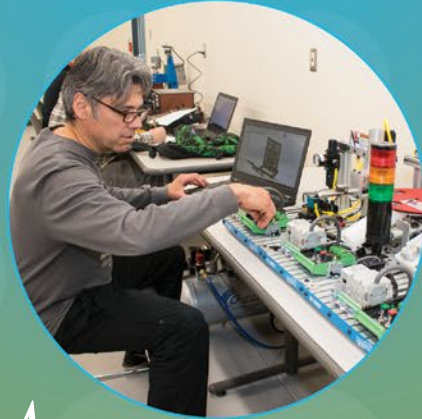




Clovis
Community
College



ADDENDUM 2018-2019 CATALOG



STATE CENTER
COMMUNITY COLLEGE DISTRICT

New Associate Degree and Certificate Programs Effective Fall 2018	3
CALIFORNIA STATE UNIVERSITY GENERAL EDUCATION BREADTH - CERTIFICATE OF ACHIEVEMENT	3
INTERSEGMENTAL GENERAL EDUCATION TRANSFER CURRICULUM (IGETC) - CERTIFICATE OF ACHIEVEMENT	10
CIVIL ENGINEERING - ASSOCIATE IN SCIENCE DEGREE	17
CIVIL ENGINEERING - CERTIFICATE OF ACHIEVEMENT	18
COMPUTER OR SOFTWARE ENGINEERING - ASSOCIATE IN SCIENCE DEGREE	19
COMPUTER OR SOFTWARE ENGINEERING - CERTIFICATE OF ACHIEVEMENT	21
ELECTRICAL ENGINEERING - ASSOCIATE IN SCIENCE DEGREE	22
ELECTRICAL ENGINEERING - CERTIFICATE OF ACHIEVEMENT	23
MECHANICAL, AEROSPACE, OR MANUFACTURING ENGINEERING - ASSOCIATE IN SCIENCE DEGREE	25
MECHANICAL, AEROSPACE, OR MANUFACTURING ENGINEERING - CERTIFICATE OF ACHIEVEMENT	26
INFORMATION SYSTEMS, CYBER SECURITY - CERTIFICATE OF ACHIEVEMENT	27
MECHATRONICS/INDUSTRIAL AUTOMATION - CERTIFICATE OF ACHIEVEMENT	28
Inactivated Associate in Science Degrees Effective Spring 2019	29
ENGINEERING - ENGINEERING ASSOCIATE IN SCIENCE DEGREE (#C.3010.AS)	29
INFORMATION SYSTEMS - INFORMATION SYSTEMS – HELP DESK ASSOCIATE IN SCIENCE DEGREE (#C.693H.AS)	29
New Associate Degree for Transfer Program Effective Spring 2019	30
ENVIRONMENTAL SCIENCE - ASSOCIATE IN SCIENCE IN ENVIRONMENTAL SCIENCE FOR TRANSFER DEGREE	30
MECHATRONICS/INDUSTRIAL AUTOMATION - ASSOCIATE IN SCIENCE DEGREE	31
New Courses Effective Fall 2018	32
HONORS 2A HONORS SEMINAR: COMMUNICATION AND CRITICAL THINKING	32
Corrected Courses Effective Fall 2018	32
INFORMATION SYSTEMS (IS) 70 INTRODUCTION TO INFORMATION SYSTEMS SECURITY	32
Courses Approved for University of California Transfer Course Articulation (UCTCA) - Effective Fall 2018	32
Revised Courses Effective Spring 2019	33
Revised Courses Effective Summer 2019	33
Changes to Personnel Effective Spring 2019	34
Changes to Clovis Community College Administration	34

NEW ASSOCIATE DEGREE AND CERTIFICATE PROGRAMS EFFECTIVE FALL 2018

(Pages 59-83 of 2018-2019 catalog)

COUNSELING

CALIFORNIA STATE UNIVERSITY GENERAL EDUCATION BREADTH

(Major #C.5800.CA)

CERTIFICATE OF ACHIEVEMENT

This Certificate of Achievement is designed for students planning to transfer to a California State University (CSU) campus. Completion of this certificate ensures that the student has met the lower division General Education requirements for all CSU campuses.

Completion of the following requirements will permit you to transfer to any CSU campus without the need, after transfer, to take additional lower-division general education courses. Students will understand the basic principles of natural sciences, social and behavioral sciences, the humanities and fine arts. Students completing this degree will understand the basic principles of these academic disciplines, their methods of inquiry, their history, and impact on society, and their relationships to each other. Students will also be able to think critically, to communicate effectively, to reason using quantitative models and to maintain their physical and mental wellbeing.

Program learning outcomes:

The graduate of the transfer studies program in CSU general studies breadth will:

1. Correctly setup, solve, and interpret the results of a variety of computational and non-computational problems relevant to the natural sciences by applying the language, critical thinking, and mathematical skills acquired in previous courses.
2. Demonstrate and understanding of the interrelationship between the creative arts, the humanities, and themselves.
3. Critically explain how people act and have acted in response to their societies.
4. Demonstrate and understanding of how societies and social subgroups operate.
5. Communicate ideas more effectively.
6. Demonstrate and ability to think logically and critically in solving problems; explaining conclusions; and evaluating, supporting or critiquing the thinking of others.
7. Evaluate personal choices regarding disease prevention, healthy living, and making positive life choices.

Catalog description

The Certificate of Achievement in California State University General Education Breadth (CSU-GE), will be awarded upon completion of the CSU GE Breadth requirements as outlined on the catalog year's CSU-GE Breadth sheet. Students must complete a minimum of 39 units, which are distributed among five areas. CSU-GE Breadth Sheet requirements are designed to be taken with a major area of concentration and elective courses in preparation for transfer to a California State University. This certificate recognizes the completion of lower-division general education requirements for the CSU. For many majors, students are encouraged to complete the CSU GE pattern; however, it is not required for admission to the CSU. Certification of the CSU-GE Breadth will be indicated on the student's transcript.

Certificate Requirements

The CSU GE- Breadth Requirements is a lower-division 39 semester (58.5 quarter) unit pattern. Transfer students must take specified courses in the areas of:

Requirements:

Area A:	English Communication and Critical Thinking Select one course from each area (A1, A2, A3)	9.0 units
Area B:	Scientific Inquiry and Quantitative Reasoning Select one course from each area (B1, B2, and B4). One course with lab (B3)	9.0 units
Area C:	Arts and Humanities Select one course from each area (C1, C2), plus an additional course from either area	9.0 units
Area D:	Social Sciences Select three courses from a least two academic disciplines (CSU American Institutions may be completed in this area)	9.0 units
Area E	Lifelong Learning and Self-Development	3.0 units
		Total Units: 39

Each of the areas has a minimum number of units or courses. Please refer to the following table for AREA specific courses offered at Clovis Community College approved to satisfy CSU GE-Breadth AREAs

Program Requirements

Certificate of Achievement in California State University General Education-Breadth (CSU GE-B)

AREA A: English Language Communication and Critical Thinking

9 semester units minimum required with at least one course each from A1, A2, and A3.

("C" or better grade required in A1, A2 and A3)

A1. Oral Communication (3 Units Minimum)

Course	Title	Units
COMM 1	Public Speaking	3
COMM 2	Interpersonal Communication	3
COMM 4	Persuasion	3
COMM 8	GROUP COMMUNICATION	3
*COMM 25	Argumentation	3

A2. Written Communication (3 Units Minimum)

Course	Title	Units
ENGL 1A	Reading and Composition	4
ENGL 1AH	Honors Reading and Composition	4

A3: Critical Thinking (3 units minimum)

Course	Title	Units
*COMM 25	Argumentation	3
COMPUTER SCIENCE 1		3
ENGL 3	Critical Reading and Writing	3
ENGL 3H	Honors Critical Reading and Writing	3
PHIL 2	Critical Reasoning and Analytic Writing	3
PHIL 4	Introduction to Logic	3
PHIL 6	Symbolic Logic	3

AREA B: Scientific Inquiry and Quantitative Reasoning

9 semester units minimum with at least one course each from B1 and B2 (one course from B1 or B2 to contain a laboratory component, marked by L), and at least one course from B4.

(“C” or better grade required in B4)

B1: Physical Science (3 units minimum)

Course	Title	Units
CHEM 1A(L)	General Chemistry	5
CHEM 1B(L)	General Chemistry and Qualitative Analysis	5
CHEM 3A(L)	Introduction to General Chemistry	4
CHEM 3B(L)	Introductory Organic and Biological Chemistry	4
CHEM 8	Elementary Organic Chemistry	3
CHEM 10(L)	Elementary Chemistry	4
CHEM 28A	Organic Chemistry I	3
CHEM 28B	Organic Chemistry II	3
GEOG 1	Physical Geography	3
GEOG 5	Physical Geography: Environmental Conditions	3
GEOG 9	Physical Geography: Land Formations	3
GEOL 1(L)	Physical Geology	4
GEOL 9(L)	Introduction to Earth Science	4
PHYS 2A(L)	General Physics I	4
PHYS 2B(L)	GENERAL PHYSICS II	4
PHYS 4A(L)	PHYSICS FOR SCIENTISTS AND ENGINEERS	4
PHYS 4B(L)	PHYSICS FOR SCIENTISTS AND ENGINEERS	4
PHYS 4C(L)	PHYSICS FOR SCIENTISTS AND ENGINEERS	4
SCI 1A(L)	Introductory Chemical And Physical Science	4

B2: Life Science (3 units minimum)

Course	Title	Units
*ANTHRO 1	Biological Anthropology	3
BIOL 3(L)	Introduction to Life Science	4
BIOL 5(L)	Human Biology	4
BIOL 10	Introduction to Life Science Lecture	3
BIOL 11A(L)	Biology For Science Majors I	5
BIOL 11B(L)	Biology For Science Majors II	5
BIOL 20(L)	Human Anatomy	4
BIOL 22(L)	Human Physiology	5
BIOL 31(L)	Microbiology	5

B3: Laboratory Activity:

Did you complete a course from B1 or B2 with a lab (marked with L) OR one of the following

Course	Title	Units
BIOL 10(L)	Introduction to Life Science Lab	1
CHEM 29A (L)	Organic Chemistry Laboratory I	2
CHEM 29B(L)	Organic Chemistry Laboratory II	2

B4: Mathematics/Quantitative Reasoning (3 units minimum)

Course	Title	Units
BA 39	Finite Mathematics for Business	3
CSCI 26	Discrete Mathematics for Computer Science	3
MATH 4A	Trigonometry	4
MATH 4B	Precalculus	4
MATH 5A	Math Analysis I	5
MATH 5B	Math Analysis II	4
MATH 6	Math Analysis III	5
MATH 10A	Structure and Concepts in Mathematics I	3
MATH 10B	Structure and Concepts in Mathematics II	3
MATH 11	Elementary Statistics	4
MATH 17	Differential Equations and Linear Algebra	5
MATH 45	Contemporary Mathematics	3
STAT 7	Elementary Statistics	4

AREA C: Arts and Humanities

9 semester units minimum with at least one course each from C1 and C2, and an additional course from C1 or C2.

