

# Berkeley City College

## CBEST Test Preparation

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### Overview

College	BCC - Liberal Arts and Social Sciences
Originator	Jenny Lowood
Award Type	Certificate of Completion

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### Codes and Dates

Curriculum Committee Approval Date	5/07/2020
Current Effective Date	8/01/2021
Top Code	0899.00* - Other Education
CIP Code	13.9900: Education, Other.

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### Description

This program prepares students to pass the CBEST tests in English and mathematics, standardized exams that future K-12 teachers in California must pass prior to being hired as teachers.

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### Career Opportunities

This program addresses the critical teacher workforce crisis in California as well as the testing barriers created by requirements like CBEST completion for beginning teachers. Those who successfully complete the program in order to pass the CBEST exams may become K-12 teachers in California.

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### Program Learning Outcomes

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

1. apply practical test-taking strategies and techniques
  2. manage time and anxiety effectively in a test-taking situation
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### Degree Requirements:

Required Courses	Noncredit:	(36.05 Required)
EDUC 502A and Test Preparation for CBEST Basic Skills Test - English		18.025
EDUC 502B Test Preparation for CBEST Basic Skills Test - Mathematics		18.025
		<b>Total: 36.05</b>

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# Berkeley City College

## Spanish

### Overview

College	BCC - Liberal Arts and Social Sciences
Originator	Fabian Banga
Award Type	AA-T Degree

### Codes and Dates

State Approval Date	9/19/2014
Curriculum Committee Approval Date	3/16/2014
Board of Trustees Date	9/19/2014
Current Effective Date	8/01/2017
Program Control Number	32847
Top Code	1105.00 - Spanish
CIP Code	16.0905: Spanish Language and Literature.

### Description

Students who successfully complete the AA-T in Spanish earn specific guarantees for transfer to the CSU system: admission to a CSU with junior status and priority admission to their local CSU campus and to a program or major in Spanish or a similar major. Students transferring to a CSU campus will be required to complete no more than 60 units after transfer to earn a bachelor's degree. Students are required to complete 60 semester units that are eligible for transfer to a California State University, including both of the following: (1) The Intersegmental General Education Transfer Curriculum (IGETC) or the California State University General Education – Breadth Requirements and (2) 19-23 semester units with a grade of C or P or better in the major and an overall minimum grade point average (GPA) of at least 2.0 in all CSU transferable coursework. See page XX for a more detailed description of Associate Degrees for Transfer. Students are advised to consult with a Berkeley City College counselor for additional information and to verify transfer requirements.

### Career Opportunities

Transfer to a 4-year university in Spanish or related discipline.

### Program Learning Outcomes

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

1. Use grammar and vocabulary to demonstrate oral competence in the Spanish language.
2. Use grammar and vocabulary to demonstrate written competence in the Spanish language.
3. Describe the culture(s) of the Spanish-speaking world.
4. Interpret Spanish-language texts according to their cultural, literary and/or linguistic content.

### Degree Requirements:

<b>REQUIRED CORE:</b>	<b>Credit Hours:</b> (0 Required)
SPAN 001A Elementary Spanish I	5
SPAN 001B Elementary Spanish II	5
SPAN 002A or Intermediate Spanish I	5
SPAN 022A Spanish for Bilingual Speakers I	5
SPAN 002B or Intermediate Spanish II	5
SPAN 022B Spanish for Bilingual Speakers II	5

**Substitution Courses (see LIST A): If a student places out of any core course, the student will need to make up the units for that course, the student will need to make up the units for that course.**

<b>LIST A (Select or substitute one to three courses for 3-9 units only if a student has taken or passed the course):</b>	<b>Credit Hours:</b> (0 Required)
SPAN 010A Advanced Spanish Conversation	3
SPAN 010B Advanced Spanish Conversation	3
SPAN 035A Intermediate Conversational Spanish: Current Events	3
SPAN 035B Intermediate Conversational Spanish: Film	3
SPAN 038 Latin American Literature	3
SPAN 039 Latin American Novel	3
SPAN 040 Hispanic Civilization and Culture	3

<b>TOTAL UNITS FOR THE MAJOR</b>	<b>Credit Hours:</b> (0 Required)
Units	19 - 23

<b>Total Units that may be double-counted (Ensure that the total for each Area of Concentration does not exceed the limit for that GE Area):</b>	<b>Credit Hours:</b> (0 Required)
Units	6 - 9

<b>General Education (CSU GE or IGETC) and Elective Units:</b>	<b>Credit Hours:</b> (0 Required)
Units	37 - 39

<b>Elective (CSU Transferable) Units:</b>	<b>Credit Hours:</b> (0 Required)
Units	4 - 9

<b>TOTAL DEGREE UNITS:</b>	<b>Credit Hours:</b> (60 Required)
Units	60



# College of Alameda

## Athletic Trainer Aide

### Overview

College	COA - Science, Technology, Engineering, Art, and Mathematics
Originator	Linda Thompson
Award Type	Certificate of Achievement

### Codes and Dates

State Approval Date	5/07/2018
Curriculum Committee Approval Date	9/05/2017
Board of Trustees Date	11/14/2017
Current Effective Date	8/01/2018
Program Control Number	36691
Top Code	1270.00 - Kinesiology
CIP Code	51.0913: Athletic Training/Trainer.

### Description

The Athletic Trainer Aide functions as an aide in a clinical setting; or in a high school, college or professional athletic training center. The Aide assists the Certified Athletic Trainer or other healthcare professionals in the prevention, care, and rehabilitation of athletic injuries. This will include assisting in the assessment and documentation of athletic injuries, acute and chronic injury management, treatment protocols, principles of conditioning, and return to competitive activity. In addition, effective communications skills with athletes/patients, as well as medical professionals are required.

### Career Opportunities

Students earning an Athletic Trainer Aide Certificate of Achievement typically work as an aide in a clinical setting; or in a high school athletic program, college athletic program, or professional athletic training center. The Athletic Trainer Aide will assist the Certified Athletic Trainer or other healthcare professionals in the prevention, care, and rehabilitation of athletic injuries. This will include assisting in the assessment and documentation of athletic injuries, acute and chronic injury management, treatment protocols, principles of conditioning, and return to competitive activity. In addition, effective communications skills with athletes/patients as well as medical professionals are required.

### Program Learning Outcomes

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

1. Upon successful completion of this program, students will be able to: 1. Prepare for entry-level opportunities in athletic training through the development of specific educational competencies and clinical proficiencies. 2. Prepare to become proficient and capable health care professionals in future employment in athletic training or other allied health settings, as well as receive an certificate of completion. 3. Develop their skills in a college athletic program, a high school athletic program or a clinical setting with a variety of physically-active individuals. 4. Embrace the college's Mission to serve the educational needs of its diverse community by providing comprehensive and flexible programs and resources that empower students to achieve their goals.

### Degree Requirements:

**Credit Hours:** (12 Required)

KIN 150	Introduction to Kinesiology	3
KIN 134	Care and Prevention of Athletic Injuries	3
HLTED 009	First Aid and Safety	2
BIOL 024	Basic Human Anatomy and Physiology	4

<b>Choose from the KIN activity courses listed for a total of 3 units:</b>		<b>Credit Hours:</b> (3 Required)
KIN 054A or	Cross Fitness I - Fundamentals	1
KIN 054B or	Cross Fitness II - Beginning	1
KIN 054C or	Cross Fitness III - Intermediate	1
KIN 054D or	Cross Fitness IV - Experienced	1
KIN 058A or	Fitness Center Strength Training I-Fundamentals	0.5
KIN 058B or	Fitness Center Strength Training II-Beginning	0.5
KIN 058C or	Fitness Center Strength Training III - Intermediate	0.5
KIN 058D or	Fitness Center Strength Training IV - Experienced	0.5
KIN 060A or	Circuit Training for Strength I-Fundamentals	1
KIN 060B or	Circuit Training for Strength II-Beginning	1
KIN 060C or	Circuit Training for Strength III - Intermediate	1 - 2
KIN 060D or	Circuit Training for Strength IV - Experienced	1 - 2
KIN 051A or	Yoga I - Fundamentals	0.5
KIN 051B	Yoga II - Beginning	0.5

**Total: 15**

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# College of Alameda

## Auto Body

### Overview

College	COA - Career and Workforce Education
Originator	Rick Greenspan
Award Type	Certificate of Achievement

### Codes and Dates

Curriculum Committee Approval Date	2/17/2015
Board of Trustees Date	4/14/2015
Current Effective Date	8/01/2015
Program Control Number	19833
Top Code	0949.00* - Automotive Collision Repair
CIP Code	47.0603: Autobody/Collision and Repair Technology/Technician

### Description

The Auto Body and Paint Program prepares students to enter the job market as trained and qualified technicians, and allows students to continue toward a Baccalaureate degree in advanced schools of technology as teachers, or to broaden their skills in management, design or business. Lecture and laboratory instruction covers safety, trade ethics, and use of hand and power tools, as well as theory, repair and painting of automobiles. Upon registering for a class in the Auto Body and Paint Program, the student will receive a list of required basic tools. The student will be expected to provide tools that relate to the particular course in which he/she has enrolled. The purpose of this requirement is to assure that students graduating from the program who wish to enter the trade possess the necessary tools. A Certificate of Achievement in Auto Body will be awarded to those students completing a minimum of 25 units as outlined below with a 2.0 GPA.

### Career Opportunities

Students in this field typically work in automotive collision and repair environments.

