Laney College

Graphics in Motion

Overview

College	Laney - Humanities, Social Sciences
Originator	Robert (Tony) Claar
Award Type	Certificate of Proficiency

Description

The certificate of proficiency in Graphics in Motion is meant to introduce students to the fundamental building blocks of art, principles, and creation of animated filmmaking. Students will cover topics in basic drawing for animation; Disney's 12 principles; timing and spacing of objects, nature, animals, and humans; and professional animation software. Once completed, students will be better qualified to be accepted into a four year university program in animation.

Career Opportunities

Checker in animation; assistant to video production using graphic arts; junior assistants in small graphic arts and video production companies; advertising specialists; storyboard checker; video editing

Program Learning Outcomes

Upon successful completion of this program, students will be able to:

1. Apply Disney's 12 principles of animation in animation projects.

Degree Requirements:

Core Courses (9 Units) **Credit Hours:** (0 Required)

GRART 043	Web Graphics and Animation	3
GRART 150	Graphics in Motion Introduction to Animation	3
GRART 151	Graphics in Motion Intermediate Animation	3

Total: 9

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Laney College

Quantitative Preparation for Civil Service

Overview

College	Laney - Student Wellness and Development
Originator	Roger Chung
Award Type	Certificate of Competency

Description

Certificate is designed to enhance quantitative reasoning competencies and skills for work-based contexts, and develop soft-skills and self-efficacy in both preparing for, and seeking employment.

Career Opportunities

Certificate completion, and the concomitant skills acquired, are relevant to a variety of workplaces, including, but not limited to: local small businesses in food and delivery industries, opportunities in service sector employment, as well as pre-apprenticeship opportunities that link to advanced manufacturing and skilled trades.

Program Learning Outcomes

Upon successful completion of this program, students will be able to:

1. Students will demonstrate competency in required mathematical skills, spatial reasoning and mechanical reasoning, at a level that will enable them to identify appropriate employment opportunities and navigate job interview process.

Degree Requirements:

Core Courses: **Noncredit:** (48.125 - 78.225 Required)

Must complete a minimum of 60 hours

MATH 504	Workforce Math	30.1 - 54.0225
LRNRE 522	Apprenticeship and Civil Service Opportunities	18.025 - 24.0625

Competency requirement: **Noncredit:** (0 Required)

Teacher or department will determine if student has met the competencies of the program and document it.	0

Total: 48.125 - 78.225

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Laney College

Quantitative Preparation for Skilled Trades

Overview

College	Laney - Student Wellness and Development
Originator	Roger Chung
Award Type	Certificate of Competency

Description

Certificate is designed to enhance quantitative reasoning competencies and skills for work-based contexts, and developing soft-skills and self-efficacy required to pass work related entrance exams.

Career Opportunities

Certificate completion, and the concomitant skills acquired, are relevant to a variety of workplaces, including, but not limited to: local small businesses in food and delivery industries, opportunities in service sector employment, as well as pre-apprenticeship opportunities that link to advanced manufacturing and skilled trades.

Program Learning Outcomes

Upon successful completion of this program, students will be able to:

1. Students will demonstrate interview techniques in mock sessions and apply resume writing skills in resume creation.

Degree Requirements:

Core Courses: **Noncredit:** (48.125 - 78.225 Required)

Must complete a minimum of 60 hours

MATH 504	Workforce Math	30.1 - 54.0225
LRNRE 521	Test Preparation for the Skilled Trades	18.025 - 24.0625

Competency requirement: **Noncredit:** (0 Required)

Teacher or department will determine if student has met the competencies of the program and document it.	0

Total: 48.125 - 78.225

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Laney College

Research Skills

Overview

College	Laney - Mathematics and Sciences
Originator	Phillippa Caldeira
Award Type	Certificate of Competency

Description

The Certificate of Competency in Research Skills is designed to provide students with a foundation in information literacy, critical thinking, ethical use of information, and research. This certificate is intended to improve the research and information literacy skills of student desiring to increase their capacity for pursuing college-level coursework, gaining employment in today's digital workforce, and community engagement. Students enrolled in the Research Skills program may use the certification as a means of providing college instructors and employers of their ability to find, evaluate, and use credible and relevant information in an ethical manner.