C1: Arts (3 units minimum)

Course	Title	Units
ART 1	Art Basics: 2/3 Dimensional Design	3
ART 2	Art Appreciation	3
ART 5	Art History I	3
ART 6	Art History II	3
ART 6H	Honors Art History II	3
*ART 26	Arts of Africa, Oceania, Indigenous North America, and the Pre-Columbia	3
FILM 1	Introduction to Film Studies	3
*FILM 2A	History of Cinema: 1895-1960	3
*FILM 2B	History of Cinema: 1960 TO PRESENT	3
MUS 12	Music Appreciation	3
MUS 16	Jazz History and Appreciation	3
PHOTO 1	Basics of Digital Photography	3

C2: Humanities (3 units minimum)

Course	Title	Units
ASL 1	Beginning American Sign Language	4
ASL 2	HIGH-BEGINNING AMERICAN SIGN LANGUAGE	4
ASL 3	INTERMEDIATE AMERICAN SIGN LANGUAGE	4
ASL 4	HIGH-INTERMEDIATE AMERICAN SIGN LANGUAGE	4
*ART 26	Arts of Africa, Oceania, Indigenous North America, and the Pre-Columbia	3
CHIN 1	BEGINNING CHINESE	4
CHIN 2	HIGH-BEGINNING CHINESE	4
ENGL 1B	INTRODUCTION TO THE STUDY OF LITERATURE	3
ENGL 1BH	HONORS INTRODUCTION TO THE STUDY OF LITERATURE	3
ENGL 43A	American Literature: Origins Through RECONSTRUCTION (1877)	3

Course	Title	Units
ENGL 43B	AMERICAN LITERATURE: 1877 TO PRESENT	3
ENGL 44A	WORLD LITERATURE TO THE RENAISSANCE	3
ENGL 44B	WORLD LITERATURE SINCE THE RENAISSANCE	3
ENGL 46A	ENGLISH LITERATURE TO 1800	3
ENGL 46B	ENGLISH LITERATURE FROM 1800 TO THE PRESENT	3
ENGL 47	SHAKESPEARE	3
ENGL 49	LATINO & CHICANO LITERATURE	3
*FILM 2A	HISTORY OF CINEMA 1895-1960	3
*FILM 2B	HISTORY OF CINEMA: 1960 TO PRESENT	3
FRENCH 1	BEGINNING FRENCH	4
FRENCH 2	HIGH-BEGINNING FRENCH	4
FRENCH 3	INTERMEDIATE FRENCH	4
FRENCH 4	HIGH-INTERMEDIATE FRENCH	4
*HIST 1	WESTERN CIVILIZATION TO 1648	3
*HIST 2	WESTERN CIVILIZATION FROM 1648	3
*HIST 11	HISTORY OF THE UNITED STATES TO 1877	3
*HIST 12	HISTORY OF THE UNITED STATES SINCE 1865	3
*HIST 12H	HONORS HISTORY OF THE UNITED STATES SINCE 1865	3
*HIST 20	WORLD HISTORY I, TO 1600	3
*HIST 23	World History II, Since 1500	3
*HIST 31	A Survey of the History of Africa	3
*HIST 33	A Survey of Latin America History	3
GERMAN 1	Beginning German	4
GERMAN 2	High-Beginning German	4
GERMAN 3	Intermediate German	4
GERMAN 4	High-Intermediate German	4
LING 10	Introduction to Language	3
PHIL 1	Introduction to Philosophy	3
PHIL 1C	Ethics	3
PHIL 1CH	Honors Ethics	3
PHIL 1D	World Religions	3
PHIL 3	Introduction to Social and Political Philosophy	3
SPAN 1	Beginning Spanish	5
SPAN 2	High-Beginning Spanish	5
SPAN 3	Intermediate Spanish	5
SPAN 3NS	Spanish for Spanish Speakers	4
SPAN 4	High-Intermediate Spanish	5
SPAN 4NS	Spanish for Spanish Speakers	4
SPAN 15	Practical Spanish Conversation, Low-Intermediate Level	3
SPAN 16	Practical Spanish Conversation, High-Intermediate Level	3

C1 or C2 (3 units minimum):

an additional course from C1 or C2

AREA D: Social Sciences

9 semester units minimum selected from at least two disciplines.

Course	Title	Units
*ANTHRO 1	Biological Anthropology	3
ANTHRO 2	Cultural Anthropology	3
ANTHRO 3	Introduction to Archaeology	3
*/**CHDEV 38	Lifespan Development	3
*/**CHDEV 39	Child Growth and Development	3
COMM 10	Intercultural Communication	3
CRIM 13	The Constitution and Your Individual Rights	3
ECON 1A	Principles of Macroeconomics	3
ECON 1B	Principles of Microeconomics	3
GEOG 6	World Regional Geography	3
GEOG 40A	World Regional Geography A	3
GEOG 40B	World Regional Geography B	3
*HIST 1	Western Civilization to 1648	3
*HIST 2	Western Civilization from 1648	3
*HIST 11	History of the United States to 1877	3
*HIST 12	History of the United States Since 1865	3
*HIST 12H	Honors History of the United States Since 1865	3
*HIST 20	World History I, to 1600	3
*HIST 23	World History II, Since 1500	3
*HIST 31	A Survey of the History of Africa	3
*HIST 33	A Survey of Latin America History	3
POLSCI 2	American Government	3
POLSCI 2H	Honors American Government	3
POLSCI 3	Introduction to Political Theory and Thought	3
POLSCI 5	Comparative Government	3
POLSCI 24	International Relations	3
*PSY 2	General Psychology	3
*PSY 2H	Honors General Psychology	3
PSY 5	Social Psychology	3
PSY 16	Abnormal Psychology	3
*/**PSY 38	Lifespan Development	3
PSY 45	Introduction to Research Methods in Psychology	3
*SOC 1A	Introduction to Sociology	3
SOC 1B	Critical Thinking About Social Problems	3
SOC 2	American Minority Groups	3

AREA E: Lifelong Learning and Self-Development (3 semester units minimum)

Course	Title	Units
*/**CHDEV 38	Lifespan Development	3
*CHDEV 39	Child Growth and Development	3
COUN 53	College and Life Management	3
FN 35	Nutrition and Health	3
HLTH 1	Contemporary Health Issues	3
INTDS 50	College Success	3
*PSY 2	General Psychology	3
*PSY 2H	Honors General Psychology	3
PSY 25	Human Sexuality	3
*/**PSY 38	Lifespan Development	3
*SOC 1A	Introduction to Sociology	3
SOC 32	Courtship, Marriage, and Divorce: Family and Interpersonal Relationships	3

This area can also be certified with a military DD-214. Official SMART transcripts must be on file.

Note: * Courses located in more than one AREA can only be used in one area

** Identifies courses that are considered “same as”. You can only take one of the 2 courses
(CHDEV 38 same as PSY 38, CHDEV 39 same as PSY 39)

To be fully certified, students must complete a minimum of 9 units each in Areas A, B, C, and D, and 3 units in Area E. At least 30 of these units must be completed with a grade of “C” or better, including the 9 units in Area A: Communication in the English Language; and 3 units in Area B-4: Mathematics.

*AP, CLEP, IB may be used to meet CSU General Education requirements for certification.

Note: Fulfilling the CSU minimum eligibility requirements does not guarantee admission to CSU campuses.

Admission selection criteria vary widely by campus and by major. Consult with your counselor or a CSU campus representative to learn about the GPA and courses that may be required for admission to particular campuses and majors. Refer to the CSU Apply website for CSU transfer eligibility requirements (<https://www2.calstate.edu/apply>).

To be fully certified, students must complete a minimum of 9 units each in Areas A, B, C, and D, and 3 units in Area E. At least 30 of these units must be completed with a grade of “C” or better, including the 9 units in Area A: Communication in the English Language; and 3 units in Area B-4: Mathematics.

GE-Breadth Certification is not automatic and must be requested by the student at the same time transcripts are requested to be sent to the CSU following the posting of final grades.

Note: A single course, even though listed in more than one area, can only be used to satisfy one General Education requirement.

Advisor: McArron

**INTERSEGMENTAL GENERAL EDUCATION TRANSFER CURRICULUM (IGETC)
(Major #C.5801.CA)
CERTIFICATE OF ACHIEVEMENT**

The Intersegmental General Education Transfer Curriculum (IGETC) is a pattern of courses that California community college students can follow to satisfy lower-division General Education requirements at any California State University (CSU) or University of California (UC) campus. Completion of IGETC qualifies students to receive a Certificate of Achievement Clovis Community College

Completion of all these requirements (34-37 units) will permit you to transfer to any CSU or UC campus without the need, after transfer, to take additional lower-division general education courses. Students will understand the basic principles of natural sciences, social and behavioral sciences, the humanities and fine arts. Students completing this degree will understand the basic principles of these academic disciplines, their methods of inquiry, their history, and impact on society, and their relationships to each other. Students will also be able to think critically, to reason using quantitative models and will develop basic speaking, listening, reading and writing skills in a foreign language.

