Accounting

Accounting

Program Description
In recent years, accounting has been one of the fastest growing professions, and the monetary rewards for the individual just entering the field and those achieving corporate positions are among the highest. Accountants deal with the financial condition of a company, an individual, or an organization. An accountant is an analyst who is employed because of expertise in financial matters.

Certificate of Achievement and Associate in Science Degree
A Certificate of Achievement can be obtained upon completion of the 29-unit major with a minimum grade of C in each course. The Associate in Science Degree can be obtained by completing the 29-unit major, general education requirements, and electives. All courses in the major must be completed with a minimum grade of C or a P if the course is taken on a Pass/No Pass basis.

Program Outcomes
Students who earn the Accounting Associate Degree or transfer with a focus on accounting will be able to:

1. Demonstrate the use of the accounting cycle to prepare the income statement, statement of owner's equity, and balance sheet while applying the generally accepted accounting principles and concepts.
2. Analyze and evaluate managerial decisions using basic managerial accounting concepts and theory.

Students who earn the Accounting Certificate will be able to:

1. Demonstrate the use of the accounting cycle to prepare the income statement, statement of owner's equity, and balance sheet while applying the generally accepted accounting principles and concepts.

REQUIRED COURSES	**Units**
ACCT 001 Principles of Accounting - Financial	4
ACCT 002 Principles of Accounting - Managerial	4
ACCT 050 Computer Accounting	3
ACCT 176 Intermediate Accounting	3
ACCT 177 Cost Accounting	3
ACCT 183 Principles of Income Tax	3
CIS 001 Introduction to Computer Science	3
or	
CIS 050 Microcomputer Applications	3
CIS 066 Microsoft Word	3
CIS 073 Microsoft Excel	3
Required Major Total units.	**29**

CSU General Education or IGETC Pattern units	**37-39**
Total Degree Units CSU-GE or IGETC	**66-68**
Solano General Education	**21**
Electives (as needed to reach 60 units)	**10**
Total Degree Units Solano GE	**60**

This is a Gainful Employment Program. For additional information, please visit ***http://www.solano.edu/gainful_employment/*** and select "Accounting."

Account Clerk Job-Direct Low Unit Certificate

All courses in the major must be completed with a minimum grade of C.

REQUIRED COURSES	**Units**
ACCT 001 Principals of Accounting-Financial	4
BUS 097 Work Readiness	1.5
CIS 073 Microsoft Excel	3
OT 162 Ten-Key	1
Total units	**9.5**

Accounting

ACCT 001 Principles of Accounting - Financial 4.0 Units
Transferable to UC/CSU
Hours: 64-72 lecture
A study and analysis of accounting as an information system, its importance and use by external users such as investors, creditors, and others making decisions. The course covers the accounting cycle, application of the generally accepted accounting principles, financial reporting, and statement analysis, including issues relating to the valuation of assets, liabilities, and equity, the recognition of revenue and expenses, cash flow, internal controls, ethics, and International Financial Reporting Standards. *(C-ID ACCT 110)*

ACCT 002 4.0 Units
Principles of Accounting - Managerial
Prerequisite: ACCT 001 with a minimum grade of C
Course Advisory: Working knowledge of Excel
Transferable to UC/CSU
Hours: 64-72 lecture
A study and analysis of how managers use accounting information in decision-making, planning, directing operations, and controlling, to include the following: terms and concepts; job order cost accounting; process cost accounting; departmental accounting; product analysis; pricing decisions; flexible budgeting; standard cost analysis; cost-volume-profit analysis; preparation of operational, capital and financial budgets; and analysis of financial reporting in manufacturing and service environments. *(C-ID ACCT 120)*

ACCT 050 Computer Accounting 3.0 Units
Prerequisite: ACCT 001
Transferable to CSU
Hours: 48-54 lecture
A hands-on course covering a complete computerized accounting system. Topics include a review of basic accounting concepts, preparation of business reports and graphs, and the creation of an accounting system for a company.

ACCT 176 Intermediate Accounting 3.0 Units
Prerequisite: ACCT 001 with a minimum grade of C
Course Advisory: Working knowledge of Excel
Hours: 48-54 lecture
Accounting theory as applied to common issues faced by accountants in today's businesses. Lecture, group-study, and computer-based study emphasize the conceptual framework, the four major financial statements, footnotes, and present-value concepts. The class helps prepare the student for an entry-level position in a professional accounting career.

ACCT 177 Cost Accounting 3.0 Units
Prerequisite: ACCT 002 with a minimum grade of C
Hours: 48-54 lecture
A comprehensive study and analysis of manufacturing costs as they apply to planning, controlling, and determining unit costs, inventory valuation, and income.

ACCT 180 Introduction To Accounting 3.0 Units
Hours: 48-54 lecture
A study and analysis of the accounting cycle for a merchandising business and professional enterprises, payroll accounting, accruals and deferrals, accounting systems, error correction, and financial reporting.

ACCT 183 Principles Of Income Tax 3.0 Units
Hours: 48-54 lecture
A comprehensive study and analysis of the principles of federal income tax applied to individual, partnership, informational, and corporate tax returns.

C-ID Designation may change periodically visit c-id.net/courses/search for current designation or consult with your counselor

Advanced Manufacturing

Automation Technology

Program Description
The Automation Technology program provides an introduction to industrial automation including digital electronic, process control and programming of PLCs, robotics and SCADA systems. The program examines applications and examples of automated manufacturing systems including both the theory and function of digital and industrial electronics, hydraulics and pneumatics, robotics systems, digital programming languages and alarm management.

Certificate of Achievement and Associate in Science Degree
A Certificate of Achievement can be obtained upon completion of the 27-28-unit major. The Associate in Science Degree can be obtained by completing the 27-28-unit major, SCC General Education - Option A, and electives. All courses for the major must be completed with a minimum grade of C or a grade of P if the course is taken on a Pass/No Pass basis

Program Outcomes
Students who complete the Automation Technology Certificate of Achievement/Associate Degree will be able to:

1. Describe and apply current safety rules and regulations while working on various manufacturing and automation systems.
2. Configure and program manufacturing systems and modules including Programmable Logic Controllers (PLCs), Human Machine Interfaces (HMIs), and industrial robots.
3. Demonstrate an understanding of electrical systems and devices related to manufacturing and automation systems

REQUIRED COURSES	**Units**
CIS 001 Introduction to Computer Science	3
IT 151 Vocational Mathematics	3
IT 101 Introduction to Mechatronics	3
MT 162 Robotic Manufacturing Systems	3
MT 163 Advanced Robotics Manufacturing Systems	3
MT 164 Programmable Logic Controllers	3
MT 165 Advanced Programmable Logic Controllers	3
One course from Electronics List	3-4
Three units from Elective List	3
Required Major Total Units	**27-28**

Electronics List: (select one course)	**Units**
MT 121 Electronics	4
MT 122 Principles of Digital Electronics	3

Elective List (select three units)	**Units**
DRFT 151 3D Modeling with Fusion 360	1.5
IT 174 Making Things 4 – Basic Electronics	1
MT 166 CNC Programming	3
MT 132 Principles of Fluid Power Systems	3
MT 142 Principles of Electrical Machinery	3
OCED 090 Occupational Work Experience	1-3
OCED 070 Occupational Soft Skills	1.5

Solano General Education	**21**
Electives (as needed to reach 60 units)	**11-12**
Total Degree Units Solano GE	**60**

This is a Gainful Employment Program. For additional information, please visit ***http://www.solano.edu/gainful_employment/*** and select "Automation Technology."

Advanced Manufacturing

Maintenance Technician

Program Description
The Maintenance Technician certificate introduces the student to basic electrical and mechanical components used in basic manufacturing systems. Topics covered include functional descriptions, physical properties and operation of electrical and mechanical components and devices. Industrial components and preventative maintenance requirements are also investigated. Students receive hands-on practical experience in the use and application of basic electrical instruments and mechanical measuring devices. An emphasis is placed on safe work habits and procedures, systematic preventive maintenance, localization and correction of malfunctions, and troubleshooting techniques.

Certificate of Achievement
The Certificate of Achievement can be obtained by completing the 18-unit major. All courses for the major must be completed with a minimum grade of C or a grade of P if the course is taken on a Pass/No Pass basis.

Program Outcomes
Students who complete the Automation Technology Certificate of Achievement will be able to:

1. Describe and apply current safety rules and regulations while working on various industrial equipment and machinery.
2. Understand the physical operation of electro-mechanical components such as AC and DC motors, solenoids, relays and various sensors used in basic manufacturing systems.
3. Describe and perform troubleshooting, preventative maintenance and documentation methods associated with basic manufacturing systemstanding of electrical systems and devices related to manufacturing and automation systems

REQUIRED COURSES	**Units**
IT 101 Introduction to Mechatronics	3
IT 151 Vocational Mathematics	3
MT 130 Principles of Mechanical Power Systems	3
MT 132 Principles of Fluid Power Systems	3
MT 140 Principles of Industrial Electrical Systems	3
MT 142 Principles of Electrical Machinery	3
Required Major Total Units	**18**

This is a Gainful Employment Program. For additional information, please visit ***http://www.solano.edu/gainful_employment/*** and select "Maintenance Technician."

Advanced Manufacturing

Mechatronics

Program Description
Mechatronics is the study of electronics, mechanics, electrical, and control systems to produce a well-rounded technician capable of handling the complex maintenance and operations tasks demanded by modern manufacturing, packaging, processing, transportation, and communication industries.

Individuals with well-rounded knowledge of how electromechanical and automated systems work together are in high demand and qualify to enter occupations such as a technician or specialist in industrial maintenance, automation, engineering, or in testing/research

Certificate of Achievement and Associate in Science Degree
A Certificate of Achievement can be obtained upon completion of the 36-37-unit major. The Associate in Science Degree can be obtained by completing the 36-37-unit major, and SCC General Education - Option A, and electives.

Program Outcomes
Students who complete the Mechatronics Certificate of Achievement/Associate Degree will be able to:

1. Demonstrate safe work habits around mechanical and electrical industrial equipment.
2. Troubleshoot and solve basic problems involving electrical wiring, connections, and distribution at both the component level.
3. Troubleshoot and solve basic problems involving mechanical and fluid power systems.
4. Demonstrate proficiency in relating and integrating math and science concepts with basic systems found in industry.
5. Demonstrate proficiency in integrating computer use with industrial machinery and control systems

REQUIRED COURSES	**Units**
CIS 001 Introduction to Computer Science	3
IT 101 Introduction to Mechatronics	3
IT 151 Vocational Mathematics	3
MT 130 Principles of Mechanical Power Systems	3
MT 132 Principles of Fluid Power Systems	3
MT 140 Principles of Industrial Electrical Systems	3
MT 142 Principles of Electrical Machinery	3
MT 162 Robotic Manufacturing Systems	3
MT 164 Programmable Logic Controllers	3
One course from Electronics List	3-4
6 -7 units from List A	6
Required Major Total Units	**36-37**

Electronics List: (select one course)	**Units**
MT 120 Principles of Analog Electronics	3
MT 121 Electronics	4
MT 122 Principles of Digital Electronics	3

List A: (select 6 units)	**Units**
DRFT 050 Basic Drafting	1.5
DRFT 079 Blueprint Reading	3
DRFT 151 3D Modeling with Fusion 360	1.5
IT 050 Alternative Energy Technologies	3
IT 120 Electrical Safety	3
IT 140 Industrial Materials	3
IT 174 Making Things 4 – Basic Electronics	1
MT 163 Advanced Robotics Manufacturing Systems	3
MT 165 Advanced Programmable Logic Controllers	3
MT 166 CNC Programming	3
OCED 070 Occupational Soft Skills	1.5
OCED 090 Occupational Work Experience	1-6

Solano General Education	**21**
Electives (as needed to reach 60 units)	**2-3**
Total Degree Units Solano GE	**60**

This is a Gainful Employment Program. For additional information, please visit ***http://www.solano.edu/gainful_employment/*** and select "Mechatronics."

Industrial Technology

IT 050 Alternative Energy Technologies 3.0 Units
Transferable to CSU
Hours: 48-54 lecture
Introduces the topics of power generation, transmission, and consumption of both conventional and alternative energy sources. Students will be exposed to an in-depth analysis of the design and use of fossil fuel based systems and then compare those systems to alternatives. Energy use in transportation, industrial, commercial, and residential applications will be examined.

IT 101 Introduction to Mechatronics 3.0 Units
Hours: 32-36 lecture, 48-54 lab
Provides an understanding of how mechatronic technology in our lives works using only basic science and math concepts. This course explores basic mechatronic systems commonly found in industry and focuses on their principles of operation, histories, and relationships to one another. Topics will include an exploration of and science behind basic mechanics, fluid power, electrical power, and control systems. Students will learn about these mechatronic technologies through lecture, classroom discussion, and laboratory experiments and projects.

IT 110 Modern Welding 3.0 Units
Hours: 32-36 lecture, 48-54 lab
Acquaints the student with MIG and TIG welding methods and knowledge necessary to weld in all positions utilizing the mild steel, low hydrogen electrodes, metal inert gas and tungsten inert gas techniques.

IT 111 Modern Welding 3.0 Units
Prerequisite: IT 110
Hours: 32-36 lecture, 48-54 lab
Aquaints the student with MIG and TIG welding methods and knowledge necessary to weld in all positions utilizing the mild steel, low hydrogen electrodes, metal inert gas and tungsten inert gas techniques.

IT 120 Electrical Safety 1.0 to 3.0 Units
Hours: 16-54 lecture
A survey of the proper use, handling, and hazards associated with electrical and electronic equipment. The student will be introduced to the current generally accepted (National Electrical Safety Code) safety practices and procedures associated with power transmission, industrial, and consumer electrical and electronic equipment. This is an Open Entry/Open Exit course. Students may take this course up to the maximum number of units over multiple semesters.

IT 140 Industrial Materials 3.0 Units
Hours: 32-36 lecture, 48-54 lab
A broad overview of the characteristics and comparative qualities of naturally occurring, alloyed and man-made materials used in industry. Testing and practical use of materials are required.

IT 151 Vocational Mathematics 3.0 Units
Hours: 48-54 lecture
Focuses on mathematical functions, plane and solid geometry, measurement systems, algebra, and trigonometry applied to specific vocational areas.

IT 171 Making Things 1 - 3D Technology 1.0 Unit
Hours: 16-18 lecture, 8-9 lab
A hands-on course using 3-Dimensional Computer Aided Drafting (CAD) tools to create objects with a 3D printer and Computer Numeric Controlled (CNC) machine. Students will gain a basic understanding of design to product workflow as well as the basics of 3D printing and CNC machines, including applications and use in industry.

IT 172 Making Things 2 - 2D Technology 1.0 Unit
Hours: 16-18 lecture, 8-9 lab
A hands-on course using 2-Dimensional Computer Aided Drafting (CAD) tools to create objects with a laser cutter and vinyl cutter. Students will gain a basic understanding of safety, design, and project workflow as well as the basics of each machine's uses in industry.

IT 173 Making Things 3 - Tool Use and Safety 1.0 Unit
Hours: 16-18 lecture, 8-9 lab
Introduction to Maker Space terminology and safety standards for hand and power tools in a laboratory setting. Students learn proper usage and applications of common hand and power tools pertinent to Maker Space laboratory and some industrial settings.

IT 174 Making Things 4 - Basic Electronics 1.0 Unit
Hours: 16-18 lecture, 8-9 lab
A hands-on introduction to basic electronics and microcontrollers used in a Maker Space environment. Students will learn basic soldering techniques, electronic terminology and circuitry, and simple programming of devices such as Arduino and Raspberry Pi.

IT 175 Maker Space Technology Lab 1.5 Units
Prerequisite: A minimum grade of C in IT 171, IT 172, IT 173, and IT 174
Hours: 72-81 lab
Utilize the full range of Maker Space equipment to create and design projects in the Maker Space laboratory. Students will create designs using instructor-given parameters in order to gain more skill on machines used in IT 171, IT 172, IT 173 and IT 174.

IT 176 Maker Space Technology Lab II 1.5 Units
Prerequisite: A minimum grade of C in IT 175 and IT 179
Hours: 72-81 lab
Utilize the full range of Maker Space equipment to create and design projects in the Maker Space laboratory. An emphasis will be given to multiple tooled projects (3D printing and electronics or laser cutting and woodworking, for example). Students will create designs using instructor-given parameters, plan projects and analyze results.