Career Opportunities

n/a

Program Learning Outcomes

Upon successful completion of this program, students will be able to:

1. Apply information literacy skills to academic, professional, and personal life.
2. Analyze, synthesize, and apply information practically and ethically.

Degree Requirements:

Courses (min 6 hours) **Noncredit:** (6.3 Required)

Students must complete a minimum of 6 class hours

LIS 511	Research Skills I	2.0125
LIS 512	Research Skills II	2.0125
LIS 513	Research Skills III	2.0125

Competency Requirement: **Noncredit:** (0 Required)

Teacher or department will determine if student has met the competencies of the program and document it	0

Total: 6.3

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Laney College

Latin American Native / Indigenous Languages and Cultures for Interpretation

Overview

College	Laney - Liberal Arts
Originator	Arturo Davila-Sanchez
Award Type	Certificate of Completion

Description

Introduction to contemporary Nauatl language and culture through the context of daily live activities: Listening, speaking, reading, and writing, knowledge of language structure, historical context and readings from contemporary and classical Nauatl, understanding of different dialects spoken today in Mexico. Students require to complete 16 units to receive the Nauatl Language and Culture certificate.

Career Opportunities

The recent immigration movements have come from indigenous communities from Mexico and Central America. Many people speak and indigenous language (Nauatl, Mayan, Zapotec). There is a need for translators to receive them and serve them. Many universities and colleges have integrated indigenous languages to their curricula and summer programs.

Program Learning Outcomes

Upon successful completion of this program, students will be able to:

1. Demonstrate oral competence in the targeted Indigenous language (Nauatl).
2. 2Demonstrate written competence in the targeted Indigenous language (Nauatl).
3. Analyze and interpret pre-colonial, colonial, and contemporary testimonies, documents and texts given or written in the targeted Indigenous language (Nauatl).

Degree Requirements:

Required Core **Noncredit:** (157.5 Required)

SPAN 533A	Beginning Conversational Nauatl	52.5
SPAN 533B	Intermediete Conversational Nauatl	52.5
SPAN 533C	Advanced Conversational Nauatl	52.5

Total: 157.5

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Merritt College

Computer Science

Overview

College	Merritt - Division II
Originator	Courtney Brown
Award Type	A.S. Degree

Description

Graduates of the two-year program in Computer Science will have the skills required for entry level software development. Upon successful completion of the curriculum, students receive the Associate in Science (AS) degree. This degree combines both CTE & Transfer outcomes and integrates entry level skills for software development with curriculum in secure coding, hacking techniques, automation of security operations, and DevOps. This Computer Science degree infuses Computer Science competencies with Cybersecurity competencies and is aligned with curriculum guidance from governing bodies such as the Association of Computing Machinery (ACM) and the National Initiative for Cybersecurity Education (NICE). The curriculum is mapped to the nationally defined Knowledge Units (KU) and articulates into four-year programs in both Computer Science and Cybersecurity. An inventory of Merritt College course mappings is published by the National Initiative for Cybersecurity Careers and Studies (NICCS) at https://niccs.us-cert.gov/training/search/merritt-college The curriculum includes instruction in the fundamentals of problem solving and analysis, programming, data structures, and architecture. Additional requirements include Calculus, Physics and Discrete Mathematics. This program takes a contextualized approach to the CS major through the choice of language, C++, and the approach to curriculum subjects. It aims to develop skills in the design and implementation of software that operates correctly at extreme scale. It equips the graduate to select strategies and develop programs that solve complex problems within appropriate constraints such as time, connectivity, processing, or storage limitations.