Program learning outcomes:

Upon completion of this program students will be able to:

1. Demonstrate an ability to think logically and critically in solving problems; explaining conclusions; and evaluating, supporting or critiquing the thinking of others.
2. Demonstrate an understanding of how societies and social subgroups operate.
3. Critically explain how people act and have acted in response to their societies.
4. Evaluate and interpret the ways in which people throughout the ages in different cultures have responded to themselves and the world around them in artistic and cultural creation.
5. Develop mathematical and quantitative reasoning skills beyond the level of intermediate algebra.
6. Understand the acts and principles which form the foundations of living and non-living systems.
7. Understand experimental methodology, the testing of hypothesis, the power of systematic questioning and the influence of the scientific method on the world's civilizations.

Catalog description

The Certificate of Achievement in Intersegmental General Education Transfer Curriculum (IGETC) is a program that provides students with the option of fulfilling all lower division general education requirements for transferring to the California State University (CSU) and University of California (UC) systems.

Students who intend to transfer must meet all current IGETC lower division general education transfer requirements including minimum GPA to achieve the Certificate of Achievement. Students may also request certification of the general education upon completion of this Certificate of Achievement. The Certificate of Achievement will appear on student's transcripts, but the certification is a separate request that must be filled out by a counselor and is the student's responsibility to submit to their transfer institution. Students are firmly advised to meet with a counselor to discuss transfer requirements and lower division major preparation that is needed for their intended transfer university.

Although the certificate recognizes the completion of IGETC lower division general education requirements, it does not guarantee admission to a specific campus within the CSU or UC system nor does it guarantee admission to a specific major. Some majors and colleges may require a different lower division preparation and/or a higher GPA than is necessary for this certificate. A grade of "C" or better is required in all courses.

Program Requirements:

Certificate of Achievement in Intersegmental GE Transfer Curriculum (IGETC)

Area 1 — Communication in the English and Critical Thinking

- CSU — 3 courses required, one from each group below.
- UC — 2 courses required, one each from Group A and Group B.

1A- English Composition — (One course, 3 semester units or 4-5 quarter units)

1B - Critical Thinking-English Composition: (One course from the following)

1C - Oral Communication (CSU requirement only): (One course from the following)

AREA 2: Mathematical Concepts and Quantitative Reasoning

One course required. (3 semester units minimum)

AREA 3: Arts and Humanities

At least three courses, with at least one from the Arts and one from the Humanities. (9 semester units minimum)

3A - Arts: (Choose one course from the 3A)

3B - Humanities: (Choose one course from the 3B)

Arts or Humanities: (Choose one additional course from 3A or 3B)

(3 Units minimum)

Area 4 — Social and Behavioral Sciences

(3 courses from at least 2 disciplines, 9 semester units or 12-15 quarter units.)

AREA 5: Physical and Biological Sciences

At least two courses, one Physical Science and one Biological Science; at least one must include a laboratory component (indicated by L). (7-9 semester units minimum)

5A - Physical Sciences

5B - Biological Sciences

5C - Laboratory Activity

AREA 6: Language Other Than English (UC requirement only)

Proficiency equivalent to two years of high school study in the same language with “C” grades or better (at Clovis Community College, one course required if not met by High School foreign language).

***Please refer to the current IGETC pattern for specific courses in each area.*

Certificate of Achievement in Intersegmental General Education Transfer Curricula (IGETC)

AREA 1: Communication in the English and Critical Thinking

- CSU — 3 courses required, one from each group below.
- UC — 2 courses required, one each from Group A and Group B.

1A- English Composition: 1 course, 3 semester units

Course	Title	Units
ENGLISH 1A	Reading and Composition	4
ENGLISH 1AH	Honors Reading and Composition	4

1B - Critical Thinking-English Composition: (One course from the following)

Course	Title	Units
*COMM 25	Argumentation	3
ENGLISH 3	Critical Reading and Writing	3
ENGLISH 3H	Honors Critical Reading and Writing	3
PHILOSOPHY 2	Critical Reasoning and Analytic Writing	3

IC - Oral Communication (CSU requirement only): (One course from the following)

Course	Title	Units
COMM 1	Public Speaking	3
COMM 1H	Honors Public Speaking	3
COMM 4	Persuasion	3
COMM 8	GROUP COMMUNICATION	3
*COMM 25	Argumentation	3

AREA 2: Mathematical Concepts and Quantitative Reasoning

One course required. (3 semester units minimum)

Course	Title	Units
CSCI 26	Discrete Mathematics for Computer Science	3
MATHEMATICS 4B	Precalculus	4
MATHEMATICS 5A	Math Analysis I	5
MATHEMATICS 5B	Math Analysis II	4
MATHEMATICS 6	Math Analysis III	5
MATHEMATICS 11	Elementary Statistics	4
MATHEMATICS 17	Differential Equations and Linear Algebra	5
STATISTICS 7	Elementary Statistics	4

AREA 3: Arts and Humanities

At least three courses, with at least one from the Arts and one from the Humanities. (9 semester units minimum)

3A- Arts: One course required. (3 semester units minimum)

Course	Title	Units
ART 1	Art Basics: 2/3 Dimensional Design	3
ART 2	Art Appreciation	3
ART 5	Art History I	3
ART 6	Art History II	3
ART 6H	Honors Art History II	3
FILM 1	Introduction to Film Studies	3
*FILM 2A	History of Cinema: 1895-1960	3
*FILM 2B	History of Cinema: 1960 TO PRESENT	3
MUSIC 12	Music Appreciation	3
MUSIC 16	Jazz History and Appreciation	3

3B – Humanities: One course required. (3 semester units minimum)

Course	Title	Units
ASL 2	High-Beginning American Sign Language	4
ASL 3	Intermediate American Sign Language	4
ASL 4	High-Intermediate American Sign Language	4
CHINESE 2	High-Beginning Chinese	4
ENGLISH1B	Introduction To The Study Of Literature	3
ENGLISH 1BH	Honors Introduction To The Study Of Literature	3
ENGLISH 43A	American Literature: Origins Through Reconstruction (1877)	3
ENGLISH 43B	American Literature: 1877 To Present	3
ENGLISH 44A	World Literature To The Renaissance	3

Course	Title	Units
ENGLISH 44B	World Literature Since The Renaissance	3
ENGLISH 46A	English Literature To 1800	3
ENGLISH 46B	English Literature From 1800 To The Present	3
ENGLISH 47	Shakespeare	3
ENGLISH 49	Latino & Chicano Literature	3
*FILM 2A	History Of Cinema 1895-1960	3
*FILM 2B	History Of Cinema: 1960 To Present	3
*FILM 2A	History Of Cinema 1895-1960	3
*FILM 2B	History Of Cinema: 1960 To Present	3
FRENCH 2	High-Beginning French	4
FRENCH 3	Intermediate French	4
FRENCH 4	High-Intermediate French	4
HISTORY 1	Western Civilization To 1648	3
HISTORY 2	Western Civilization From 1648	3
*HISTORY 11	History Of The United States To 1877	3
*HISTORY 12	History Of The United States Since 1865	3
*HISTORY 12H	Honors History Of The United States Since 1865	3
HISTORY 20	World History I, To 1600	3
*HISTORY 23	World History II, Since 1500	3
GERMAN 2	High-Beginning German	4
GERMAN 3	Intermediate German	4
GERMAN 4	High-Intermediate German	4
LINGUISTICS 10	Introduction to Language	
PHILOSOPHY 1	Introduction to Philosophy	3
PHILOSOPHY 1C	Ethics	3
PHILOSOPHY 1CH	Honors Ethics	3
PHILOSOPHY 1D	World Religions	3
PHILOSOPHY 3	Introduction to Social and Political Philosophy	3
SPANISH 2	High-Beginning Spanish	5
SPANISH 3	Intermediate Spanish	5
SPANISH 3NS	Spanish for Spanish Speakers	4
SPANISH 4	High-Intermediate Spanish	5
SPANISH 4NS	Spanish for Spanish Speakers	4

Arts or Humanities: Did you complete an additional course from Area 3, Arts or Humanities?

AREA 4: Social and Behavioral Sciences

At least three courses from at least two different disciplines. (9 semester units minimum)

Course	Title	Units
*ANTHROPOLOGY 1	Biological Anthropology	3
ANTHROPOLOGY 2	Cultural Anthropology	3
ANTHROPOLOGY 3	Introduction to Archaeology	3
CHDEV 30	Child, Family and Community	3
**CHDEV 38	Lifespan Development	3
**CHDEV 39	Child Growth and Development	3
COMM 10	Intercultural Communication	3
ECONOMICS 1A	Principles of Macroeconomics	3
ECONOMICS 1B	Principles of Microeconomics	3
GEOGRAPHY 6	World Regional Geography	3
*HISTORY 11	History of the United States to 1877	3
*HISTORY 12	History of the United States Since 1865	3
*HISTORY 12H	Honors History of the United States Since 1865	3
*HISTORY 23	World History II, Since 1500	3
POLSCI 2	American Government	3
POLSCI 2H	Honors American Government	3
POLSCI 3	Introduction to Political Theory and Thought	3
POLSCI 5	Comparative Government	3
POLSCI 24	International Relations	3
PSYCHOLOGY 2	General Psychology	3
PSYCHOLOGY 2H	Honors General Psychology	3
PSYCHOLOGY 5	Social Psychology	3
PSYCHOLOGY 16	Abnormal Psychology	3
**PSYCHOLOGY 38	Lifespan Development	3
PSYCHOLOGY 45	Introduction to Research Methods in Psychology	3
SOCIOLOGY 1A	Introduction to Sociology	3
SOCIOLOGY 1B	Critical Thinking About Social Problems	3
SOCIOLOGY 2	American Minority Groups	3

AREA 5: Physical and Biological Sciences

At least two courses, one **Physical Science** and one **Biological Science**; at least one must include a laboratory component (indicated by L).