IT 179 1.0 Unit
Making Things 5 - Sewing Fundamentals
Hours: 16-18 lecture, 8-9 lab
Introduces students to industry sewing techniques with an emphasis on safe and appropriate operation of consumer and industrial sewing machines and tools. Students produce projects by applying the techniques taught in the course as a foundation to the understanding of pattern construction, manufacturing, and production. Designed for students with little to no sewing experience.

IT 181 Introduction to Drones 3.0 Units
Hours: 48-54 lecture
An introduction to Drones and Unmanned Aerial Vehicles. Provides a starting point to use drones for multiple purposes and careers. Topics include the basics of aviation and flight, classes of drone systems, applications, required equipment, maintenance, mission planning, control systems, recovery systems and regulations. Intended for those looking to become licensed to use drones for commercial purposes such as aerial cinematography, photography, surveying, and imaging.

IT 182 Basic Drone Operations 3.0 Units
Prerequisite: IT 181 with a minimum grade of C
Hours: 32-36 lecture, 48-54 lab
Basic flight operation, drone controls, and equipment as well as safety procedures. Students will understand the varied uses of unmanned aviation vehicles (UAV) and learn the Federal Aviation Administration (FAA) guidelines for commercial usage.

IT 183 Drone Photography and Video 3.0 Units
Prerequisite: IT 182 with a minimum grade of C
Hours: 32-36 lecture, 48-54 lab
Covers the use of cameras and sensors to capture and analyze aerial photos and video. Camera and sensor mounting, settings, accessories, image analysis, options, software, and best practices will be explored.

IT 184 Remote Pilot Exam Prep 1.5 Units
Prerequisite: IT 182 with a minimum grade of C.
Hours: 24-27 lecture.
Covers the aeronautical knowledge required to fly drones for commercial purposes. Prepares the student to take the Federal Aviation Administration (FAA) Part 107 examination.

Maintenance Technology

MT 120 Principles of Analog Electronics 3.0 Units
Hours: 32-36 lecture, 48-54 lab
Introduces the topic of analog electronics as it applies to mechatronics. Studies include an introduction to DC and AC circuitry as well as advanced electronic components, instruments used in the operation, installation, and troubleshooting of electronic systems, schematic diagrams, and breadboarding. Students will construct several kits as part of the class.

MT 121 Electronics 4.0 Units
Hours: 40-45 lecture, 72-81 lab
Introduces the topics of analog and digital electronics. Studies include an introduction to DC and AC circuitry as well as specific analog and digital electronic components, circuits, and instruments used in the operation, installation, and troubleshooting of electronic systems.

MT 122 Principles of Digital Electronics 3.0 Units
Hours: 32-36 lecture, 48-54 lab
Introduces the topic of digital electronics as it applies to mechatronics. Studies include an introduction to digital numbering systems, digital codes and logic, registers, memories, Boolean Algebra, and integrated circuits as well as advanced topics in computerized control systems. Students will construct several kits as part of the class.

MT 130 3.0 Units
Principles of Mechanical Power Systems
Hours: 32-36 lecture, 48-54 lab
Introduces the topic of mechanical power systems and mechanical power transmission as it applies to mechatronics. Studies include mechanical theory, mechanical power, thermal systems, hand tools, precision measuring instruments, and mathematics applied to mechanical power systems. Includes studies in manufacturing technology using modern manufacturing equipment and software simulators.

Advanced Manufacturing

MT 132 Principles of Fluid Power Systems 3.0 Units
Hours: 32-36 lecture, 48-54 lab
Introduces the topic of hydraulic and pneumatic systems as they apply to mechatronics. Studies include fluid power systems theory, pumps, actuators, accumulators, filters, meters, valves, control devices, and mathematics applied to fluid power systems. Includes studies in manufacturing technology using modern manufacturing equipment and software simulators.

MT 140 3.0 Units
Principles of Industrial Electrical Systems
Hours: 32-36 lecture, 48-54 lab
Introduces the topic of DC, single-phase and three-phase AC circuits as they apply to mechatonics. Introduces commercial/industrial electrical installations that meet National Electrical Code requirements. Students will complete labs and wiring projects. Lab, electrical and worksite safety is emphasized.

MT 142 Principles of Electrical Machinery 3.0 Units
Prerequisite: MT 120 or MT 140 with a minimum grade of C
Hours: 32-36 lecture, 48-54 lab
Introduces the topic of electrical machinery as it applies to mechatronics. Studies include direct-current and alternating-current generators, alternators, transmission equipment, and motors. Students will complete labs and electrical machinery projects. Lab, electrical and worksite safety is emphasized.

MT 162 Robotic Manufacturing Systems 3.0 Units
Hours: 32-36 lecture, 48-54 lab
Presentation of physical principles applied to automated manufacturing systems. Students will develop solutions to manufacturing problems using robots, programmable logic controllers (PLC) and computer numerical control (CNC) manufacturing machines. Students will also apply safety-oriented work habits to the completion of laboratory projects while working individually and in groups.

MT 163 3.0 Units
Advanced Robotics Manufacturing Systems
Prerequisite: MT 162 with a minimum grade of C
Hours: 32-36 lecture, 48-54 lab
Advanced programming, vision recognition systems, PLC and HMI integration, and hardware concepts associated with industrial robots. Students in this course will program several robots to work together and with other common automation systems to increase the efficiency and throughput of industrial automation processes. Robot safety procedures including Dual Check Safety (DCS) and other industry standards will be emphasized throughout the course.

MT 164 Programmable Logic Controllers 3.0 Units
Hours: 32-36 lecture, 48-54 lab
Introduces the student to process control via Programmable Logic Controllers (PLC's). Content includes the popular Allen-Bradley PLC systems and the most common command instructions for the RSLogix 5, RSLogix 500, RSLogix 5000, Micrologix 1000, SLC5 and SLC 500 as well as ControlLogix processors. Troubleshooting and electrical safety are emphasized.

MT 165 3.0 Units
Advanced Programmable Logic Controllers
Prerequisite: MT 164 with a minimum grade of C
Hours: 32-36 lecture, 48-54 lab
For PLC (Programmable Logic Controllers) programmers, electricians, maintenance and instrumentation technicians, automation students and professionals that have some experience with basic PLC programming. Topics include Tag-Based programming with ControlLogix PLCs along with the RSLogix 5000 programming suite, process control methods, variable frequency drives, SCADA (Supervisory Control and Data Aquisition), and HMI's (Human Machine Interface).

MT 166 CNC Programming 3.0 Units
Course Advisory: DRFT 151 with a minimum grade of C
Hours: 32-36 lecture, 48-54 lab
Operational and theory of Computer Numerical Control (CNC) machinery, with a focus on skill building, safety practices and maintenance to work as an operator. Includes integration of Computer-Aided Design and Computer-Aided Manufacturing (CAM) as well as manual programming techniques.

MT 167 Advanced CNC Programming 3.0 Units
Prerequisite: MT 166 with a minimum grade of C
Hours: 32-36 lecture, 48-54 lab
Exposes the beginning CNC Machinist to advanced programming techniques for creating basic macro programs, tool and work probing methods, sub programs, sub-routines, 2-axis lathes, 3 + 2 axis mill programming, and 5 axis mill simultaneous programming. Includes preparatory skill and knowledge development in preparation for Haas CNC Operator and/or National Institute for Metalworking Skills (NIMS) certification exams.

Aeronautics

Airframe Maintenance Technician

Program Description
Practical and theoretical knowledge in basic maintenance techniques, plus the special requirements of airframe or airframe & powerplant work. Upon satisfactory completion of the required courses, the student is eligible to take the Federal Aviation Administration written oral and practical examination for airframe or powerplant license.

Certificate of Achievement and Associate in Science Degree
A Certificate of Achievement can be obtained upon completion of the 41-unit major. An Associate in Science Degree can be obtained upon completion of the units required for the 41-unit Airframe major and SCC General Education- Option A.

A combination Airframe & Powerplant Maintenance Technician Certificate of Achievement can be obtained upon completion of the 41-unit airframe major and 21-unit Powerplant courses. An Associate in Science Degree can be obtained upon completion of the 62-unit Airframe and Powerplant courses and SCC General Education - Option A.

The Federal Aviation administration (FAA) requires 1150 hours (four full semesters) of instruction to complete the Airframe curriculum (An additional 750 hours, two full semesters for Airframe and Powerplant). All courses in the major must be completed with a minimum grade of C or a P if the course is taken on a Pass/No Pass basis.

Program Outcomes
Students who complete the Airframe Maintenance Technician or Airframe & Powerplant Maintenance Technician Certificate of Achievement/Associate Degree will be able to:

1. Demonstrate proficient, entry-level aviation maintenance skills in airframe and powerplant with emphasis on aircraft engines, aircraft structures, and aircraft systems.
2. Have a working knowledge to inspect, maintain, service and repair aircraft electrical, engine (piston and turbine), airframe structure, flight control, hydraulic, pneumatic, fuel, navigation and instrument systems and other aircraft components specified by Federal Aviation Regulation Part 147.
3. Obtain the knowledge and skills to pass oral, practical and written Federal Aviation Administration (FAA) examination in general and airframe/powerplant subjects.

REQUIRED COURSES	**Units**
AERO 055 Aviation Maintenance Technician - General Aircraft Subjects	10
AERO 102 Aviation Maintenance Technician - Airframe Structures	10
AERO 103 Aviation Maintenance Technician - Basic Electricity and Hydraulics	10
AERO 105 Aviation Maintenance Technician - Airframe Systems	10
AERO 118 Aviation Maintenance Technician - FAA Airframe Test Preparation	1
Required Major Total units	**41**

Combined Airframe & Powerplant Maintenance Technician Required Courses (In addition to the 41.0 Units listed above)	**Units**
AERO 106 Aviation Maintenance Technician - Powerplant Reciprocating Engines	10
AERO 107 Aviation Maintenance Technician - Powerplant Turbine Engines	10
AERO 119 Aviation Maintenance Technician - FAA Powerplant Test Preparation	1
Required Major Total units	**21**
Solano General Education	**21**
Electives (as needed to reach 60 units)	**0**
Total Degree Units Airframe	**62**
Total Degree Units Airframe/Powerplant	**83**

These programs are Gainful Employment Programs. For additional information, please visit ***http://www.solano.edu/gainful_employment/*** and select "Aeronautics Airframe Maintenance Technician," or "Aeronautics Airframe & Powerplant Maintenance Technician."

Aeronautics

Powerplant Maintenance Technician

Program Description
Practical and theoretical knowledge in basic maintenance techniques, plus the special requirements of either powerplant or airframe & powerplant work. Upon satisfactory completion of the required courses, the student is eligible to take the Federal Aviation Administration written, oral, and practical examination for powerplant or airframe & powerplant license.

Certificate of Achievement and Associate in Science Degree
A Certificate of Achievement can be obtained upon completion of the 41-unit major. An Associate in Science Degree can be obtained upon completion of the 41-unit Powerplant major and SCC General Education - Option A.

A combination Airframe & Powerplant Maintenance Technician Certificate of Achievement can be obtained upon completion of the 41-unit Powerplant major and 21-unit Airframe courses. An Associate in Science Degree can be obtained upon completion of the 62-unit Airframe and Powerplant courses and SCC General Education - Option A.

The Federal Aviation Administration (FAA) requires 1150 hours (four full semesters) of instruction to complete the Powerplant curriculum (An additional 750 hours, two full semesters for Airframe and Powerplant). All courses in the major must be completed with a minimum grade of C or a P if the course is taken on a Pass/No Pass basis.

Program Outcomes
Students who complete the Powerplant Maintenance Technician or Airframe & Powerplant Maintenance Technician Certificate of Achievement/Associate Degree will be able to:

1. Demonstrate proficient, entry-level aviation maintenance skills in powerplant or airframe and powerplant with emphasis on aircraft engines, aircraft structures, and aircraft systems.
2. Have a working knowledge to inspect, maintain, service and repair aircraft electrical, engine (piston and turbine), airframe structure, flight control, hydraulic, pneumatic, fuel, navigation and instrument systems and other aircraft components specified by Federal Aviation Regulation Part 147.
3. Obtain the knowledge and skills to pass oral, practical and written Federal Aviation Administration (FAA) examination in general and airframe/powerplant subjects.

REQUIRED COURSES	**Units**
AERO 055 Aviation Maintenance Technician - General Aircraft Subjects	10
AERO 103 Aviation Maintenance Technician - Basic Electricity and Hydraulics	10
AERO 106 Aviation Maintenance Technician - Powerplant Reciprocating Engines	10
AERO 107 Aviation Maintenance Technician - Powerplant Turbine Engines	10
AERO 119 Aviation Maintenance Technician - FAA Powerplant Test Preparation	1
Total units	**41**

Combined Airframe & Powerplant Maintenance Technician Certificate or Degree Required Courses (In addition to 750 hours, 2 semesters)	**Units**
AERO 102 Aviation Maintenance Technician - Airframe Structures	10
AERO 105 Aviation Maintenance Technician - Airframe Systems	10
AERO 118 Aviation Maintenance Technician - FAA Airframe Test Preparation	1
Total Units	**21**
Solano General Education	**21**
Electives (as needed to reach 60 units)	**0**
Total Degree Units Powerplant	**62**
Total Degree Units Airframe/Powerplant	**83**

These programs are Gainful Employment Programs. For additional information, please visit ***http://www.solano.edu/gainful_employment/*** and select "Aeronautics Powerplant Maintenance Technician" or "Aeronautics Airframe & Powerplant Maintenance Technician."

Aeronautics

AERO 055 **10.0 Units**
Aviation Maintenance Technician - General Aircraft Subjects
Transferable to CSU
Hours: 80-90 lecture, 240-270 lab
Presents the fundamentals necessary for the advanced study in Aeronautics. It will define the history of aviation and powerplant operation, and the study of flight: aircraft weight and balance, ground operation and servicing, mathematics, maintenance forms and records, basic physics, maintenance publication, and mechanic privileges and limitation. Safety is stressed throughout the course. In addition, this course is a study of the methods and processes used in the production of an aircraft, including shop safety. The course includes fundamentals in the use of hand tools and power equipment, aircraft drawings, cleaning, corrosion control; and the processes used by the manufacturers for aircraft construction.

AERO 102 **10.0 Units**
Aviation Maintenance Technician - Airframe Structures
Hours: 80-90 lecture, 240-270 lab
Presents the application of fundamental methods, techniques, and practices used in aircraft inspection, maintenance, and repair. The course includes fundamentals of shop safety, wood structures, fabric covering, finishes, composite structures, plastics, sheet-metal structures, welding, assembly and rigging, and airframe inspection.

AERO 103 **10.0 Units**
Aviation Maintenance Technician - Basic Electricity and Hydraulics
Hours: 80-90 lecture, 240-270 lab
A study of fluid control systems and components with emphasis on design, maintainability, testing and system repair. The course includes the fundamentals of hydraulic fluids, fluid carrying lines and fittings, inspection, servicing and testing of pneumatic and hydraulic systems. The course also presents theory and application of direct and alternating current as related to aircraft electrical components and systems.

AERO 105 **10.0 Units**
Aviation Maintenance Technician - Airframe Systems
Hours: 80-90 lecture, 240-270 lab
A detailed study of the fundamentals of fabrication, maintenance, and repair of aircraft airframe systems. The course includes study of all basic systems which include: landing gear, hydraulic, pneumatic, cabin atmospheric control, flight instrumentation, communication, navigation, fuel storage and delivery, ice and rain detection, prevention and removal as well as fire detection and protection systems.

AERO 106 **10.0 Units**
Aviation Maintenance Technician - Powerplant Reciprocating Engines
Hours: 80-90 lecture, 240-270 lab
Designed to acquaint the student with reciprocating engines. The course includes study in the fundamentals of basic engine design, types and materials of construction, nomenclature, repair, overhaul and servicing, maintainability and reliability concepts.

AERO 107 **10.0 Units**
Aviation Maintenance Technician - Powerplant Turbine Engines
Hours: 80-90 lecture, 240-270 lab
Presents a study of the theory, operation, maintenance and repair of the turbine engine and related systems. It gives the student practical “hands on” experience that will satisfy future employment and FAA requirements.

AERO 118 **0.5 to 1.5 Units**
Aviation Maintenance Technician - FAA Airframe Test Preparation
Hours: 24-81 lab
Taken during the final semester of a student’s enrollment in the Aeronautics program. The course consists of a comprehensive oral, practical, and written examination of all material covered in the Airframe Program for the purpose of verifying the students’ readiness to pass the Federal Aviation Administration Airframe Examinations. Students may take this course up to the maximum number of units over multiple semesters. This is an Open Entry/ Open Exit course.