This program also prepares students for transfer to four-year colleges for further study in Computer Science or Cybersecurity, as well as related areas such as Computer Engineering. Students who are interested in transferring after completion of the two-year degree program should consult with the departmental faculty chair, read the “Transfer Information” section of the college catalog, and discuss their plans with their program advisor or counselor. If you wish to substitute one class for another because of specific requirements of the transfer institution you will attend, consult with your articulation counselor. Four-year universities may have additional or different course requirements for completion of lower division courses. The web site www.assist.org can provide additional information about applicable courses for transfer.

Career Opportunities

Graduates of the two-year program in Computer Science will have the skills required for entry level software development, Cybersecurity, and DevOps. Graduates also meet the qualifications for employment in the California STEM Core Network a growing partnership of major scientific/technical employers including NASA and federally funded labs, 14 community colleges, and statewide and national workforce intermediaries focused on expanding the pipeline of students for engineering and computer science careers. Merritt College is a partner in the STEM Core network. This degree provides students access to employment in engineering technology, bioengineering and computer technology. Graduates who enter the workforce as entry level Software Developer gain access to rewarding jobs and careers. The 2014 average salary for a software developer with a Bachelor of Science in Computer Science was $140,000 per year. The Oakland Metropolitan Chamber of Commerce's 2016 Regional Occupational Analysis of the Bay Area Labor Market projected the demand for Software Developers in the East Bay to grow by 78% in the next 5 years, and to continue to be the top occupation for workforce development efforts Bay Area wide. The A.S. Degree in Computer Science is the minimal entry-level requirement for these jobs, and is an important element of the pathway leading to more advanced degrees that many of these positions require. The Merritt program provides a complete array of tools to grow a local and diverse workforce talent pool for the region. The table below lists the general entry level software developer career opportunities as well as specialized opportunities for each elective Entry Level software developer Total 473 Salary Est. # Jobs Position Types Location $50,000 160 Full-time 171 San Francisco 18 $65,000 124 Internship 17 San Jose, 17 $85,000 94 Temporary 15 California 12 $100,000 62 Contract 10 Los Angeles 8 $120,000 33 Part-time 7 San Diego 7 Source: Indeed.com Cybersecurity - Secure Software Development - California Total 8532 Salary Est. # Jobs Position Types Location Full-time 3263 $75,000 2824 Contract 142 San Francisco 654 $105,000 2226 Part-time 87 San Diego 252 $120,000 1668 Internship 84 San Jose 213 $130,000 1235 Commission 49 Sunnyvale 172 $145,000 579 Temporary 36 Los Angeles 145 Source: Indeed.com

Cybersecurity - DevOps (Dev/Sec/Ops) Total 335 Salary Est. # Jobs Position Types Location $110,000 105 Full-time 116 Santa Clara 27 $125,000 86 Internship 11 San Francisco 20 $130,000 70 Contract 6 San Diego 15 $140,000 50 Temporary 2 Palo Alto 13 $150,000 24 Part-time 1 Sunnyvale 7 Source: Indeed.com Blockchain Services and Mobile Applications Total 44 Salary Est. # Jobs Position Types Location $95,000 14 Full-time 15 San Francisco 5 $120,000 11 Internship 1 Los Angeles 3 $125,000 10 Part-time 1 San Francisco Bay Area 2 $130,000 5 Temporary 1 Foster City 2 $135,000 4 Woodland Hills 1 Source: Indeed.com DevOps - Software Engineering Automation and Continuous Integration Total 1021 Salary Est. # Jobs Position Types Location $115,000 310 Full-time 355 San Francisco 76 $125,000 262 Contract 13 San Diego 41 $130,000 217 Internship 12 Palo Alto 33 $140,000 141 Commission1 San Jose 20 $145,000 91 Sunnyvale 20 Source: Indeed.com High Performance Computing (HPC), Data Science, and Artificial Intelligence (AI) Total 60 Salary Est. # Jobs Position Types Location $90,000 20 Full-time 33 East Palo Alto 10 $110,000 16 Contract 1 Santa Clara 7 $130,000 12 Internship 1 Palo Alto 4 $145,000 8 Sunnyvale 3 $160,000 4 San Francisco Bay Area 3 Source: Indeed.com

Program Learning Outcomes

Upon successful completion of this program, students will be able to:

1. Select the appropriate design and implementation to solve a problem within given constraints
2. Analyze computer architecture to formulate estimates of performance
3. Explain the fundamentals of problem solving and analysis
4. Analyze software design and/or implementation and make suggestions to improve security.
5. Design and Implement software to automate security operations.