### Program Learning Outcomes

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

1. Apply critical thinking and problem solving skills in the process of diagnosing and repairing electrical and electronic systems, utilizing computer data bases and operating appropriate diagnostic equipment.
2. Safely work with power and hand tools, welding equipment, and chemicals in an auto body repair shop.
3. Apply critical thinking and problem solving skills in the process of following instructions and professional inter-personal communication with management and coworkers.
4. Demonstrate competence and familiarity working with various metals, techniques, and equipment, including practicing all standard safety procedures.

### Degree Requirements:

#### Certificate of Achievement Requirements

**Credit Hours:** (29 Required)

#### *AUTO BODY*

AUTOB 010	Basic Auto Body Repair Concepts	10
AUTOB 020	Advanced Auto Body Repair Concepts	10
MATH 225	Mathematics for Technicians	3
AUTOB 012	Service Welding for Transportation Technology	2
ATECH 026	Introduction to Automotive Electrical Systems	4

**Credit Hours:**



# College of Alameda

## Engine Repair Specialist

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### Overview

College  
Originator  
Award Type

COA - Career and Workforce Education  
Rick Greenspan  
A.S. Degree

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### Description

The Automotive Technology curriculum is designed to prepare students for employment as apprentice auto mechanics or to allow students to continue toward a Baccalaureate degree in other advanced schools of technology in preparation for future management and teaching careers in the automotive industry.

The College of Alameda ATECH program is certified by the National Institute for Automotive Service Excellence (ASE), and was recognized as the "Best Auto Mechanics Training Program" in California in 1999 and again in 2002 by the Industry Planning Council of the Motor Vehicle Manufacturers Association. College of Alameda is also part of the Toyota Associates Program, providing College of Alameda ATECH students with specialized Toyota training and affording them special opportunities towards job placement in local Toyota dealerships.

Instruction covers safety, trade ethics, use of hand and power tools, as well as the theory, repair and testing of automobiles and their components. Special emphasis is placed on the diagnosis and repair of electronic and computer control systems in late model automobiles.

Upon registering for a class in the automotive major area, a student will receive a list of required basic tools. The student will be expected to purchase tools that relate to the course in which he/she has enrolled. The purpose of this requirement is to assure that all students graduating from the program possess tools in a quantity sufficient for trade entry as an apprentice.

Upon graduating with an Associate in Science (AS) degree, the beginning apprentice will have the union four-year night school requirement waived. The graduate with only a Certificate of Completion will have two of the required four years of night school waived. The National Institute for Automotive Service Excellence (ASE) will give one-year experience credit for the two-year program towards the ASE certification program in Auto Mechanics.

Confer with the division counselor for the specific course pattern of requirements and prerequisites. Students may not take more than one of the following 10-unit "major" courses in a single semester: ATECH 10, 11, 12, 14, 15, 40, 41, 42, and 45. Priority for enrollment in any "major" class will be given to students with the most seniority in the program. A minimum grade of "C" in ATECH 21 and 26 may be required for enrollment in a student's first "major" course.

Associate in Science (AS) Degree and Certificate of Achievement Programs:

It is recommended that these courses be completed prior to enrollment in any of the "major" Auto Mechanics classes:

- Completion of ENGL 268A-268B or ESL 253A-253B, or equivalent with a grade of "C" or better.
- One year of high school algebra or completion of MATH 225 with a grade of "C" or better.

The AS degree will be awarded upon satisfactory completion of the major course requirements listed below for each option and the General Education requirements for the Associate in Arts Degree listed in the Degrees, Programs & Transfer Requirements section of this Catalog.

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### Career Opportunities

The Automotive Technology curriculum is designed to prepare students for employment as apprentice auto mechanics. Upon registering for a class in the automotive major area, a student will receive a list of required basic tools. The student will be expected to purchase tools that relate to the course in which he/she has enrolled. The purpose of this requirement is to assure that all students graduating from the program possess tools in a quantity sufficient for trade entry as an apprentice. Upon graduating with an Associate in Science (AS) degree, the beginning apprentice will have the union four-year night school requirement waived. The graduate with only a Certificate of Completion will have two of the required four years of night school waived. The National Institute for Automotive Service Excellence (ASE) will give one year experience credit for our two-year program towards the



ASE certification program in Auto Mechanics. Confer with the division counselor for the specific course pattern of requirements and prerequisites. Students may not take more than one of the following 10-unit "major" courses in a single semester: ATECH 10, 11, 12, 14, 15, 40, 41, 42, and 45. Priority for enrollment in any "major" class will be given to students with the most seniority in the program. A minimum grade of "C" in ATECH 21 and 22 may be required for enrollment in a student's first "major" course.

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## Program Learning Outcomes

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

1. (Commitment to Learning) Be 'lifelong learners' in the field of automotive technology, keeping up with changes in vehicles, in diagnostics and in repair procedures through a commitment to continual learning and training.
2. (Communication) Communicate effectively with customers, supervisors and co-workers.
3. (Critical Thinking) Apply critical thinking and problem solving skills in the process of diagnosing and repairing vehicles.
4. (Performance) Competently perform industry standard automotive repair procedures, using proper tools, procedures and diagnostic techniques, as specified in the NATEF program certification process.

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## Degree Requirements:

### FIRST SEMESTER

**Credit Hours:** (14 Required)

*Degree Major/Certificate Requirements*

ATECH 021	TRANSPORTATION TECHNOLOGY PRINCIPLES	4
ATECH 022	Introduction to Auto Mechanics	4
BUS 208	Communication Skills for Technicians *	3
MATH 225	Mathematics for Technicians *	3

### SECOND SEMESTER

**Credit Hours:** (10 Required)

ATECH 011 and	Engines, Fuel and Ignition Systems	10
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### THIRD SEMESTER

**Credit Hours:** (10 Required)

ATECH 041 and	ADVANCED ENGINE REPAIR	10
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**Total: 34**

\*: Candidates for the AS Degree should take Mathematics and English classes required for that degree.

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# College of Alameda

## Engine Repair Specialist

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### Overview

College  
Originator  
Award Type

COA - Liberal Studies and Language Arts  
Rick Greenspan  
Certificate of Achievement

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### Description

The Automotive Technology curriculum is designed to prepare students for employment as apprentice auto mechanics or to allow students to continue toward a Baccalaureate degree in other advanced schools of technology in preparation for future management and teaching careers in the automotive industry.

The College of Alameda ATECH program is certified by the National Institute for Automotive Service Excellence (ASE), and was recognized as the "Best Auto Mechanics Training Program" in California in 1999 and again in 2002 by the Industry Planning Council of the Motor Vehicle Manufacturers Association. College of Alameda is also part of the Toyota Associates Program, providing College of Alameda ATECH students with specialized Toyota training and affording them special opportunities towards job placement in local Toyota dealerships.

Instruction covers safety, trade ethics, use of hand and power tools, as well as the theory, repair and testing of automobiles and their components. Special emphasis is placed on the diagnosis and repair of electronic and computer control systems in late model automobiles.

Upon registering for a class in the automotive major area, a student will receive a list of required basic tools. The student will be expected to purchase tools that relate to the course in which he/she has enrolled. The purpose of this requirement is to assure that all students graduating from the program possess tools in a quantity sufficient for trade entry as an apprentice.

Upon graduating with an Associate in Science (AS) degree, the beginning apprentice will have the union four-year night school requirement waived. The graduate with only a Certificate of Completion will have two of the required four years of night school waived. The National Institute for Automotive Service Excellence (ASE) will give one-year experience credit for the two-year program towards the ASE certification program in Auto Mechanics.

Confer with the division counselor for the specific course pattern of requirements and prerequisites. Students may not take more than one of the following 10-unit "major" courses in a single semester: ATECH 10, 11, 12, 14, 15, 40, 41, 42, and 45. Priority for enrollment in any "major" class will be given to students with the most seniority in the program. A minimum grade of "C" in ATECH 21 and 26 may be required for enrollment in a student's first "major" course.

Associate in Science (AS) Degree and Certificate of Achievement Programs:

It is recommended that these courses be completed prior to enrollment in any of the "major" Auto Mechanics classes:

- Completion of ENGL 268A-268B or ESL 253A-253B, or equivalent with a grade of "C" or better.
- One year of high school algebra or completion of MATH 225 with a grade of "C" or better.

The AS degree will be awarded upon satisfactory completion of the major course requirements listed below for each option and the General Education requirements for the Associate in Arts Degree listed in the Degrees, Programs & Transfer Requirements section of this Catalog.

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### Career Opportunities

Upon registering for a class in the automotive major area, a student will receive a list of required basic tools. The student will be expected to purchase tools that relate to the course in which he/she has enrolled. The purpose of this requirement is to assure that all students graduating from the program possess tools in a quantity sufficient for trade entry as an apprentice. Upon graduating with an Associate in Science (AS) degree, the beginning apprentice will have the union four-year night school requirement waived. The graduate with only a Certificate of Completion will have two of the required four years of night school waived. The National Institute for Automotive Service Excellence (ASE) will give one year experience credit for our two-year program towards the ASE certification program in Auto Mechanics. Confer with the division counselor for the specific course pattern of

requirements and prerequisites. Students may not take more than one of the following 10-unit "major" courses in a single semester: ATECH 10, 11, 12, 14, 15, 40, 41, 42, and 45. Priority for enrollment in any "major" class will be given to students with the most seniority in the program. A minimum grade of "C" in ATECH 21 and 22 may be required for enrollment in a student's first "major" course.

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## Program Learning Outcomes

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

1. (Commitment to Learning) Be 'lifelong learners' in the field of automotive technology, keeping up with changes in vehicles, in diagnostics and in repair procedures through a commitment to continual learning and training.
2. (Communication) Communicate effectively with customers, supervisors and co-workers.
3. (Critical Thinking) Apply critical thinking and problem solving skills in the process of diagnosing and repairing vehicles.
4. (Performance) Competently perform industry standard automotive repair procedures, using proper tools, procedures and diagnostic techniques, as specified in the NATEF program certification process.

