



CENTER FOR A
COMPETITIVE WORKFORCE

CLOUD COMPUTING

REGIONAL PROGRAM ADVISORY MEETING

Powered by LAEDC

Los Angeles Community College Program Look Book

POWERED BY



California
Community
Colleges



CALIFORNIA
CLOUD
WORKFORCE



LOS ANGELES COUNTY
ECONOMIC DEVELOPMENT CORPORATION

Collectively Advancing Opportunity and Prosperity for All

In partnership with the Center for a Competitive Workforce,
the Regional Directors of Employer Engagement, and the
Los Angeles County Economic Development Corporation



TABLE OF CONTENTS

MEETING AGENDA	2
CENTER FOR A COMPETITIVE WORKFORCE	3
Mission	3
Contact Information	4
REGIONAL DIRECTORS OF EMPLOYER ENGAGEMENT	5
INDUSTRY REPRESENTATION	6
CLOUD COMPUTING PROGRAM DATA	8
COMMUNITY COLLEGE REPRESENTATION	11
Cerritos College	12
Citrus College	13
East Los Angeles College	14
El Camino College	15
Glendale Community College	16
Long Beach City College	17
Los Angeles City College	18
Los Angeles Harbor College.....	20
Los Angeles Mission College	21
Los Angeles Pierce College.....	22
Los Angeles Trade Technical College	23
Mt. San Antonio College.....	24
Pasadena City College.....	25
Santa Monica College	26
West Los Angeles College	27
PROGRAM CURRICULUM	28
PROGRAM SUMMARY	35



MEETING AGENDA

Date and Time	May 29, 2020 from 10-11:30am
Occupation	Cloud Computing
Opening Remarks	Welcome and Introductions Isabel Duran, LAEDC Center for a Competitive Workforce Richard Verches, CCW Sector Overview Charlotte Augenstein, Regional Director Cloud Computing Programs Overview Salomón Dávila
Discussion Moderated by Jessica Ku Kim	Topics: <ul style="list-style-type: none">- Industry workforce trends- The evolution of technology- Opportunities to bridge gaps- Industry trends used to access entry-level talent
Curriculum Review and Approval	Colleges represented include: <ul style="list-style-type: none">- Cerritos College- Citrus College- East Los Angeles College- El Camino College- Glendale Community College- Long Beach City College- Los Angeles City College- Los Angeles Harbor College- Los Angeles Mission College- Los Angeles Pierce College- Los Angeles Trade Technical College- Mt. San Antonio College- Pasadena City College- Santa Monica College- West Los Angeles College
Closing Remarks	Next Steps and Adjournment Claire Anderson, LAEDC



CENTER FOR A COMPETITIVE WORKFORCE

Mission

Center for a Competitive Workforce (CCW) was established in 2017 as a Strong Workforce Program regional project of the 19 community colleges in the Los Angeles region in collaboration with the LA/OC Center of Excellence for Labor Market Research (COE) hosted at Mt. San Antonio College and the Los Angeles County Economic Development Corporation (LAEDC).

In partnership with the COE and LAEDC Institute for Applied Economics, CCW has published multiple labor market reports that analyze labor supply and demand data for middle-skill occupations in high-growth industries to inform and influence the development of new or modified career education and workforce development programs and curricula. CCW supports quarterly convenings with education, workforce, nonprofit, government and industry leaders in three of the LA region's most highly concentrated and fastest growing industry sectors of advanced transportation, bioscience and digital media/entertainment, with the co-equal goals to strengthen industry engagement with community college faculty and to connect more community college students to meaningful work-based learning opportunities, as one of the best ways to constructively prepare them for the 21st century jobs and careers in the fast-emerging and rapidly-changing knowledge-intensive industries that will drive our regional economy today and tomorrow.

CCW, in partnership with the regional directors for employer engagement, is piloting seven regional advisory committees to further strengthen regional alignment of and ongoing connections between faculty and industry. CCW has developed two online platforms: a biosciences industry portal and a regional Workforce and Education Partner Portal that employs technology to increase the speed and richness of industry-college connections, to seamlessly access and deploy the economic intelligence gleaned through industry engagement, and to rapidly expand and scale the number of work-based learning and employment opportunities for career education students and graduates with certificates and degrees.

Learn more at www.CompetitiveWorkforce.LA.



California
Community
Colleges



LOS ANGELES COUNTY
ECONOMIC DEVELOPMENT CORPORATION

Funded by the California Community Colleges Chancellor's Office under the Strong Workforce Program (SWP) as a Los Angeles Regional Project.

The Los Angeles County Economic Development Corporation (LAEDC) was founded in 1981 as a nonprofit, public-benefit organization to harness the power of private sector in collaboration with L.A. County, to guide economic development and create more widely shared prosperity. LAEDC collaborates with all stakeholders in the region including education, business, and government. Learn more at www.LAEDC.org.



Contact Information



Richard Verches, Executive Director, Center for a Competitive Workforce
Verches@verizon.net



Jessica Ku Kim, Senior Director of Workforce Development, LAEDC
Jessica.Kim@LAEDC.org



Claire Anderson, Workforce Development Program Manager, LAEDC
Claire.Anderson@LAEDC.org



Isabel Duran, Administrative Manager, LAEDC
Isabel.Duran@LAEDC.org



REGIONAL DIRECTORS OF EMPLOYER ENGAGEMENT

Regional Directors play a key role in implementing activities and achieving outcomes for their designated sector by working with community colleges in the designated region to strengthen connections between career education and business and industry.

The Regional Directors develop partnerships with business and industry, working closely with key talent including Regional Chairs, Centers of Excellence, Technical Assistance Providers, Pathway Coordinators, Statewide Directors, and other Regional Directors of Employer Engagement.