Degree Requirements:

Required Courses **Credit Hours:** (31 - 32 Required)

CIS 006 or	Introduction to Computer Programming	5
CIS 007	Control Structures and Objects	4
CIS 011	Discrete Structures and Logic	4
CIS 033	Software Architectures and Algorithms	4
CIS 078	Digital Architectures for Computation	4
MATH 003A	Calculus I	5
MATH 003B	Calculus II	5
PHYS 004A	General Physics with Calculus	5

MATH 011 accepted as substitute for CIS 011

Restricted Electives **Credit Hours:** (12 - 17 Required)

Select one Group of Concentration Electives from the List Below

Cybersecurity - Secure Software Development **Credit Hours:** (0 Required)

Recommended Sequence of Courses

CIS 071	Introduction to Information Systems Security	3
CIS 059	Applications in Information Security	3
CIS 056	Secure Coding in Java and .NET	3
CIS 057	Web Application PEN Testing	3

Cybersecurity - DevOps (Dev/Sec/Ops) **Credit Hours:** (0 Required)

Recommended Sequence of Courses

CIS 055	Hacker Techniques, Exploits & Incident Handling	3
CIS 060	Computer Forensics Fundamentals	3
CIS 247	Information Systems Skills Challenge	1

CIS 052	Cloud Security Fundamentals	3
CIS 053	Intrusion Detection In-Depth: Compliance, Security, Forensics and Troubleshooting	3
CIS 178	Build Automation for DevOps & QA	4

CIS 225 requires participation in one round of Ethical Hacking Competition: National Cyber League (NCL), CyberPatriots, CyberDefenders, or equivalent.

Blockchain Services and Mobile Applications **Credit Hours:** (0 Required)

Recommended Sequence of Courses

CIS 066	XML Documents and Applications	2
CIS 093	Cross Platform Mobile Application Development	4
CIS 100	Introduction to Blockchain, Cryptocurrencies, and Identity	3
CS 043	High Performance Web Applications and Services	3

DevOps - Software Engineering Automation and Continuous Integration **Credit Hours:** (0 Required)

Recommended Sequence of Courses

CIS 051	Introduction to Information Technology Project Management	4
CS 020	Python Application Programming	3
CS 080	Software Engineering	3
CIS 178	Build Automation for DevOps & QA	4
CIS 179	Agile Software Management and Project Automation	3

Completing this elective qualifies you to become a PMI Agile Certified Practitioner (PMI-ACP) https://www.pmi.org/certifications/types/agile-acp
Exams are administered only to qualified students by Project Management Institute (PMI) http://pmi.org

High Performance Computing, Data Science, and Artificial Intelligence **Credit Hours:** (0 Required)

Recommended Sequence of Courses

CS 020	Python Application Programming	3
MATH 003E	Linear Algebra	3
CIS 008	Introduction to Parallel and Cloud Programming	4
CS 060	Applications of Artificial Intelligence and Deep Learning	3

Units that may be double counted for General Education **Credit Hours:** (0 Required)

7

Local Degree General Education (PCCD GE PATTERN) **Credit Hours:** (12 Required)

19

Credit Hours: (0 Required)

Total: 55.000 - 61.000

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Merritt College

Computer Science

Overview

College	Merritt - Division II
Originator	Courtney Brown
Award Type	Certificate of Achievement

Description

Graduates of the two-year certificate program in Computer Science will have the skills required for entry level employment in Software Development, Cybersecurity, or DevOps occupations. The Certificate of Achievement is the recommended program for students who already hold a baccalaureate or higher degree. It also prepares students for further study in computer Science as well as related areas such as Computer Engineering. The curriculum includes instruction in the fundamentals of problem solving and analysis, programming, data structures, and architecture. Additional requirements include Calculus, Physics and Discrete Mathematics. This program takes a contextualized approach to Computer Science through the choice of language, C++, and electives that can be aligned to facilitate High Performance Computing (HPC). It aims to develop skills in the design and implementation of software that operates correctly at extreme scale while leveraging emerging technologies in different industries.

