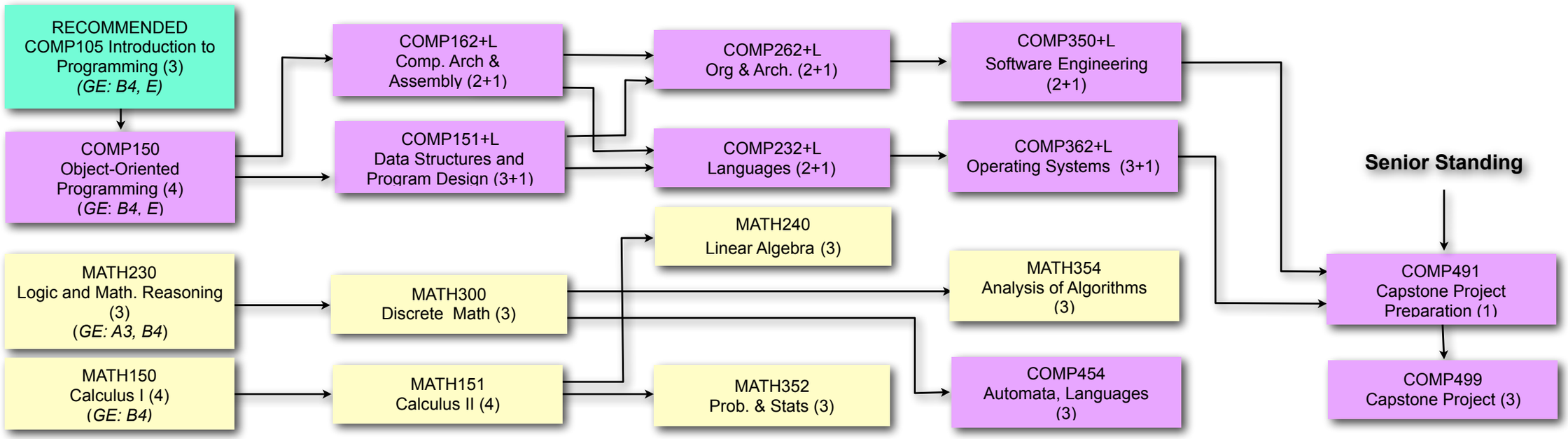
Math	CS
Mathematics	Computer Science
Physics / Applied Physics	Information Technology
Statistics / Data Analytics	**Mechatronics Engineering**
Imaging	Cybersecurity
Astronomy	Robotics
	Game Design
Masters	Masters

Cloudifying the curriculum



CSUCI COMPUTER SCIENCE B.S. DEGREE CHART

Total units: 120. C- or better grade required in all pre-requisite courses in the major.



Laboratory Science

11 units from either (a) or (b)

(a)
PHYS200 General Physics I (4),
PHYS201 General Physics II (4),
and a course from GE section B-2.
(b)
PHYS200 General Physics I (4),
BIOL200 Principles of Organismal and Population Biology (4),
BIOL212 Neurobiology and Cognitive Science (3) (GE: B2, E).

General Education and American Institutions

40 units:

General Education (28)
American Institutions (6)
Elective Courses (6)

Electives

15 units from:

COMP345 Digital Image Analysis (3)
COMP 347 Online Communication and Society (3)
COMP351 Distributed Computing (3)
COMP420+L Databases (2+1)
COMP424 Computer System Security (3)
COMP425 Computer Game Programming (3)
COMP429+L Computer Networks (2+1)
COMP445 Advanced Image Analysis and Pattern Recognition (3)
COMP451 Advanced Object-Oriented Programming (3)
COMP452 Computational Bioinformatics (3)
COMP462+L Embedded Systems (2+1)
COMP464+L Comp. Graphics I (2+1)
COMP469+L Artificial Intelligence (2+1)
COMP470+L Mobile Robotics (2+1)
COMP478+L Introduction to Data Mining (2+1)
COMP490 Special Topics (3)
COMP492 Internship (1-3)
COMP494 Independent Research (1-3)
COMP497 Directed Studies (3)
MATH 429 Operations Research (3)
MATH 448 Scientific Computing (3)