AERO 119 **0.5 to 1.5 Units**

Aviation Maintenance Technician - FAA Powerplant Test Preparation

Hours: 24-81 lab

Taken during the final semester of a student's enrollment in the Aeronautics program. The course consists of a comprehensive oral, practical, and written examination of all material covered in the Powerplant Program for the purpose of verifying the students readiness to pass the Federal Aviation Administration Powerplant Examinations. Students may take this course up to the maximum number of units over multiple semesters. This is an Open Entry/Open Exit course.

AERO 150 **0.5 to 1.5 Units**

Aviation Maintenance Technician - FAA Special Projects and Course Enhancement

Course Advisory: Any Solano College Aeronautics course (AERO 055-119); or previous training/experience in aeronautics

Hours: 24-81 lab

Gives Aeronautics students a chance to make up time lost for FAA certificate and/or to work on special projects required by FAA to bring students in line with new FAA FAR Part 66 requirements. Students may take this course up to the maximum number of units over multiple semesters. This is an Open Entry/Open Exit course.

AERO 151 **0.5 to 1.5 Units**

Aviation Maintenance Technician - FAA Special Projects - Powerplant Enhancement

Hours: 24-81 lab

Gives Aeronautics students a chance to make up time lost for FAA certificate and/or to work on special projects required by FAA to bring students in line with new FAA FAR Part 66 requirements. Students may take this course up to the maximum number of units over multiple semesters. This is an Open Entry/Open Exit course.

American Sign Language

ASL/English Interpreter Training

Program Description
The ASL program provides a foundation of interpreting skills for students seeking to transfer to a four-year institution in order to become an interpreter. The coursework presents American Sign Language in a cross-cultural context, addressing the ethics and standards expected of a professional interpreter.

Certificate of Achievement and Associate in Arts Degree
A Certificate of Achievement can be obtained upon successful completion of the 27-unit major. The Associate in Arts degree can be obtained upon completion of the major, general education requirements, and electives. All courses in the major must be completed with a minimum grade of C or a P if the course is taken on a Pass/No Pass basis.

Program Outcomes
Students who complete the ASL/English Interpreter Training Certificate of Achievement/Associate Degree will be able to:
1. Sign effectively, using appropriate skills, in working with the Deaf and Hard of Hearing.
2. Demonstrate an understanding of Deaf culture, and the ethics and standards of professional ASL environment.

REQUIRED COURSES	**Units**
ASL 001 American Sign Language 1	3
ASL 002 American Sign Language 2	3
ASL 003 American Sign Language 3	3
ASL 004 American Sign Language 4	3
ASL 005 American Deaf Culture	3
ASL 006 Linguistics of American Sign Language	3
ASL 052 Fingerspelling, Classifiers, and Numbers	3
ASL 053 Introduction to American Sign Language Interpreting	3
ASL 054 ASL Interpreting Field Work	2
OCED 090 Occupational Work Experience	1
Required Major Total Units	**27**

CSU General Education or IGETC Pattern units	**37-39**
Total Degree Units CSU GE or IGETC	**60-61**
Solano General Education	**21**
Electives (as needed to reach 60 units)	**12**
Total Degree Units Solano GE	**60**

** 3-6 units may be double counted toward both the major area of emphasis and CSU General Education or IGETC Pattern. Consult with a counselor for more information on completing this degree.*

These programs are Gainful Employment Programs. For additional information, please visit ***http://www.solano.edu/gainful_employment/*** and select "ASL/English Interpreter Training."

ASL 001 American Sign Language 1 3.0 Units
Transferable to UC/CSU
General Education: Opt A: Area C; Opt. B: Area 6; Opt. C: Area C2
Hours: 48-54 lecture.
Introduction to the culture and language of the deaf in this country. The course includes the acquisition of Fingerspelling skills and basic functional vocabulary of ASL. In addition to fluency in these two separate skills, the student will acquire basic knowledge of ASL syntax and nonverbal aspects of ASL, a history of the deaf in the country and deaf education, variations in Manual Communication, and the Culture of the Deaf. There will be both written and signed examinations, a research project, homework assignments, and individual examinations to demonstrate competency in both expressive and receptive ASL. Students will be expected to acquire a vocabulary of approximately 500 words (signs) and be proficient in Fingerspelling.

ASL 002 American Sign Language 2 3.0 Units
Prerequisite: ASL 001 with a minimum grade of C
General Education: Opt A: Area C; Opt. B: Area 6
Transferable to UC/CSU
Hours: 48-54 lecture
Emphasis on vocabulary expansion, introduction to ASL idiomatic expressions and information regarding the ethics and process of becoming a sign language interpreter. Assessment of competency is accomplished through written and communicative examinations. Some interaction with the deaf population is required.

ASL 003 American Sign Language 3 3.0 Units
Prerequisite: ASL 002 with a minimum grade of C
General Education: Opt. B: Area 6
Transferable to UC/CSU
Hours: 48-54 lecture
A focus on the grammatical structure of American Sign Language and how it has been influenced throughout history, by society, and other cultures in America. Students will develop their vocabulary, not through rote memorization, but through emphasis on receptive and expressive modes of communication; they will learn how to develop their own styles.

American Sign Language

ASL 004 American Sign Language 4 **3.0 Units**

Prerequisite: ASL 003 with a minimum grade of C
General Education: Opt. B: Area 6
Transferable to UC/CSU
Hours: 48-54 lecture

An advanced course designed to increase vocabulary, examine the use of semantic and body classifiers, expand and develop conversational signing ability through the use of appropriate grammar structures and storytelling. Popular Deaf culture stories are learned through the development of storytelling techniques. The rich heritage of Deaf people is studied through biographies of those who are famous for their contribution.

ASL 005 American Deaf Culture **3.0 Units**

General Education: Opt. C: Area C2
Transferable to UC/CSU
Hours: 48-54 lecture

Exploration of American Deaf Culture with historical and cultural overview of the American Deaf community and its language, American Sign Language (ASL). Fundamental sociological and anthropological theories will be discussed. Students will be given an opportunity to study and understand the following: minority group dynamics, attitudes and behavioral characteristics of the oppressed and oppressors, and the liberation movements. Analysis of the relationship of ASL to the history of the American Deaf community will be conducted.

ASL 006 **3.0 Units**

Linguistics of American Sign Language

Prerequisite: ASL 002 with a minimum grade of C
General Education: Opt. C: Area C2
Transferable to UC/CSU
Hours: 48-54 lecture

Applies knowledge of linguistics (e.g., phonetics, phonology, syntax, semantics) to signed languages, especially ASL. Students will learn about aspects of the language that are specific to signing, such as using three-dimensional space as grammatical tools. Students will compare ASL to other signed languages to further explore how these linguistic aspects differ between signed languages.

ASL 052 **3.0 Units**

Fingerspelling, Classifiers, and Numbers

Prerequisite: ASL 001 with a minimum grade of C (may enroll concurrently)
Transferable to CSU
Hours: 48-54 lecture

Solidifies fingerspelling, numbers, and classifiers to the point where they can reliably be leveraged in an expressive and receptive manner. The focus of the course is on recognition and use of fingerspelling, numbers, and classifiers in different contexts.

ASL 053 **3.0 Units**

Introduction to American Sign Language Interpreting

Prerequisite: ASL 002 with a minimum grade of C
Transferable to CSU
Hours: 48-54 lecture

Introduction to professional conduct, variety of interpreter work settings, and interactions with the populations served.

ASL 054 ASL Interpreting Field Work **2.0 Units**

Prerequisite: ASL 003 with a minimum grade of C
Corequisite: OCED 090
Transferable to CSU
Hours: 32-36 lecture

Prepares students for the profession of ASL interpreting by providing field work in which students can observe different scenarios and apply skills learned in the classroom. Weekly seminars will explore how ASL interpreters learn discourse mapping, a systematic approach for analyzing texts to produce successful, effective interpretations. Through a co-requisite of OCED 090 students will work in a real world environment to practice the techniques discussed in class.

ASL 055 **3.0 Units**

Interpreting 1: Consecutive Interpreting

Prerequisite: ASL 053 with a minimum grade of C
Transferable to CSU
Hours: 48-54 lecture

Building and improving basic receptive and expressive sign language interpretation skills emphasizing the development of consecutive ASL to English and English to ASL.

ASL 056 **3.0 Units**

Interpreting 2: Simultaneous Interpreting

Prerequisite: ASL 053 with a minimum grade of C
Transferable to CSU
Hours: 48-54 lecture

Advanced simultaneous interpreting skills that can be applied in both ASL to English and English to ASL interpretation. Topics include: research and analysis of the simultaneous interpreting process, interpreting models and how to apply them in various work environments, and the basis of ethical decision making within the field of sign language interpreting.

Anthropology for Transfer (AA-T)

CAREER PATHS:

Anthropologist

Archaeologist

Post-Secondary Teacher

Curator

Additional Career Paths and related data, including state-by-state wage info and growth in the field, can be found at www.onetonline.org.

This program map represents one possible pathway. See a counselor to create a customized education plan. Map is for the 2019-2020 catalog year.

SOLANO COMMUNITY COLLEGE

Anthropology
Associate in Arts for Transfer
GE Pattern: IGETC
Program Total Units: 60.5

For more information please contact: (707) 864-7251

1 FIRST SEMESTER

Total Recommended Units: 15

- **ENG 001** 4 units — College Composition (IGETC 1A)
- **LR 010** 1 units — Introduction to Library Research
- **MATH 011** 4 units — Statistics (IGETC 2/ ANTH List A)
- **ANTH 002** 3 units — Cultural Anthropology (IGETC 4)
- **Transferable Elective** 3 units — (Course #001-049) Suggested: COMM 001

2 SECOND SEMESTER

Total Recommended Units: 15.5

- **ANTH 001** 3 units — Physical Anthropology (IGETC 5B)
- **ANTH 001L** 1.5 units — Physical Anthropology Lab (IGETC 5C/ ANTH List B)
- **IGETC 1B** 4 units — Suggested: ENGL 002 or ENGL 004
- **IGETC 3B/Am Inst Grp 2** 3 units — Suggested: HIST 017 or 18 or 028 or 029 or 1 for Am Inst Requirement
- **IGETC 1C** — Suggested: COMM 001 or 002 or 006

3 THIRD SEMESTER

Total Recommended Units: 15

- **ANTH 007** 3 units — Archaeology (IGETC 4)
- **SOC 001** 3 units — Introduction to Sociology (IGETC 4/ ANTH List C)
- **GEOL 001** 3 units — Physical Geology (IGETC 5A/ANTH List B)
- **ANTH LIST B of the ADT** 3 units — Suggested: GEOL 002
- **IGETC 3A** 3 units — Suggested: ART 001

4 FOURTH SEMESTER

Total Recommended Units: 15

- **ANTH List C of the ADT** 3 units — Suggested: GEOL 002
- **IGETC 4/Am Inst Grp 1** 3 units — Suggested: PLSC 001 or 005 for Am Inst requirement
- **IGETC 3A or 3B** 3 units
- **IGETC 4** 3 units — Suggested: PSYCH 007
- **Transferable Elective** 3 units — Course #001-049

Required Courses/Courses in Discipline GE Courses/Categories

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  Visit online at solano.edu/career
- **You Can Afford College! Learn more about Financial Aid!**
  Call 707-864-7103, or email at FinancialAid@solano.edu
  Visit online at solano.edu/financial_aid
- **College is Accessible!** Contact our Disability Services Program (DSP) at 707-864-7136.

Anthropology

Associate in Arts in Anthropology for Transfer

Program Description
This program emphasizes the development and diversity of, and adaptations in, human behavior and biology. Students in this program may study a variety of anthropological subfields, including Physical, Cultural, and Archaeology. In addition to acting as a path for successful transfer to an institution offering a baccalaureate degree in Anthropology, the Associate in Arts in Anthropology for Transfer Degree provides students pursuing any baccalaureate degree with basic skills in critical analysis, application of the scientific method, and cross-cultural understanding.

Associate in Arts in Anthropology for Transfer Degree
Upon completion of the Associate in Arts in Anthropology for Transfer Degree, students will be prepared to transfer to a CSU undergraduate Anthropology program. The Associate in Arts in Anthropology for Transfer Degree will facilitate successful transfer to the CSU system, allowing students to complete baccalaureate degrees in a more timely fashion.

To earn the Associate in Arts in Anthropology for Transfer degree, students must:

1. Complete 60 semester 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 in a major or area of emphasis, as determined by the community college district.
2. Obtain a minimum grade point average of 2.0.

Program Outcomes
Students who complete the Associate in Arts in Anthropology for Transfer degree, will be able to:

1. Demonstrate an understanding of anthropology as a science, in particular with regard to major theories, methods, and applications.
2. Demonstrate an understanding of human biological diversity, and be able to discuss processes responsible for such variation.
3. Demonstrate an understanding of human cultural diversity, and be able to discuss processes responsible for such variation.

REQUIRED COURSES	**Units**
ANTH 001 Physical Anthropology	3
ANTH 001L Physical Anthropology Laboratory	1.5
ANTH 002 Cultural Anthropology	3
ANTH 007 Archaeology	3
MATH 011 Elementary Statistics	4
3-5 units from List A	3-5
3-5 units from List B	3-5

List A (select 3-5 units)

BIO 004 Human Anatomy	5
GEOL 010 Introduction to Geographic Information Systems	3
PSYC 004 Research Methods in Behavioral Science	3
GEOL 001 Physical Geology	3
and	
GEOL 002 Geology Laboratory	1

List B (select 3-5 units)
Any List A courses not already used

COMM 012 Intercultural Communication	3
GEOG 002 Cultural Geography	3
PSYC 007 Cross-Cultural Psychology	3
SOC 001 Introduction to Sociology	3

Required Major Total units	**20.5-23.5**
CSU General Education or IGETC Pattern units	**37-39**
CSU Transferable Electives (as needed to reach 60 transferable units)*	**9.5-20.5**
Total Degree units	**60**

**12-18 units may be double counted toward both the major area of emphasis and CSU General Education or IGETC Pattern. Consult with a counselor for more information on completing this degree.*

Anthropology

ANTH 001 Physical Anthropology 3.0 Units
Course Advisory: ENGL 001 with a minimum grade of C
General Education: Option A: Area A; Option B: Area 5B; Option C: Area B2
Transferable to UC/CSU
Hours: 48-54 lecture
An introduction to the science of physical anthropology; covering the concepts, methods of inquiry, and scientific explanations of biological evolution and their application to the human species. Topics to be covered will include: the scientific method, genetics, principles and mechanisms of biological evolution, modern human variation and the race concept, biocultural adaptations, primate classification, comparative primate anatomy and behavior, and the fossil evidence for human evolution. *(C-ID ANTH 110)*

ANTH 001L 1.5 Units
Physical Anthropology Laboratory
Prerequisite: ANTH 001 with a minimum grade of C (may enroll concurrently)
General Education: Option A: Area A; Option B: Area 5C; Option C: Area B3
Transferable to UC/CSU
Hours: 8-9 lecture, 48-54 lab
A laboratory introduction to familiarize students with the methods and materials of physical anthropology, and is intended to be a companion course to ANTH 001 (Physical Anthropology). This course provides hands-on experience with genetics exercises as well as the skeletal materials of modern humans, non-human primates, and fossil hominins. Other topics discussed include the scientific method, sources of biological variation (with special focus on variation in humans and non-human primates) and the forces of evolution, biological classification of the primates, and non-human primate behavior. A field trip may be required. *(C-ID ANTH 115L)*

ANTH 002 Cultural Anthropology 3.0 Units
Course Advisory: ENGL 001 with a minimum grade of C.
General Education: Option A: Area B2; Option B: Area 4; Option C: Area D
Transferable to UC/CSU
Hours: 48-54 lecture
An introduction to the anthropological study of human culture; covering anthropological concepts such as fieldwork, holism, the comparative method, cultural relativism, the nature of culture and cultural identity, and research ethics. Topics will include: subsistence patterns, political organizations including social inequality, kinship and family, communication, supernatural belief systems, gender and sexuality, art, culture change including globalization, and applied anthropology. *(C-ID ANTH 120)*

ANTH 006 Magic, Witchcraft, and Religion 3.0 Units
Course Advisory: ENGL 001 with a minimum grade of C
Transferable to CSU
Hours: 48-54 lecture
A cross-cultural, multi-cultural examination of the forms and functions of supernatural belief systems and associated rituals that have developed in various societies. Basic anthropological concepts and methodologies will be introduced and applied to the assessment and analysis of selected cultural and religious traditions. This course also examines the general functions of ritual and mythology in reinforcing cultural ideals and ethics. Emphasis will be placed on understanding religious belief systems within their given social contexts.