Students who are interested in continuing their studies after completion of the two-year program should consult with the departmental chair, read the “Transfer Information” section of the college catalog, and discuss their plans with their program advisor or counselor. If you wish to substitute one class for another because of specific requirements of the transfer institution you will attend, consult with your articulation counselor. Four-year universities may have additional or different course requirements for completion of lower division courses. The web site www.assist.org can provide additional information about applicable courses for transfer.

Career Opportunities

Graduates of the two-year program in Computer Science will have the skills required for entry level software development. In 2014 the average salary for a software developer with a Bachelor in Science in Computer Science was $140,000 per year. The Oakland Metropolitan Chamber of Commerce's 2016 Regional Occupational Analysis of the Bay Area Labor Market projected the demand for Software Developers in the East Bay to grow by 78% in the next 5 years, and to continue to be the top occupation for workforce development efforts Bay Area wide. The Certificate of Achievement in Computer Science is the minimal entry-level requirement for these jobs, and is an important element of the pathway leading to more advanced degrees that many of these positions require. The Merritt program provides a complete array of tools to grow local and diverse workforce talent pool for the region. This certificate is stackable to permit additional training for workforce specialties. Students with existing degrees who complete this two year certificate program may also meet the qualifications for employment in the California STEM Core Network. The California STEM Core Network is a growing partnership of major scientific/technical employers including NASA and federally funded labs, 14 community colleges, and state-wide and national workforce intermediaries focused on expanding the pipeline of students for engineering and Computer Science careers. Merritt College is a partner college in the STEM Core Network. This certificate is required to provide students access to regional STEM Core network internships and employment in engineering technology, bioengineering, and computer technology. The table below lists the general entry level software developer career opportunities as well as specialized opportunities for each elective Entry Level software developer Total 473 Salary Est. # Jobs Position Types Location $50,000 160 Full-time 171 San Francisco 18 $65,000 124 Internship 17 San Jose, 17 $85,000 94 Temporary 15 California 12 $100,000 62 Contract 10 Los Angeles 8 $120,000 33 Part-time 7 San Diego 7 Source: Indeed.com Cybersecurity - Secure Software Development - California Total 8532 Salary Est. # Jobs Position Types Location Full-time 3263 $75,000 2824 Contract 142 San Francisco 654 $105,000 2226 Part-time 87 San Diego 252 $120,000 1668 Internship 84 San Jose 213 $130,000 1235 Commission 49 Sunnyvale 172 $145,000 579 Temporary 36 Los Angeles 145 Source: Indeed.com Cybersecurity - DevOps (Dev/Sec/Ops) Total 335 Salary Est. # Jobs Position Types Location $110,000 105 Full-time 116 Santa Clara 27 $125,000 86 Internship 11 San Francisco 20 $130,000 70 Contract 6 San Diego 15 $140,000 50 Temporary 2 Palo Alto 13 $150,000 24 Part-time 1 Sunnyvale 7 Source: Indeed.com Blockchain Services and Mobile Applications Total 44 Salary Est. # Jobs Position Types Location $95,000 14 Full-time 15 San Francisco 5 $120,000 11 Internship 1 Los Angeles 3 $125,000 10 Part-time 1 San Francisco Bay Area 2 $130,000 5 Temporary 1 Foster City 2 $135,000 4 Woodland Hills 1 Source: Indeed.com DevOps - Software Engineering Automation and Continuous Integration Total 1021