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## Degree Requirements:

### FIRST SEMESTER

**Credit Hours:** (14 Required)

*Degree Major/Certificate Requirements*

ATECH 021	TRANSPORTATION TECHNOLOGY PRINCIPLES	4
ATECH 022	Introduction to Auto Mechanics	4
BUS 208	Communication Skills for Technicians *	3
MATH 225	Mathematics for Technicians *	3

### SECOND SEMESTER

**Credit Hours:** (10 Required)

ATECH 011 and	Engines, Fuel and Ignition Systems	10
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### THIRD SEMESTER

**Credit Hours:** (10 Required)

ATECH 041 and	ADVANCED ENGINE REPAIR	10
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**Total: 34**

\*: Candidates for the AS Degree should take Mathematics and English classes required for that degree.

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# College of Alameda

## English for Speakers of Other Languages: Advanced Certificate

### Overview

College	COA - Liberal Studies and Language Arts
Originator	Amanda Price
Award Type	Certificate of Proficiency

### Codes and Dates

Curriculum Committee Approval Date	3/06/2018
Board of Trustees Date	5/08/2018
Current Effective Date	1/01/2019
Top Code	4930.87 - English as a Second Language - Integrated
CIP Code	32.0108: Developmental/Remedial English.

### Description

The Advanced Certificate in ESOL verifies that the student has successfully completed three core classes at the advanced level: Grammar, Reading & Writing, and Listening & Speaking. The certificate will provide students with evidence of English study, which makes a job-seeker more competitive in many industries.

### Career Opportunities

This certificate will prepare speakers of other languages to communicate verbally and in writing in vocational programs and the workplace. The certificate will provide students with evidence of English study, which makes a job-seeker more competitive in many industries.

### Program Learning Outcomes

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

1. Participate in campus and classroom culture at a level required for success as an advanced ESOL student.
2. Express ideas fluently, accurately and appropriately in American English in preparation for non-ESOL courses.

### Degree Requirements:

<b>Certificate of Proficiency Requirements</b>	<b>Credit Hours:</b>	<b>(14 Required)</b>
ESOL 052A and Advanced Reading and Writing		6
ESOL 274A Grammar 4		4
ESOL 050A Advanced Listening and Speaking		4
ESOL 052 or Advanced Reading and Writing		6
		<b>Total: 14</b>

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# College of Alameda

## English for Speakers of Other Languages: High Intermediate Certificate

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### Overview

College	COA - Career and Workforce Education
Originator	Amanda Price
Award Type	Certificate of Proficiency

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### Codes and Dates

Curriculum Committee Approval Date	3/06/2018
Board of Trustees Date	5/08/2018
Current Effective Date	1/01/2019
Top Code	4930.87 - English as a Second Language - Integrated
CIP Code	32.0108: Developmental/Remedial English.

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### Description

The High Intermediate Certificate in ESOL verifies that the student has successfully completed three core classes at the high intermediate level: Grammar, Reading & Writing, and Listening & Speaking. The certificate will provide students with evidence of English study, which makes a job-seeker more competitive in many industries.

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### Career Opportunities

This certificate will prepare speakers of other languages to communicate verbally and in writing in vocational programs and the workplace. The certificate will provide students with evidence of English study, which makes a job-seeker more competitive in many industries.

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### Program Learning Outcomes

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

1. Participate in campus and classroom culture at a level required for success as a high-intermediate ESOL student.
  2. Express ideas fluently, accurately and appropriately in American English in preparation for advanced ESOL courses.
- 

### Degree Requirements:

<b>Certificate of Proficiency Requirements</b>	<b>Credit Hours:</b>	<b>(14 Required)</b>
ESOL 253A and Reading and Writing 3	6	6
ESOL 273A and Grammar 3	4	4
ESOL 263A and Listening and Speaking 3	4	4
ESOL 253 or Reading and Writing 3	6	6
		<b>Total: 14</b>

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# College of Alameda

## ESOL High Beginning

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### Overview

College	COA - Liberal Studies and Language Arts
Originator	Amanda Price
Award Type	Certificate of Competency

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### Description

The High Beginning Certificate of Competency in ESOL verifies that a student has successfully completed three ESOL core classes (Reading and Writing, Listening and Speaking, and Grammar) at the high beginning level. Students interested in completing this certificate should consult with the ESOL department chair and a counselor.

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### Career Opportunities

This certificate will help prepare students for vocational programs and job advancement.

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### Program Learning Outcomes

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

1. Demonstrate high beginning skills in English listening, speaking, reading, and/or writing which will allow them to achieve their personal, vocational, and academic goals.
- 

### Degree Requirements:

#### Courses (min 172 hours)

**Noncredit:** (245 Required)

*Students must complete a minimum of 172 class hours*

ESOL 511 and Reading and Writing 1	105
ESOL 561 and Listening and Speaking 1	70
ESOL 571 and Grammar 1	70

#### Competency Requirement

**Noncredit:** (0 Required)

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

**Total: 245**

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# College of Alameda

## ESOL High Intermediate

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### Overview

College	COA - Liberal Studies and Language Arts
Originator	Amanda Price
Award Type	Certificate of Competency

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### Description

The High Intermediate Certificate of Competency in ESOL verifies that a student has successfully completed three ESOL core classes (Reading and Writing, Listening and Speaking, and Grammar) at the high intermediate level. Students interested in completing this certificate should consult with the ESOL department chair and a counselor.

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### Career Opportunities

This certificate will help prepare students for vocational programs and job advancement.

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### Program Learning Outcomes

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

1. Demonstrate high intermediate skills in English listening, speaking, reading, and/or writing which will allow them to achieve their personal, vocational, and academic goals.
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### Degree Requirements:

#### Courses (min 172 hours)

**Noncredit:** (315 Required)

*Students must complete a minimum of 172 class hours*

ESOL 513 and	Reading and Writing 3	105
ESOL 563 and	Listening and Speaking 3	70
ESOL 573 and	Grammar 3	70
ESOL 574 or	Grammar 4	70

#### Competency Requirement

**Noncredit:** (0 Required)

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

**Total: 315**

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# College of Alameda

## History

### Overview

College	COA - Liberal Studies and Language Arts
Originator	Ed Loretto
Award Type	A.A. Degree

### Description

The AA degree in History will be awarded upon satisfactory completion of the major course requirements listed below and the General Education requirements for the Associate in Arts Degree listed in the Degrees, Programs & Transfer Requirements section of this Catalog.

### Career Opportunities

Career Options for history majors include employment opportunities in a variety of different career areas. The need for teachers in the state of California for elementary, middle, and high schools remains high and college graduates with a history degree will find themselves well suited for opportunities to earn teaching credentials in a variety of subjects. The research and writing skills needed to successfully complete a degree in history offer excellent preparations for careers in law, journalism, public relations, and domestic and foreign government service.

### Program Learning Outcomes

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

1. Synthesize ideas from multiple perspectives.
2. Reason through research and analysis.
3. Communicate reasoned interpretations.

### Degree Requirements:

<b>Degree Major Requirements:</b>	<b>Credit Hours:</b>	(6 Required)
HIST 007A History of the United States to 1877		3
HIST 007B History of the United States since 1865		3
<b>Select one course from the following:</b>	<b>Credit Hours:</b>	(3 Required)
HIST 002A History of European Civilization		3
HIST 002B History of European Civilization		3
<b>Select three courses (9 units) from the following:</b>	<b>Credit Hours:</b>	(9 Required)
AFRAM 30 African-American History: Africa to 1865		3
AFRAM 31 African-American History: 1865-1945		3
AFRAM 32 African-American History: 1945 to Present		3
HIST 002A History of European Civilization		3
HIST 002B History of European Civilization		3
HIST 005 History of Mexico		3
HIST 008B History of Latin-American Civilization		3
HIST 008A History of Latin-American Civilization		3
HIST 012 History and Culture of Eastern Asia		3
HIST 11 Vietnam: An American Tragedy		3



HIST 019	History of California	3
HIST 32	The United States Since 1945	3

**Total: 18**

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# College of Alameda

## Practitioner of Fine Art

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### Overview

College  
Originator  
Award Type

COA - Science, Technology, Engineering, Art, and Mathematics  
John Drew Burgess  
Certificate of Achievement

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### Description

The pursuit of fine art is a central component of education and healthy societies. The artist's concern for truth, beauty and form is a bridge to the well being of individuals within communities. The College of Alameda Art Department encourages the growth of student expression. A student who successfully completes the designed course sequence in art will be eligible for a Certificate of Achievement as a Practitioner of Fine Art.

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### Career Opportunities

Fine Artist

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### Program Learning Outcomes

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

1. Examine historical works of art with analytical inquiry concerning fine art and modern society.
  2. Synthesize artistic ideas regarding global expressions of fine art.
  3. Analyze, read, write and express art history concepts to critically evaluate the role of fine art in society.
  4. Acquire materials, design, compose and construct works of fine art.
  5. Develop a presentation portfolio of original works of art and individualized expression.
- 

### Degree Requirements:

<b>Practitioner of Fine Art</b>		<b>Credit Hours:</b> (27 Required)
ART 001	Introduction to Art History	3
ART 004	History of Modern Art (1800 to Present)	3
ART 122	World Art	3
ART 020	Beginning Drawing & Composition	3
ART 022	Intermediate Drawing and Composition	3
ART 050	Beginning Painting	3
ART 052	Intermediate Painting	3
ART 046	2-D Visual Design	3
ART 090	Mixed Media	3
<b>Total:</b>		<b>27</b>

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# College of Alameda

## Transfer Studies: CSU GE-Breadth

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### Overview

College  
Originator  
Award Type

COA - Student Services/Non-Instructional  
Vinh Phan  
Certificate of Achievement

---

### Description

The Certificate of Achievement in CSU GE-Breadth is designed for students who plan to transfer to the California State University system (CSU). The courses in this certificate will give students a broad exposure to topics and in most cases will fulfill lower-division general education transfer requirements of the California State University General Education Breadth (CSU GE-Breadth).