ANTH 007 Archaeology 3.0 Units
Course Advisory: ENGL 001 with a minimum grade of C; SCC minimum Math standards
General Education: Option A: Area B2; Option B: Area 4; Option C: Area D
Transferable to UC/CSU
Hours: 48-54 lecture
An introduction to the study of the concepts, theories, methods, and data of archaeology that contribute to our knowledge of human cultures. The course includes a discussion of the nature of scientific inquiry; the history and interdisciplinary nature of archaeological research; dating techniques; methods of survey, excavation, analysis, and interpretation; cultural resource management; professional ethics; and selected cultural sequences. Several key archaeological sites will be covered and will serve to illustrate central archaeological theories and methods. *(C-ID ANTH 150)*

Art History for Transfer (AA-T)

CAREER PATHS:

Art, Drama, History and/or Music Teacher
Art Therapist
Art Director
Museum Curator, Technician, or Conservator
Fine Artist

Additional Career Paths and related data, including state-by-state wage info and growth in the field, can be found at www.onetonline.org.

This program map represents one possible pathway. See a counselor to create a customized education plan. Map is for the 2019-2020 catalog year.

SOLANO COMMUNITY COLLEGE

Art History
Associate in Arts for Transfer
GE Pattern: IGETC Program
Total Units: 60-65

For more information please contact: (707) 864-7114

1 FIRST SEMESTER

Total Recommended Units: 15

ART 001 Art History	3 units
LIST B of the ADT Suggested: ART 006, 007, or 008	4 units
ENGL 001 College Composition (IGETC 1A)	4 units
LR 010 Introduction to Library Research and Information Competency	1 unit
IGETC Suggested: PSYCH 001	3 units

2 SECOND SEMESTER

Total Recommended Units: 16-17

ART 002 Art History	3 units
ART 014	3 units
IGETC 1B Suggested: ENGL 002 or 004	4 units
IGETC 1C Suggested: COMM 001 or 002 or 006	3 units
IGETC 2 Suggested: MATH [illegible] or 0	4 units

3 THIRD SEMESTER

Total Recommended Units: 15

ART 003A or 003B	3 units
IGETC 4 Suggested: ANTH 002 or 007	3 units
IGETC 5A or 5B with Lab	3-5 units
IGETC 3B / Am Inst Grp 2 Suggested: HIST 017 or 018 or 028 or 029 or 037 for Am Inst	3 units
Transferable Elective Course #001-049	3 units

4 FOURTH SEMESTER

Total Recommended Units: 15-17

ART 011 or 012	3 units
IGETC 1C Suggested: Comm 001 or 002 or 006	3-5 units
IGETC 5A or 5B without Lab	3 units
IGETC 4 / Am Inst Grp 1 Suggested: PLSC 001 or 005 for Am Inst	3 units
Transferable Elective Course #001-049	3 units

Required Courses/Courses in Discipline GE Courses/Categories

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- **College is Accessible!** Contact our Disability Services Program (DSP) at 707-864-7136.

Art

Associate in Arts in Art History for Transfer (ADT: A.A.-T)

Program Description
This program provides the academic and practical experience to prepare students for a career, or further education at a four-year institution, in art history and related fields, such as museum studies, art education and administration. The Associate in Arts in Art History for Transfer provides the academic and practical experience to transfer into the CSU system to complete a baccalaureate degree that will prepare students for a career in Art History.

Associate in Arts in Art History for Transfer
Students wishing to transfer to a University of California system for an Art History B.A. should take all the art history courses in the program (ART 001, 002, 003A, 003B, 011 and 012). Students completing an Associate in Arts in Art History for Transfer degree are guaranteed admission to the CSU system, but not to a particular campus or major. Students transferring to a CSU campus that accepts the Associate in Arts in Art History for Transfer degree will be required to complete no more than 60 units after transfer to earn a bachelor's degree. The Associate in Arts in Art History for Transfer degree also prepares students for art history degree programs at CSU institutions, but does not come with the same guarantees. In all cases, students should consult with a counselor for more information on university admission and transfer requirements.

To earn the Associate in Arts in Art History for Transfer degree, students must:
1. Complete 60 semester 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 in a major or area of emphasis, as determined by the community college district.
2. Obtain a minimum grade point average of 2.0.

Program Outcomes
Students who complete the Associate in Arts in Art History for Transfer degree will be able to:
1. Students will analyze the relationship between various cultures and their art forms, linking specific works, artists, and art movements/periods to relevant historical events, cultural values, and belief systems.
2. Students will analyze issues related to the perception, scholarship, and display of artwork.
3. Students will use scholarly sources effectively and ethically to support their analyses of art.

REQUIRED COURSES	**Units**
ART 001 Art History	3
ART 002 Art History	3
ART 014 Introduction to Drawing	3
3 units from List A	3
3 units from List B	3
3 units from List C	3

List A: Non-Western Arts History (select 3 units)	3
ART 003A Arts of Asia	3
ART 003B Arts of Africa, Oceania, and the Americas	3

List B: Studio Art (select minimum of 3 units)	**Units**
ART 004 Life Drawing	3
ART 006 Design Principles in 2-Dimensions	3
ART 007 Design-Color	3
ART 008 Design Principles in 3-Dimensions	3
ART 016 Beginning Painting	3
ART 019 Figure Painting	3
ART 023 Introduction to Ceramics: Hand Building	3
ART 026 Introduction to Ceramics: Wheel Throwing Techniques	3
ART 031 Sculpture	3
ART 032 Sculpture: Human Figure	3
ART 038 Introduction to Printmaking	3
ART 039 Etching and Engraving: Line Techniques	3
ART 043 Printmaking: Relief Printing, Including Woodcut	3
ART 045A Graphic Design I	3
PHOT 030 Beginning Photography	3

List C: Modern, Contemporary, and Theory (select 3 units)	**Units**
ART 011 Survey of Modern Art	3
ART 012 Inside/Outside: The Cultures and Identities of Visual Artists in a Diverse America	3

Required Major Total Units	**18**
CSU General Education or IGETC Pattern units	**37-39**
CSU Transferable Electives (as needed to reach 60 transferable units)*	**9-11**
Total Degree Units	**60**

** 6 units may be double counted toward both the major area of emphasis and CSU General Education or IGETC Pattern. Consult with a counselor for more information on completing this degree.*

Studio Art (AA-T)

CAREER PATHS:

Art Therapist
Art Director
Art Educator
Fine Artist
Museum Curator, Technician, or Conservator
Multimedia Artist and Animator
Graphic Designer

Additional Career Paths and related data, including state-by-state wage info and growth in the field, can be found at www.onetonline.org.

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SOLANO COMMUNITY COLLEGE

STUDIO ART

Associate in Arts for Transfer
GE Pattern: IGETC
Program Total Units: 61-62

For more information please contact: (707) 864-7114

1 FIRST SEMESTER

Total Recommended Units: 17

- **ART 002** Art History (IGETC 3A) — **3 units**
- **ART 006** Design in 2 Dimensions — **3 units**
- **ART 008** Design in 3 Dimensions — **3 units**
- **ENGL 001** College Composition (IGETC 1A) — **4 units**

2 SECOND SEMESTER

Total Recommended Units: 15-16

- **ART List A of ADT** — **3 units**
- **ART List B of ADT** — **3 units**
- **ART 014** Introduction to Drawing — **3 units**
- **IGETC 2** Suggested: Math 011 or 012 — **3-4 units**

3 THIRD SEMESTER

Total Recommended Units: 15

- **ART List B of ADT** — **3 units**
- **IGETC 1C** Suggested: COMM 001, 002, or 006 — **3 units**
- **IGETC 5A or 5B** Without Lab — **3 units**
- **IGETC 3B / Am Inst Grp 2** Suggested: HIST 017 or 18 or 028 or 029 or 037 for Am Inst requirement — **3 units**
- **IGETC 3A or 3B** — **3 units**

4 FOURTH SEMESTER

Total Recommended Units: 14

- **ART List B of ADT** — **3 units**
- **IGETC 1B** Suggested: ENGL 002 or 004 — **4 units**
- **IGETC 5A or 5B** With Lab. Whichever not taken — **4 units**
- **IGETC 4** — **3 units**

Required Courses/Courses in Discipline GE Courses/Categories

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- **You Can Afford College! Learn more about Financial Aid!**
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- **College is Accessible!** Contact our Disability Services Program (DSP) at 707-864-7136.

Art

Associate in Arts in Studio Arts for Transfer (ADT: A.A.-T)

Program Description
This program provides the academic and practical experience to prepare students for a career, or further education at a four-year institution, in studio art. The program is designed for students to develop visual skills in a variety of art media.

Associate in Arts in Studio Arts for Transfer
The Associate in Arts in Studio Arts for Transfer is especially designed for students who plan to complete a bachelor's degree in Studio Art at a CSU campus. Students completing an Associate in Arts for Transfer degree are guaranteed admission to the CSU system, but not to a particular campus or major. Students transferring to a CSU campus that accepts the A.A. degree for Transfer will be required to complete no more than 60 units after transfer to earn a bachelor's degree. This degree also prepares students for studio art programs at other four-year institutions, but does not come with the same guarantees. In all cases, students should consult with a counselor for more information on university admission and transfer requirements.

To earn the Associate in Arts in Studio Art for Transfer degree, students must:

1. Complete 60 semester 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 in a major or area of emphasis, as determined by the community college district.
2. Obtain a minimum grade point average of 2.0.

Program Outcomes
Students who complete the Associate in Arts in Studio Arts for Transfer degree will be able to:

1. Apply appropriate materials and techniques to solve creative problems.
2. Apply composition strategies to create visually unified and compositionally effective works of art.
3. Utilize appropriate language and approaches to create, analyze and critique conceptually effective works.

REQUIRED CORE	**Units**
ART 002 Art History	3
ART 006 Design Principles in 2-Dimensions	3
ART 008 Design Principles in 3-Dimensions	3
ART 014 Introduction to Drawing	3
One course from List A	3
Three courses from List B	9

List A: (select one course)	**Units**
ART 001 Art History	3
ART 003A Arts of Asia	3
ART 003B Arts of Africa, Oceania, and the Americas	3
ART 011 Survey of Modern Art	3

List B: (select three courses)	**Units**
ART 004 Life Drawing	3
or	
ART 015 Intermediate Drawing	3
ART 005 Life Drawing - Intermediate	3
ART 007 Design-Color	3
ART 016 Beginning Painting	3
ART 017 Intermediate Painting: Acrylic and Oil	3
ART 019 Figure Painting	3
ART 021 Watercolor	3
ART 023 Introduction to Ceramics: Hand Building	3
or	
ART 026 Introduction to Ceramics: Wheel Throwing Techniques	3
ART 024 Intermediate Ceramics: Hand Building	3
ART 031 Sculpture	3
or	
ART 034 Ceramic Sculpture	3
ART 032 Sculpture: Human Figure	3
ART 033 Intermediate Sculpture	3
ART 038 Introduction to Printmaking	3
ART 039 Etching and Engraving: Line Techniques	3
ART 040 Etching and Engraving: Tone	3
ART 041 Etching and Engraving: Color	3
ART 042 Screen Printing	3
ART 043 Printmaking: Relief Printing, Including Woodcut	3
ART 045A Graphic Design I	3
ART 045C Typography	3
ART 046 Illustration	3
PHOT 030 Beginning Photography	3

Required Major Total Units	**24**
CSU General Education or IGETC Pattern Units	**37-39**
CSU Transferable Electives (as needed to reach 60 transferable units)*	**3-5**
Total Degree Units	**60**

** 6 units may be double counted toward both the major area of emphasis and CSU General Education or IGETC Pattern. Consult with a counselor for more information on completing this degree.*

Art

Graphic Design & Illustration

Program Description
This program provides the student with sufficient academic and practical experience for entrance into the job market as a graphic artist, or for study towards the B.A. in college or professional school.

Associate in Arts Degree
The Associate in Arts Degree can be obtained by completing the 27-unit major, general education requirements, and electives. All courses in the major must be completed with a minimum grade of C or a P if the course is taken on a Pass/No Pass basis.

Program Outcomes
Students who complete the Graphic Design & Illustration Associate Degree will be able to:
1. Analyze, apply and integrate diverse visual experiences.
2. Develop and articulate with proficiency an understanding of visual and multi-cultural literacy.
3. Work independently and cooperatively to solve creative problems, applying critical thinking skills.

REQUIRED COURSES	**Units**
ART 004 Life Drawing	3
or	
ART 015 Intermediate Drawing	3
ART 006 Design Principles in 2-Dimensions	3
ART 007 Design-Color	3
ART 014 Introduction to Drawing	3
ART 045A Graphic Design I	3
ART 045B Graphic Design II	3
ART 045C Typography	3
ART 046 Illustration I	3
ART 046C Illustration II	3
Required Major Total Units	**27**

CSU General Education or IGETC Pattern units	**37-39**
Total Degree Units CSU GE or IGETC	**64-66**
Solano General Education	**21**
Electives (as needed to reach 60 units)	**12**
Total Degree Units Solano GE	**60**

** 0 units may be double counted toward both the major area of emphasis and CSU General Education or IGETC Pattern. Consult with a counselor for more information on completing this degree.*

Art

Studio Arts with Emphasis

Program Description
The Studio Arts Degree with Emphasis offers students a strong fine arts foundation, with core courses that develop essential technical skills, aesthetic vision, historical and contemporary art context, and an understanding of the artist's role as a global citizen. Students may select an Emphasis which will allow deeper technical, aesthetic, and conceptual study within a specific medium: drawing and mixed media; painting; printmaking; sculpture; and ceramics. The Studio Arts Degree with Emphasis is designed for students seeking to further their study at an art school or at one of the University of California art departments. Students who earn this degree will also meet the requirements for the AA-T degree in Studio Arts, and should petition for the AA-T degree only if they plan to transfer to a California State University campus.

Associate in Arts Degree
The Associate in Arts Degree can be obtained upon completion the 26-27 unit major, general education requirements, and electives. All courses in the major must be completed with a minimum grade of C or a P if the course is taken on a Pass/No Pass basis.

Program Outcomes
Students who complete the Studio Arts with Emphasis Associate Degree will be able to:

1. Demonstrate advanced skills in selecting a broad range of appropriate materials and techniques to solve creative problems.
2. Apply advanced composition strategies to create visually unified and compositionally effective works of art.
3. Utilize appropriate language and approaches to create, analyze, and critique conceptually effective works of art at an advanced level, with breadth and depth of analysis.