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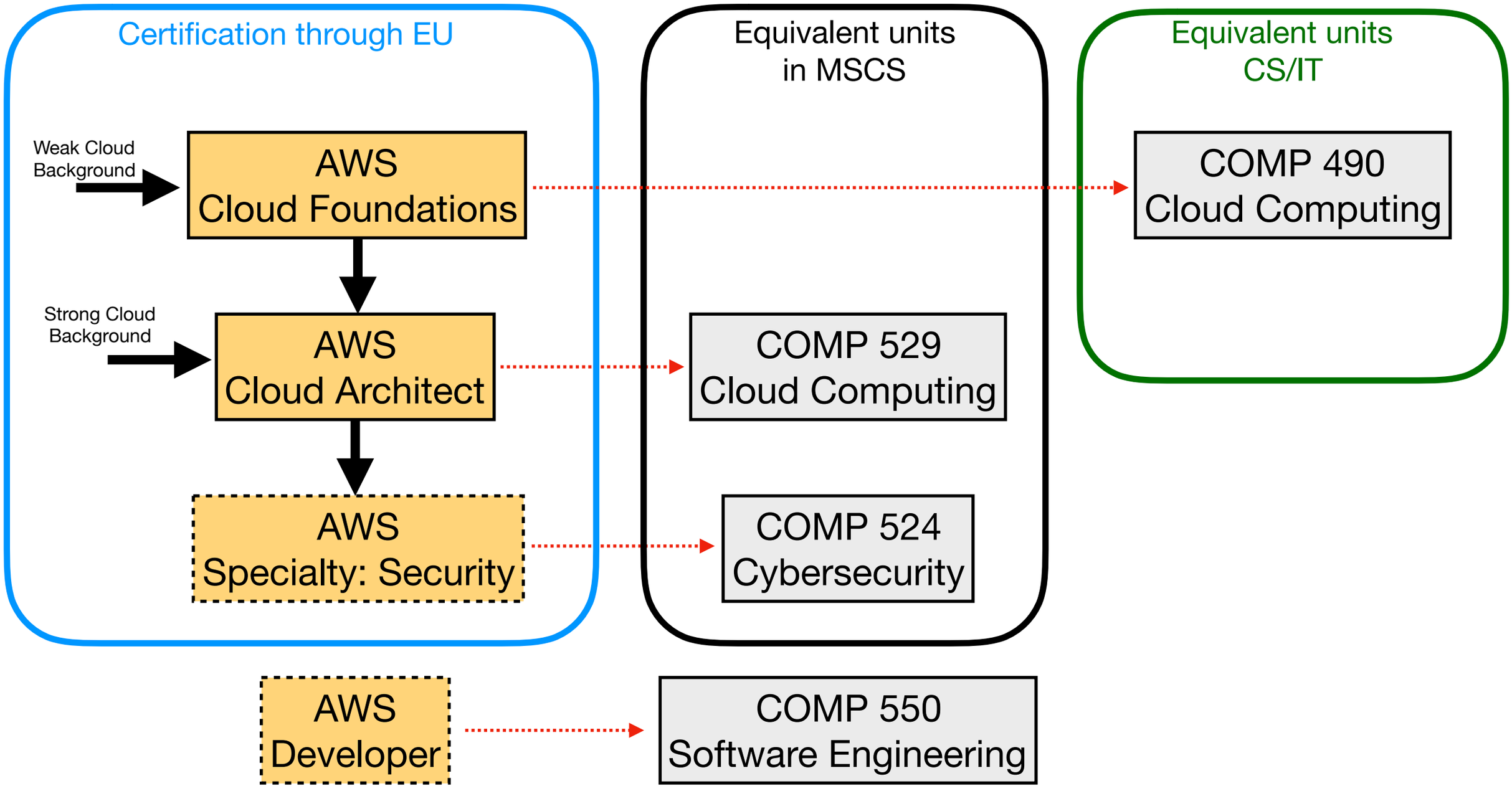
Certification through EU
Weak Cloud Background
AWS Cloud Foundations
Strong Cloud Background
AWS Cloud Architect
AWS Specialty: Security
AWS Developer
Equivalent units in MSCS
COMP 529 Cloud Computing
COMP 524 Cybersecurity
COMP 550 Software Engineering
Equivalent units CS/IT
COMP 490 Cloud Computing

Behind the scenes:

1. Train instructors (we have two accredited, and two in the pipeline)
2. Communicate to the faculty the benefit of *cloudifying*
3. Curriculum committee vs Academic Freedom
4. Buy-in from the administration, and in our case from the Comp Sci Advisory Board
5. Develop a structure to deliver AWS to the public at large (certificate program through continuing education)
6. Take into account ACM curriculum, ABET accreditation, and WASC
7. We need to also mention Google Cloud and Microsoft Azure

Questions / Discussion

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http://prof.msoltys.com