5A - Physical Sciences: One course required. (3 semester units minimum)

Course	Title	Units
CHEMISTRY 1A (L)	General Chemistry	5
CHEMISTRY 1B (L)	General Chemistry and Qualitative Analysis	5
CHEMISTRY 3A (L)	Introductory General Chemistry	4
CHEMISTRY 8	Elementary Organic Chemistry	4
CHEMISTRY 10 (L)	Elementary Chemistry	4
CHEMISTRY 28A	Organic Chemistry I	3
CHEMISTRY 28B	Organic Chemistry II	3
GEOGRAPHY 5	Physical Geography: Environmental Conditions	3
GEOGRAPHY 9	Physical Geography: Land Formation	3

Course	Title	Units
GEOLOGY 1 (L)	Physical Geology	4
GEOLOGY 9 (L)	Introduction to Earth Science	4
PHYSICS 2A(L)	General Physics I	4
PHYSICS 2B (L)	General Physics II	4
PHYSICS 4A (L)	Physics for Scientists and Engineers	4
PHYSICS 4B (L)	Physics for Scientists and Engineers	4
PHYSICS 4C (L)	Physics for Scientists and Engineers	4
PHYSICS 10 (L)	Conceptual Physics	3.5
SCI 1A (L)	Introductory Chemical and Physical Science	4

5A – Biological Sciences: One course required. (3 semester units minimum)

Course	Title	Units
*ANTHROPOLOGY 1	Biological Anthropology	3
BIOLOGY 3(L)	Introduction to Life Science	4
BIOLOGY5(L)	Human Biology	4
BIOLOGY 10	Introduction to Life Science Lecture	3
BIOLOGY 11A(L)	Biology For Science Majors I	5
BIOLOGY 11B(L)	Biology For Science Majors II	5
BIOLOGY 20(L)	Human Anatomy	4
BIOLOGY 22(L)	Human Physiology	5
BIOLOGY 31(L)	Microbiology	5

5C – Laboratory Activity:

Did you complete a course from AREA 5A or 5B with a lab (marked with an L) OR one of the following:

Course	Title	Units
BIOLOGY 10L (L)	Introduction to Life Science Lab	1
CHEMISTRY 29A (L)	Organic Chemistry Laboratory I	2
CHEMISTRY 29B(L)	Organic Chemistry Laboratory II	2

AREA 6: Language Other Than English (UC requirement only)

Proficiency equivalent to two years of high school study in the same language with “C” grades or better (at Clovis Community College, one course required if not met by High School foreign language).

Course	Title	Units
ASL 1	Beginning American Sign Language	4
ASL 2	High-Beginning American Sign Language	4
ASL 3	Intermediate American Sign Language	4
ASL 4	High-Intermediate American Sign Language	4
CHINESE 1	Beginning Chinese	4
CHINESE 2	High-Beginning Chinese	4
FRENCH 1	Beginning French	4
FRENCH 2	High-Beginning French	4
FRENCH 3	Intermediate French	4
FRENCH 4	High-Intermediate French	4
GERMAN 1	Beginning German	4
GERMAN 2	High-Beginning German	4

Course	Title	Units
GERMAN 3	Intermediate German	4
GERMAN 4	High-Intermediate German	4
SPANISH 1	Beginning Spanish	5
SPANISH 2	High-Beginning Spanish	5
SPANISH 3	High-Beginning Spanish	5
SPANISH 3NS	Intermediate Spanish	5
SPANISH 4	Spanish for Spanish Speakers	4
SPANISH 4NS	High-Intermediate Spanish	5

Notes:

*Courses listed above in more than one location will only be counted one time except for courses in Language Other Than English, which can be certified in Areas 3B and 6.

CSU Graduation Requirement in U.S. History, Constitution and American Ideals

This requirement may be met before or after transfer to the CSU. At the discretion of the CSU campus granting the degree, courses meeting this requirement may also be counted toward certification in general education. Students satisfy this CSU graduation requirement through coursework in three areas: US-1, US-2 and US-3. A student must take one course from each of the three areas. A student may use the same course to satisfy more than one area (US-1, US-2, US-3), if applicable.

Note: Fulfilling the UC minimum eligibility requirements does not guarantee admission to UC campuses. Admission selection criteria vary widely by campus and by major. Consult with your counselor or a UC campus representative to learn about the GPA and courses that may be required for admission to particular campuses and majors. Refer to the University of California website for UC transfer requirements:<http://admission.universityofcalifornia.edu/transfer/index.html>.

AP scores of 3, 4 or 5 can be used to satisfy any IGETC subject area except the Critical Thinking/English Composition or the Oral Communication requirements (Areas 1B & 1C). Each AP score can only be used as one course. However, more than one AP score can be used in each area except Area 1. Refer to the chart available at (insert catalog hyperlink) or a list of approved AP scores and the corresponding IGETC area credit.

IB scores of 5, 6 or 7 can be used to satisfy certain IGETC subject areas. Each IB score can only be used as one course. However, more than one IB score can be used in each area. Refer to the chart available at (insert catalog hyperlink) for a list of approved IB scores and the corresponding IGETC area credit.

ENGINEERING

CIVIL ENGINEERING

(Major #C.3011.AS)

ASSOCIATE IN SCIENCE DEGREE

Program Goals:

A student earning this degree will have completed the lower division coursework necessary to transfer into a bachelor's degree program in Civil Engineering. In addition, a student earning this degree will be prepared for engineering internship opportunities.

The college has heretofore had a successful program for general engineering transfer. Associated with this program is an existing AS degree called Engineering. This existing general Engineering AS degree is being replaced with four new more specific Engineering AS degrees, this proposal being one of them. The new degrees recognize the slight differences in lower division preparation between the different types of engineering BS degrees and guide the students accordingly. These new degree proposals follow closely the recommendations of the California FDRG group for lower division engineering preparation. All courses in the new degrees are existing Clovis Community College courses that students have been using successfully to transfer to four-year engineering programs.

Program learning outcomes:

A student who successfully completes this degree will be able to:

1. Apply knowledge of mathematics, science, and engineering fundamentals to solve engineering problems.
2. Conduct laboratory experiments. Analyze and interpret the data resulting from these experiments.
3. Make basic design decisions concerning engineering problems.
4. Communicate solutions to engineering problems using effective oral, written, and graphical methods.
5. Demonstrate knowledge of the impact of engineering solutions in a global and societal context.
6. Use the techniques, skills, and software tools of modern engineering practice.

Catalog Description:

A student earning this degree will have completed the lower division coursework necessary to transfer into a bachelor's degree program in Civil Engineering. In addition, a student earning this degree will be prepared for engineering internship opportunities.

Required Core Courses	29
ENGR 10 Introduction to Engineering	2
MATH 5A Math Analysis I	5
MATH 5B Math Analysis II	4
MATH 6 Math Analysis III	5
MATH 17 Differential Equations and Linear Algebra	5
PHYS 4A Physics for Scientists and Engineers	4
PHYS 4B Physics for Scientists and Engineers	4
Select a minimum of four courses from the following¹	13-17
ENGR 2 Engineering Graphics	4
ENGR 4 Engineering Materials	3
ENGR 6 Electric Circuits Analysis with Lab	4
ENGR 8 Statics	3
ENGR 40 ² Programming for Scientists and Engineers	4
Or	
ENGR 5 ² Programming and Problem-Solving in MATLAB	3
Or	
CSCI 40 ² Programming Concepts and Methodology I	4
CHEM 1A ³ General Chemistry	5
Or	
CHEM 3A ³ Introductory General Chemistry	4
PHYS 4C Physics for Scientists and Engineers	4
Total Units:	42-46

¹ Student should carefully plan which of these courses to take based on their specific major and intended transfer institution(s). Some transfer institutions will have minimum requirements for transfer that will necessitate choosing more than 4 courses from this section.

² Student should complete the programming course specifically required by his or her transfer institution of choice. The choices are: ENGR 40 Programming for Scientists and Engineers (4 units), ENGR 5 Programming and Problem Solving in MATLAB (3 units), and CSCI 40 Programming Concepts and Methodology I (4 units).

³ Student should check the minimum chemistry transfer requirements for his or her intended transfer institution.

Advisor: Glaves

CIVIL ENGINEERING

(Major #C.3011.CA)

CERTIFICATE OF ACHIEVEMENT

Program Goals:

A student earning this certificate of achievement will have completed the lower division STEM coursework necessary to transfer into a bachelor's degree program in Civil Engineering. In addition, a student earning this certificate of achievement will be prepared for engineering internship opportunities.

The college has heretofore had a successful program for general engineering transfer. Associated with this program is an existing AS degree called Engineering. Most engineering transfer students have heretofore transferred successfully without completing the requirements for this degree. The main reason for this has been that the high units loads in the program's STEM areas have precluded the students from taking enough general education units to meet the AS degree requirements. Engineering students at four-year universities have this same issue and are allowed by their institutions to spread their lower division general education coursework over all four years of their degree. This certificate will effectively allow our engineering transfer students to do the same thing while also earning a credential from our college that recognizes their achievement.

Our existing Engineering AS degree is being replaced by four new more specific certificates of achievement, this certificate of achievement being one of them. The new certificates of achievement recognize that students will likely transfer without fully completing lower division education requirements and also recognize the slight differences in lower division preparation between the different types of engineering BS degrees and guide the students accordingly. These new certificates of achievement proposals follow closely the recommendations of the California FDRG group for lower division engineering preparation. All courses in the new certificates of achievement are existing Clovis Community College courses that students have been using successfully to transfer to four-year engineering programs.