REQUIRED CORE	**Units**
ART 002 Art History	3
ART 006 Design Principles in 2-Dimensions	3
ART 007 Design-Color	3
ART 008 Design Principles in 3-Dimensions	3
ART 014 Introduction to Drawing	3
One course from List A – Art History	3
Three courses from one of the Areas of Emphasis	8-9
Required Major Total Units	**26-27**

List A: Art History (select one course)	**Units**
ART 001 Art History	3
ART 011 Survey of Modern Art	3

Drawing and Mixed Media Emphasis	**Units**
ART 004 Life Drawing	3
ART 005 Life Drawing	3
ART 015 Intermediate Drawing	3
ART 015B Collage & Assemblage	3
ART 020 Landscape Drawing and Painting — Reflections of Nature	2-3

Painting Emphasis	**Units**
ART 016 Beginning Painting	3
ART 017 Acrylic and Oil Painting	3
ART 018 Advanced Intermediate Painting: Acrylic and Oil Painting	3
ART 019 Figure Painting	3
ART 021 Watercolor	3

Printmaking Emphasis	**Units**
ART 038 Introduction to Printmaking	3
ART 039 Etching and Engraving: Line Techniques	3
ART 040 Etching and Engraving: Tone	3
ART 041 Etching and Engraving: Color	3
ART 042 Screen Printing	3
ART 043 Printmaking: Relief Printing, Including Woodcut	3

Sculpture Emphasis	**Units**
ART 031 Sculpture	3
ART 032 Sculpture: Human Figure	3
ART 033 Intermediate Sculpture	3
ART 034 Ceramic Sculpture	3

Ceramics Emphasis	**Units**
ART 023 Introduction to Ceramics: Hand Building	3
ART 024 Intermediate Ceramics: Hand Building	3
ART 025 Ceramic Design And Decoration: Hand Building Methods	3
ART 026 Introduction to Ceramics: Wheel Throwing Techniques	3
ART 027 Intermediate Ceramics: Wheel Throwing Techniques	3
ART 028 Ceramic Design: Wheel Throwing Techniques	3
ART 029 Raku Pottery	3
ART 030C Ceramics: History, Culture, Practice	3
ART 035A Introduction to Wood-Fired Ceramics	3
ART 037 Clay and Glazes for the Ceramic Artist	3

CSU General Education or IGETC Pattern units	**37-39**
Transferable Electives	**0-3**
Total Degree Units CSU or IGETC	**60-63**

Solano General Education	**21**
Electives (as needed to reach 60 units)	**12**
Total Degree Units Solano GE	**60**

** 3-6 units may be double counted toward both the major area of emphasis and CSU General Education or IGETC Pattern. Consult with a counselor for more information on completing this degree.*

Art

ART 001 Art History 3.0 Units
General Education: Option A: Area C; Option B: Area 3A; Option C: Area C1
Transferable to UC/CSU
Hours: 48-54 lecture
Explores the history of art in the Western World from the Paleolithic era through the Middle Ages. Focuses on the interrelation of art and culture, with a comparative study of select works of non-Western art. Field trip may be required. *(C-ID ARTH 110)*

ART 002 Art History 3.0 Units
General Education: Option A: Area C; Option B: Area 3A; Option C: Area C1
Transferable to UC/CSU
Hours: 48-54 lecture
Explores the history of Western Art through a critical analysis of Renaissance art through Post-Modern Art. Students will examine the connection between art and culture, and evaluate the historic, religious, and political influences on the artistic choices of diverse men and women of art history from the 15th century to today. Field trip may be required. *(C-ID ARTH 120)*

ART 003A Arts of Asia 3.0 Units
Course Advisory: ENGL 001
General Education: Option A: Area C; Option B: Area 3A; Option C: Area C1
Transferable to UC/CSU
Hours: 48-54 lecture
A survey of art and architecture from India, Southeast Asia, China, Korea, and Japan from pre-history to modern times. *(C-ID ARTH 130)*

ART 003B 3.0 Units
Arts of Africa, Oceania, and the Americas
Course Advisory: ENGL 001
General Education: Option A: Area C; Option B: Area 3A; Option C: Area C1
Transferable to UC/CSU
Hours: 48-54 lecture
A survey of the arts and architecture of Africa, Oceania, and the Americas, with an emphasis on traditional arts and practices. This course will also address issues related to the scholarship and display of these arts in the Western world. *(C-ID ARTH 140)*

ART 004 Life Drawing 3.0 Units
Transferable to UC/CSU
Hours: 32-36 lecture, 64-72 lab
A study of the human figure in action and repose using a variety of drawing materials and approaches. Students work directly from the live model to develop skills using assignments which include gesture, line drawings, tone studies and the use of color. The student submits a midterm and final portfolio for evaluation. Field trip may be required. *(C-ID ARTS 200)*

ART 005 Life Drawing - Intermediate 3.0 Units
Prerequisite: ART 004 with a minimum grade of C
Transferable to UC/CSU
Hours: 32-36 lecture, 64-72 lab
The continued study of the human figure with more advanced problems in drawing and composition. Following initial review, the student may choose an individual program of study with the approval of the instructor. Field trip may be required.

ART 006 Design Principles In 2-Dimensions 3.0 Units
Transferable to UC/CSU
Hours: 32-36 lecture, 64-72 lab
A fundamental study of visual elements and principles of design for production of art images in 2-Dimensions using various materials in black and white. Design formats developed from historic and aesthetic precepts are employed to investigate the relationship of form and content. Field trip may be required. *(C-ID ARTS 100)*

ART 007 Design-Color 3.0 Units
Transferable to UC/CSU
Hours: 32-36 lecture, 64-72 lab
A study of the principles of additive and substractive color in two dimensions. Various theories of color will be studied including those of Albers and Ittens. Reference to the use of color in the dominant styles of art history will be made. Students will produce a portfolio of projects in applied color and the elements of design. Field trip may be required. *(C-ID ARTS 270)*

ART 008 Design Principles In 3-Dimensions 3.0 Units
Transferable to UC/CSU
Hours: 32-36 lecture, 64-72 lab
A fundamental study of visual elements and principles of design for production of art objects in three dimensions using various sculpture materials and methods. Design formats developed from historic and aesthetic precepts are employed to investigate the relationships of form and content. Field trip may be required. *(C-ID ARTS 101)*

ART 010 Art Appreciation 3.0 Units
General Education: Option A: Area C; Option B: Area 3A; Option C: Area C1
Transferable to UC/CSU
Hours: 48-54 lecture
An introductory examination of the cultural, universal, and personal factors influencing the making and viewing of art. Including a study of style, composition, materials and techniques used in the creation of art from disparate cultures and periods of history. Field trip may be required. *(C-ID ARTH 100)*

C-ID Designation may change periodically visit c-id.net/courses/search for current designation or consult with your counselor

ART 011 Survey of Modern Art 3.0 Units
Course Advisory: ENGL 001
General Education: Option A: Area C; Option B: Area 3A; Option C: Area C1
Transferable to UC/CSU
Hours: 48-54 lecture
A study of the art and architecture of the major modern movements and artists from the 19th and 20th centuries. Analysis of subject, form and content of paintings, photography and sculpture in lecture and audio visual presentation. Classes supplemented by field trips to current exhibitions. Written examinations and paper required. Modern Art is a capstone course designed for, but not limited to, Art History and Studio Art Majors. Field trip may be required. *(C-ID ARTH 150)*

ART 012 3.0 Units
Inside/Outside: The Cultures and Identities of Diverse Visual Artists in the U.S.
Course Advisory: ENGL 001
General Education: Option A: Area C, Area E; Option B: Area 3A, SCC Cross-Cultural; Option C: Area C1, SCC Cross-Cultural
Transferable to UC/CSU
Hours: 48-54 lecture
An art survey course that examines and assesses three or more groups of culturally diverse artists, art organizations and support structures. Explores art issues related to social and historical trends in the U.S., including ways in which art may reflect and shape American attitudes towards identity (ethnic, gender, sexual, intersectional), culture and discrimination. Field trip may be required.

ART 014 Introduction To Drawing 3.0 Units
Transferable to UC/CSU
Hours: 32-36 lecture, 64-72 lab
A study of drawing as a means of expression with emphasis on the potential variety of forms and materials available to the artist. Students will create representational and abstract drawings from still life, the figure, nature and imagination. Observational drawing skills and technical skills will be developed. Field trip may be required. *(C-ID ARTS 110)*

ART 015 Intermediate Drawing 3.0 Units
Course Advisory: ART 014
Transferable to UC/CSU
Hours: 32-36 lecture, 64-72 lab
A basic drawing class which develops the concepts introduced in ART 014 on a more advanced level. Problems in observation and imagination and the translation of these experiences into graphic terms by exploration of line, shape, mass, space, texture, and light and shadow. Emphasis on composition and the development of a personal approach to drawing. Students will be required to submit a portfolio of assignments. Field trip may be required. *(C-ID ARTS 205)*

ART 015B Collage and Assemblage 3.0 Units
Transferable to UC/CSU
Hours: 32-36 lecture, 64-72 lab
Explores the making of 2D and 3D collages and assemblages in a variety of media. Addresses the history and prevalence of collage thinking as an approach to art making while integrating traditional drawing and painting skills. Field trip may be required.

ART 015C Book Making 3.0 Units
Transferable to UC/CSU
Hours: 32-36 lecture, 64-72 lab
Explores book making in a variety of formats. Discusses the history and development of the book. Students will make several books: Classic signature book bound between boards, side bound books and a variety of artist's books including altered books, boxed books, and 3 dimensional book structures like accordion books and pop-up books. Field trip may be required.

ART 016 Beginning Painting 3.0 Units
Course Advisory: ART 014
Transferable to UC/CSU
Hours: 32-36 lecture, 64-72 lab
An introduction to techniques and materials of painting in acrylic or oil. Designed for the student with limited experience in painting, this course includes color theory, composition, exposure to a variety of subject matters, and the development of skills for individual expression. Field trip may be required. *(C-ID ARTS 210)*

ART 017 **3.0 Units**
Intermediate Painting: Acrylic and Oil
Course Advisory: ART 016
Transferable to UC/CSU
Hours: 32-36 lecture, 64-72 lab
A study of acrylic and oil painting techniques focusing on use of color, the medium and composition. A series of painting assignments designed to develop skills in both media. Field trip may be required.

ART 018 **3.0 Units**
Advanced Intermediate Painting: Acrylic and Oil
Prerequisite: ART 017 with a minimum grade of C
Transferable to UC/CSU
Hours: 32-36 lecture, 64-72 lab
A study of color, composition and technique in oil or acrylic painting on an intermediate level. Students may choose to build on assignments from ART 017 or develop an outline of semester assignments appropriate to their interests and skill needs. Field trip may be required.

ART 019 Figure Painting **3.0 Units**
Course Advisory: ART 016
Transferable to UC/CSU
Hours: 32-36 lecture, 64-72 lab
A study of the human figure using a variety of painting techniques and approaches. Students work directly from the live model to develop skills in rendering and expression. Assignments include long and short observational paintings which will afford skill development in materials handling as well as compositional and thematic developments. Field trip may be required.

ART 019B Clothed Figure **3.0 Units**
Transferable to UC/CSU
Hours: 32-36 lecture, 64-72 lab
Understanding the various properties of clothing and drapery, as used with the figure in painting and drawing. Gesture, proportion, form and color will be studied in relation to the clothed figure. Projects will include a variety of costume statements including fashion, sport, fantasy or science fiction and theatre costume. Field trip may be required.

ART 020 **2.0 or 3.0 Units**
Landscape Drawing And Painting - Reflections Of Nature
Transferable to UC/CSU
Hours: 16-36 lecture, 48-72 lab
A focus on the outdoors as subject matter. Frequent field trips and class exercises will introduce and expand the student's awareness and observational skills of the environment, in the tradition of Natural History as well as plein air (outdoor) art making. The student will reflect and translate these experiences into graphic terms using various media while considering line, shape, mass, space, texture, light, color and shadow. The student will focus on composition and content while developing a personal understanding of the environment. Keeping a written and visual journal will also be a component of this class. This course will examine the interrelationships of humans and their surroundings, and the aesthetic choices available with which to communicate our responses. This class will consist of regular field trips during class meetings as well as some weekend outings. Films, special lectures, various projects and assignments as well as consideration for weather conditions will make up the remaining time in the studio. Students who wish to transfer must enroll in the 3-unit section.

ART 021 Watercolor **3.0 Units**
Transferable to UC/CSU
Hours: 32-36 lecture, 64-72 lab
An introduction to the materials and techniques of transparent watercolor. Including basic composition, color study and an exploration of materials. Lectures, demonstrations and field study will supplement class assignments. Field trip may be required.

ART 022 Watercolor - Intermediate **3.0 Units**
Prerequisite: ART 021 with a minimum grade of C
Transferable to UC/CSU
Hours: 32-36 lecture, 64-72 lab
A continuation of the study of basic watercolor techniques with emphasis on a more individual approach to the medium. The student and instructor develop a course of study that will focus on needs in the areas of skills and self-expression. Field trip may be required.

ART 023 **3.0 Units**
Introduction to Ceramics: Hand Building
Transferable to UC/CSU
Hours: 32-36 lecture, 64-72 lab
Basic construction methods of hand building and finishing pottery. Emphasis on form, craftspersonship and creativity. Building methods include pinch technique, coil building, and slab construction. Surface techniques include texture, stencil, slip, relief, stain, and glaze. Non-traditional construction and surface techniques will also be covered. Field trip may be required.

ART 024 **3.0 Units**
Intermediate Ceramics: Hand Building
Prerequisite: ART 023 with a minimum grade of C
Transferable to UC/CSU
Hours: 32-36 lecture, 64-72 lab
A continuation of ART 023 with emphasis on expanding skills, experimentation, design, craftspersonship, and creativity. Application of basic techniques to create finished art forms. Field trip may be required.

ART 025 **3.0 Units**
Ceramic Design And Decoration: Hand Building Methods
Prerequisite: ART 024 with a minimum grade of C
Transferable to UC/CSU
Hours: 32-36 lecture, 64-72 lab
Emphasizes ceramic design problem-solving. Emphasis on creativity, design, honing skills, craftspersonship and experimentation. Ceramic art of the past as well as contemporary art is discussed. Loading and firing kilns, formulating glazes and mixing clay bodies are also covered. Builds on fundamental skills covered in Art 023 and Art 024. Field trip may be required.

ART 026 **3.0 Units**
Introduction to Ceramics: Wheel Throwing Techniques
Transferable to UC/CSU
Hours: 32-36 lecture, 64-72 lab
Introduction to basic wheel throwing techniques. Emphasis on form, craftspersonship, and creativity. Surface techniques include texture, stencil, slip, relief, stain, and glaze. Non-traditional construction and surface techniques will also be covered.

ART 027 **3.0 Units**
Intermediate Ceramics: Wheel Throwing Techniques
Prerequisite: ART 026 with a minimum grade of C
Transferable to UC/CSU
Hours: 32-36 lecture, 64-72 lab
This course is a continuation of ART 026 with emphasis on expanding skills, experimentation, design, craftspersonship, and creativity. Application of basic techniques to create finished art forms. Field trip may be required.

ART 028 **3.0 Units**
Ceramic Design: Wheel Throwing Techniques
Prerequisite: ART 027 with a minimum grade of C
Transferable to UC/CSU
Hours: 32-36 lecture, 64-72 lab
Emphasizes ceramic design problem-solving. Emphasis on creativity, design, honing skills, craftspersonship and experimentation. Ceramic art of the past as well as contemporary art is discussed. Loading and firing kilns, formulating glazes and mixing clay bodies are also covered. Builds on fundamental skills covered in ART 026 and ART 027. Field trip may be required.

ART 029 Raku Pottery **2.0 or 3.0 Units**
Course Advisory: ART 023 or ART 026 (one college level ceramics course)
Transferable to UC/CSU
Hours: 16-36 lecture, 48-72 lab
Covers the ancient and contemporary art of Raku. Topics include techniques of forming clay, the formulation of clay bodies and glazes for Raku, kiln construction, firing, post firing, Eastern and Western esthetics, and the history of Raku. The course will not cover basic ceramic construction techniques. Students should already be familiar with basic hand building or wheel throwing techniques. Field trip may be required. Students who wish to transfer must enroll in the 3-unit section.

ART 030A **2.0 or 3.0 Units**
Architectural Ceramics, Murals and Tiles
Course Advisory: ART 023 or ART 026 (one college level ceramics course)
Transferable to UC/CSU
Hours: 16-36 lecture, 48-72 lab
An investigation of the history, contemporary examples, materials, techniques and the vast range of artistic expression possible in architectural ceramics, ceramic murals and tiles. The course will not cover basic ceramic construction techniques. Students should already be familiar with basic hand building or wheel throwing techniques. Students should expect to incur materials and equipment costs typical of a studio art course. Field trips may be required in this course. Students who wish to transfer must enroll in the 3-unit section.

ART 030B **3.0 Units**

Mural Painting: History, Community, Practice

General Education: Option A: Area C; Option B: Area 3A; Option C: Area C1
Transferable to UC/CSU
Hours: 32-36 lecture, 64-72 lab.

An exploration of the cultural history of mural painting as well as the social and political issues related to the creation and public reception of mural paintings. Students will apply aesthetic as well as conceptual analyses to the design and creation of a full-scale mural. Through both study and practice, students will consider the importance of the community in the mural-making process. Field trips are required. Students will travel to view murals in the Bay Area. Murals may be painted at an off-campus site.

ART 030C **3.0 Units**

Ceramics: History, Culture, Practice

General Education: Option B: Area 3A; Option C: Area C1
Transferable to UC/CSU
Hours: 32-36 lecture, 64-72 lab

Introduction to a broad spectrum of ceramic art from diverse cultures including Western/European Art, Asian/ Middle Eastern Art, Meso-American Art and African Art within a technical, historical, and cultural context. Students will utilize creative problem solving skills to produce contemporary, original works of art that reinterpret the traditions presented in the course content.

ART 031 Sculpture **3.0 Units**

Transferable to UC/CSU
Hours: 32-36 lecture, 64-72 lab

Introduction to sculpture methods and materials. Emphasis on principles of three dimensional design and the interrelationship of form, content and context. Sculpture methods to be covered include modeling, mold making, welding, assemblage, and construction with a variety of materials. Various sculpture methods are practiced with attention to creative self-expression and historical context. Field trip may be required.

ART 032 Sculpture: Human Figure **3.0 Units**

Transferable to UC/CSU
Hours: 32-36 lecture, 64-72 lab

Study of the human form in sculpture. Students will create both realistic and abstract sculpture of the human form in a variety of materials. Field trip may be required.