For more information regarding Regional Directors and their industry sectors, use the following link:
www.laocrc.org/member-resources/rdee

Los Angeles County Regional Directors

Bruce Noble, Energy, Construction and Utilities

Bruce.noble@riohondo.edu

Charlotte Augenstein, Information and Communication Technology (ICT) and Digital Media

Charlotte@Glendale.edu

Judy Fox, Business and Entrepreneurship

Jfox@cerritos.edu

Katie Mishler, Advanced Transportation and Logistics

Kmishler@cerritos.edu

Ozzie Lopez, Health

Olopez63@mtsac.edu

Ruth Amanuel, Global Trade

Ramanuel@lbcc.edu

Shari Herzfeld, Health

Shertzfeld@riohondo.edu



INDUSTRY REPRESENTATION

Dan Macftridge, Global Employer Lead at Amazon Web Services (AWS)



Dan is a global employer lead at AWS, working on behalf of Educate students and AWS customers to help them find one another and start building and growing meaningful cloud careers that accelerate digital transformation. Prior to joining AWS in 2019, Dan spent 20 years at Microsoft, Apple and other leading technology companies attempting to align business outcomes with his passion to change the world. From helping millions of underserved families secure home internet access, to empowering schools to migrate from on-premises to cloud computing, to building new sales teams that would evangelize these transformations, Dan has focused on identifying needs, understanding their root causes and solving them through public, private and government sponsored programs. Less a technologist – more a humanist, Dan has an Anthropology degree from the University of Washington.

Joanne Peterson, Chief of Human Capital and Development at Los Angeles Metro



Joanne is a seasoned human resources and labor relations professional with more than 20 years of executive-level experience in the industry. She joined the Los Angeles County Metropolitan Transportation Authority (LA Metro) in May 2015 as the Executive Officer of Human Resources and has held positions with the County of Marin and the City of Seattle's Public Utilities. Joanne holds a master's degree from the University of Washington-Seattle and an Executive Leadership Certificate from Harvard University Kennedy School, and has built world-class workforce programs with a focus on leadership development and strategic planning. Her experience includes work within unionized environments and her philosophy is to honor all agreements, be an active listener, serve as a collaborative problem-solver, and make data-driven, transparent decisions.

Kevin Griffin, Senior Practice Director of Technology Enablement at Slalom Consulting



Kevin is a Senior Practice Director for Slalom Consulting in Los Angeles, where he manages their Technology Enablement practice. Kevin's focus includes Cloud, DevOps, Digital Experience, Emerging Tech, custom software engineering as well as the technical project management office (PMO). Areas of specialization include multi-cloud delivery with Amazon Web Services (AWS), Google Cloud Platform (GCP) and Microsoft Azure, DevOps, digital experience management, web content management, e-commerce, digital marketing, software engineering, resourcing and global project management office. Kevin is an executive with more than 20 years of experience in Management and IT Consulting. His background includes global experience in multi-cloud, digital enabled applications, operations management, business intelligence, business integration, strategic communications and resource allocation for leading companies.

Mariana Holliday, International Program Manager on the AWS Educate Cloud Degree Team



Mariana works to help institutions around the world build and scale academic and workforce programs in cloud computing. Mariana began her career as an elementary school teacher in Houston, TX as part of Teach For America. Prior to joining AWS, she worked at McKinsey Social Initiative as one of the founding members of their global youth employment initiative, Generation. Mariana has a B.A. from Claremont McKenna College and an M.S. from Columbia University.



Manish Bhardia, Partner at Think AI Corporation



Manish is a Cloud consultant with more than 22 years of experience leading complex technical projects and currently serves as President of the International Association of Microsoft Channel Partners (IAMCP) SoCal. He is a Partner at Think AI Corporation, a trusted strategic partner for enterprise thought leaders who need to solve complex business problems using modern technologies including AI, business intelligence (BI) and chatbots. Think AI is a GOLD certified Microsoft partner. He has extensive experience in the industry, having been part of 50+ speaking engagements, and with clients such as Starwood (Marriott), Microsoft, St. John's WellChild and Port of Los Angeles. He was recently awarded the 2019 IAMCP SoCal Partner Choice Award, as well as the ABAOC Presidential Award of the year (2019).

Mike Berman, Principal Program Manager for AWS Educate



Mike helps institutions and school systems around the world build academic and workforce programs in cloud computing. Mike began his career as a middle school teacher with Aspire Public Schools in California. He later co-founded a high school serving low-income, first-generation college students – the school achieved a 100% admissions rate to four-year universities. Mike has worked as a professional services director for Agile Mind, supporting teachers and leaders in implementing programs developed by the Charles A. Dana Center at The University of Texas at Austin. Before joining AWS, Mike led the curriculum development team at TenMarks, an Amazon subsidiary focused on K12 math and writing programs. Mike has a B.A. and M.A. from Stanford University.

Myra Roldan, Lead Technical Curriculum Program Manager on the AWS Educate Cloud Degree Team



Myra is the Lead Technical Curriculum Program Manager on the AWS Educate Cloud Degree team. She has worked one-on-one with over 150 institutions across the globe to create new programs of study and modify existing ones that align to cloud jobs. Myra brings 18 years of technical experience to AWS Educate. As a former System Engineer and Associate professor, Myra is passionate about the future of technology and education.