For students who wish to transfer in engineering and in addition earn an Associate of Science degree, the college has also developed four engineering AS degrees. These are essentially the same as the engineering certificates of achievement, but include the local general education requirements for our AS degrees.

Program learning outcomes:

A student who successfully completes this certificate of achievement will be able to:

1. Apply knowledge of mathematics, science, and engineering fundamentals to solve engineering problems.
2. Conduct laboratory experiments. Analyze and interpret the data resulting from these experiments.
3. Make basic design decisions concerning engineering problems.
4. Communicate solutions to engineering problems using effective oral, written, and graphical methods.
5. Demonstrate knowledge of the impact of engineering solutions in a global and societal context.
6. Use the techniques, skills, and software tools of modern engineering practice.

Catalog Description:

A student earning this certificate of achievement will have completed the lower division coursework necessary to transfer into a bachelor’s degree program in Civil Engineering. In addition, a student earning this certificate of achievement will be prepared for engineering internship opportunities.

Required Core Courses	29
ENGR 10 Introduction to Engineering	2
MATH 5A Math Analysis I	5
MATH 5B Math Analysis II.....	4
MATH 6 Math Analysis III	5
MATH 17 Differential Equations and Linear Algebra	5
PHYS 4A Physics for Scientists and Engineers.....	4
PHYS 4B Physics for Scientists and Engineers.....	4
Select a minimum of four courses from the following¹	13-17
ENGR 2 Engineering Graphics	4
ENGR 4 Engineering Materials.....	3
ENGR 6 Electric Circuits Analysis with Lab.....	4
ENGR 8 Statics	3
ENGR 40 ² Programming for Scientists and Engineers	4
Or	
ENGR 5 ² Programming and Problem-Solving in MATLAB.....	3
Or	
CSCI 40 ² Programming Concepts and Methodology I	4
CHEM 1A ³ General Chemistry.....	5
Or	
CHEM 3A ³ Introductory General Chemistry	4
PHYS 4C Physics for Scientists and Engineers	4
Total Units:.....	42-46

¹ Student should carefully plan which of these courses to take based on their specific major and intended transfer institution(s). Some transfer institutions will have minimum requirements for transfer that will necessitate choosing more than 4 courses from this section.

² Student should complete the programming course specifically required by his or her transfer institution of choice. The choices are: ENGR 40 Programming for Scientists and Engineers (4 units), ENGR 5 Programming and Problem Solving in MATLAB (3 units), and CSCI 40 Programming Concepts and Methodology I (4 units).

³ Student should check the minimum chemistry transfer requirements for his or her intended transfer institution.

Advisor: Glaves

COMPUTER OR SOFTWARE ENGINEERING

(Major #C.3013.AS)

ASSOCIATE IN SCIENCE DEGREE

Program Goals:

A student earning this degree will have completed the lower division coursework necessary to transfer into a bachelor’s degree program in Computer Engineering or Software Engineering. In addition, a student earning this degree will be prepared for engineering internship opportunities.

The college has heretofore had a successful program for general engineering transfer. Associated with this program is an existing AS degree called Engineering. This existing general Engineering AS degree is being replaced with four new more specific Engineering AS degrees, this proposal being one of them. The new degrees recognize the slight differences in lower division preparation between the different types of engineering BS degrees and guide the students accordingly. These new degree proposals follow closely the recommendations of the California FDRG group for lower division engineering preparation. All courses in the new degrees are existing Clovis Community College courses that students have been using successfully to transfer to four-year engineering programs.

Program learning outcomes:

A student who successfully completes this certificate of achievement will be able to:

1. Apply knowledge of mathematics, science, and engineering fundamentals to solve engineering problems.
2. Conduct laboratory experiments. Analyze and interpret the data resulting from these experiments.
3. Make basic design decisions concerning engineering problems.
4. Communicate solutions to engineering problems using effective oral, written, and graphical methods.
5. Demonstrate knowledge of the impact of engineering solutions in a global and societal context.
6. Use the techniques, skills, and software tools of modern engineering practice.

Catalog Description:

A student earning this degree will have completed the lower division coursework necessary to transfer into a bachelor's degree program in Computer Engineering or Software Engineering. In addition, a student earning this degree will be prepared for engineering internship opportunities.

Required Core Courses	29
ENGR 10 Introduction to Engineering	2
MATH 5A Math Analysis I.....	5
MATH 5B Math Analysis II.....	4
MATH 6 Math Analysis III	5
MATH 17 Differential Equations and Linear Algebra	5
PHYS 4A Physics for Scientists and Engineers.....	4
PHYS 4B Physics for Scientists and Engineers.....	4
Select a minimum of four courses from the following¹	16-17
ENGR 6 Electric Circuits Analysis with Lab.....	4
ENGR 40 ² Programming for Scientists and Engineers	4
Or	
CSCI 40 ² Programming Concepts and Methodology I	4
CSCI 41 Programming Concepts and Methodology II	4
CHEM 1A ³ General Chemistry.....	5
Or	
CHEM 3A ³ Introductory General Chemistry	4
PHYS 4C Physics for Scientists and Engineers	4
Total Units:	45-46

¹ Student should carefully plan which of these courses to take based on their specific major and intended transfer institution(s). Some transfer institutions will have minimum requirements for transfer that will necessitate choosing more than 4 courses from this section.

² Student should complete the programming course specifically required by his or her transfer institution of choice. The choices are: ENGR 40 Programming for Scientists and Engineers (4 units), ENGR 5 Programming and Problem Solving in MATLAB (3 units), and CSCI 40 Programming Concepts and Methodology I (4 units).

³ Student should check the minimum chemistry transfer requirements for his or her intended transfer institution.

Advisor: Graves

COMPUTER OR SOFTWARE ENGINEERING

(Major #C.3013.CA)

CERTIFICATE OF ACHIEVEMENT

Program Goals:

A student earning this certificate of achievement will have completed the lower division STEM coursework necessary to transfer into a bachelor's degree program in Computer or Software Engineering. In addition, a student earning this certificate of achievement will be prepared for engineering internship opportunities.

The college has heretofore had a successful program for general engineering transfer. Associated with this program is an existing AS degree called Engineering. Most engineering transfer students have heretofore transferred successfully without completing the requirements for this degree. The main reason for this has been that the high units loads in the program's STEM areas have precluded the students from taking enough general education units to meet the AS degree requirements. Engineering students at four-year universities have this same issue and are allowed by their institutions to spread their lower division general education coursework over all four years of their degree. This certificate will effectively allow our engineering transfer students to do the same thing while also earning a credential from our college that recognizes their achievement.

Our existing Engineering AS degree is being replaced by four new more specific certificates of achievement, this certificate of achievement being one of them. The new certificates of achievement recognize that students will likely transfer without fully completing lower division education requirements and also recognize the slight differences in lower division preparation between the different types of engineering BS degrees and guide the students accordingly. These new certificates of achievement proposals follow closely the recommendations of the California FDRG group for lower division engineering preparation. All courses in the new certificates of achievement are existing Clovis Community College courses that students have been using successfully to transfer to four-year engineering programs.

For students who wish to transfer in engineering and in addition earn an Associate of Science degree, the college has also developed four engineering AS degrees. These are essentially the same as the engineering certificates of achievement, but include the local general education requirements for our AS degrees.

Program learning outcomes:

A student who successfully completes this certificate of achievement will be able to:

1. Apply knowledge of mathematics, science, and engineering fundamentals to solve engineering problems.
2. Conduct laboratory experiments. Analyze and interpret the data resulting from these experiments.
3. Make basic design decisions concerning engineering problems.
4. Communicate solutions to engineering problems using effective oral, written, and graphical methods.
5. Demonstrate knowledge of the impact of engineering solutions in a global and societal context.
6. Use the techniques, skills, and software tools of modern engineering practice.

Catalog Description:

A student earning this certificate of achievement will have completed the lower division coursework necessary to transfer into a bachelor's degree program in Computer Engineering or Software Engineering. In addition, a student earning this certificate of achievement will be prepared for engineering internship opportunities.

Required Core Courses	29
ENGR 10 Introduction to Engineering	2
MATH 5A Math Analysis I	5
MATH 5B Math Analysis II	4
MATH 6 Math Analysis III	5
MATH 17 Differential Equations and Linear Algebra	5
PHYS 4A Physics for Scientists and Engineers	4
PHYS 4B Physics for Scientists and Engineers	4
Select a minimum of four courses from the following¹	16-17
ENGR 6 Electric Circuits Analysis with Lab	4

ENGR 40 ² Programming for Scientists and Engineers	4
Or	
CSCI 40 ² Programming Concepts and Methodology I	4
CSCI 41 Programming Concepts and Methodology II	4
CHEM 1A ³ General Chemistry.....	5
Or	
CHEM 3A ³ Introductory General Chemistry	4
PHYS 4C Physics for Scientists and Engineers	4
Total Units:.....	45-46

¹ Student should carefully plan which of these courses to take based on their specific major and intended transfer institution(s). Some transfer institutions will have minimum requirements for transfer that will necessitate choosing more than 4 courses from this section.

² Student should complete the programming course specifically required by his or her transfer institution of choice. The choices are: ENGR 40 Programming for Scientists and Engineers (4 units), ENGR 5 Programming and Problem Solving in MATLAB (3 units), and CSCI 40 Programming Concepts and Methodology I (4 units).

³ Student should check the minimum chemistry transfer requirements for his or her intended transfer institution.

Advisor: Glaves

ELECTRICAL ENGINEERING

(Major #C.3012.AS)

ASSOCIATE IN SCIENCE DEGREE

Program Goals:

A student earning this degree will have completed the lower division coursework necessary to transfer into a bachelor's degree program in Electrical Engineering. In addition, a student earning this degree will be prepared for engineering internship opportunities.