ART 033 Intermediate Sculpture **3.0 Units**

Prerequisite: A minimum grade of C in ART 031, ART 032 or ART 034
Transferable to UC/CSU
Hours: 32-36 lecture, 64-72 lab

Further development of concepts and skills presented in ART 031 and ART 032. Emphasis is placed on individual expression. A variety of materials, methods, and sculptural concepts are explored. Field trip may be required.

ART 034 Ceramic Sculpture **3.0 Units**

Transferable to UC/CSU
Hours: 32-36 lecture, 64-72 lab

Introduction to basic sculpture concepts, materials, and approaches with an emphasis on ceramics. Subjects to be covered include: Historic and contemporary approaches to ceramic sculpture, slab construction, coil building, mold making, extruded fabrication, modeling from the figure, introduction to ceramic color, characteristics and limitations of ceramic materials. Field trip may be required.

ART 035A **3.0 Units**

Introduction to Wood-Fired Ceramics

Transferable to UC/CSU
Hours: 32-36 lecture, 64-72 lab

Covers the ancient and contemporary art of wood-fired ceramics. Topics include techniques of forming clay, the formulating of clay bodies and glazes for wood fire, kiln construction, wood firing techniques, Eastern and Western esthetics and the history of wood-fired ceramics. The course will not cover basic ceramic construction techniques. Students should already be familiar with basic hand building or wheel throwing techniques.

ART 036 **2.0 or 3.0 Units**

Ceramics Surfaces - Drawing and Painting on Clay

Transferable to UC/CSU
Hours: 16-36 lecture, 48-72 lab

A ceramic surface design exploration of the vast range of artistic expression possible with ceramic slips, stains, glazes and firing techniques at low, medium and high temperature ranges. The course will not cover basic ceramic construction techniques. Students should already be familiar with basic hand building or wheel throwing techniques. Field trip may be required. Students who wish to transfer must enroll in the 3-unit section.

ART 037 **2.0 or 3.0 Units**

Clay and Glazes for the Ceramic Artist

Prerequisite: A minimum grade of C in ART 023 or ART 026
Transferable to UC/CSU
Hours: 16-36 lecture, 48-72 lab

Covers and investigates the theoretical and practical aspects of clay and glaze formulation. Topics covered include: Clay/glaze fit, glaze calculation, testing strategies, the development of color, the development of texture, kiln types, kiln temperatures and kiln atmosphere. Field trip may be required. Students who wish to transfer must enroll in the 3-unit section.

C-ID Designation may change periodically visit c-id.net/courses/search for current designation or consult with your counselor

ART 038 Introduction to Printmaking 3.0 Units
Transferable to UC/CSU
Hours: 32-36 lecture, 64-72 lab
Explores traditional and contemporary approaches to etching (Intaglio), lithography, relief (woodcut and linoleum) and screen printing. Digital and new methods of photographic printmaking are discussed and demonstrated. This course is project oriented to enable the student to develop a portfolio of completed works in various mediums. Field trip may be required.

ART 039 3.0 Units
Etching and Engraving: Line Techniques
Transferable to UC/CSU
Hours: 32-36 lecture, 64-72 lab
History and techniques of line etching and engraving, includes dry point, sugar lift line etching, and soft ground line variations. The student is expected to produce matted prints of completed projects. Field trip may be required.

ART 040 Etching and Engraving: Tone 3.0 Units
Transferable to UC/CSU
Hours: 32-36 lecture, 64-72 lab
Etching and engraving techniques such as aquatint, featherbiting, spit bite, and soft ground which produce tones that have gray and black areas defining line etchings. The student will prepare a portfolio of completed projects. Field trip may be required.

ART 041 Etching and Engraving: Color 3.0 Units
Transferable to UC/CSU
Hours: 32-36 lecture, 64-72 lab
Etching and engraving techniques and their history, including the use of multiple plates for each color used on the key plate. Some color plate methods covered include a la poupee, monotype, chine colle, color rollings, and viscosity printing. The student will prepare a portfolio of completed projects. Field trip may be required.

ART 042 Screen Printing 3.0 Units
Transferable to UC/CSU
Hours: 32-36 lecture, 64-72 lab
Screen printing techniques from paper stencils and pochoir to photographic and digital processes. Students are expected to develop a portfolio of prints that emphasizes the exploration of personal content while employing advanced screen techniques and related digital processes. The course will consist of studio production, lectures on contemporary and historical screen printing, demonstrations and critiques. Field trip may be required.

ART 042A Commercial Screen Printing 3.0 Units
Transferable to UC/CSU
Hours: 32-36 lecture, 64-72 lab
An introduction to the screen-printing process. Students will participate in the various functions of a design studio: producing artwork; select mesh, frames, and stencil systems; and select inks and substrates based on printing techniques. A combination of laboratory applications and theory will provide the foundation for this course. Acquisition of technical skills through the actual production of screen-printed products is a major goal of this course. Tee shirts, reusable shopping bags and aprons will be some of the merchandise the class will design and print for the Solano College community.

ART 043 3.0 Units
Print Making: Relief Printing, Including Woodcut
Transferable to UC/CSU
Hours: 32-36 lecture, 64-72 lab
A general introduction to printmaking - the history, development, techniques, and processes. Emphasis is on an in-depth study and application of various relief methods (embossing, collagraph, linoleum cut, woodcut, and non-traditional) along with an investigation of relevant image source and development. Field trip may be required.

ART 045A Graphic Design I 3.0 Units
Transferable to CSU
Hours: 32-36 lecture, 64-72 lab
A fundamental background for terminal and transfer students planning to enter the graphic design field. Instruction in the professional use of design, lettering, and illustration through solution of visual communication problems.

ART 045B Graphic Design II 3.0 Units
Prerequisite: ART 045A with a minimum grade of C
Transferable to UC/CSU
Hours: 32-36 lecture, 64-72 lab
Computer design and production methods for print and digital mediums using Adobe and other software programs for layout, illustration, typography, and animation. Graphic design principles are stressed.

ART 045C Typography 3.0 Units
Course Advisory: ENGL 001 with a minimum grade of C
Transferable to CSU
Hours: 32-36 lecture, 64-72 lab
Fundamentally covers the history, theory and study of letterforms and type design, using both traditional and digital media. Studies will include typographic characteristics, the relationship between type and image, principles of legibility, visual hierarchy, and grid systems. Field trip may be required.

ART 046 Illustration I 3.0 Units
Transferable to UC/CSU
Hours: 32-36 lecture, 64-72 lab
Problems in design and rendering of illustration for print and film media. Projects may include illustrations for books, magazines, advertising and film. Field trip may be required.

ART 046C Illustration II 3.0 Units
Prerequisite: ART 046 with a minimum grade of C or equivalent as determined by portfolio review
Transferable to UC/CSU
Hours: 32-36 lecture, 64-72 lab
Studio illustration conception, production and finish. Students will execute illustration projects using professional procedures and equipment. Emphasis is on student creative and technical development. Written papers and portfolio review required.

ART 047 Introduction to Animation 3.0 Units
Transferable to UC/CSU
Hours: 32-36 lecture, 64-72 lab
Introduction to the art of animation, and its history and evolution. Student projects will facilitate and require the further development of visual literacy, esthetic principles, and critical thinking skills. Interactivity, the study of motion and linear and non-linear narrative structures will be explored. Students will gain an understanding of how animation can be used as an effective tool for storytelling, and will gain experience through group and individual animation projects. Offers an in-depth study of animation and interactive work using industry standard animation software.

ART 049 Art Honors 1.0 to 3.0 Units
Prerequisite: Completion of 24.0 units of college credit with a minimum GPA of 3.3; a minimum of 5.0 units in the discipline with a grade of 'B' or better; an ability to work independently and permission of the School Dean based on instructor availability.
Transferable to CSU
Hours: 48-162 lab by arrangement
An independent study course designed for sophomores or students who have taken many of the basic classes and wish to continue work with an instructor in a specialized area. The student works by arrangement with the instructor on an outlined program of study. Students may take this course up to the maximum number of units over multiple semesters.

ART 060 Exhibition Design 1.0 to 3.0 Units
Transferable to CSU
Hours: 16-54 lecture
Fundamentals of designing exhibitions in gallery, museum, and alternative spaces. Students will gain experience developing exhibitions for the Herger Gallery (Fairfield Campus) and Centers. Topics covered include selection, design and installation of exhibitions; defining the mission of a gallery; public relations; and career opportunities. Field trip may be required.

ART 064 Monotype/Monoprint 3.0 Units
Transferable to CSU
Hours: 32-36 lecture, 64-72 lab
A focus on the unique print. Study will include history and development of this form in relation to print tradition. Development of press skills in single-drop and multi-drop printing is required as well as a portfolio of printing techniques including direct, indirect and combination prints. Field trip may be required.

ART 074 Kiln Design and Operation 2.0 or 3.0 Units
Course Advisory: ART 023 or ART 026 (one college level ceramics course)
Transferable to CSU
Hours: 16-36 lecture, 48-72 lab
Investigate into the vast range of kiln designs, their operation and the opportunities each offers for artistic expression. Kiln designs covered will include natural gas, propane, electric, raku, salt, wood, and alternative kilns. Students will be able to determine which kilns and which firing strategies are best suited to their current artistic vision. The course will not cover basic ceramic construction techniques. Students should already be familiar with basic hand building or wheel throwing techniques. Field trips may be required. Students who wish to transfer must enroll in the 3-unit section.

ART 075 Art Studio Concepts 2.0 or 3.0 Units
Transferable to CSU
Hours: 16-36 lecture, 48-72 lab
Intensive study in visual arts studio. Exposure to contemporary art directions, trends and selected topics. Different studio problems will be investigated each semester. Field trips may be required. Students who wish to transfer must enroll in the 3-unit section.

ART 076A 3.0 Units
Portfolio Development - Artistic Inquiry
Transferable to CSU
Hours: 32-36 lecture, 64-72 lab
An advanced course designed to serve the student in the preparation of a professional fine art portfolio consisting of a body or series of work. Emphasis is placed on: individual expression of an artistic vision; idea development; artistic inquiry; and setting and meeting artistic goals and timelines for the production of a body or series of work. The student should have the necessary skills, art making experience and motivation to work independently, with expert consultation by the instructor, on developing a coherent body of work. This course is the first in a two part course offering completed by Portfolio Development-Documentation. Student should expect to incur materials and equipment costs typical of a studio art course. Field trip may be required.

ART 076B 3.0 Units
Portfolio Development - Documentation
Transferable to CSU
Hours: 32-36 lecture, 64-72 lab
An advanced course designed to serve the student in the preparation of a professional fine art portfolio consisting of a body or series of work. Emphasis is placed on: individual expression of an artistic vision; professional quality documentation and presentation of artwork; and capacity to communicate both verbally and in writing about artwork produced. The student should have the necessary skills, art making experience and motivation to work independently, with expert consultation by the instructor, on developing a coherent body of work. This course is the second in a two part course offering following Portfolio Development - Artistic Inquiry. Student should expect to incur materials and equipment costs typical of a studio art course. Field trip may be required.

ART 077A Professional Practices for Artists 3.0 Units
Transferable to CSU
Hours: 48-54 lecture
Provides the skills and information to serve the student in developing a professional art career. Topics include: How to approach galleries, institutions, universities, art schools, and potential employers. Techniques for promoting art for employment or transfer to four year schools, portfolio preparation, resume writing, artist statement and biography composition, sales and pricing of art, business basics, entrepreneurship, public relations, art on the internet, planning and goal setting, contracts, taxes, grant getting, display, shipping, sustaining creativity. Evaluation of marketing and promotional concepts. Recommended for all art and design majors seeking to become professionals. Field trips may be required.

ART 077B Art on Site 3.0 Units
Transferable to CSU
Hours: 48-54 lecture
A movable feast. In this course students will visit artists, gallery owners, museum curators and art administrators on site, at their studios, galleries museums and offices. This will be a forum for students to hear first hand from artists, arts scholars and other art professionals discussing and contextualizing their work within the contemporary art field. Includes multiple lecturers by visitors and additional class lectures providing further context. Exposure to contemporary art directions, trends and job markets. This course requires extensive field trips to destinations in the greater Sacramento and Bay Area.

ART 100 2.0 or 3.0 Units
Color and Mixed Media Drawing
Hours: 16-36 lecture, 48-72 lab
A focus on the use of a variety of drawing materials and techniques with special attention to color theory. Lectures, demonstrations and field study will supplement class assignments. Field trip may be required.

ART 145 Portrait Drawing and Painting 2.0 or 3.0 Units
Course Advisory: ART 014
Hours: 16-36 lecture, 48-72 lab
A multifaceted address of the representation of likeness portrait study. Includes anatomy and work with live models, self-portraits and portraits of others. Issues of gender, ethnic identity, youth and aging, stereotyping and caricature will be presented in historical and contemporary contexts. Portrait work will be explored in a variety of stylistic formats from observational likeness to expressionistic images to symbolic portraits. Work in a variety of media is required. Field trip may be required.

Art - Digital

ARTD 044 Introduction to Digital Design 3.0 Units
Transferable to UC/CSU
Hours: 32-36 lecture, 64-72 lab
Introduction to digital tools used for the theory, practice and production of graphic design. Principles of color, resolution, pixels, vectors, image enhancement, layout, visual hierarchy, and typography. Emphasis on creating content for industry standards, including compliance with print and web specifications, and professional practices for presentation and communication skills.

ARTD 047C Introduction to 3D Animation 3.0 Units
Transferable to UC/CSU
Hours: 32-36 lecture, 64-72 lab
Introduction to the theory, history and production of 3D animation using industry standard software. The traditional principles of animation are applied and translated to the computer generated 3D (CG 3D) environment.

ARTD 144A Design Bootcamp 1.0 Unit
Hours: 16-18 lecture, 8-9 lab
An accelerated, in-depth course that covers the principles, practices and digital production of visual design. Topics covered include visual hierarchy, color, typography, composition, color theory, ideation, and professional practices within the industry.

Astronomy

Program Description
The Astronomy program introduces students to the physical properties and processes that govern celestial bodies in the Universe. Students may take astronomy courses to satisfy their natural sciences requirements or to transfer with a major in astronomy/astrophysics or double major in astronomy and physics to the university. Transfer level astronomy curricula stress very strong preparation in physics and mathematics. While most astronomy courses will be taken at the upper division or graduate level, exposure to lower division astronomy courses will assist in exploring the major. Students planning to transfer may need to complete additional coursework and/or select specific electives required by the transfer institution and should consult with a counselor to identify required courses at their target university. Students who pursue a B.S. degree in astronomy will be qualified to enter a teaching credential program, operate a planetarium, and assist at an observatory. With an M.S. degree, students can teach astronomy or physics at a community college, be a telescope operator at a major observatory, or work in industry. A Ph.D. qualifies students for a career in research at a university, space agency, or observatory.

Associate in Science Degree
The Associate in Science Degree in Astronomy can be obtained by completing the 39-unit major and general education requirements. All courses for the major must be completed with a minimum grade of C, or a grade of P if the course is taken on a Pass/No Pass basis.

Program Outcomes
Students who complete the Astronomy Associate Degree will be able to:

1. Explain and discuss basic astronomical phenomena including, but not limited to: gravitation, the seasons, the phases of the Moon, eclipses.
2. Apply the laws of physics to explain the properties of planets, stars, galaxies, and the Universe.
3. Explain and discuss the impact and history of scientific theories and their importance in the advancement of astronomy.
4. Demonstrate proficiency in applying scientific procedures for making observations and measurements typical of modern astronomical research.

REQUIRED COURSES	**Units**
ASTR 010 General Astronomy	3
ASTR 020 Astronomy Laboratory	1
MATH 020 Analytic Geometry and Calculus I	5
MATH 021 Analytic Geometry and Calculus II	5
MATH 022 Analytic Geometry and Calculus III	4
PHYS 006 Physics for Science and Engineering	5
PHYS 007 Physics for Science and Engineering	5
PHYS 008 Physics for Science and Engineering	5
6 units from List A:	6
Total Units	**39**

List A: (select 6 units)	**Units**
ASTR 030 The Solar System	3
ASTR 040 Stars, Galaxies, and Cosmology	3
ASTR 045 Introduction to Astrobiology and the search for Life in the Universe	3
ASTR 050 Astronomical Optics	1
CHEM 001 General Chemistry	5
CIS 022 Introduction to Programming	3

CSU General Education or IGETC Pattern units	**37-39**
Total Degree Units CSU GE or IGETC	**67-69**
Solano General Education	**21**
Electives (as needed to reach 60 units)	**0**
Total Degree Units Solano GE	**60**

** 9 units may be double counted toward both the major area of emphasis and CSU General Education or IGETC Pattern. Consult with a counselor for more information on completing this degree.*

Astronomy

ASTR 010 General Astronomy 3.0 Units

General Education: Option A: Area A; Option B: Area 5A; Option C: Area B1
Transferable to UC/CSU
Hours: 48-54 lecture

An introductory study of the universe, including the properties and evolution of galaxies, stars, pulsars, black holes, quasars, the sun, planets and life in the universe. Field trip may be required.