Wendy Pantano, Senior Technical Recruiter at CDW Integrated Technology Solutions

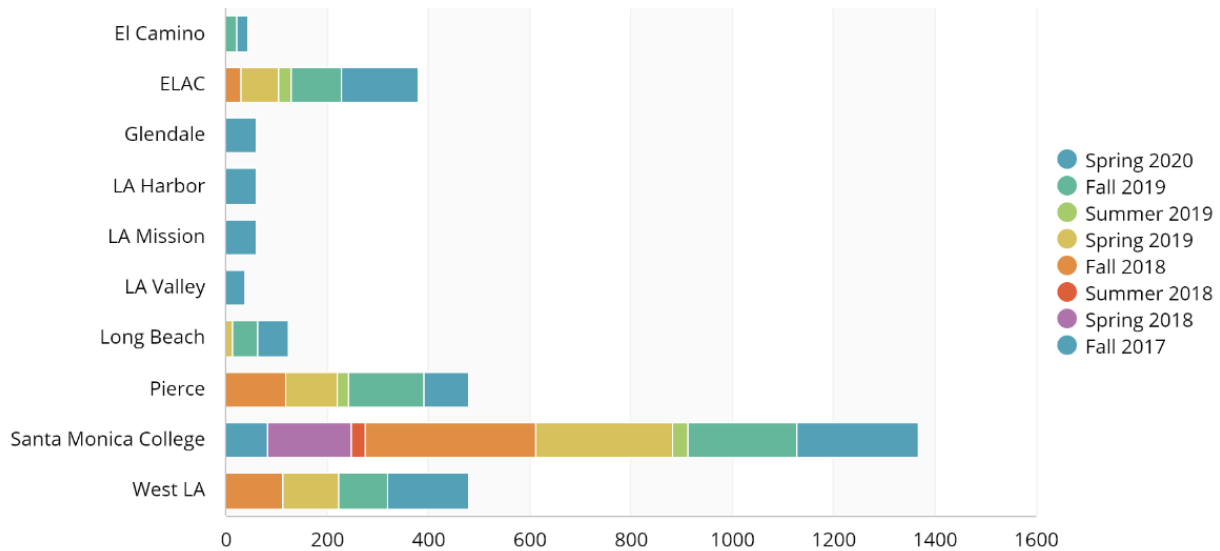


Wendy has over 20 years of Talent Acquisition, Leadership and Recruiting experience and has been working as a Senior Technical Recruiter with CDW for the last 6 years. Wendy's ability to truly engage a candidate is a key differentiator in her success in bringing the top Security, Networking and Cloud professionals to CDW's best in class workforce. Most recently Wendy has partnered with CDW's newly formed AWS Cloud team to recruit and build a team of talented Architects that will be working with CDW's customers to develop the best AWS solutions for their business needs.

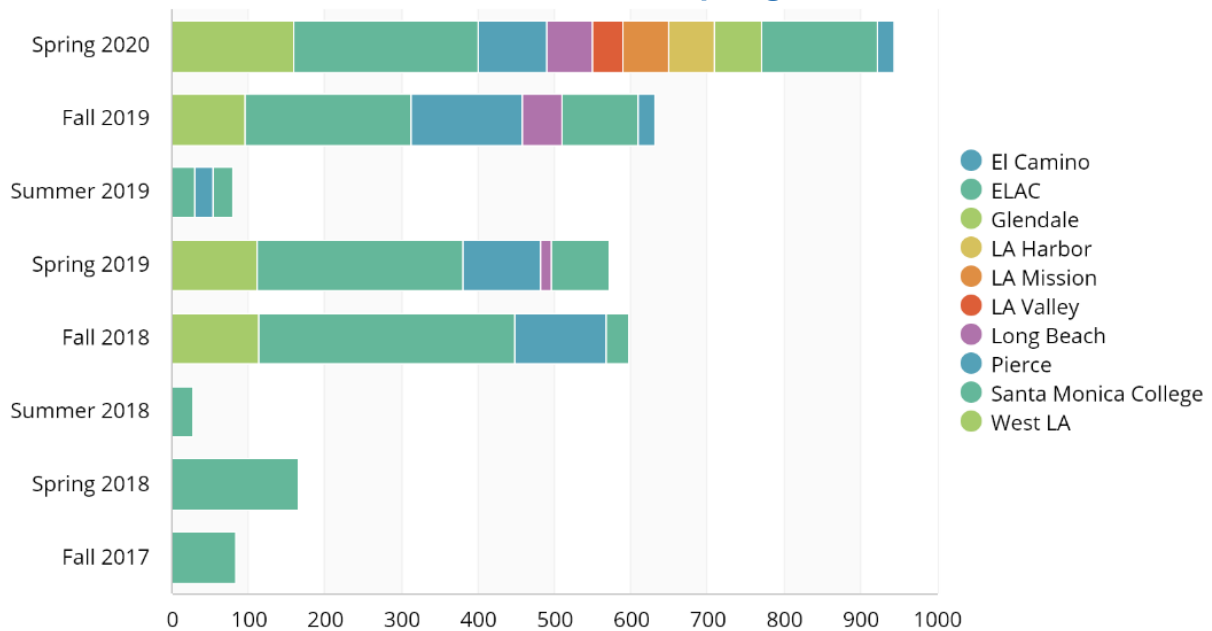


CLOUD COMPUTING PROGRAM DATA

Enrollments by College: Fall 2017-Spring 2020
Total: 3099 Student Enrollments



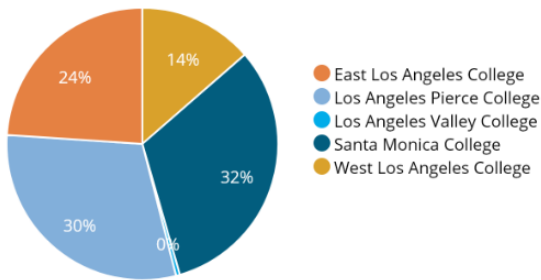
Enrollments by Term: Fall 2017-Spring 2020
Growth of 67% from Fall 2019 to Spring 2020 Enrollments





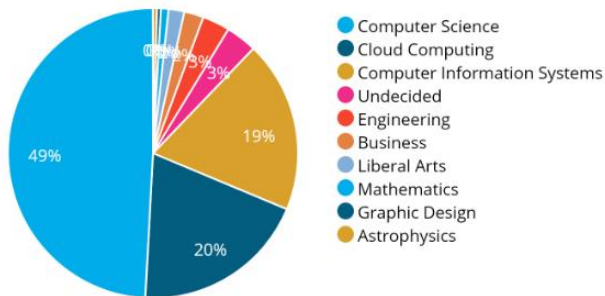
Student Employment Interest Survey

College Participation

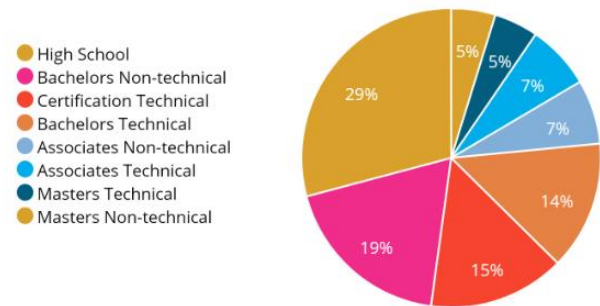


- **328** students surveyed
- **41.9%** of CS and **39.7%** of CTE Students
- **27.6%** of students with Associates or Industry Certifications
- **42.9%** of students with Bachelors or Master degrees