All courses within the CSU GE-Breadth must be completed with a grade of "C" or better and have an overall GPA of 2.0. Upon completion of the certificate requirements, students should file a "Petition for a Transfer Studies: CSU-GE Breadth Certificate of Achievement".

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### Career Opportunities

N/A. This certificate is designed for students who complete the CSU GE-Breadth transfer pattern.

---

### Program Learning Outcomes

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

1. Explain the values of a culture as expressed through its art or language.
  2. Demonstrate effective expository and persuasive writing skills.
  3. Develop a reasoned solution to a problem.
  4. Evaluate new and accepted ideas about the natural universe using testable methodology.
  5. Evaluate the methods of inquiry and evidence used in the behavioral and social sciences.
- 

### Degree Requirements:

**GE Area A: English Language Communication and Critical Thinking** **Credit Hours:** (9 Required)

- A1: Oral Communication (3 units)
- A2: Written Communication (3 units)
- A3: Critical Thinking (3 units)

**GE Area B: Scientific Inquiry and Quantitative Reasoning** **Credit Hours:** (9 Required)

- B1: Physical Science\* (3 units)
- B2: Life Science\* (3 units)
- \*B3: Lab (1 unit, \*a course completed in B1 or B2 with a lab component meets the B3 requirement)
- B4: Math Concept (3 Units)

**GE Area C: Arts and Humanities** **Credit Hours:** (9 Required)

- C1: Arts (3 units)
- C2: Humanities (3 units)
- C1 or C2 (3 units)

**GE Area D: Social Sciences**

*(select three courses from at least two disciplines)*

**Credit Hours:** (9 Required)

**GE Area E: Lifelong Learning and Self Development**

**Credit Hours:** (3 Required)

**Total: 39**

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# College of Alameda

## Transfer Studies: IGETC

### Overview

College	COA - Student Services/Non-Instructional
Originator	Vinh Phan
Award Type	Certificate of Achievement

### Description

The Certificate of Achievement in IGETC is designed for students who plan to transfer to the University of California system (UC) or the California State University system (CSU). The courses in this certificate will give students exposure to a board range of topics and in most cases will fulfill lower-division general education transfer requirements of the Intersegmental General Education Transfer Curriculum (IGETC).

All courses within the IGETC must be completed with a grade of "C" or better and have an overall GPA of 2.0 or higher. Upon completion of the certificate requirements, students should file for "Petition for a Transfer Studies: IGETC Certificate of Achievement".

### Career Opportunities

N/A. This certificate is designed for students who complete the IGETC transfer pattern.

### Program Learning Outcomes

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

1. Demonstrate effective expository and persuasive writing skills.
2. Explain the values of a culture as expressed through its art or language.
3. Evaluate new and accepted ideas about the natural universe using testable methodology.

### Degree Requirements:

#### Credit Hours:

*For CSU transfer, must complete 1C*

*For UC transfer, must complete Area 6*

*For certificate completion, either Area 1C or Area 6 must be completed*

#### **AREA 1: ENGLISH COMMUNICATION**

**Credit Hours:** (7 - 9 Required)

--1A: English Composition (4 units)

--1B: Critical Thinking (3 units)

--1C: Oral Communication (3 units, CSU Requirement ONLY)

#### **AREA 2: MATHEMATICAL CONCEPTS & QUANTITATIVE REASONING**

**Credit Hours:** (3 - 5 Required)

#### **AREA 3: ARTS AND HUMANITIES**

**Credit Hours:** (9 Required)

*Select one course from each area (3A, 3B), and an additional course from either area*

--3A: Arts (3 units)

--3B: Humanities (3 units)

--3A or 3B (3 units)

#### **AREA 4: SOCIAL AND BEHAVIORAL SCIENCES**

**Credit Hours:** (9 Required)

*Select three courses from a least 2 disciplines*

**AREA 5: PHYSICAL AND BIOLOGICAL SCIENCES**

**Credit Hours:** (7 - 9 Required)

--5A: Physical Science (3 units)

--5B: Biological Sciences (3 units)

--5C: Laboratory Science (1 unit)

**AREA 6: LANGUAGE OTHER THAN ENGLISH (UC Requirement ONLY)**

**Credit Hours:**

**Total: 35.000 - 41.000**

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# Laney College

## Laney Educational/after-school Pathways (leap)

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### Overview

College	Laney - Student Wellness and Development
Originator	Jean Paul Schumacher
Award Type	Certificate of Proficiency

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### Description

The Laney Educational/After –School Pathways (LEAP) Certificate of Proficiency program prepares students for employment in after school or youth development programs. Additionally, the core Learning Resource classes count toward the AA degree and provide a solid foundation for programs leading to a teaching certificate or career in human services.

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### Career Opportunities

n/a

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### Program Learning Outcomes

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

1. Student demonstrates readiness to work with K-8 students in math, English, and other academic courses.
  2. Student can apply appropriate strategies for target populations and various learning and communication styles.
  3. Student demonstrates ability to set personal and community wellness goals.
  4. Student employs culturally appropriate practices as they apply to pedagogical themes.
  5. Student demonstrates ability to develop an effective lesson plan for youth development program.
- 

### Degree Requirements:

<b>Certificate of Proficiency Requirements:</b>	<b>Credit Hours:</b> (12 - 14 Required)
ENGL 201A or Preparation for Composition and Reading *	4
ENGL 201B Preparation for Composition and Reading *	4
HLTED 001 or Exploring Health Issues	3
HLTED 20 Health and Wellness: Personal Change	1
LRNRE 20 Introduction to Youth Development	3
LRNRE 030 Introduction to Tutoring	1
MATH 250 or Arithmetic **	3
MATH 253 Pre-Algebra **	3
<b>Total: 12.000 - 14.000</b>	

\*: A more advanced ENGL course may substitute ENGL 201A or 201B.

\*\*: A more advanced MATH course may substitute MATH 250 or 253.

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# Laney College

## Android Programming

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### Overview

College	Laney - Mathematics and Sciences
Originator	Kim Bridges
Award Type	Certificate of Achievement

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### Codes and Dates

State Approval Date	4/12/2018
Board of Trustees Date	12/13/2016
Program Control Number	36576
Top Code	0707.10* - Computer Programming
CIP Code	11.0201: Computer Programming/Programmer, General.

---

### Description

The Android Mobile Application Programming certificate prepares students for careers as entry-level mobile application developers and quality assurance engineers. Students are taught to program native mobile applications utilizing the Android SDK. In addition to learning the fundamentals of programming for the Android platform, students learn to develop applications that support quality user-experience, memory efficiency, data reliability, and security.

---

### Career Opportunities

Students completing this certificate program will be qualified for employment as entry-level app developers and quality assurance technicians.

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### Program Learning Outcomes

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

1. Analyze a problem and interpret technical specifications to create and program appropriate algorithmic solutions that include the use of control structures, parameters and return values
  2. Design and implement abstract data types using classes, encapsulation, inheritance, polymorphism, exceptions, events, multithreading, collections and generics
  3. Create User Interfaces UIs using controls, layout managers, adaptors, menus and dialogs
- 

### Degree Requirements:

<b>Complete the following courses:</b>		<b>Credit Hours:</b> (16 Required)
CIS 006	Introduction to Computer Programming	5
CIS 025A or	Object Oriented Programming Using C++	4
CIS 036A	Java Programming Language I	4
CIS 079A	Introduction to Application Design in Android	3
CIS 079B	Advanced Application Design in Android	3
CIS 205	Computer Literacy	1
		<b>Total: 16</b>

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# Laney College

## Biomanufacturing

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### Overview

College	Laney - Mathematics and Sciences
Originator	Leslie Blackie
Award Type	Certificate of Achievement

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### Codes and Dates

State Approval Date	4/09/2018
Curriculum Committee Approval Date	10/21/2016
Board of Trustees Date	12/13/2016
Current Effective Date	6/18/2018
Program Control Number	30965
Top Code	0430.00* - Biotechnology and Biomedical Technology
CIP Code	41.0101: Biology Technician/Biotechnology Laboratory Technician.

---

### Description

The Certificate of Achievement in Biomanufacturing is designed to provide students with the knowledge and skills necessary for employment in the biomanufacturing/pharmaceutical industry. Students study basic biotechnology and biomanufacturing skills in one semester, earning a Certificate of Proficiency in Biomanufacturing Skills. Students may then continue their academic training by taking additional courses to earn a Certificate of Achievement in Biomanufacturing gaining the skills and knowledge necessary for a higher level of employment within the manufacturing sector of the pharmaceutical industry.