ASTR 020 Astronomy Laboratory 1.0 Unit

Prerequisite: ASTR 010, ASTR 030, ASTR 040 or ASTR 045 (courses may be taken concurrently)
General Education: Option B: Area 5C; Option C: Area B3
Transferable to UC/CSU
Hours: 48-54 lab

A familiarization with the sky, telescopes, and other astronomical equipment. Students will conduct experiments in physics related to astronomy. Topics will cover the moon, planets, stars, galaxies, and cosmology. Field trips may be required.

ASTR 030 The Solar System 3.0 Units

General Education: Option A: Area A; Option B: Area 5A; Option C: Area B1
Transferable to UC/CSU
Hours: 48-54 lecture

An introductory study of solar system astronomy, the physics related to that astronomy, the planets and their moons, the sun, solar system debris, and the possibility of extraterrestrial life. Field trips may be required.

ASTR 040 Stars, Galaxies, and Cosmology 3.0 Units

General Education: Option A: Area A; Option B: Area 5A; Option C: Area B1
Transferable to UC/CSU
Hours: 48-54 lecture

An introductory study of stars, galaxies, the universe, and the physics related to these topics. Including an examination of the facts relating to the sun, stellar lifetimes, supernovae, black holes, and cosmology. Field trip may be required.

ASTR 045 3.0 Units
Introduction to Astrobiology and the Search for Life in the Universe

General Education: Option B: Area 5A; Option C: Area B1
Transferable to UC/CSU
Hours: 48-54 lecture

An exploration of the possibility of life beyond the Earth. Topics include the origin and evolution of life on Earth, the formation of Earth and other planets in the solar system, the likelihood of life existing on other planets or moons within our solar system, attempts to locate life within our solar system and attempts to communicate with intelligent life in other parts of the galaxy.

ASTR 049 Astronomy Honors 1.0 to 3.0 Units

Prerequisite: A minimum grade of C in ASTR 020 or ASTR 045 and an ability to work independently; permission of the School Dean based on instructor availability.
Transferable to CSU
Hours: 48-144 lab

Universities and research laboratories across the country critically depend on ordinary citizens to collect the data that they need for their research projects. These people are known as "Citizen Scientists". In this course students will contribute to a current Citizen Science research project in Astronomy. This project requires the approval of a faculty member sponsor.

ASTR 050 Astronomical Optics 1.0 Unit

Course Advisory: A minimum grade of B in ASTR 030 or ASTR 040; A minimum grade of C in MATH 104
Transferable to CSU
Hours: 48-54 lab

An introduction to principles of astronomical optics. The student will apply these principles to the design, fabrication, and use of a telescope, which will be tested under the night sky. Primary mirrors will be ground, smoothed, polished, and figured by hand. Optics and optical testing theories will be presented. Students will design and build a custom optical tube assembly and telescope mount. A field trip to test the finished telescope will be required.

Automotive

Automotive Technician

Program Description
This program is designed to prepare graduates for entry level employment in the automotive industry as apprentice technicians, parts specialists, service consultants, or specialists in one of the many areas in the automotive service and repair industry.

Associate in Science Degree
The Associate in Science Degree can be obtained upon completion of the 45-unit major and Solano General Education - Option A. All courses in the major must be completed with a minimum grade of C or a P if the course is taken on a Pass/No Pass basis.

Program Outcomes
Students who complete the Associate Degree will be technically proficient in entry level skills as defined by the National Automotive Technician's Education Foundation (NATEF) by demonstrating:

1. Demonstrate the ability to properly service and repair automotive engines, automatic and manual transmissions and transaxles.
2. Demonstrate the ability to properly service and repair automotive brakes, steering and suspension systems.
3. Demonstrate the ability to properly service and repair automotive electrical, engine performance, HVAC and hybrid/alternative fuel vehicles.
4. Demonstrate effective workplace skills including oral and written communication and proper disposal and handling of hazardous waste materials

REQUIRED COURSES	**Units**
ATEC 070 Automotive Fundamentals	3
ATEC 130 Automotive Suspension and Steering	4
ATEC 131 Automotive Electrical Systems	4
ATEC 132 Automotive Brake Systems	4
ATEC 133 Automotive Engine Repair	4
ATEC 134 Automatic Transmissions/Transaxles	4
ATEC 135 Automotive Engine Performance	4
ATEC 136 Automotive Manual Drivetrain and Axles	4
ATEC 137 Automotive Heating and Air Conditioning	4
ATEC 138 Automotive Electronics	4
ATEC 139 Advanced Engine Performance	4
ATEC 140 Hybrid Vehicle Maintenance and Repair	2
Required Major Total Units	**45**
Solano General Education	**21**
Electives (as needed to reach 60 units)	**0**
Total Degree Units	**66**

This is a Gainful Employment Program. For additional information, please visit ***http://www.solano.edu/gainful_employment/*** and select *"Automotive Technician."*

Automotive

Automotive Automatic Transmissions and Transaxles

Program Description
This program is designed to prepare graduates for entry level employment in the automotive industry as an Automatic Transmission/Transaxle Service/Repair Technician.

Certificate of Achievement
A Certificate of Achievement in Automatic Transmissions and Transaxles can be obtained by completing the 17-unit major. All courses must be completed with a minimum grade of C or a P if the course is taken on a Pass/No Pass basis.

Program Outcomes
Students who complete the Certificate of Achievement in Automatic Transmissions and Transaxles shall have demonstrated and practiced:

1. Diagnose, remove, and repair automotive transmissions and transaxles
2. Utilize electrical diagnostic equipment and do hands-on testing with digital multi-meter
3. Safely work on and repair hybrid and alternative fuel vehicles

REQUIRED COURSES	**Units**
ATEC 070 Automotive Fundamentals	3
ATEC 131 Automotive Electrical Systems	4
ATEC 134 Automatic Transmissions/Transaxles	4
ATEC 138 Automotive Electronics	4
ATEC 140 Hybrid Vehicle Maintenance and Repair	2
Total Units	**17**

This is a Gainful Employment Program. For additional information, please visit ***http://www.solano.edu/gainful_employment/*** and select *"Automotive Automatic Transmissions and Transaxles."*

Automotive Electrical and Body Systems

Program Description
This program is designed to prepare graduates for entry level employment in the automotive industry as an Automotive Electrical/Electronics Service/Repair Technician.

Certificate of Achievement
A Certificate of Achievement in Automotive Electrical and Body Systems can be obtained by completing the 17-unit major. All courses must be completed with a minimum grade of C or a P if the course is taken on a Pass/No Pass basis.

Program Outcomes
Students who complete the Certificate of Achievement in Automotive Electrical and Body Systems shall have demonstrated and practiced:

1. Understand the theory of air conditioning and heating systems and how to properly repair automotive HVAC systems
2. Utilize electrical diagnostic equipment and do hands-on testing with digital multi-meter
3. Safely work on and repair hybrid and alternative fuel vehicles

REQUIRED COURSES	**Units**
ATEC 070 Automotive Fundamentals	3
ATEC 131 Automotive Electrical Systems	4
ATEC 137 Automotive Heating and Air Conditioning	4
ATEC 138 Automotive Electronics	4
ATEC 140 Hybrid Vehicle Maintenance and Repair	2
Total Units	**17**

This is a Gainful Employment Program. For additional information, please visit ***http://www.solano.edu/gainful_employment/*** and select *"Automotive Electrical and Body Systems."*

Automotive

Automotive Maintenance and Light Repair

Program Description
This program is designed to prepare graduates for entry level employment in the automotive industry as apprentice technicians, lube technician, express service technician or parts specialist.

Certificate of Achievement
The Certificate of Achievement can be obtained by completing the 17-unit automotive major. All courses in the major must be completed with a minimum grade of C or a P if the course is taken on a pass-no pass basis.

Program Outcomes
Students who complete the Associate Degree will be technically proficient in entry level skills as defined by the National Automotive Technician's Education Foundation. (NATEF) by demonstrating:

1. Demonstrate proficiency in diagnosing and repairing automotive steering and suspension systems
2. Use electrical diagnostic equipment and do hands-on testing with a digital multi-meter
3. Proficiently diagnose, service, and repair automotive brake systems
4. Safely work on and repair hybrid and alternative fuel vehicles

REQUIRED COURSES.....**Units**
ATEC 070 Automotive Fundamentals 3
ATEC 130 Automotive Suspension and Steering 4
ATEC 131 Automotive Electrical Systems 4
ATEC 132 Automotive Brake Systems 4
ATEC 140 Hybrid Vehicle Maintenance and Repair 2
Total Units 17

This is a Gainful Employment Program. For additional information, please visit
http://www.solano.edu/gainful_employment/ and select *"Automotive Maintenance and Light Repair Technician."*

ATEC 070 Automotive Fundamentals 3.0 Units
Transferable to CSU
Hours: 32-36 lecture, 48-54 lab
Provides the knowledge and skills needed to prepare students for entry into the automotive core curriculum. The study of automotive industry fundamentals including careers, safety, fasteners, hand tool identification and usage, vehicle systems, electrical fundamentals, service information access and use, automotive chemical and fluid applications, hazardous waste handling, general shop equipment usage, and vehicle servicing. The course is designed in conjunction with Automotive Service Excellence (ASE) standards and subsequently will in part prepare the student for the ASE Maintenance and Light Repair G1 Certification Examination.

ATEC 130 4.0 Units
Automotive Suspension and Steering
Prerequisite: ATEC 070 with a minimum grade of C (may enroll concurrently)
Course Advisory: ATEC 131
Hours: 32-36 lecture, 96-108 lab
The study of automotive suspension and steering fundamentals including: Diagnosis, inspection, repair, and adjustment of modern automotive steering, suspension, supplemental restraint, tire pressure monitoring, and alignment systems. Theory of operation, common automotive steering and suspension systems, wheel alignment principles, methods of diagnosis, adjustment and repair, and the use of suspension service equipment will be covered. The course is designed in conjunction with Automotive Service Excellence (ASE) standards and subsequently will in part prepare the student for the ASE Suspension and Steering A4 Certification Examination.

C-ID Designation may change periodically visit c-id.net/courses/search for current designation or consult with your counselor

ATEC 131 Automotive Electrical Systems 4.0 Units
Prerequisite: ATEC 070 with a minimum grade of C (may enroll concurrently)
Hours: 32-36 lecture, 96-108 lab
Theory and principles of automotive electrical systems including basic electrical theory, Ohm's Law, series and parallel circuits, electrical symbols and schematics, automotive batteries, charging systems, voltage regulation, starting systems, lighting systems, and various accessory systems. Laboratory will place emphasis on diagnosis and testing techniques required to effectively determine the necessary action in an electrical system failure. Use of schematics, technical specifications, voltmeters, ohmmeters, ammeters, and circuit testers will be required. The course is designed in conjunction with Automotive Service Excellence (ASE) standards and subsequently will in part prepare the student for the ASE Electrical / Electronic A6 Certification Examination.

ATEC 132 Automotive Brake Systems 4.0 Units
Prerequisite: ATEC 070 with a minimum grade of C (may enroll concurrently)
Course Advisory: ATEC 131
Hours: 32-36 lecture, 96-108 lab.
The study of modern automotive braking systems. Hydraulic principles, coefficients of friction, and thermodynamics will be discussed. Diagnosis, repair, overhaul, and adjustment procedures of drum, disc/drum, and four-wheel disc systems will be emphasized. Anti-lock Braking Systems (ABS) diagnostics, servicing, and repair procedures will also be covered. The course will cover common domestic and import passenger vehicles, and light trucks only. The course is designed in conjunction with Automotive Service Excellence (ASE) standards and subsequently will prepare the student for the ASE Brakes A5 Certification Examination.

ATEC 133 Automotive Engine Repair 4.0 Units
Prerequisite: ATEC 070 with a minimum grade of C (may enroll concurrently)
Course Advisory: ATEC 131
Hours: 32-36 lecture, 96-108 lab
The study of four stroke combustion cycle theory, engine torque, horsepower, materials, and manufacturing processes as they relate to internal combustion powerplants used in production automobiles and light trucks. The theory, principles, and diagnosis of cooling systems, lubrication systems, and common engine mechanical failures will be emphasized. Laboratory will focus on comprehensive engine testing, in-vehicle engine servicing, engine disassembly/ reassembly, precision measuring, and inspection of internal engine components. The course is designed in conjunction with Automotive Service Excellence (ASE) standards and subsequently will prepare the student for the ASE Engine Repair A1 Certification Examination.

ATEC 134 4.0 Units
Automatic Transmissions/Transaxles
Prerequisite: ATEC 070 with a minimum grade of C (may enroll concurrently).
Course Advisory: ATEC 131
Hours: 32-36 lecture, 96-108 lab.
The study of hydraulic and electronically actuated automatic transmissions and transaxles. Topics will include positive and variable displacement pumps, torque converters, bands and clutches, hydraulic valves, electronic shift solenoids, governors, and common compound planetary gear arrangements. Laboratory will focus on diagnostic and overhaul procedures, in-vehicle testing, and bench testing of various components. The course is designed in conjunction with Automotive Service Excellence (ASE) standards and subsequently will prepare the student for the ASE Automatic Transmission A2 Certification Examination.

ATEC 135 Automotive Engine Performance 4.0 Units
Prerequisite: ATEC 070 with a minimum grade of C (may enroll concurrently)
Course Advisory: ATEC 131
Hours: 32-36 lecture, 96-108 lab
Operation, troubleshooting and repair of the ignition, fuel and emission control systems of import and domestic passenger vehicles and light trucks. Emphasis is on theoretical knowledge and the proper use of diagnostic tools and equipment. The course is designed in conjunction with Automotive Service Excellence (ASE) standards and subsequently, will in part, prepare the student for the ASE Engine Performance A8 Certification Examination.

ATEC 136 4.0 Units
Automotive Manual Drivetrain and Axles
Prerequisite: ATEC 070 with a minimum grade of C (may enroll concurrently)
Hours: 32-36 lecture, 96-108 lab
Theory and principles of manual transmissions/transaxles, clutches, driveshafts, half shafts, variable and constant velocity joints, differentials, rear wheel drive axle assemblies, all wheel drives, and four wheel drives. Gear types, ratios, and noise, vibration, harshness diagnostic routines will be discussed. Diagnosis, repair, overhaul, and adjustment procedures for common domestic, import, and light truck drivetrain components will be emphasized. The course is designed in conjunction with Automotive Service Excellence (ASE) standards and subsequently will prepare the student for the ASE Manual Transmission/Transaxle & Drivetrain A3 Certification Examination.

ATEC 137 **4.0 Units**

Automotive Heating and Air Conditioning

Prerequisite: ATEC 070 with a minimum grade of C (may enroll concurrently)
Hours: 32-36 lecture, 96-108 lab

Theory and operation of automotive heating systems and air conditioning refrigeration systems. Topics will include the refrigeration cycle, evacuation principles, humidity, heat transfer, automotive refrigerants, temperature pressure relationship, greenhouse gases, and proper handling and storage of refrigerants. Laboratory will focus on the diagnosis and repair of heating and cooling systems, use of refrigerant recycling-reclaiming equipment, use of evacuation equipment, retrofitting, and environmentally sound refrigeration handling techniques. The course is designed in conjunction with Automotive Service Excellence (ASE) standards and subsequently will prepare the student for the ASE A7 Air Conditioning and Heating Certification Examination.

ATEC 138 Automotive Electronics **4.0 Units**

Prerequisite: A minimum grade of C in ATEC 070 and ATEC 131
Hours: 32-36 lecture, 96-108 lab

Emphasis on applied techniques in schematic reading, scan tool usage and diagnosis of various automotive electronic systems, including power doors, mirrors, windows and seats; sun roofs; air bags; keyless entry; networks and other body control electronics. This course builds on the concepts introduced in Automotive Electrical Systems; is designed in conjunction with Automotive Service Excellence (ASE) standards and subsequently will in part prepare the student for the ASE Electrical / Electronic A6 Certification Examination.