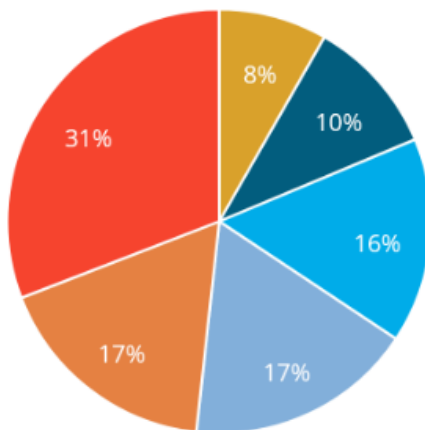
Majors Represented



Educational Background

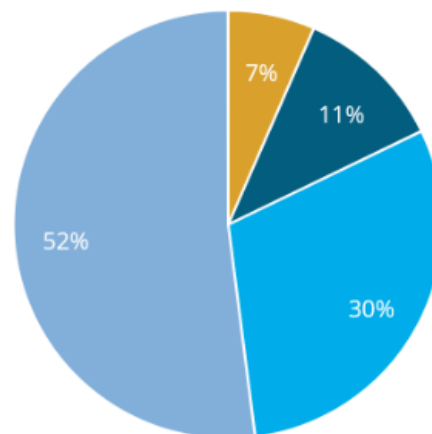


Previous Work Experience



- Non-technical
- Technical - Non IT
- Technical - IT
- None
- Technical - Software Developer
- Help Desk

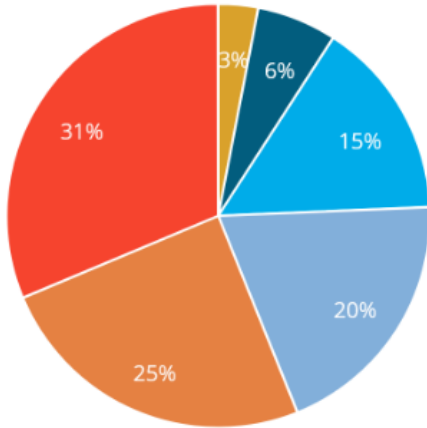
Purpose for Enrollment



- Career Advancement
- Career Exploration
- Employer Adoption
- Career Transition

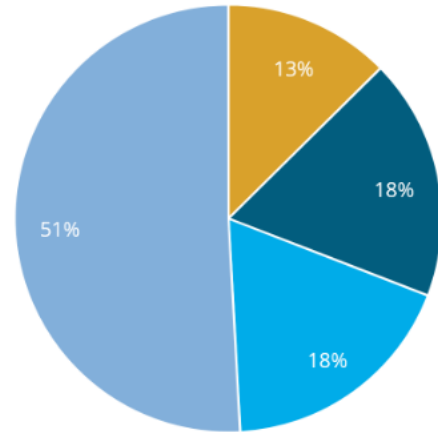


Program Goal



- Take the AWS Solution Architect Associate
- Take the AWS Cloud Practitioner Certification
- Complete a few courses for skills development
- Secure full-time employment
- Secure an internship at an employer
- Secure part-time employment

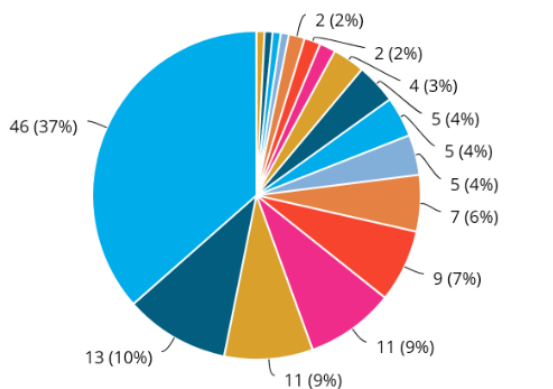
Educational Goal



- Complete local college Cloud Computing Certificate
- Complete Associate's Degree + Transfer to a University
- Complete Associate's Degree
- Transfer to a University

Cloud Day Spring 2020: Learn About Cloud Employment and Technology 126 Registrants To-Date

College Attendees



- Santa Monica
- West LA
- High School
- LA Valley
- Santiago Canyon
- LA Pierce
- Ventura
- Moorpark
- Glendale
- NA
- El Camino
- Mt. SAC
- Oxnard
- East LA
- LA Harbor
- LA Mission
- Long Beach

Workshop Enrollments





COMMUNITY COLLEGE REPRESENTATION

- Cerritos College
- Citrus College
- East Los Angeles College
- El Camino College
- Glendale Community College
- Long Beach City College
- Los Angeles City College
- Los Angeles Harbor College
- Los Angeles Mission College
- Los Angeles Pierce College
- Los Angeles Trade Technical College
- Mt. San Antonio College
- Pasadena City College
- Santa Monica College
- West Los Angeles College



Cerritos College

Program Name(s)	Cloud Computing Program
Website	https://www.cerritos.edu/klou/SitePages/IT_Pathway.htm
Competencies Focus	The Cloud Computing program prepares students to design solutions for Infrastructure as a Service (IaaS) architectures by provisioning computing instances, establishing virtual private networks, managing databases and storage within a secure online environment. Students produce dynamic solutions responsive to information and computing technology workloads with on-demand pay-as-you-go pricing allowing flexibility for small business, entrepreneurship and enterprise adoption. Industry certifications are embedded to prepare for occupations in Cloud Architect, Cloud Support Associate, Cloud Engineer or Cloud Technicians.
Cohort Size	10+ students

For more information, contact Kenny Lou at (562) 860-2451 ext. 2721 or klou@cerritos.edu.



Citrus College

Program Name(s)	Computer Information Systems (CIS)
Website	https://citruscollege.edu/academics/programs/cis/Pages/default.aspx
Competencies Focus	The CIS program includes microcomputer applications and computer support of business organizations. The program offers state-of-the-art training in the use of business application software and hardware to prepare students for professional careers, transfer study, and/or personal use. Students receive hands-on training in laboratory facilities. Faculty members work with industry and business to ensure relevant training.

For more information, contact Michael Wangler at mwangler@citruscollege.edu.



East Los Angeles College

Program Name(s)	Certificate of Achievement in Cloud Computing
Competencies Focus	The Certificate of Achievement in Cloud Computing introduces students to the highly scalable internet architectures cloud computing differentiating it from on premise infrastructure. which shifts information. The certificate provides students with a solid foundation of cloud computing technologies and provides them with the understanding required to effectively evaluate and assess the business and technical benefits of cloud computing and cloud applications. Students analyze a variety of cloud services (storage, servers and software applications) and cloud providers. The curriculum also assesses cloud careers and discusses industry demand for cloud skills.
Cohort Size	20-35 students

For more information, contact Mei-Lee at wanm@elac.edu.