---

### Career Opportunities

Manufacturing and production ex. material handlers, manufacturing assistant, instrumentation and calibration technicians, media prep assistant Research and Development ex. laboratory assistant, green house worker, animal caretakers Quality control/Quality Assurance (QA/QC) ex. QC technician, QA specialist or assistant

---

### Program Learning Outcomes

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

1. Setup and manipulate laboratory equipment, carry out experimental procedures and identify possible sources of error.
  2. Maintain a laboratory notebook according to standard scientific guidelines or write clear, well-documented lab reports using the language of science.
  3. Explain and discuss both verbally and in writing the science concepts listed in the course content, as well as their relevance to everyday events and circumstances in a broad interdisciplinary context.
- 

### Degree Requirements:

<b>First Semester (4-10 units):</b>	<b>Credit Hours:</b>	(0 Required)
BIOL 075      Fundamentals of Biotechnology		2
MATH 208      Mathematics for Laboratory Sciences *		3
CHEM 030A or    Introductory General Chemistry		4
CHEM 001A      General Chemistry		5
<b>Second Semester (7-10 units):</b>	<b>Credit Hours:</b>	(0 Required)
BIOL 076 or    Principles of Biomanufacturing *		3
BIOL 078 or    Applied Biomanufacturing Technology with Laboratory *		5
BIOL 003 or    Microbiology		5
BIOL 073      Cell Culture Principles and Techniques		4

**Credit Hours:** (13 - 17 Required)

Total Units:

13 - 17

**Total: 13.000 - 17.000**

\*: BIOL 78 can be taken in lieu of all three of the following courses: BIOL 75, BIOL 76, and Math 208

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# Laney College

## Biomanufacturing Production

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### Overview

College	Laney - Mathematics and Sciences
Originator	Leslie Blackie
Award Type	A.S. Degree

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### Codes and Dates

State Approval Date	4/09/2018
Curriculum Committee Approval Date	10/21/2016
Board of Trustees Date	12/13/2016
Current Effective Date	6/18/2018
Program Control Number	30965
Top Code	0430.00* - Biotechnology and Biomedical Technology
CIP Code	41.0101: Biology Technician/Biotechnology Laboratory Technician.

---

### Description

The Associates of Science in Biomanufacturing Production degree continues to build on the courses taught for the Certificates of Proficiency and Achievement to prepare graduates to work in the biomanufacturing/pharmaceutical industry as technicians. Students will learn how to operate and maintain the equipment used to manufacture protein pharmaceutical products; culture bacterial, yeast and mammalian cells and recover the proteins that those cells produce. Students will follow good manufacturing practices by maintaining records in order to comply with quality assurance procedures and government regulations.

---

### Career Opportunities

Manufacturing Technician, Production Technician, Laboratory Technician, Quality Control Technician

---

### Program Learning Outcomes

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

1. PLO # 1 Set up and manipulate laboratory equipment, carry out experimental procedures and identify possible sources of error as well as practice laboratory safety guidelines relating to working with laboratory equipment.
  2. PLO # 2 Communicate using industry standard documentation of laboratory notebooks, SOPs or batch records or write clear well documented lab reports as appropriate.
  3. PLO # 3 Explain and discuss both verbally and in writing the science concepts listed in the course content, as well as their relevance to everyday events and circumstances in a broad interdisciplinary context.
- 

### Degree Requirements:

<b>First Semester (4-10 units):</b>		<b>Credit Hours:</b> (0 Required)
BIOL 075	Fundamentals of Biotechnology *	2
MATH 208	Mathematics for Laboratory Sciences *	3
CHEM 030A or	Introductory General Chemistry	4
CHEM 001A	General Chemistry	5
<b>Second Semester (7-10 units):</b>		<b>Credit Hours:</b> (0 Required)
BIOL 003 or	Microbiology	5
BIOL 073	Cell Culture Principles and Techniques	4
BIOL 076	Principles of Biomanufacturing *	3
BIOL 078	Applied Biomanufacturing Technology with Laboratory *	5
<b>Third Semester (7 units):</b>		<b>Credit Hours:</b> (0 Required)

BIOL 072A	Biotech Instrumentation: Good Manufacturing Practices and Safe Chemical Handling	1
BIOL 072B	Biotech Instrumentation: Clean Room	1
BIOL 072C	Biotech Instrumentation: PCR	1
BIOL 072D	Biotech Instrumentation: Protein Purification and Quality Control	1
BIOL 074	Scientific Communication	3

**Fourth Semester (7 units):**

**Credit Hours:** (0 Required)

BIOL 077	Business and Regulatory Practices in Biomanufacturing	3
BIOL 079	Bioreactor Cell Culture and Protein Recovery	4

**Credit Hours:** (0 Required)

Total Major Units: 27 - 32

**Credit Hours:** (0 Required)

General Education Requirements: 19

**Credit Hours:** (0 Required)

Electives to meet 60 units:

**Credit Hours:** (60 Required)

Total Units: 60

**Total: 60**

\*: BIOL 78 can be taken in lieu of all three of the following courses: BIOL 75, BIOL 76, and Math 208

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# Laney College

## College Preparation and Orientation

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### Overview

College	Laney - Student Wellness and Development
Originator	Lilian Chow
Award Type	Certificate of Competency

---

### Description

The College Preparation and Orientation Certificate of Competency will provide students with experience with navigating the college student records system. Courses will cover college orientation, resources, time management skills and goal setting skills to incoming college students.

---

### Career Opportunities

This is a non-credit certificate of completion

---

### Program Learning Outcomes

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

1. Navigate the college system (student portal, email account and Passport system), for college policies, procedures, and various information.
- 

### Degree Requirements:

#### Core Courses (min 4 hours)

COUN 521	College Readiness 1	<b>Noncredit:</b> (0 Required)	4.0075 - 8.015
COUN 522	College Readiness 2		4.0075 - 8.015

#### Competency Requirement:

Teacher or department will determine if student has met the competencies of the program and document it.	<b>Noncredit:</b> (0 Required)	0
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# Laney College

## Computer Information Science

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### Overview

College	Laney - Mathematics and Sciences
Originator	Kim Bridges
Award Type	A.S. Degree

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### Codes and Dates

State Approval Date	7/04/2016
Board of Trustees Date	12/10/2013
Program Control Number	35121
Top Code	0702.00* - Computer Information Systems
CIP Code	11.0201: Computer Programming/Programmer, General.

---

### Description

The major in Computer Information Science prepares students for careers in the Information Technology field. The program provides the analytical, methodological, and language skills required within the computer industry, and prepares students for transfer to four-year colleges for further study in Computer Information Systems, as well as related areas such as Computer Science. Please consult with a counselor for more information regarding transferring.

---

### Career Opportunities

Computer Information Science continues to be an excellent career, with openings in all industries. Technical positions include: computer operator, computer programmer, systems analyst, database administrator, computer support or help desk specialist, Web developer, and application developer.

---

### Program Learning Outcomes

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

1. Solve problems and conduct experiments in basic computer science.
  2. Solve mathematical problems using calculus, linear algebra, discrete math and differential equations.
  3. Create and program algorithmic solutions to solve problems.
- 

### Degree Requirements:

<b>First Semester (10 units):</b>	<b>Credit Hours:</b> (0 Required)
CIS 005 Introduction to Computer Science	5
MATH 003A Calculus I	5
<b>Second Semester (10 units):</b>	<b>Credit Hours:</b> (0 Required)
CIS 061 Structure and Interpretation of Computer Programs	5
MATH 003B Calculus II	5
<b>Third Semester (7 units):</b>	<b>Credit Hours:</b> (0 Required)
CIS 036A or Java Programming Language I	4
CIS 025A Object Oriented Programming Using C++	4
MATH 003E Linear Algebra	3
<b>Fourth Semester (7-8 units):</b>	<b>Credit Hours:</b> (0 Required)
CIS 025B or C++ Programming Language II	4
CIS 036B Java Programming Language II	4
MATH 003F or Differential Equations	3
MATH 011 Discrete Mathematics	4

Total Units:	<b>Credit Hours:</b> (0 Required)	34 - 35
General Education Requirements:	<b>Credit Hours:</b> (0 Required)	19
Total Units:	<b>Credit Hours:</b> (60 Required)	60
	<b>Total: 60</b>	

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# Laney College

## Music Industry

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### Overview

College	Laney - Liberal Arts
Originator	John Reager
Award Type	Certificate of Achievement

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### Codes and Dates

State Approval Date	5/09/2019
Curriculum Committee Approval Date	10/05/2018
Board of Trustees Date	2/26/2019
Current Effective Date	6/01/2019
Program Control Number	37932
Top Code	1005.00* - Commercial Music
CIP Code	10.0203: Recording Arts Technology/Technician.

---

### Description

The Music Industry Studies Certificate of Achievement is designed for music students whose career goals are focused on the recording industry, concert promotions, and other commercial ventures. Students will explore aspects of the music production process including: recording, marketing, and distribution.

---

### Career Opportunities

Audio Engineer, Digital Sound Editor, Small Business Entrepreneur, Concert Promoter, Manager, Event Producer, Arranger, Songwriter. Students who receive this degree will be Career opportunities

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### Program Learning Outcomes

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

1. Students will employ proper audio engineering and midi techniques to produce sound recording projects.
  2. Students will create original music projects in line with current industry standards.
  3. Analyze a situation in the music industry and recommend a solution or plan for improvement.
- 

### Degree Requirements:

<b>Group 1: Recording, Mastering, Sound Reinforcement, and Distribution - (11 Required)</b>		<b>Credit Hours:</b> (11 Required)
MEDIA 150	Pro Tools: Sound Design/Aesthetics for Video, Broadcast and Digital Cinematography	3
MEDIA 155	Advanced Music Video Production: Basic Recording	3
MEDIA 156	Advanced Music Video Production III: Mixing and Mastering	3
MUSIC 152	Live Sound	2
<b>Group 2: Music Creation - (6 units)</b>		<b>Credit Hours:</b> (6 Required)
MUSIC 147	Introduction to Electronic Music and MIDI	3
MUSIC 148	Songwriting	3
<b>Group 3: Music Business - (3 units):</b>		<b>Credit Hours:</b> (3 Required)
MUSIC 149	Music Business	3
<b>Group 4: Music Theory- (3 units):</b>		<b>Credit Hours:</b> (3 Required)
MUSIC 101	Music Theory and Culture I	3
MUSIC 102	Music Theory and Culture II	3
MUSIC 103	Music Theory and Culture III	3
MUSIC 104	Music Theory and Culture IV	3





# Laney College

## Newswriting and Reporting

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### Overview

College	Laney - Liberal Arts
Originator	Eleni Gastis
Award Type	Certificate of Achievement

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### Description

The Certificate of Achievement in Newswriting and Reporting provides foundational knowledge and hands-on training that prepares students for jobs in the media realm. The certificate serves as a comprehensive and multi-discipline overview of content and skills needed by the modern journalist.