Salary Est. # Jobs Position Types Location $115,000 310 Full-time 355 San Francisco 76 $125,000 262 Contract 13 San Diego 41 $130,000 217 Internship 12 Palo Alto 33 $140,000 141 Commission1 San Jose 20 $145,000 91 Sunnyvale 20 Source: Indeed.com High Performance Computing (HPC), Data Science, and Artificial Intelligence (AI) Total 60 Salary Est. # Jobs Position Types Location $90,000 20 Full-time 33 East Palo Alto 10 $110,000 16 Contract 1 Santa Clara 7 $130,000 12 Internship 1 Palo Alto 4 $145,000 8 Sunnyvale 3 $160,000 4 San Francisco Bay Area 3 Source: Indeed.com

Program Learning Outcomes

Upon successful completion of this program, students will be able to:

1. Select the appropriate design and implementation to solve a problem within given constraints.
2. Analyze computer architecture to formulate estimates of performance
3. Explain the fundamentals of problem solving and analysis.

Degree Requirements:

Required Courses **Credit Hours:** (31 - 32 Required)

Program Courses

CIS 006 or	Introduction to Computer Programming	5
CIS 007	Control Structures and Objects	4
CIS 011	Discrete Structures and Logic	4
CIS 033	Software Architectures and Algorithms	4
CIS 078	Digital Architectures for Computation	4
MATH 003A	Calculus I	5
MATH 003B	Calculus II	5
PHYS 004A	General Physics with Calculus	5

MATH 011 accepted as a substitute for CIS 011

Optional Electives **Credit Hours:**

Select an Optional Group of Concentration Electives from the List Below
Completion of an electives are is not required to receive this certificate.

Cybersecurity - Secure Software Development **Credit Hours:** (0 Required)

Recommended Sequence of Courses

CIS 071	Introduction to Information Systems Security	3
CIS 059	Applications in Information Security	3
CIS 056	Secure Coding in Java and .NET	3
CIS 057	Web Application PEN Testing	3

Cybersecurity - DevOps (Dev/Sec/Ops) **Credit Hours:** (0 Required)

Recommended Sequence of Courses

CIS 055	Hacker Techniques, Exploits & Incident Handling	3
CIS 060	Computer Forensics Fundamentals	3
CIS 247	Information Systems Skills Challenge	1
CIS 052	Cloud Security Fundamentals	3
CIS 053	Intrusion Detection In-Depth: Compliance, Security, Forensics and Troubleshooting	3
CIS 178	Build Automation for DevOps & QA	4

CIS 225 requires participation in one round of Ethical Hacking Competition: National Cyber League (NCL), CyberPatriots, CyberDefenders, or equivalent.

Blockchain Services and Mobile Applications **Credit Hours:** (0 Required)

Recommended Sequence of Courses

CIS 066	XML Documents and Applications	2
CIS 093	Cross Platform Mobile Application Development	4
CIS 100	Introduction to Blockchain, Cryptocurrencies, and Identity	3
CS 043	High Performance Web Applications and Services	3

DevOps - Software Engineering Automation and Continuous Integration **Credit Hours:** (0 Required)

Recommended Sequence of Courses

CIS 051	Introduction to Information Technology Project Management	4
CS 020	Python Application Programming	3
CS 080	Software Engineering	3
CIS 178	Build Automation for DevOps & QA	4
CIS 179	Agile Software Management and Project Automation	3
COPED 450 or	General Work Experience	1
COPED 469 or	Occupational Work Experience in Security Administration	1
CIS 247	Information Systems Skills Challenge	1

Completing CIS 051 and COPED 450 or 469 qualifies you to become Certified Associate in Project Management (CAPM) https://www.pmi.org/certifications/types/certified-associate-capm
Completing this elective qualifies you to become a PMI Agile Certified Practitioner (PMI-ACP) https://www.pmi.org/certifications/types/agile-acp
Exams are administered only to qualified students by Project Management Institute (PMI) http://pmi.org

High Performance Computing (HPC), Data Science, and Machine Learning Credit Hours: (0 Required)

Recommended Sequence of Courses

CS 020	Python Application Programming	3
MATH 003E	Linear Algebra	3
CIS 008	Introduction to Parallel and Cloud Programming	4
CS 060	Applications of Artificial Intelligence and Deep Learning	3

Total: 31.000 - 32.000

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