The college has heretofore had a successful program for general engineering transfer. Associated with this program is an existing AS degree called Engineering. This existing general Engineering AS degree is being replaced with four new more specific Engineering AS degrees, this proposal being one of them. The new degrees recognize the slight differences in lower division preparation between the different types of engineering BS degrees and guide the students accordingly. These new degree proposals follow closely the recommendations of the California FDRG group for lower division engineering preparation. All courses in the new degrees are existing Clovis Community College courses that students have been using successfully to transfer to four-year engineering programs.

Program learning outcomes:

A student who successfully completes this degree will be able to:

1. Apply knowledge of mathematics, science, and engineering fundamentals to solve engineering problems.
2. Conduct laboratory experiments. Analyze and interpret the data resulting from these experiments.
3. Make basic design decisions concerning engineering problems.
4. Communicate solutions to engineering problems using effective oral, written, and graphical methods.
5. Demonstrate knowledge of the impact of engineering solutions in a global and societal context.
6. Use the techniques, skills, and software tools of modern engineering practice.

Catalog Description:

A student earning this degree will have completed the lower division coursework necessary to transfer into a bachelor's degree program in Electrical Engineering. In addition, a student earning this degree will be prepared for engineering internship opportunities.

Required Core Courses	29
ENGR 10 Introduction to Engineering	2
MATH 5A Math Analysis I.....	5
MATH 5B Math Analysis II.....	4
MATH 6 Math Analysis III	5
MATH 17 Differential Equations and Linear Algebra	5
PHYS 4A Physics for Scientists and Engineers.....	4

PHYS 4B Physics for Scientists and Engineers.....	4
Select a minimum of four courses from the following¹	15-17
ENGR 6 Electric Circuits Analysis with Lab.....	4
Must take two of the following programming courses ^{2,3} :	
ENGR 40 ^{2,3} Programming for Scientists and Engineers.....	4
Or	
ENGR 5 ^{2,3} Programming and Problem-Solving in MATLAB.....	3
Or	
CSCI 40 ^{2,3} Programming Concepts and Methodology I.....	4
CHEM 1A ⁴ General Chemistry.....	5
Or	
CHEM 3A ⁴ Introductory General Chemistry.....	4
PHYS 4C Physics for Scientists and Engineers	4
Total Units:.....	44-46

¹ Student should carefully plan which of these courses to take based on their specific major and intended transfer institution(s). Some transfer institutions will have minimum requirements for transfer that will necessitate choosing more than 4 courses from this section.

² As a first programming course, student should complete the programming course specifically required by his or her transfer institution of choice. The choices are: ENGR 40 Programming for Scientists and Engineers (4 units), ENGR 5 Programming and Problem Solving in MATLAB (3 units), and CSCI 40 Programming Concepts and Methodology I (4 units).

³ Credit will not be given for both ENGR 40 and CSCI 40. If ENGR 5 was chosen as a first programming course, then the student could choose ENGR 40 or CSCI 40 as a second programming course. If ENGR 40 or CSCI 40 was chosen as a first programming course, then the student could choose ENGR 5 as a second programming course.

⁴ Student should check the minimum chemistry transfer requirements for his or her intended transfer institution.

Advisor: Graves

ELECTRICAL ENGINEERING

(Major #C.3012.CA)

CERTIFICATE OF ACHIEVEMENT

Program Goals:

A student earning this certificate of achievement will have completed the lower division STEM coursework necessary to transfer into a bachelor's degree program in Electrical Engineering. In addition, a student earning this certificate of achievement will be prepared for engineering internship opportunities.

The college has heretofore had a successful program for general engineering transfer. Associated with this program is an existing AS degree called Engineering. Most engineering transfer students have heretofore transferred successfully without completing the requirements for this degree. The main reason for this has been that the high units loads in the program's STEM areas have precluded the students from taking enough general education units to meet the AS degree requirements. Engineering students at four-year universities have this same issue and are allowed by their institutions to spread their lower division general education coursework over all four years of their degree. This certificate will effectively allow our engineering transfer students to do the same thing while also earning a credential from our college that recognizes their achievement.

Our existing Engineering AS degree is being replaced by four new more specific certificates of achievement, this certificate of achievement being one of them. The new certificates of achievement recognize that students will likely transfer without fully completing lower division education requirements and also recognize the slight differences in lower division preparation between the different types of engineering BS degrees and guide the students accordingly. These new certificates of achievement proposals follow closely the recommendations of the California FDRG group for lower division engineering preparation. All courses in the new certificates of achievement are existing Clovis Community College courses that students have been using successfully to transfer to four-year engineering programs.

For students who wish to transfer in engineering and in addition earn an Associate of Science degree, the college has also developed four engineering AS degrees. These are essentially the same as the engineering certificates of achievement, but include the local general education requirements for our AS degrees.

Program learning outcomes:

A student who successfully completes this certificate of achievement will be able to:

1. Apply knowledge of mathematics, science, and engineering fundamentals to solve engineering problems.
2. Conduct laboratory experiments. Analyze and interpret the data resulting from these experiments.
3. Make basic design decisions concerning engineering problems.
4. Communicate solutions to engineering problems using effective oral, written, and graphical methods.
5. Demonstrate knowledge of the impact of engineering solutions in a global and societal context.
6. Use the techniques, skills, and software tools of modern engineering practice.

Catalog Description:

A student earning this certificate of achievement will have completed the lower division coursework necessary to transfer into a bachelor's degree program in Electrical Engineering. In addition, a student earning this certificate of achievement will be prepared for engineering internship opportunities.

Required Core Courses	29
ENGR 10 Introduction to Engineering	2
MATH 5A Math Analysis I	5
MATH 5B Math Analysis II	4
MATH 6 Math Analysis III	5
MATH 17 Differential Equations and Linear Algebra	5
PHYS 4A Physics for Scientists and Engineers	4
PHYS 4B Physics for Scientists and Engineers	4
Select a minimum of four courses from the following¹	15-17
ENGR 6 Electric Circuits Analysis with Lab	4
Must take two of the following programming courses ^{2,3} :	
ENGR 40 ^{2,3} Programming for Scientists and Engineers	4
Or	
ENGR 5 ^{2,3} Programming and Problem-Solving in MATLAB	3
Or	
CSCI 40 ^{2,3} Programming Concepts and Methodology I	4
CHEM 1A ⁴ General Chemistry	5
Or	
CHEM 3A ⁴ Introductory General Chemistry	4
PHYS 4C Physics for Scientists and Engineers	4
Total Units:	44-46

¹ Student should carefully plan which of these courses to take based on their specific major and intended transfer institution(s). Some transfer institutions will have minimum requirements for transfer that will necessitate choosing more than 4 courses from this section.

² As a first programming course, student should complete the programming course specifically required by his or her transfer institution of choice. The choices are: ENGR 40 Programming for Scientists and Engineers (4 units), ENGR 5 Programming and Problem Solving in MATLAB (3 units), and CSCI 40 Programming Concepts and Methodology I (4 units).

³ Credit will not be given for both ENGR 40 and CSCI 40. If ENGR 5 was chosen as a first programming course, then the student could choose ENGR 40 or CSCI 40 as a second programming course. If ENGR 40 or CSCI 40 was chosen as a first programming course, then the student could choose ENGR 5 as a second programming course.

⁴ Student should check the minimum chemistry transfer requirements for his or her intended transfer institution.

Advisor: Glaves

MECHANICAL, AEROSPACE, OR MANUFACTURING ENGINEERING

(Major #C.3014.AS)

ASSOCIATE IN SCIENCE DEGREE

Program Goals:

A student earning this degree will have completed the lower division coursework necessary to transfer into a bachelor's degree program in Mechanical, Aerospace, or Manufacturing Engineering. In addition, a student earning this degree will be prepared for engineering internship opportunities.

The college has heretofore had a successful program for general engineering transfer. Associated with this program is an existing AS degree called Engineering. This existing general Engineering AS degree is being replaced with four new more specific Engineering AS degrees, this proposal being one of them. The new degrees recognize the slight differences in lower division preparation between the different types of engineering BS degrees and guide the students accordingly. These new degree proposals follow closely the recommendations of the California FDRG group for lower division engineering preparation. All courses in the new degrees are existing Clovis Community College courses that students have been using successfully to transfer to four-year engineering programs.

Program learning outcomes:

A student who successfully completes this certificate of achievement will be able to:

- 1. Apply knowledge of mathematics, science, and engineering fundamentals to solve engineering problems.
2. Conduct laboratory experiments. Analyze and interpret the data resulting from these experiments.
3. Make basic design decisions concerning engineering problems.
4. Communicate solutions to engineering problems using effective oral, written, and graphical methods.
5. Demonstrate knowledge of the impact of engineering solutions in a global and societal context.
6. Use the techniques, skills, and software tools of modern engineering practice.

Catalog Description:

A student earning this degree will have completed the lower division coursework necessary to transfer into a bachelor's degree program in Mechanical, Aerospace, or Manufacturing Engineering. In addition, a student earning this degree will be prepared for engineering internship opportunities.

Required Core Courses 29
ENGR 10 Introduction to Engineering 2
MATH 5A Math Analysis I 5
MATH 5B Math Analysis II 4
MATH 6 Math Analysis III 5
MATH 17 Differential Equations and Linear Algebra 5
PHYS 4A Physics for Scientists and Engineers 4
PHYS 4B Physics for Scientists and Engineers 4
Select a minimum of four courses from the following1 13-17
ENGR 2 Engineering Graphics 4
ENGR 4 Engineering Materials 3
ENGR 6 Electric Circuits Analysis with Lab 4
ENGR 8 Statics 3
ENGR 402 Programming for Scientists and Engineers 4
Or
ENGR 52 Programming and Problem-Solving in MATLAB 3
Or
CSCI 402 Programming Concepts and Methodology I 4
CHEM 1A General Chemistry 5
PHYS 4C Physics for Scientists and Engineers 4
Total Units: 42-46

¹ Student should carefully plan which of these courses to take based on their specific major and intended transfer institution(s). Some transfer institutions will have minimum requirements for transfer that will necessitate choosing more than 4 courses from this section.