El Camino College

Program Name(s)	Cloud Computing and Programming with Amazon Web Services, and Cloud Computing with Amazon Web Services
Website	https://www.elcamino.edu/academics/business/CIS/courses.aspx Program video: https://www.youtube.com/watch?v=4HQY31bfXY4&t=3s
Competencies Focus	Focuses on: <ul style="list-style-type: none">- Cloud Computing- Information Technology- Virtualization- Serverless Applications- Big Data
Cohort Size	50 students
Hiring Timeframe	3-6 months

For more information, contact Khai Lu at (310) 660-3770 ext. 3767 or klu@elcamino.edu.



Glendale Community College

Program Name(s)	Cloud Computing
Website	https://www.glendale.edu/cloud
Competencies Focus	Program focuses on Amazon Web Services (AWS). Cloud Computing shifts IT from on premises computing infrastructure to elastic cloud systems. The program provides a foundation of cloud computing technologies and provides students with the ability to evaluate and assess the business and technical benefits of cloud computing and cloud applications.
Cohort Size	30
Hiring Timeframe	One year

For more information, contact Simon Mirzayan at simon@glendale.edu.



Long Beach City College

Program Name(s)	Certificate of Achievement in Cloud Computing
Website	https://www.lbcc.edu/program-computer-security-networking
Competencies Focus	<p>The Cloud Computing program prepares students to design solutions for Infrastructure as a Service (IaaS) architectures by provisioning computing instances, establishing virtual private networks, managing databases, and storage within a secure online environment.</p> <p>Students produce dynamic solutions responsive to information and computing technology workloads with on-demand pay-as-you-go pricing allowing flexibility for small business, entrepreneurship and enterprise adoption. Industry certifications are embedded to prepare for occupations in Cloud Architect, Cloud Support Associate, Cloud Engineer or Cloud Technicians. Some preparation in information technology or computer programming is recommended.</p> <p>Learning outcomes:</p> <ul style="list-style-type: none">- Design Infrastructure as a Service (IaaS) solutions by provisioning computing instances, establishing virtual private networks, managing databases, and storage within a secure online environment- Analyze performance metrics of cloud architecture to respond dynamically to information and computing technology workloads and optimize service costs- Collaborate in a team designing business solutions in an industry aligned project

For more information, contact Karen Thurston at kthurston@lbcc.edu.



Los Angeles City College

Program Name(s)	Amazon Web Services – Cloud Computing
Website	http://www.lacitycollege.edu/
Competencies Focus	<p>The Cloud Computing program develops skills for the occupations of cloud architect and cloud technician using Amazon Web Services (AWS), the leading cloud computing provider.</p> <p>The program bridges traditional on-premises data center skills of server installation, database management, and networking set-up and cabling into virtualizations of these information and computing technologies over online services.</p>

For more information, contact Munir Samplewala at (323) 953-4000 ext. 2688 or samplewm@lacitycollege.edu.

Program Name(s)	Full Stack Web Application Developer
Website	http://www.lacitycollege.edu/
Competencies Focus	<p>The Full Stack Web Application Developer program provides the necessary skills required to code and maintain web applications, and the tools to understand front end, middleware, and back end of a web application.</p> <p>The program uses MEAN development environment, the technologies that are the next generation in Web development. Students produce a personal portfolio of Web applications showcasing the various technologies.</p>

For more information, contact Munir Samplewala at (323) 953-4000 ext. 2688 or samplewm@lacitycollege.edu.

Program Name(s)	Cybersecurity
Website	http://www.lacitycollege.edu/Departments/CT/Programs/Cybersecurity
Competencies Focus	<p>The cybersecurity program provides student with an understanding of computer technologies, concepts of cybersecurity and the skills necessary to apply their knowledge of concepts, tools, and procedures to react to cybersecurity incidents and guard against cybersecurity attacks.</p> <p>The program prepares students for entry-level positions in the field of cybersecurity that include information security analyst, computer user support specialist, and computer network support specialist.</p>



For more information, contact Mike Yazdanian at (323) 953-4000 ext. 2671 or yazdanm@lacitycollege.edu, or Allan Pratt at (818) 808-5822 or prattap@lacitycollege.edu.

For more information about all programs, contact:

- Dr. Armando M. Rivera-Figueroa, Ph.D., Dean of Academic Affairs, Economic Development & Workforce Education at Riveraa2@lacitycollege.edu
- Dr. Dakduk Shawki, Chair of Computer Science / Computer Science & Information Technology at (323) 953-4000 ext. 2689 or dakduks@lacitycollege.edu
- Juliana Medina, M.S., Career Center Coordinator at (323) 953-4000 ext. 1522 or medinaj@laccd.edu



Los Angeles Harbor College

Program Name(s)	Amazon Web Services Cloud Computing Certificate Program
Website	https://effectiveness.lahc.edu/academic_affairs/business/SitePages/Home.aspx
Competencies Focus	<p>The Cloud Computing program develops skills for occupations of cloud architect and cloud technician using Amazon Web Services (AWS), the leading cloud computing provider. The program bridges traditional on-premises data center skills of server installation, database management, and networking set-up and cabling into virtualizations of these information and computing technologies over the online services. Job preparation will include industry certifications of AWS Cloud Practitioner and AWS Solutions Architect Associate mapped to course work. The program will prepare the student to take the AWS Cloud Practitioner Certificate.</p> <p>Courses include:</p> <ul style="list-style-type: none">- Introduction to Cloud Computing- Database Essentials in Amazon Web Services- Introduction to Linux +- Computer Engines in Amazon Web Services- Security in Amazon Web Services- Python Programming
Cohort Size	Minimum 25-30 students per cohort; there are currently 10 students going through the pathway
Hiring Timeframe	The goal is for all participants to complete the program and obtain gainful employment industry sector upon completion with 12 months

For more information, contact Dorothy Phillips at phillidc@lahc.edu.