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### Career Opportunities

reporting, copywriting, public relations, communication, screenwriting, social media, brand management.

---

### Program Learning Outcomes

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

1. Assemble a portfolio of appropriate photographs, writings, journals or digital media that reflects the skills and understanding of techniques of journalism.
  2. Write news, features, and opinion pieces in newspaper style.
  3. Apply media law, fact-checking and ethics to the journalistic process.
- 

### Degree Requirements:

<b>Core Courses (17 units):</b>	<b>Credit Hours:</b> (17 Required)
JOURN 018A      News Production I	4
JOURN 018B      News Production II	4
JOURN 021        Newswriting	3
JOURN 069        Multimedia Reporting for Journalists	3
PHOTO 020        Photojournalism I	3
<b>Electives (select a minimum of one course) (3 units):</b>	<b>Credit Hours:</b> (3 Required)
GRART 032        Digital Documents (Adobe InDesign)	3
GRART 036        Adobe Photoshop Basics	3
GRART 115        Website Design	3
	<b>Total: 20</b>

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# Laney College

## Vocational English for Speakers of Other Languages

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### Overview

College	Laney - Liberal Arts
Originator	Elizabeth Maher
Award Type	Certificate of Competency

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### Codes and Dates

State Approval Date	5/04/2018
Curriculum Committee Approval Date	10/20/2017
Board of Trustees Date	1/23/2018
Current Effective Date	6/18/2018
Top Code	4931.00* - Vocational ESL
CIP Code	32.0109: Second Language Learning.

---

### Description

Laney College's noncredit VESOL Program offers courses that will prepare students for the language skills required in entry-level employment or college certificate programs in the hospitality and retail industries. In this program students will practice communicating in the workplace with co-workers and customers, learn how to conduct a basic job search in the American workplace and use simple technology at work, such as email by developing language skills including listening, speaking, reading and writing tasks related to work in restaurants, hotels, retail stores and offices.

---

### Career Opportunities

This certificate will assist students in finding entry-level positions in the regional hospitality, retail and other targeted industries.

---

### Program Learning Outcomes

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

1. Demonstrate the ability to apply for and communicate in an entry-level job in the hospitality, retail and other targeted industries.
- 

### Degree Requirements:

<b>Core Requirements:</b>		<b>Noncredit:</b> (79.8 - 99.05 Required)
<i>Student must complete a min of 75 hours</i>		
ESOL 586	English for Job Search	35
ESOL 534A	English for Technology 1	22.4 - 32.0075
ESOL 534B	English for Technology 2	22.4 - 32.0075
<b>Select one course from one of the following:</b>		<b>Noncredit:</b> (122.5 - 140 Required)
<i>(17.5-52.5 hours)</i>		
ESOL 583	Business English	52.5
ESOL 587	ESOL for Customer Service	52.5
ESOL 590	English for Special Purposes	17.5 - 35
<b>Competency Requirement:</b>		<b>Noncredit:</b> (0 Required)
Teacher or department will determine if student has met the competencies of the program and document it. 0		

**Total: 202.300 - 239.050**

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# Laney College

## Associate In Science Degree In Mathematics For Transfer

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### Overview

College	Laney - Mathematics and Sciences
Originator	David Ross
Award Type	AS-T Degree

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### Codes and Dates

State Approval Date	4/26/2012
Program Control Number	31234
Top Code	1701.00 - Mathematics, General
CIP Code	27.0101: Mathematics, General.

---

### Description

The Associate in Science in Mathematics for Transfer Degree is designed to prepare students for a seamless transfer with junior status and priority admission to a local CSU campus to a program or major in Mathematics or similar major for completion of a baccalaureate degree. Students are required to complete:

- Completion of 60 semester units or 90 quarter units that are eligible for transfer to the California State University, including both of the following:

(A) The Intersegmental General Education Transfer Curriculum (IGETC) or the California State University General Education – Breadth Requirements.

(B) A minimum of 18 semester units or 27 quarter units in a major or area of emphasis, as determined by the community college district.

- Obtainment of a minimum grade point average of 2.0. Students must earn a C or better in all courses required for the major or area of emphasis.
- No more than 60 semester units are required.

The Associate in Science in Mathematics for Transfer Degree will also assist Mathematics major students to transfer to a U.C. or other baccalaureate institutions. Students are advised to consult with a counselor to verify transfer requirements.

---

### Career Opportunities

In the modern world, there are many fields that need specialists in mathematics. Careers in mathematics include: scientists, researchers, space technicians, mathematics teachers, actuaries and insurance specialists, and people who can combine mathematical knowledge with a scientific, computer, or business background.

---

### Program Learning Outcomes

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

1. Compute derivatives and integrals of multivariable functions.
  2. Evaluate integrals using Green's Theorem, Stokes' Theorem and Gauss' Theorem.
  3. Solve quantitative problems using numerical, graphical, and algebraic methods.
- 

### Degree Requirements:

<b>Core Courses (15 units):</b>	<b>Credit Hours:</b> (0 Required)
MATH 003A      Calculus I	5
MATH 003B      Calculus II	5
MATH 003C      Calculus III	5
<b>Select one from the following (if you choose both, other courses are optional):</b>	<b>Credit Hours:</b> (0 Required)
MATH 003E or    Linear Algebra	3
MATH 003F      Differential Equations	3

**Select one course from the following if necessary to complete 21 units for Credit Hours:** (0 Required)

MATH 011	Discrete Mathematics	4
MATH 013	Introduction to Statistics	4
PHYS 004A	General Physics with Calculus	5

Total Major Units: **Credit Hours:** (0 Required)  
21 - 23

IGETC or CSU GE-Breadth Education pattern and elective courses **Credit Hours:** (0 Required)  
37 - 39

CSU Transferable General Elective Courses to meet 60 units **Credit Hours:** (0 Required)

Total Units: **Credit Hours:** (60 Required)  
60

**Total: 60**

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# Merritt College

## Applications Security

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### Overview

College  
Originator  
Award Type

Merritt - Division II  
Courtney Brown  
A.S. Degree

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### Description

The Application Security Associate of Science confers best practices and competencies in secure software deployment, design, management, and vulnerability mitigation. A software application delivers value through services accessible through remote connections as well as through systems directly on the local network making it a high value target for hacking attempts. Graduates of this program are able to manage and optimize software applications to ensure compliance with security controls; help prevent, detect, investigate and respond to application security threats and attacks; facilitate application security vulnerability assessments, perform penetration tests and risk assessments; investigate application security events and incidents, including forensic analysis. They are able to form and lead incident response teams and represent software application security interests in the creation of organization practices and policies.

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### Career Opportunities

• Information Security Analysts (SOC 15-1122) • Computer and Information Systems Managers (SOC 11-3021) • Computer Systems Analysts (SOC 15-1121) CA-DIR Cybersecurity Technician Apprenticeship - [https://www.dir.ca.gov/databases/das/results\\_aigdetail.asp?varOcclId=9266](https://www.dir.ca.gov/databases/das/results_aigdetail.asp?varOcclId=9266) DOL Apprenticeship ONET Code:15.112 RAPIDS Code: 1059CB \*\*Military Crosswalk\*\*: • Advanced Information Operations (IO) Planner (Marine Corps - Commissioned Officer only) • Aviation Logistics Information Management System (ALIMS) Specialist (Marine Corps - Enlisted) • Cyberspace Operations, Cyber Command and Control Mission System (Air Force - Commissioned Officer only) • Cyberspace Operations, Cyber Security and Control System (Air Force - Commissioned Officer only)

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### Program Learning Outcomes

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

1. Design and secure applications and services to protect critical assets.
  2. Develop, test, and implement secure applications to safeguard critical information
  3. Manage ongoing maintenance and updates to applications and services to respond to changing security threats
- 

### Degree Requirements:

#### Year 1 First Semester

**Credit Hours:** (6 - 8 Required)

*Completion within 4 semesters requires students begin the program in Fall term*

CIS 005 or	Introduction to Computer Science	5
CIS 006 or	Introduction to Computer Programming	5
CIS 007 or	Control Structures and Objects	4
CS 020 and	Python Application Programming	3
CIS 071	Introduction to Information Systems Security	3

**Year 1 Second Semester****Credit Hours:** (6 Required)*Courses are scheduled over two 6-week sessions each semester.**Courses are listed in the order they should be taken.*

CIS 055 and	Hacker Techniques, Exploits & Incident Handling	3
CIS 060	Computer Forensics Fundamentals	3

*Register for both courses at the start of the semester.***Year 2 Third Semester****Credit Hours:** (6 Required)*Courses are scheduled over two 6-week sessions each semester.**Courses are listed in the order they should be taken.*

CIS 059 and	Applications in Information Security	3
CIS 056	Secure Coding in Java and .NET	3

*Register for both courses at the start of the semester.***Year 2 Fourth Semester****Credit Hours:** (6 Required)*Courses are scheduled over two 6-week sessions each semester.**Courses are listed in the order they should be taken.*

CIS 057 and	Web Application PEN Testing	3
CIS 054	IT Security Goals, Strategy, Policy, and Leadership	3