² Student should complete the programming course specifically required by his or her transfer institution of choice. The choices are ENGR 40 Programming for Scientists and Engineers (4 units), ENGR 5 Programming and Problem Solving in MATLAB (3 units), and CSCI 40 Programming Concepts and Methodology I (4 units).

Advisor: Glaves

MECHANICAL, AEROSPACE, OR MANUFACTURING ENGINEERING

(Major #C.3014.CA)

CERTIFICATE OF ACHIEVEMENT

Program Goals:

A student earning this certificate of achievement will have completed the lower division STEM coursework necessary to transfer into a bachelor's degree program in Mechanical, Aerospace, or Manufacturing Engineering. In addition, a student earning this certificate of achievement will be prepared for engineering internship opportunities.

The college has heretofore had a successful program for general engineering transfer. Associated with this program is an existing AS degree called Engineering. Most engineering transfer students have heretofore transferred successfully without completing the requirements for this degree. The main reason for this has been that the high units loads in the program's STEM areas have precluded the students from taking enough general education units to meet the AS degree requirements. Engineering students at four-year universities have this same issue and are allowed by their institutions to spread their lower division general education coursework over all four years of their degree. This certificate will effectively allow our engineering transfer students to do the same thing while also earning a credential from our college that recognizes their achievement.

Our existing Engineering AS degree is being replaced by four new more specific certificates of achievement, this certificate of achievement being one of them. The new certificates of achievement recognize that students will likely transfer without fully completing lower division education requirements and also recognize the slight differences in lower division preparation between the different types of engineering BS degrees and guide the students accordingly. These new certificates of achievement proposals follow closely the recommendations of the California FDRG group for lower division engineering preparation. All courses in the new certificates of achievement are existing Clovis Community College courses that students have been using successfully to transfer to four-year engineering programs.

For students who wish to transfer in engineering and in addition earn an Associate of Science degree, the college has also developed four engineering AS degrees. These are essentially the same as the engineering certificates of achievement, but include the local general education requirements for our AS degrees.

Program learning outcomes:

A student who successfully completes this certificate of achievement will be able to:

1. Apply knowledge of mathematics, science, and engineering fundamentals to solve engineering problems.
2. Conduct laboratory experiments. Analyze and interpret the data resulting from these experiments.
3. Make basic design decisions concerning engineering problems.
4. Communicate solutions to engineering problems using effective oral, written, and graphical methods.
5. Demonstrate knowledge of the impact of engineering solutions in a global and societal context.
6. Use the techniques, skills, and software tools of modern engineering practice.

Catalog Description:

A student earning this certificate of achievement will have completed the lower division coursework necessary to transfer into a bachelor's degree program in Mechanical, Aerospace, or Manufacturing Engineering. In addition, a student earning this certificate of achievement will be prepared for engineering internship opportunities.

Required Core Courses	29
ENGR 10 Introduction to Engineering	2
MATH 5A Math Analysis I	5
MATH 5B Math Analysis II	4

MATH 6 Math Analysis III	5
MATH 17 Differential Equations and Linear Algebra	5
PHYS 4A Physics for Scientists and Engineers.....	4
PHYS 4B Physics for Scientists and Engineers.....	4
Select a minimum of four courses from the following¹	13-17
ENGR 2 Engineering Graphics	4
ENGR 4 Engineering Materials.....	3
ENGR 6 Electric Circuits Analysis with Lab.....	4
ENGR 8 Statics	3
ENGR 40 ² Programming for Scientists and Engineers	4
Or	
ENGR 5 ² Programming and Problem-Solving in MATLAB.....	3
Or	
CSCI 40 ² Programming Concepts and Methodology I	4
CHEM 1A General Chemistry.....	5
PHYS 4C Physics for Scientists and Engineers	4
Total Units:.....	42-46

¹ Student should carefully plan which of these courses to take based on their specific major and intended transfer institution(s). Some transfer institutions will have minimum requirements for transfer that will necessitate choosing more than 4 courses from this section.

² Student should complete the programming course specifically required by his or her transfer institution of choice. The choices are ENGR 40 Programming for Scientists and Engineers (4 units), ENGR 5 Programming and Problem Solving in MATLAB (3 units), and CSCI 40 Programming Concepts and Methodology I (4 units).

Advisor: Graves

INFORMATION SYSTEMS

CYBER SECURITY

(Major #C.6932.CA)

CERTIFICATE OF ACHIEVEMENT

Program Goals:

1. Design a network topology for a medium to large enterprise, while reading and understanding the fundamental goal of Cyber Security – Confidentiality, Integrity, and Availability (CIA) of data which is transmitted on a given network and governed by federal and state regulations, and procedures.
2. Design a network security system which is configured to protect a given network, while reading, researching and considering all elements of Cyber Security such as Physical, Communication, and Network security.
3. Design and configure an Intrusion Detection System (IDS), for a typical network for a medium to large enterprise, while using the typical tools and written instructions used by Cyber Security experts to perform network sniffing, monitoring, surveillance, and enumeration of data.

Objectives:

In the process of completing this program, students will learn the following main competencies to succeed in the field of cyber security and networking:

1. Install switches, routers and hubs, and configure them while reading instructions that outline specific protocols and addressing procedures which are at risk of intrusion.
2. Read, identify and distinguish the 3 key goals of network security: Confidentiality, Integrity, and Availability (CIA), in a medium to large computer network.
3. Implement security policies and standards as required for network protection and security.
4. Secure wireless networks, and test for intrusion, as well configuring for optimal protection such as MAC filtering and traffic encryption.
5. Install and configure Intrusion Detection Systems (IDS) to meet the designed and written requirements given the range of threats in any combination of Physical, Network, or Communications elements of a given network.
6. Determine “Best Practices” in HTTPS, DNS, SMTP, and FTP servers to “harden” these resources against outside attacks,

- through research, reading professional journals, and publications.
- Secure a given network using firewalls, and proxy servers, as well as specialized programs and tools.

Program learning outcomes:

- Evaluate the computer network and information security needs of an organization.
- Assess cybersecurity risk management policies in order to adequately protect an organizations critical information and assets.
- Evaluate the performance of security systems within an enterprise-level information system.
- Troubleshoot, maintain, and update an enterprise-level information security system.
- Implement continuous network monitoring and provide real-time security solutions.
- Formulate, update, and communicate short- and long-term organizational cybersecurity strategies and policies.

Catalog Description:

This program provides students with the knowledge, training, and hands-on experience to pursue a career and gain professional certification (CompTIA) as an Information Technology Cyber Security Technician professional in a business, government, or education environment. Students should have a basic understanding of computer networking prior to enrolling. Students completing this program of study will be able to enter the cyber security workforce in areas such as security analyst, or penetration tester with a comprehensive understanding of computer hardware, system software, networking essentials, as well as the intermediate skills to protect computer networks against malicious attack, and to use currently available tools to perform network testing, penetration, and assessment of target networks.

Required Core Courses	20-21
IS 15 Computer Concepts	3
IS 62 Computer & Communication Essentials – Troubleshooting and Maintenance.....	4
IS 63 Computer Networking Fundamentals	3
IS 70 Introduction to Information Systems Security	3
IS 71 Introduction to Cybersecurity: Ethical Hacking	3
IS 72 Computer Forensics Fundamentals.....	3
OT 17 Job Retention and Responsibilities	1
Or	
IS 66 Office and Customer Skills for Technicians	2
Total Units:	20-21

Advisor: Nabors

MECHATRONICS/INDUSTRIAL AUTOMATION

(Major #C.8391.CA)

CERTIFICATE OF ACHIEVEMENT

Program Goals:

- Prepare students to obtain an entry-level positions as industrial automation technicians in various local and regional industries.
- Provide foundational training and mentorship that enables students to transfer to related four-year baccalaureate programs.

Program learning outcomes:

Upon completion of this program students will be able to:

- Safety:** Identify the hazards associated with automated machinery and determine appropriate safety methods for working in an industrial environment.
- Troubleshooting:** Utilize electrical/mechanical troubleshooting and communication skills to diagnose, repair, test, and return to service failed components.
- Identify and Solve Problems:** Identify, analyze, and solve narrowly defined technical problems determining root cause with a general understanding of industry practices.
- System Design and Programming:** Use basic understanding of programming and industrial system design to enhance systems via incremental changes in software and/or in hardware modifications.
- Communication:** Apply written, oral and graphical communication skill in both technical and non-technical environments, and identify and use appropriate technical literature.

- 6. Teamwork, Professionalism and Quality: Function effectively as a team member, both individually and as group, demonstrating a commitment to quality, timeliness, and continuous improvement in a professional manner. Student Selection and Fees: The program is open to all Clovis Community College students. The cost of program to students would include the required textbooks and/or online educational resources.

Catalog Description

The certificate in Mechatronics/Industrial Automation is designed to prepare students for employment as entry-level industrial automation technicians. The program prepares students for careers in the design, operation, and maintenance of industrial automation systems focusing on the local industries that utilize these technologies, such as food production, petroleum production, fabrication, and logistics. This program focuses on the application of electronics and computer technology to industrial automation systems, including instrumentation and control, industrial robotics, and process control systems. Significant emphasis is placed on project-based learning facilitated by significant laboratory work.