Los Angeles Mission College

Program Name(s)	Two stackable programs: Cloud Computing Skills Certificate and Certificate of Achievement in Cloud Computing
Website	https://www.lamission.edu/Computer-Science/Cloud-Computing-Amazon-Web-Services.aspx
Competencies Focus	<p>Cloud Computing Skills Certificate:</p> <p>Introduction to computer science for non-majors and majors. Learn about programming, cloud computing and SQL and their purpose. This certificate is for next generation entrepreneurs and managers.</p> <p>Learning Objectives</p> <ul style="list-style-type: none">- Understand computer concepts and programming.- Understand how to access and analyze data. <p>Certificate of Achievement in Cloud Computing:</p> <p>The Cloud Computing program prepares students to design solutions for Infrastructure as a Service (IaaS) architectures by provisioning computing instances, establishing virtual private networks, managing databases and storage within a secure online environment. Students produce dynamic solutions responsive to information and computing technology workloads with on-demand pay-as-you-go pricing allowing flexibility for small business, entrepreneurship and enterprise adoption. Industry certifications are Program Proposal Attributes embedded to prepare for occupations in Cloud Architect, Cloud Support Associate, Cloud Engineer or Cloud Technicians. Some preparation in information technology or computer programming is recommended.</p> <p>Learning Objectives:</p> <ul style="list-style-type: none">- Design Infrastructure as a Service (IaaS) solutions by provisioning computing instances, establishing virtual private networks, managing databases and storage within a secure online environment.- Analyze performance metrics of a cloud architecture to respond dynamically to information and computing technology workloads and optimize service costs.- Collaborate in a team designing business solutions in an industry aligned project.

For more information, contact Marla Uliana at (818) 833-3327 or UlianaMR@lacc.edu, or Sophia Robles at (818) 364-7600 ext. 7114 or Roblesse@lamission.edu.



Los Angeles Pierce College

Program Name(s)	Cloud Computing Program
Website	http://www.piercecsit.com/
Competencies Focus	<p>The Cloud Computing program develops skills for the occupations of cloud architect and cloud technician using Amazon Web Services (AWS), the leading cloud computing provider. The program bridges traditional on-premises data center skills of server installation, database management, and networking set-up and cabling into virtualizations of these information and computing technologies over online services.</p> <p>The Cloud Computing program prepares students to design solutions for Infrastructure as a Service (IaaS) architectures by provisioning computing instances, establishing virtual private networks, managing databases and storage within a secure online environment. Students produce dynamic solutions responsive to information and computing technology workloads with on-demand pay-as-you-go pricing allowing flexibility for small business, entrepreneurship and enterprise adoption. Industry certifications are embedded to prepare for occupations in Cloud Architect, Cloud Support Associate, Cloud Engineer or Cloud Technicians.</p>
Cohort Size	20+ students
Hiring Timeframe	Students with networking and server administration background are ready to industry jobs at the completion of the four Cloud courses we offer, that can be taken all in one semester.

For more information, contact Luis Celada at (818) 710-3009 or celadalj@piercecollege.edu, or Natalia Grigoriants at (818) 719-6458 or grigorn@piercecollege.edu.



Los Angeles Trade Technical College

Program Name(s)	Computer Information Systems
Website	http://www.lattc.edu/academics/pathways/bce/certificates-degrees/computer-information-systems
Competencies Focus	<p>The Computer Information Systems program is designed to prepare students for careers in the exciting Information Technology fields such as programming, software engineering, database administration, computer networking, multimedia programming, and web programming technologies. Microcomputer usage continues to grow at an ever-increasing pace as does the demand for workers with solid technical skills and knowledge of programming, networking, and website development and management. The primary goal of the program is to prepare students for entry-level employment as well as providing marketable career advancement knowledge and skills. Students with interest in transferring to an Information Systems program at four-year institutions should consult with the Counseling department for needed course work.</p> <p>Student learning outcomes:</p> <ul style="list-style-type: none">- Create, debug, and comment computer programming codes in order to integrate multiple language constructs in a single project- Create business applications using advanced computer software- Identify and describe computer hardware, networking concepts, and computer software

For more information, contact Marcia Wilson at wilsonmr@lattc.edu.



Mt. San Antonio College

Program Name(s)	Computer Information Systems
Website	https://www.mtsac.edu/cis/
Competencies Focus	The Mt. SAC CIS Department strives to be recognized as teaching state of the art courses, responsive to current industry needs, with top-quality instruction with 70+ courses covering programming, database management, computer networking, cybersecurity, web development, open source, big data, virtualization, and soon cloud computing.
Cohort Size	2019-20 School Year Totals: 180+ sections taught by 10 full-time faculty and 15 adjunct faculty, serving 4800+ enrollees

For more information, contact Barry Andrews at bandrews@mtsac.edu.



Pasadena City College

Program Name(s)	Computer Information Systems - System and Network Administrator
Website	https://pasadena.edu/academics/degrees-and-certificates/certificates-of-achievement/system-network-administrator.php
Competencies Focus	<p>This system and network administrator program prepares students with necessary skills to seek entry-level employment in the field of Information Technology to administer an enterprise network infrastructure and/or a network operating system infrastructure. Instruction includes training in installing, configuring, maintaining, and troubleshooting network devices and end devices with an emphasis on Cisco enterprise network infrastructure administration. Upon completion of coursework, students will have the foundation needed to pursue industry certifications such as CompTIA Network+, Cisco CCNA Routing and switching, Cisco CCNA CyberOps, and Microsoft MCSA Windows Server or CompTIA Linux+/LPI Linux Administrator.</p> <p>A Certificate of Achievement is awarded upon completion of all required courses with a grade of C or better.</p>

For more information, contact Earlie Douglas at earlied1@aol.com.



Santa Monica College

Program Name(s)	Cloud Computing with Amazon Web Services and Cloud Computing with Microsoft Azure
Website	http://smc.edu/AcademicPrograms/CSIS/Pages/Cloud-Computing.aspx
Competencies Focus	<p>Cloud computing—which delivers vast data capacity to organizations of all shapes and sizes without requiring expensive on-site servers—is widely considered the biggest growth arena in technology today. It is also set to open a world of opportunity for Santa Monica College students, in one of the highest paying IT fields.</p> <p>Students learn:</p> <ul style="list-style-type: none">- Cloud Computing- Networking- Cybersecurity- Software Development- Cloud Application Development
Cohort Size	100 students
Hiring Timeframe	3-6 months

For more information, contact Howard Stahl at (310) 434-8015 or stahl_howard@smc.edu.