*Register for both courses at the start of the semester.***Optional Occupational Work Experience****Credit Hours:** (0 Required)

*Students who select COPED 469 from the list of restricted electives are able to provide evidence of applicable work experience on their official transcript. Students are advised to start seeking internships at the end of their first year and confirm placement before registering for COPED 469. 1 unit of COPED equates to 75 hours of paid work or 60 hours of unpaid work. To fulfill the required internship total of 225 paid hours or 180 unpaid hours, you may take this class up to 3 times.*

**Restricted Electives****Credit Hours:** (3 - 4 Required)*Select 3 - 4 units from the list of courses below*

COPED 469	Occupational Work Experience in Security Administration	3
CIS 051	Introduction to Information Technology Project Management	4
CIS 098	Database Programming with SQL	4
CIS 178	Build Automation for DevOps & QA	4
CIS 221	Cyber Safety, Online Identity, and Computer Literacy	3
CIS 247	Information Systems Skills Challenge	1

*CIS 221 requires concurrent external registration with CodePath to gain access to information security scenarios. Students taking CIS 221 are advised to complete CIS 98 or equivalent SQL coursework and/or experience prior to enrolling, or to enroll in CIS 98 concurrently with CIS 221.*

*CIS 247 requires participation in one round of Ethical Hacking Competition: National CyberLeague (NCL), CyberPatriots, CyberDefenders, SANS Cyber fast track, or equivalent hacking competition.*

*CIS 247 is recommended to be taken in the second semester of first year but may be completed at any time.*

**Total: 27.000 - 30.000**

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# Merritt College

## Applications Security

### Overview

College  
Originator  
Award Type

Merritt - Division II  
Courtney Brown  
Certificate of Achievement

### Description

The Applications Security Certificate of Achievement provides best practices and competencies for students to design, install and implement secure applications and services; manage, and optimize application to ensure compliance with security controls; help prevent, detect, investigate and respond to application security threats and attacks; facilitate application security vulnerability assessments, penetration tests and risk assessments; investigate application security events and incidents, including forensic analysis; represent security interests on project teams by ensuring security standards and requirements; conduct security research, analysis and review of application solutions to ensure compliance with company security policies; evaluate new products and technologies to protect against existing and emerging security threats; and develop and implement information security policies and procedures.

A Certificate of Achievement will be awarded upon satisfactory completion of the certificate requirements specified below.

### Career Opportunities

• Information Security Analysts (SOC 15-1122): • Computer and Information Systems Managers (SOC 11-3021) • Computer Systems Analysts (SOC 15-1121) CA-DIR Cybersecurity Technician Apprenticeship - [https://www.dir.ca.gov/databases/das/results\\_aigdetail.asp?varOcclId=9266](https://www.dir.ca.gov/databases/das/results_aigdetail.asp?varOcclId=9266) DOL Apprenticeship ONET Code:15.112 RAPIDS Code: 1059CB \*\*Military Crosswalk\*\*: • Advanced Information Operations (IO) Planner (Marine Corps - Commissioned Officer only) • Aviation Logistics Information Management System (ALIMS) Specialist (Marine Corps - Enlisted) • Cyberspace Operations, Cyber Command and Control Mission System (Air Force - Commissioned Officer only) • Cyberspace Operations, Cyber Security and Control System (Air Force - Commissioned Officer only)

### Program Learning Outcomes

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

1. Design and secure applications and services to protect critical assets.
2. Develop, test, and implement secure applications to safeguard critical information.
3. Manage ongoing maintenance and updates to applications and services to respond to changing security threats.

### Degree Requirements:

#### Year 1 First Semester

**Credit Hours:** (6 - 8 Required)

*Completion within 4 semesters requires students begin the program in Fall term*

CIS 005 or	Introduction to Computer Science	5
CIS 006 or	Introduction to Computer Programming	5
CIS 007 or	Control Structures and Objects	4
CS 020 and	Python Application Programming	3
CIS 071	Introduction to Information Systems Security	3

#### Year 1 Second Semester

**Credit Hours:** (6 Required)



*Courses are scheduled over two 6-week sessions each semester.*

*Courses are listed in the order they should be taken.*

CIS 055 and	Hacker Techniques, Exploits & Incident Handling	3
CIS 060	Computer Forensics Fundamentals	3

*Register for both courses at the start of the semester.*

### **Year 2 Third Semester**

**Credit Hours:** (6 Required)

*Courses are scheduled over two 6-week sessions each semester.*

*Courses are listed in the order they should be taken.*

CIS 059 and	Applications in Information Security	3
CIS 056	Secure Coding in Java and .NET	3

*Register for both courses at the start of the semester.*

### **Year 2 Fourth Semester**

**Credit Hours:** (6 Required)

*Courses are scheduled over two 6-week sessions each semester.*

*Courses are listed in the order they should be taken.*

CIS 057 and	Web Application PEN Testing	3
CIS 054	IT Security Goals, Strategy, Policy, and Leadership	3

*Register for both courses at the start of the semester.*

### **Optional Occupational Work Experience**

**Credit Hours:** (0 Required)

*Students who select COPED 469 from the list of restricted electives are able to provide evidence of applicable work experience on their official transcript. Students are advised to start seeking internships at the end of their first year and confirm placement before registering for COPED 469. 1 unit of COPED equates to 75 hours of paid work or 60 hours of unpaid work. To fulfill the required internship total of 225 paid hours or 180 unpaid hours, you may take this class up to 3 times.*

### **Restricted Electives**

**Credit Hours:** (3 - 4 Required)

*Select 3 - 4 units from the list of courses below.*

COPED 469	Occupational Work Experience in Security Administration	3
CIS 051	Introduction to Information Technology Project Management	4
CIS 098	Database Programming with SQL	4
CIS 178	Build Automation for DevOps & QA	4
CIS 221	Cyber Safety, Online Identity, and Computer Literacy	3
CIS 247	Information Systems Skills Challenge	1

*CIS 221 requires concurrent external registration with CodePath to gain access to information security scenarios. Students taking CIS 221 are advised to complete CIS 98 or equivalent SQL coursework and/or experience prior to enrolling, or to enroll in CIS 98 concurrently with CIS 221.*

*CIS 247 requires participation in one round of Ethical Hacking Competition: National CyberLeague (NCL), CyberPatriots, CyberDefenders, SANS Cyber fast track, or equivalent hacking competition.*

*CIS 247 is recommended to be taken in the second semester of first year but may be completed at any time.*

**Total: 27.000 - 30.000**

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# Merritt College

## Computer Science

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### Overview

College  
Originator  
Award Type

Merritt - Division II  
Courtney Brown  
A.S. Degree

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### Description

Graduates of the Computer Science Associate in Science degree will have the skills required for entry level software development. 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. 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 website [transfer.assist.org](https://transfer.assist.org) can provide additional information about applicable courses for transfer.

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### Career Opportunities

Career opportunities include entry-level positions as Application Software Developers (SOC 15-1132), Computer Systems Analysts (SOC 15-1121), Systems Software Developers (SOC 15-1133), Information Security Analysts (SOC 15-1122), and Network and Computer Systems Administrators (SOC 15-1142).

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### 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 247 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*

CIS 098 Database Programming with SQL 4

MATH 003E Linear Algebra 3

CIS 008 Introduction to Parallel and Cloud Programming 4

CIS 107 and Administering Cloud Services and Containers 3

CS 060 Applications of Artificial Intelligence and Deep Learning 3

**Swift Software Development** Credit Hours: (0 Required)

*Recommended Sequence of Courses*

CS 025 and Swift Application Programming 4

CS 026 and Swift Data Structures and Algorithms 4

CS 027 and Swift Universal Framework Applications 4

CIS 247 SMA Swift Multi-Platform Application Development 3

*CIS 247 SMA requires creation of a software application that runs on at least two (2)*

*of the following platforms: iOS, tvOS, watchOS, or macOS*

**Units that may be double counted for General Education** Credit Hours: (7 Required)

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

**Credit Hours:**

**Total: 62.000 - 68.000**

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# Merritt College

## Computer Science

### Overview

College  
Originator  
Award Type

Merritt - Division II  
Courtney Brown  
Certificate of Achievement

### Description

Graduates of the Certificate of Achievement 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 Certificate of Achievement 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 [transfer.assist.org](http://transfer.assist.org) can provide additional information about applicable courses for transfer.

### Career Opportunities

Career opportunities include entry-level positions as Application Software Developers (SOC 15-1132), Computer Systems Analysts (SOC 15-1121), Systems Software Developers (SOC 15-1133), Information Security Analysts (SOC 15-1122), and Network and Computer Systems Administrators (SOC 15-1142).

### 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

45

*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 elective sequence 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 247 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 (HPC), Data Science, and Machine Learning

**Credit Hours:** (0 Required)

*Recommended Sequence of Courses*

CIS 098	Database Programming with SQL	4
MATH 003E	Linear Algebra	3
CIS 008	Introduction to Parallel and Cloud Programming	4
CIS 107	Administering Cloud Services and Containers	3

CS 060	Applications of Artificial Intelligence and Deep Learning	3
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**Swift Software Development****Credit Hours:** (0 Required)*Recommended Sequence of Courses*

CS 025 and	Swift Application Programming	4
CS 026 and	Swift Data Structures and Algorithms	4
CS 027 and	Swift Universal Framework Applications	4
CIS 247 SMA	Swift Multi-Platform Application Development	3

*CIS 247 SMA requires creation of a software application that runs on at least two (2) of the following platforms: iOS, tvOS, watchOS, or macOS*

**Total: 31.000 - 32.000**


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# Merritt College

## Infrastructure Security

### Overview

College  
Originator  
Award Type

Merritt - Division II  
Courtney Brown  
A.S. Degree

### Description

The Infrastructure Security Associate of Science degree confers skills and best practices in secure deployment and configuration of hardware devices that deliver connectivity and enable the exchange of information services. The graduate of this program is able to design, install and implement network and application services; detect intrusions, monitor and capture network traffic, manage and optimize security infrastructure to ensure compliance with security controls. They have completed instruction in the infiltration of information systems, baseline performance measurement, management of alerts and exception thresholds and formulation of security policies, and formation of an incident response team to investigate and respond to operational security threats and attacks. They conduct security research, analysis and review of infrastructure designs to ensure compliance with company security policies; evaluate new products and technologies to protect against existing and emerging security threats; and develop and implement information security policies and procedures.