Required Courses	26
MECH 2 Mechanical Systems.....	3
MECH 3 Electricity and Electronics (AC &DC).....	4
MECH 4 Electric Motors- Controls	4
MECH 5 Programmable Logic Controllers (PLCs).....	3
MECH 19V Cooperative Work Experience, Mechatronics/Industrial Automation	3
MECH 23 Instrumentation and Process Control	3
MECH 35 Industrial Communications Network.....	3
MECH 45 Industrial Automation Systems	3
Total Units:	26

Advisor: Graff

INACTIVATED ASSOCIATE IN SCIENCE DEGREES EFFECTIVE SPRING 2019

ENGINEERING

Engineering Associate in Science Degree (#C.3010.AS)

INFORMATION SYSTEMS

Information Systems – Help Desk Associate in Science Degree (#C.693H.AS)

NEW ASSOCIATE DEGREE FOR TRANSFER

PROGRAM EFFECTIVE SPRING 2019

(Pages 84-103 of 2018-2019 catalog)

ENVIRONMENTAL SCIENCE

ASSOCIATE IN SCIENCE IN ENVIRONMENTAL SCIENCE FOR TRANSFER DEGREE

(Major #C.6000.AS-T)

Program Goals:

The Associate in Science in Environmental Science for Transfer Degree is an interdisciplinary and multidisciplinary course of study that presents an overview of ecological issues from a scientific perspective. With a broad foundation across the natural sciences, the coursework examines the interrelated nature of environmental and social systems. This program is designed to equip students with the skills and tools to successfully use the scientific method while studying and solving environmental problems.

The Associate in Science in Environmental Science for Transfer degree is designed to demonstrate the breadth of content and disciplines that underlie environmental science and prepare students for advanced courses and projects that they will be presented with in their bachelor degree program. The Associate in Science in Environmental Science for Transfer degree promotes an understanding of basic operational principles underlying the biosphere and ecosystem through a transdisciplinary approach to understanding interaction between the biological and physical world and human institutions.

Program learning outcomes:

1. Investigate and describe specific evidence used to construct individual scientific principles.
2. Utilize scientific methodologies when solving a problem.
3. Demonstrate knowledge of how human activities impact the physical and biological environments.
4. Apply concepts, models, and quantitative techniques from mathematics, life sciences, and physical sciences to solve complex problems related to the natural world.
5. Analyze, interpret, and evaluate quantitative and qualitative evidence regarding the causes and consequences of human impacts on the environment.

Catalog Description:

Students will understand essential biological and physical processes, analyze human/environment interactions, understand different cultural perspectives on the environment, build critical thinking skills as the basis for decision making and sound value judgments, gain specialized analytical skills in at least one area of environmental science, build teamwork, leadership, conflict resolution skills, and develop effective communication skills.

Required Core Courses	13-14
BIOL 11A Biology for Science Majors I	5
CHEM 1A General Chemistry	5
CHEM 1B General Chemistry and Qualitative Analysis	5
List A	13-14
GEOL 1 Physical Geology	4
MATH 5A Math Analysis I	4
MATH 11 Elementary Statistics	4
Or	
STAT 7 Elementary Statistics	4
List B: Select two or three courses from the following	11
ECON 1B Principles of Microeconomics	3
PHYS 2A General Physics I	4
And	
PHYS 2B General Physics II	4

Or	
PHYS 4A Physics for Scientists and Engineers.....	4
And	
PHYS 4B Physics for Scientists and Engineers.....	4
Total units for the major.....	37-39

Advisor: Rutledge

MECHATRONICS/INDUSTRIAL AUTOMATION

(Major #C.8391.AS)

MECHATRONICS/INDUSTRIAL AUTOMATION ASSOCIATE IN SCIENCE DEGREE

Program Goals:

1. Prepare students to obtain an entry-level positions as industrial automation technicians in various local and regional industries.
2. Provide foundational training and mentorship that enables students to transfer to related four-year baccalaureate programs.

Program learning outcomes:

Upon completion of this program students will be able to:

1. Safety: Identify the hazards associated with automated machinery and determine appropriate safety methods for working in an industrial environment.
2. Troubleshooting: Utilize electrical/mechanical troubleshooting and communication skills to diagnose, repair, test, and return to service failed components.
3. Identify and Solve Problems: Identify, analyze, and solve narrowly defined technical problems determining root cause with a general understanding of industry practices.
4. System Design and Programming: Use basic understanding of programming and industrial system design to enhance systems via incremental changes in software and/or in hardware modifications.
5. Communication: Apply written, oral and graphical communication skill in both technical and non-technical environments, and identify and use appropriate technical literature.
6. Teamwork, Professionalism and Quality: Function effectively as a team member, both individually and as group, demonstrating a commitment to quality, timeliness, and continuous improvement in a professional manner.

Student Selection and Fees: The program is open to all Clovis Community College students. The cost of program to students would include the required textbooks and/or online educational resources.

Catalog Description:

The Mechatronics/Industrial Automation Associate in Science degree in is designed to prepare students for employment as entry-level industrial automation technicians. The program prepares students for careers in the design, operation, and maintenance of industrial automation systems focusing on the local industries that utilize these technologies, such as food production, petroleum production, fabrication, and logistics. This program focuses on the application of electronics and computer technology to industrial automation systems, including instrumentation and control, industrial robotics, and process control systems. Significant emphasis is placed on project-based learning facilitated by significant laboratory work.

Required Core Courses.....	26
MECH 2 Mechanical Systems.....	3
MECH 3 Electricity and Electronics (AC & DC).....	4
MECH 4 Electric Motors – Controls.....	4
MECH 5 Programmable Logic Controllers (PLCs).....	3
MECH 19V Cooperative Work Experience, Mechatronics/Industrial Automation.....	3
MECH 23 Instrumentation and Process Control.....	3
MECH 35 Industrial Communications Networks.....	3
MECH 45 Industrial Automation Systems.....	3
Total units for the major.....	26

Advisor: Graff

NEW COURSES EFFECTIVE FALL 2018

(Pages 104-153 of 2018-2019 catalog)

HONORS (HONORS)

2A HONORS SEMINAR: COMMUNICATION AND CRITICAL THINKING

1 unit, 1 lecture hour

ADVISORIES: Eligibility for English 1A or English 1AH.

A seminar exploring a path of inquiry under the overall topic of communications or critical thinking. This seminar is intended for honors students of the Clovis Community College Honors program to stimulate intellectual curiosity, discussion, and analysis. This seminar may include field trips and guest speakers. (A, CSU)

CORRECTED COURSES EFFECTIVE FALL 2018

(Pages 104-153 of 2018-2019 catalog)

INFORMATION SYSTEMS (IS)

70 INTRODUCTION TO INFORMATION SYSTEMS SECURITY

3 units, 3 lecture hours, 1 lab hour (Pass/No Pass)

ADVISORY: IS 63, CCNA, CompTIA Networking +, or experience with networking. Eligibility for English 1A.

Correction: Corrected lab hours from 2 to 1

COURSES APPROVED FOR UNIVERSITY OF CALIFORNIA TRANSFER COURSE ARTICULATION (UCTCA)

EFFECTIVE FALL 2018

(Pages 104-153 of 2018-2019 catalog)

The following courses have been approved for University of California Transfer Course Articulation (UCTCA) effective with the Fall 2018 semester.

1. Anthropology 4, Introduction to Archaeology
2. Art 8, Beginning Figure Drawing
3. Art 26, Arts of Africa, Oceania, Indigenous North America, and the Pre-Columbian Americas
4. Communication 2, Interpersonal Communication
5. Dance 12A, Ballet
6. Engineering 5, Programming and Problem-Solving in MATLAB
7. Engineering 10, Introduction to Engineering
8. Geography 1, Physical Geography
9. Geography 2, Cultural Geography
10. Geography 10, Introduction to Geographic Information Systems and Techniques, with Lab
11. Geography 20, California Geography
12. History 31, A Survey of the History of Africa
13. History 33, A Survey of Latin American History
14. Physical Education 32B, Competitive Cross-Country
15. Physical Education 32C, Off-Season Conditioning for Cross-Country

REVISED COURSES EFFECTIVE SPRING 2019

(Pages 104-153 of 2018-2019 catalog)

GEOGRAPHY (GEOG)

6 World Regional Geography

3 units, 3 lecture hours (Pass/No Pass)

ADVISORY: Eligibility for English 1A.

Change: Corrected grading basis to Pass/No Pass option.

REVISED COURSES EFFECTIVE SUMMER 2019

(Pages 104-153 of 2018-2019 catalog)

INFORMATION SYSTEMS (IS)

50A Introduction to Game Programming

This course introduces students to game development concepts, including the theory of game design, mathematical concepts needed to create 3D games, and how to create a new game using a game engine.

Change: Removed prerequisite of Information Systems 15, changed advisories to, "Information Systems 15 or Computer Science 40, Mathematics 4A, and Eligibility for English 125 and 126;" revised catalog description, student learning outcomes, objectives, lecture and lab content, and updated textbooks.

50B Intermediate Game Programming

This course provides students with intermediate-level game design, level creation, and programming skills. Over the course of the semester students will cooperatively build a moderately advanced game for the PC or web.

Change: Removed prerequisite of Information Systems 15 and added prerequisite of Information Systems 50A, removed all advisories, revised catalog description, student learning outcomes, objectives, lecture and lab content, and updated textbooks.

CHANGES TO PERSONNEL EFFECTIVE SPRING 2019

(Pages 157 - 163 of 2018-2019 catalog)

Board of Trustees

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CHANGES TO CLOVIS COMMUNITY COLLEGE ADMINISTRATION

Interim Vice-President of Instruction – Spring 2019 Dr. Kimberlee Messina

Clovis Community College Administration

Numbers in parenthesis indicate year of appointment at State Center Community College District.

Remove:

DORSEY-ROBINSON, SYLVIA (2018)

Interim Vice-President of Instruction (1 semester temp)

B.S., M.S., Old Dominion University, Norfolk VA

Add:

MESSINA, KIMBERLY S. (2019)

Interim Vice-President of Instruction (1 semester temp)

Ed.D., University of California, Davis

M.A. B.A., California State University, Sacramento



Creating Opportunities
One Student at a Time



Clovis Community College is the college of choice for academic excellence, innovation, and student achievement.



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