West Los Angeles College

Program Name(s)	Certificate of Achievement in Cloud Computing - Amazon Web Services (AWS)
Website	http://www.wlac.edu/Computer-Science/Amazon-Web-Services-(AWS).aspx
Competencies Focus	Learning outcomes: <ul style="list-style-type: none">- Cloud Computing- Virtualization- Server Technology- Serverless Computing- Kubernetes- Cloud Security- Databases
Cohort Size	20-30 students
Hiring Timeframe	3-6 months

For more information, contact Vicky Seno at senov@wla.edu.



PROGRAM CURRICULUM

A Los Angeles/Orange County regional labor market report was compiled September 2018 showing 10,305 total annual openings with 83, 010 total job postings with occupations directly impacted by cloud-based technologies. Specifically, the skill set with Amazon Web Services (AWS) appears on 4,876 job posting within the region. On average, regional community colleges conferred 974 awards (associate degrees and certificates) annually in information and computing technology programs between 2014 and 2017.

The Cloud Computing program prepares students to design solutions for Infrastructure as a Service (IaaS) architectures by provisioning computing instances, establishing virtual private networks, managing databases and storage within a secure online environment. Students produce dynamic solutions responsive to information and computing technology workloads with on-demand pay-as-you-go pricing allowing flexibility for small business, entrepreneurship and enterprise adoption. Industry certifications are embedded to prepare for occupations in Cloud Architect, Cloud Support Associate, Cloud Engineer or Cloud Technicians. Some preparation in information technology or computer programming is recommended.

Cloud Computing Certificate of Achievement – 18 Units

Student Learning Outcomes

- Ability to design Infrastructure as a Service (IaaS) solutions by provisioning computing instances, establishing virtual private networks, managing databases and storage within a secure online environment.
- Ability to analyze performance metrics of a cloud architecture to respond dynamically to information and computing technology workloads and optimize service costs.
- Ability to collaborate in a team designing business solutions in an industry aligned project.

Requirement	Semester 1	Semester 2
Core	Introduction to Cloud Computing	Compute Engines Database Essentials Security
Elective Topics	Computer programming language, operating systems, web development, Information and Communication Essentials, Business fundamentals, Customer Service	Systems Administrator, DevOps, Cybersecurity, Big Data, Serverless Architecture
Certifications	AWS Cloud Practitioner	AWS Solutions Architect - Associate



Cloud Computing AA Degree – 27 Units

This degree provides students with the industry skills to understand, build and maintain applications for the cloud. These skills include the technical principles of the hardware and software requirements to run systems in the cloud including storage, database management, and software systems, while maintaining secure access.

Core – 12 Units

79A : Introduction to Cloud Computing

79B : Database Essentials in Cloud Computing

79C : Compute Engines in Cloud Computing

79D : Security in Cloud Computing

Electives – 15 Units

33 : C# Programming

41 : Linux Workstation Administration

70 : Network Fundamentals and Architecture

81 : Javascript Programming CS 87A : Python Programming

55 : Java Programming

79E : Best Practices in Amazon Web Services

79F : Machine Learning on Amazon Web Services 82 : Asp.Net Programming in C#

83R : Server-Side Ruby Web Programming

79Y : Azure Database Essentials CS

79Z : Azure Server Essentials CS

General Education Courses 30-33 Units

Supporting Documents

- [Cloud Computing - Amazon Web Services \(AWS\) Labor market supply and demand data.](#) Center of Excellence, LA/OC Region. September 2018.
- [AWS Certified Cloud Practitioner](#)
- [AWS Certified Solutions Architect - Associate](#)

Course Objectives and Student Learning Outcomes

79A- Introduction to Cloud Computing

Upon completion of this course, the student will be able to:

1. Describe the cloud computing model
2. Describe examples of infrastructure as a service
3. Describe examples of platform as a service
4. Describe examples of software as a service



5. Identify and mitigate security concerns associated with cloud computing
6. Identify and mitigate legal concerns associated with cloud computing
7. Use current cloud services from leading service providers
8. Describe cloud services offered by different cloud providers
9. Plan for cloud service implementations
10. Utilize cloud services offered by different cloud providers

79B- Database Essentials in Cloud Computing

Upon completion of this course, the student will be able to:

1. Describe how SQL and noSQL database web services can be used to store data
2. Describe redundancies and their adverse effects
3. Identify operations such as restrict, project, union, intersection, difference, divide, and join
4. Design small databases with primary and foreign keys and other constraints to be enforced by the database management system (DBMS)
5. Design databases by employing normalization rules, including supertypes and subtypes to reduce nulls and other rules to reduce redundancies
6. Design and document databases by using connectivity, cardinality, entity relationship diagrams, relational schemas, and data dictionaries
7. Interact with object APIs to store and retrieve data in noSQL database web services
8. Explain the differences between file-based, hierarchical, network, relational, and object-oriented databases and the many design principles that reduce redundancy and increase performance
9. Describe the use of a database management system language to apply the concepts by creating tables, populating them with data, retrieving data, creating indexes, and creating programs that manipulate data

79C – Compute Engines in Cloud Computing

Upon completion of this course, the student will be able to:

1. Describe important design consideration for scalable cloud applications
2. Describe the architectural approach used by AWS
3. Navigate the AWS Management Console
4. Describe the architectural approach used by AWS' Elastic Beanstalk
5. Deploy and manage Elastic Beanstalk applications
6. Scale and Load-Balance cloud application using AWS tools
7. Deploy EC2 Servers and work with various Amazon Machine Images
8. Design, create and deploy applications using the AWS Console and Elastic Beanstalk
9. Launch and monitor EC2 instances with the AWS Console

79D- Security in Cloud Computing

Upon completion of this course, the student will be able to:

1. Describe the AWS Shared Responsibility Model.



2. Describe security best practices employed with AWS applications.
3. Manage security groups, access control lists, users, roles and permissions.
4. Create secure websites using SSL/TLS certificates.
5. Support multi-factor authentication in their AWS applications.
6. Monitor and log security events using AWS tools.
7. Deliver secure, resilient products that incorporate security principles into the design of their applications.
8. Identify important security principles that web services applications must meet when deployed.