### Career Opportunities

- Information Security Analysts (SOC 15-1122): • Computer and Information Systems Managers (SOC 11-3021) • Computer Systems Analysts (SOC 15-1121) CA-DIR Cybersecurity Technician Apprenticeship - [https://www.dir.ca.gov/databases/das/results\\_aigdetail.asp?varOcclid=9266](https://www.dir.ca.gov/databases/das/results_aigdetail.asp?varOcclid=9266) DOL Apprenticeship ONET Code:15.112 RAPIDS Code: 1059CB \*\*Military Crosswalk\*\*:
- Advanced Information Operations (IO) Planner (Marine Corps - Commissioned Officer only) • Aviation Logistics Information Management System (ALIMS) Specialist (Marine Corps - Enlisted) • Cyberspace Operations, Cyber Command and Control Mission System (Air Force - Commissioned Officer only) • Cyberspace Operations, Cyber Security and Control System (Air Force - Commissioned Officer only)

### Program Learning Outcomes

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

1. Install and configure infrastructure, software, and upgrades.
2. Install, configure, and test network devices, servers, and workstations.
3. Troubleshoot hardware, network, and security problems.

### Degree Requirements:

#### Year 1 First Semester

**Credit Hours:** (6 - 8 Required)

*Completion within 4 semesters requires students begin this program in the fall*

CIS 005 or	Introduction to Computer Science	5
CIS 006 or	Introduction to Computer Programming	5
CIS 007 or	Control Structures and Objects	4
CS 020 and	Python Application Programming	3
CIS 072	Systems and Network Administration	3

#### Year 1 Second Semester

**Credit Hours:** (6 Required)

*Courses are scheduled over two 6-week sessions each semester.*

*Courses are listed in the order they should be taken.*

CIS 055	Hacker Techniques, Exploits & Incident Handling	3
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CIS 060	Computer Forensics Fundamentals	3
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*Register for both courses at the start of the semester.*

**Year 2 Third Semester****Credit Hours:** (6 Required)*Courses are scheduled over two 6-week sessions each semester.**Courses are listed in the order they should be taken.*

CIS 052 and	Cloud Security Fundamentals	3
CIS 053	Intrusion Detection In-Depth: Compliance, Security, Forensics and Troubleshooting	3

*Register for both courses at the start of the semester.***Year 2 Fourth Semester****Credit Hours:** (6 Required)*Courses are scheduled over two 6-week sessions each semester.**Courses are listed in the order they should be taken.*

CIS 058 and	Hacker Guard – Baseline Training for IT Administrators and Operations	3
CIS 054	IT Security Goals, Strategy, Policy, and Leadership	3

*Register for both courses at the start of the semester.***Optional Occupational Work Experience****Credit Hours:** (0 Required)

*Students who select COPED 469 from the list of restricted electives are able to provide evidence of applicable work experience on their official transcript. Students are advised to start seeking internships at the end of their first year and confirm placement before registering for COPED 469. 1 unit of COPED equates to 75 hours of paid work or 60 hours of unpaid work. To fulfill the required internship total of 225 paid hours or 180 unpaid hours, you may take this class up to 3 times.*

**Restricted Electives****Credit Hours:** (3 - 4 Required)*Select 3 - 4 units from the list of courses below*

COPED 469	Occupational Work Experience in Security Administration	3
CIS 051	Introduction to Information Technology Project Management	4
CIS 098	Database Programming with SQL	4
CIS 178	Build Automation for DevOps & QA	4
CIS 221	Cyber Safety, Online Identity, and Computer Literacy	1
CIS 247	Information Systems Skills Challenge	1

*CIS 221 requires concurrent external registration with CodePath to gain access to information security scenarios. Students taking CIS 221 are advised to complete CIS 98 or equivalent SQL coursework and/or experience prior to enrolling, or to enroll in CIS 98 concurrently with CIS 221.*

*CIS 247 requires participation in one round of Ethical Hacking Competition: National CyberLeague (NCL), CyberPatriots, CyberDefenders, SANS Cyber fast track, or equivalent hacking competition.*

*CIS 247 is recommended to be taken in the second semester of first year but may be completed at any time.*

**Total: 27.000 - 30.000**

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# Merritt College

## Infrastructure Security

### Overview

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

### Description

The Infrastructure Security Associate of Science degree confers skills and best practices in secure deployment and configuration of hardware devices that deliver connectivity and enable the exchange of information services. The graduate of this program is able to design, install and implement network and application services; detect intrusions, monitor and capture network traffic, manage and optimize security infrastructure to ensure compliance with security controls. They have completed instruction in the infiltration of information systems, baseline performance measurement, management of alerts and exception thresholds and formulation of security policies, and formation of an incident response team to investigate and respond to operational security threats and attacks. They conduct security research, analysis and review of infrastructure designs to ensure compliance with company security policies; evaluate new products and technologies to protect against existing and emerging security threats; and develop and implement information security policies and procedures.

### Career Opportunities

- Information Security Analysts (SOC 15-1122): • Computer and Information Systems Managers (SOC 11-3021) • Computer Systems Analysts (SOC 15-1121) CA-DIR Cybersecurity Technician Apprenticeship - [https://www.dir.ca.gov/databases/das/results\\_aigdetail.asp?varOcclid=9266](https://www.dir.ca.gov/databases/das/results_aigdetail.asp?varOcclid=9266) DOL Apprenticeship ONET Code:15.112 RAPIDS Code: 1059CB \*\*Military Crosswalk\*\*:
- Advanced Information Operations (IO) Planner (Marine Corps - Commissioned Officer only) • Aviation Logistics Information Management System (ALIMS) Specialist (Marine Corps - Enlisted) • Cyberspace Operations, Cyber Command and Control Mission System (Air Force - Commissioned Officer only) • Cyberspace Operations, Cyber Security and Control System (Air Force - Commissioned Officer only)

### Program Learning Outcomes

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

1. Install and configure infrastructure, software, and upgrades
2. Install, configure, and test network devices, servers, and workstations
3. Troubleshoot hardware, network, and security problems

### Degree Requirements:

#### Year 1 First Semester

**Credit Hours:** (6 - 8 Required)

*Completion within 4 semesters requires students begin this program in the fall*

CIS 005 or	Introduction to Computer Science	5
CIS 006 or	Introduction to Computer Programming	5
CIS 007 or	Control Structures and Objects	4
CS 020 and	Python Application Programming	3
CIS 072	Systems and Network Administration	3

#### Year 1 Second Semester

**Credit Hours:** (6 Required)

*Courses are scheduled over two 6-week sessions each semester.*

*Courses are listed in the order they should be taken.*

CIS 055 and	Hacker Techniques, Exploits & Incident Handling	3
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CIS 060	Computer Forensics Fundamentals	3
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*Register for both courses at the start of the semester.*

### Year 2 Fall Semester

**Credit Hours:** (6 Required)

*Courses are scheduled over two 6-week sessions each semester.*

*Courses are listed in the order they should be taken.*

CIS 052 and	Cloud Security Fundamentals	3
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CIS 053	Intrusion Detection In-Depth: Compliance, Security, Forensics and Troubleshooting	3
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*Register for both courses at the start of the semester.*

### Year 2 Spring Semester

**Credit Hours:** (6 Required)

*Courses are scheduled over two 6-week sessions each semester.*

*Courses are listed in the order they should be taken.*

CIS 058 and	Hacker Guard – Baseline Training for IT Administrators and Operations	3
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CIS 054	IT Security Goals, Strategy, Policy, and Leadership	3
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*Register for both courses at the start of the semester.*

### Optional Occupational Work Experience

**Credit Hours:** (0 Required)

*Students who select COPED 469 from the list of restricted electives are able to provide evidence of applicable work experience on their official transcript. Students are advised to start seeking internships at the end of their first year and confirm placement before registering for COPED 469. 1 unit of COPED equates to 75 hours of paid work or 60 hours of unpaid work. To fulfill the required internship total of 225 paid hours or 180 unpaid hours, you may take this class up to 3 times.*

### Restricted Electives

**Credit Hours:** (3 - 4 Required)

*Select 3 - 4 units from the the courses listed below.*

COPED 469	Occupational Work Experience in Security Administration	3
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CIS 051	Introduction to Information Technology Project Management	4
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CIS 098	Database Programming with SQL	4
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CIS 178	Build Automation for DevOps & QA	4
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CIS 221	Cyber Safety, Online Identity, and Computer Literacy	3
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CIS 247	Information Systems Skills Challenge	1
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*CIS 221 requires concurrent external registration with CodePath to gain access to information security scenarios. Students taking CIS 221 are advised to complete CIS 98 or equivalent SQL coursework and/or experience prior to enrolling or to enroll in CIS 98 concurrently with CIS 221.*

*CIS 247 requires participation in one round of Ethical Hacking Competition: National CyberLeague (NCL), CyberPatriots, CyberDefenders, SANS Cyber fast track, or equivalent hacking competition.*

**Total: 27.000 - 30.000**

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