CS 79E – Best Practices in AWS

Upon completion of this course, the student will be able to:

1. Describe the AWS Well-Architected Framework
2. Describe design principles and apply the best practices of Operational Excellence in AWS
3. Describe design principles and apply the best practices of Security in AWS
4. Describe design principles and apply the best practices of Reliability in AWS
5. Describe design principles and apply the best practices of Performance Efficiency in AWS
6. Describe design principles and apply the best practices of Cost Optimization in AWS
7. Analyze AWS applications against the best practices developed for efficient applications
8. Demonstrate an understanding of the trade-offs involved in designing systems for AWS infrastructure

79F- Machine Learning on AWS

Upon completion of this course, the student will be able to:

1. List and describe the basics of Machine Learning, Artificial Intelligence and Deep Learning.
2. Describe the terms and processes to build a machine learning model using the Amazon Web Services platform.
3. Describe the fundamental concepts of how a business challenge can be modeled in a machine learning model.
4. Perform mass storage of business data to be used in machine learning model.
5. Describe how business data can be moved and processed through the machine learning pipeline.
6. Evaluate a machine learning trained model and predictions.
7. Select and justify the appropriate ML approach for a given business problem
8. Identify appropriate AWS services to implement ML solutions.
9. Design and implement scalable, cost-optimized, reliable, and secure ML solutions.



CS 41- Linux Workstation Administration

Upon completion of this course, the student will be able to:

1. Use Linux through the command shell interface
2. Use Linux through at least one of its graphical interfaces
3. Use the vi editor
4. Write and run shell script programs
5. Use the tools for C programming and compilation
6. Install and remove programs installed in binary or source code form
7. Manage user accounts
8. Perform backup
9. Schedule periodic jobs
10. Configure logging
11. Practice local security
12. Understand foundation concepts and the central responsibilities of operating systems
13. Install applications and perform local administrative tasks

CS 70- Network Fundamentals and Architecture

Upon completion of this course, the student will be able to:

1. Explain the essential network components.
2. Select appropriate network topologies for a given environment.
3. Compare and contrast different network media.
4. Understand and explain the function of packets and communication protocols.
5. Explain the limitations and advantages of different network architectures.
6. Install and configure network applications.
1. Install and configure network applications.
2. Evaluate and select different network architectures for custom designed environments.

CS 81- JavaScript Programming

Upon completion of this course, the student will be able to:

1. Write algorithms to solve common client-side scripting problems.
2. Design and implement client-side scripts using JavaScript to enhance and add interactivity to Web pages.
3. Use the Document Object Model (DOM) to manipulate the contents of Web pages.
4. Write Ajax webapps.
5. Write scripts using the jQuery library.
6. Understand Object-Oriented Programming, especially the JavaScript prototype-based object model.
7. Understand the basics of Functional Programming including higher-order functions and closures.
8. Students use Core and Client-Side JavaScript and the Document Object Model to build interactive, high-performance Web sites.



9. Students apply fundamental programming concepts to design and implement dynamic Web pages.

CS 87A- Python Programming

Upon completion of this course, the student will be able to:

1. Use logical analysis to develop the logical code model from which the code statements are developed.
2. Demonstrate and use the basic syntax of Python.
3. Use appropriate data structures as data containers.
4. Debug and test programs written in Python.
5. Model applications using Python.
6. Applying logical analysis, students will design, build and debug programming projects in Python.
7. Using the built-in functions of Python, students will be able to build data processing application.

CS 83R- Server-Side Ruby Web Programming

Upon completion of this course, the student will be able to:

1. Design and write applications utilizing the Ruby programming language
2. Test and debug Ruby applications
3. Use UML modeling when defining and implementing classes in Ruby
4. Apply object-oriented principles and design techniques in solving specific programming problems
5. Apply the Model-View-Controller design pattern when working with the Rails webapp environment
6. Describe the Rails webapp environment
7. Apply Ruby on Rails to solve specific programming problems
8. Design and create applications using the Ruby programming language
9. Build web applications utilizing Ruby on Rails

CS 79Y : Azure Database Essentials

In this course, students will learn to deploy relational and non-relational databases in Azure. Students will define, operate and scale both SQL and noSQL data storage solutions. Principles are applied by performing exercises using the Azure SQL Database service as well as Azure Storage Explorer. Students will store, manage and analyze data in all the different storage options offered in Azure including blob storage, file storage, table storage, queue storage, Cognos DB and Azure Data Lakes.

CS 79Z : Azure Server Essentials

In this course, students will learn how to build and deploy server-side applications in Azure. Students will work with Azure App Service to host web apps and RESTful APIs. Students will develop with Azure Functions, a serverless compute services that enables code to run on- demand in response to a variety of events. Students will use Docker and Azure



Kubernetes Service to deploy and manage containerized applications. This course discusses, from a developer perspective, the most important reasons for using Azure and examines the underlying design principles of scalable cloud applications.



PROGRAM SUMMARY

Associate Degree (AA) / Certificate of Achievement

This certificate provides students with the industry skills to understand, build and maintain applications for the cloud. These skills include the technical principles of the hardware and software requirements to run systems in the cloud including storage, database management, and software systems, while maintaining secure access.

Program Learning Outcomes:

Upon completion of the program, students will demonstrate a high level of competency in the different operational levels of cloud computing, such as storage and software as a service, while applying security standards to their operation.

Required Courses - 15 units Units: 15.0

CS 43	Windows Network Administration	3.0
OR		
CS 41	Linux Workstation Administration	3.0
.....		
CS 87A	Python Programming	3.0
CS 81	Javascript Programming	3.0
CS 79A	Introduction to Cloud Computing	3.0
CS 70	Network Fundamentals and Architecture	3.0
.....		

Choose 1 Track - 9 Units Units: 9.0

<i>AWS Track</i>		9.0
CS 79D	Security in Amazon Web Services	3.0
.....		
AND		
CS 79C	Compute Engines in Amazon Web Services	3.0
.....		
AND		
CS 79B	Database Essentials in Amazon Web Services	3.0
.....		
OR		
<i>Azure Track</i>		9.0
CS 33	C # Programming	3.0
.....		