ATEC 139 Advanced Engine Performance **4.0 Units**

Prerequisite: A minimum grade of C in ATEC 070, ATEC 131 and ATEC 135
Hours: 32-36 lecture, 96-108 lab

Emphasis on applied techniques in advanced engine performance systems diagnostics including fuel injection; ignition; emission controls; OBD II and CAN/BUS. The course is correlated with the National Institute for Automotive Service Excellence (ASE) standards and is designed to prepare the student for the ASE A8 and L1 Engine Performance Certification Examination series.

ATEC 140 **2.0 Units**

Hybrid Vehicle Maintenance and Repair

Hours: 16-18 lecture, 48-54 lab

Study of hybrid vehicles, safety issues associated with hybrid vehicles, maintenance and repair procedures specific to hybrid vehicles.

ATEC 148A Special Topics-Smog Check Level I **2.5 Units**

Hours: 32-36 lecture, 32-36 lab

The Engine and Emission Control Training is intended to provide students with fundamental knowledge of engine and emission control theory, design and operation. Students who successfully complete this training will have met the first step of the Bureau of Automotive Repair's training requirements for inexperienced or minimally experienced candidates for the Smog Check Inspector license. The training is a minimum of 68 hours and must be completed at a Bureau of Automotive Repair (BAR) certified school. To pass Level 1 training, a student must successfully complete a series of hands-on assessments and pass a written examination. Experienced candidates may skip Level 1 training if they: Possess ASE A6, A8 and L1 certification; or possess an AA/AS Degree or Certificate in automotive technology and have 1 year experience; or have 2 years experience and have completed BAR specified diagnostic and repair training.

ATEC 148B **1.0 Unit**

Special Topics - Smog Check Level II

Prerequisite: ATEC 148A with a minimum grade of C
Hours: 16-18 lecture, 8-9 lab

Level 2 - Smog Check Procedures Training. This training provides students the procedural knowledge, skills, and abilities needed to perform Smog Check inspections. This training is a minimum of 28 hours and must be completed at a BAR-certified school. The Smog Check Procedures Training must be completed by all Inspector candidates. To pass Level 2 training, a student must successfully complete a series of hands-on assessments and pass a written examination. Students who complete and pass this training will have met the Bureau's training requirements to qualify to take the Smog Check Inspector state licensing examination.

ATEC 150 Automotive Data Acquisition **2.0 Units**

Hours: 32-36 lecture

Provides an understanding of OASIS (Online Automotive Service Information Systems) and the skills needed to adequately retrieve and apply automotive data, service procedures, and technical service bulletins. Includes the preparation of computer based repair orders and calculating repair estimates using web based service information providers.

ATEC 151 Automotive Parts and Service **3.0 Units**

Hours: 32-36 lecture. 48-54 lab.

An introduction to the skills and knowledge utilized in the field of automotive parts and service consulting. This course offers preparation for the Automotive Service Excellence (ASE) C-1 and P-1 exam and certification. Topics include flow chart/diagnostic chart interpretation, parts removal/replacement, small group communication, and small business operations related to the automotive industry.

C-ID Designation may change periodically visit c-id.net/courses/search for current designation or consult with your counselor

Biology (AS-T)

CAREER PATHS:

Biological Technician
Biologist
Molecular and Cellular Biologist
Geneticists
Life Scientist
Natural Science Manager
Environmental Restoration
Secondary Education
Post-Secondary Education

Additional Career Paths and related data, including state-by-state wage info and growth in the field, can be found at www.onetonline.org.

This program map represents one possible pathway. See a counselor to create a customized education plan. Map is for the 2019-2020 catalog year.

SOLANO COMMUNITY COLLEGE

BIOLOGY

Associate in Sciences for Transfer
GE Pattern: IGETC
Program Total Units: 65

For more information please contact: (707) 864-7211

1 FIRST SEMESTER

Total Recommended Units: 15

CHEM 001	General Chemistry I (IGETC 5A/5C)	**5 units**
MATH 020	Analytic Geometry & Calculus I (IGETC 2)	**5 units**
ENGL 001	College Composition (IGETC 1A)	**4 units**
LR 010	Introduction to Library Research and Information Competency	**1 unit**

2 SECOND SEMESTER

Total Recommended Units: 17

CHEM 002	General Chemistry II (IGETC 5B)	**5 units**
BIO 002	Cell & Molecular Biology	**5 units**
IGETC 1B	Suggested: ENGL 002 or 004	**4 units**
IGETC 3A	Suggested: ART 001 or 002 or MUSC 005 or 008	**3 units**

3 THIRD SEMESTER

Total Recommended Units: 16

PHYS 002 or 006*	General Physics I OR Physics for Science & Engineering	**5 units**
BIO 003	Evolution, Ecology and Biodiversity	**5 units**
IGETC 3B / Am Inst Grp 2	Suggested: HIST 017 or 018	**3 units**
IGETC 1C	Suggested: COMM 001 or 002 or 006	**3 units**

4 FOURTH SEMESTER

Total Recommended Units: 17

PHYS 004 or 007*	General Physics II OR Physics for Science & Engineering	**5 units**
IGETC 4	Suggested: PSYC 001	**3 units**
IGETC 3A or 3B		**3 units**
IGETC 4 / Am Inst Grp 1	Suggested: PLSC 001 for Am Inst requirement	**3 units**
IGETC 4	Suggested: SOC 001 or ANTH 002 or ECON 001	**3 units**

*The University of California transfer pathway for Biology also requires MATH 021, CHEM 003, and CHEM 004, but does NOT require courses in Physics. See a counselor for a personalized education plan.

Required Courses/Courses in Discipline GE Courses/Categories

GET STARTED NOW!

- **Get started on your Pathway now with these recommended courses!** *Then* – See a counselor to create a **CUSTOMIZED** education plan personalized to your career and transfer goals!
- Required courses may change depending on a student's career and transfer goals, including requirements for cross-cultural and foreign language courses, and/or specific requirements for an individual CSU or UC.
- Unique transfer requirements for a specific institution can be found at **www.assist.org.**

LET US HELP YOU!

How to Apply: solano.edu/ar/apply.php

- **Questions? Talk to a Counselor Now!**
  Main Campus, Fairfield: (707) 864-7101
  Vacaville Center: (707) 863-7836
  Vallejo Center: (707) 642-8188
  Travis AFB: (707) 863-7878
  Visit online at solano.edu/counseling
- **Contact Our Career Center to Learn Your Career Options!**
  Call 707-864-7124, or email at CareerCenter@solano.edu
  Visit online at solano.edu/career
- **You Can Afford College! Learn more about Financial Aid!**
  Call 707-864-7103, or email at FinancialAid@solano.edu
  Visit online at solano.edu/financial_aid
- **College is Accessible!** Contact our Disability Services Program (DSP) at 707-864-7136.

Biology

Associate in Science in Biology for Transfer (ADT: A.S.-T.)

Program Description
The Associate in Science in Biology for Transfer Degree program prepares students to transfer to the California State University system as a biology major.

Associate in Science Degree
The Associate in Science in Biology for Transfer degree prepares students to seamlessly transfer to the California State University system as a Biology major. This degree gives Biology majors the Biology, Mathematics, Chemistry, and Physics knowledge that allows them to succeed in upper division courses after transfer. In the major, students gain knowledge of biological molecules, cell structure and function, bioenergetics, Mendelian and molecular genetics, microbiology, plant biology, evolution, ecology, biodiversity, and biotechnology. In the laboratory students learn experimental design including data collection and analysis, keeping a legal laboratory notebook, and reporting the results in a standard scientific journal format. The Biology courses give students an extensive laboratory experience where they gain essential skills required to study and manipulate macromolecules, aseptically transfer cells, work with the common model organisms used in Biology research, and carry out a field study.

Associate in Science in Biology for Transfer
Students who complete this 35 unit major will be guaranteed admission with junior status to the California State University system, though not to a particular campus.

The Associate in Science in Biology for Transfer degree requires:

1. Completion of 60 semester 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. Completion of the 35 units of courses in the major.
2. Obtainment of a minimum grade point average of 2.0. Students must earn a C or better in all courses required for the major. A "P" (Pass) grade is not an acceptable grade for courses in the major.

Program Outcomes
Students who complete the Biology Associate Degree will be able to:

1. Design and/or interpret an investigation, including data collection and/or analysis.
2. Describe the molecular basis of genetics and energetics.
3. Explain the principles and mechanisms of microevolution and macroevolution.

REQUIRED COURSES	**Units**
BIO 002 Cell and Molecular Biology	5
BIO 003 Evolution, Ecology & Biodiversity	5
CHEM 001 General Chemistry I	5
CHEM 002 General Chemistry II	5
MATH 020 Analytic Geometry and Calculus I	5
Select List A or List B	10
Required Major Total Units	**35**

List A	**Units**
PHYS 002 General Physics (Non-Calculus)	5
PHYS 004 General Physics (Non-Calculus)	5

List B	**Units**
PHYS 006 Physics for Science and Engineering	5
PHYS 007 Physics for Science and Engineering	5

CSU General Education or IGETC for Stem Units	**31-33**
CSU Transferable Electives (as needed to reach 60 Transferable units)*	**1-4**
Total Degree Units	**60**

**9-10 units may be double counted toward both the major area of emphasis and CSU General Education or IGETC Pattern. Consult with a counselor for more information on completing this degree.*

Biology

Biology

Program Description
This degree has been designed for students planning on transferring to a campus of the University of California as a Biology, Cell Biology, Molecular Biology, or Biochemistry major. The program incorporates a study of the mathematics, chemistry, and biology required to understand and research biological processes including cell biology, molecular biology, bioenergetics, genetics, population genetics, microbiology, evolution, developmental biology, ecology, biodiversity, and biotechnology.

Associate in Science Degree
The Associate in Science Degree can be obtained by completing the 40-unit major, and general education requirements. All courses in the major must be completed with a minimum grade of C or a P if the course is taken on a Pass/No Pass basis.

Program Outcomes
Students who complete the Biology Associate Degree will be able to:

1. Design and/or interpret an investigation, including data collection and/or analysis.
2. Describe the molecular basis of genetics and energetics.
3. Explain the principles and mechanisms of microevolution and macroevolution.

REQUIRED COURSES	**Units**
BIO 002 Cell and Molecular Biology	5
BIO 003 Evolution, Ecology & Biodiversity	5
CHEM 001 General Chemistry I	5
CHEM 002 General Chemistry II	5
CHEM 003 Organic Chemistry I	5
CHEM 004 Organic Chemistry II	5
MATH 020 Analytic Geometry and Calculus I	5
MATH 021 Analytic Geometry and Calculus II	5
Required Major Total Units	**40**

CSU General Education or IGETC for STEM units	**31-33**
Total Degree Units CSU GE or IGETC	**62-64**
Solano General Education	**21**
Electives (as needed to reach 60 units)	**0**
Total Degree Units Solano GE	**61**

** 9 units may be double counted toward both the major area of emphasis and CSU General Education or IGETC Pattern. Consult with a counselor for more information on completing this degree.*

Biology

Biomedical Sciences

Program Description
The Biomedical Sciences Associate in Science Degree prepares students to transfer into a health care profession program offered at a community college or a four year institution. These fields include nursing, respiratory therapy, radiological science, physical therapy, occupational health, dental assistant, and dental hygiene. The degree provides basic knowledge in chemistry, microbiology, human anatomy, and human physiology. These are the common prerequisites for community college and university allied health majors.

Certificate of Achievement and Associate in Science Degree
A Certificate of Achievement can be obtained upon completion of the 18-19-unit major. The Associate in Science Degree can be obtained by completing the 18-19-unit major, general education requirements and electives. All courses for the major must be completed with a minimum grade of C or a grade of P if the course is taken on a Pass/No Pass basis.

Program Outcomes
1. Demonstrate knowledge of the structure and function of the major organ systems of the human body.
2. Demonstrate knowledge of the normal physiological functions of the organ systems and explain how disturbances of normal physiological functions lead to metabolic and physiological disorders (clinical applications).
3. Demonstrate knowledge of how microorganisms interact with the human body and describe how these interactions lead to health or human disease

REQUIRED COURSES	**Units**
BIO 004 Human Anatomy	5
BIO 005 Human Physiology	5
BIO 014 Principles of Microbiology	4
One course from Chemistry List	4-5
Required Major Total Units	**18-19**

Chemistry List: (select one course)	**Units**
CHEM 001 General Chemistry I	5
CHEM 010 Intermediate Chemistry	4
CHEM 012 Chemistry for the Health Sciences	5

CSU General Education or IGETC Pattern units	**37-39**
Electives (as needed to reach 60 units)	**9-12**
Total Degree Units CSU GE or IGETC	**60**

Solano General Education	**21**
Electives (as needed to reach 60 units)	**20-21**
Total Degree Units Solano GE	**60**

** 7 units may be double counted toward both the major area of emphasis and CSU General Education or IGETC Pattern. Consult with a counselor for more information on completing this degree.*

BIO 002 Cell and Molecular Biology 5.0 Units
Prerequisite: CHEM 001
General Education: Opt. A: Area A; Opt. B: Area 5B, 5C; Opt. C: Area B2, B3
Transferable to UC/CSU
Hours: 48-54 lecture, 96-108 lab
This course, intended for biology majors, covers the structure and function of prokaryotic and eukaryotic cells, biological molecules, cell reproduction and its controls. Mendelian and molecular genetics, cell physiology and the metabolism including cellular respiration and photosynthesis, cellular communication, and homeostasis. An extensive laboratory component teaches the techniques used in biotechnology to manipulate DNA and to study proteins. *(C-ID BIOL 190)*

BIO 003 Evolution, Ecology & Biodiversity 5.0 Units
Prerequisite: BIO 002 with a minimum grade of C
General Education: Opt. A: Area A; Opt. B: Area 5B, 5C; Opt. C: Area B2, B3
Transferable to UC/CSU
Hours: 48-54 lecture, 96-108 lab
This course, intended for biology majors, covers evolution, ecology, and the diversity of life. Laboratory includes invertebrate and vertebrate dissection and several weekend and all day field trips. Students must successfully complete both the lecture and the laboratory portions of the course. Field trips may be required with some involving a fee. *(C-ID BIOL 140)*

Biology

BIO 004 Human Anatomy 5.0 Units
Course Advisory: BIO 016 and BIO 016L strongly recommended
General Education: Opt. A: Area A; Opt. B: Area 5B, 5C; Opt. C: Area B2, B3
Transferable to UC/CSU
Hours: 48-54 lecture, 96-108 lab
A study of the structural organization of the human body, from cellular to organismal level. Throughout the course, various types of instruction are used, including microscopic investigation of prepared slides of tissues and organs, gross (macroscopic) anatomical dissection, and examination of prosected human material. *(C-ID BIOL 110B)*

BIO 005 Human Physiology 5.0 Units
Prerequisite: A minimum grade of C in BIO 004 and CHEM 001, CHEM 010 or CHEM 012 (formerly CHEM 051)
General Education: Opt. A: Area A; Opt. B: Area 5B, 5C; Opt. C: Area B2, B3
Transferable to UC/CSU
Hours: 48-54 lecture, 96-108 lab
A description of physiological and homeostatic mechanisms of the body systems in health and disease. The laboratory relates structure to function, uses instrumentation to measure physiological variables, and enables students to critically evaluate functional status. *(C-ID BIOL 120B)*

BIO 012 Environmental Science 3.0 Units
General Education: Opt. A: Area A; Opt. B: Area 5B; Opt. C: Area B2
Transferable to UC/CSU
Hours: 48-54 lecture
Examines environmental issues from a scientific perspective by using an understanding of the physical, chemical, and biological processes of the Earth system to examine the interaction between humans and these processes. Topics include ecological principles, biodiversity, human population growth, climate change, air and water pollution, solid waste management, and the management of renewable and non-renewable energy, water, land, soil, and mineral resources. The course utilizes knowledge of these subject to find solutions to environmental challenges. Field trips may be required.

BIO 012L Environmental Science Laboratory 1.5 Units
Prerequisite: BIO 012 (may enroll concurrently)
General Education: Opt. B: Area 5C; Opt. C: Area B3
Transferable to UC/CSU
Hours: 8-9 lecture, 48-54 lab
Examine the ecological roles of organisms, resource use, and pollution/waste by using laboratory and mandatory field trip techniques. Field trips may be required.

BIO 014 Principles of Microbiology 4.0 Units
Prerequisite: A minimum grade of C in CHEM 001, CHEM 010, or CHEM 012
General Education: Opt. A: Area A; Opt. B: Area 5B, 5C; Opt. C: Area B2, B3
Transferable to UC/CSU
Hours: 48-54 lecture, 48-54 lab
The study of the morphology, physiology, genetics, taxonomy, and ecology of microorganisms. The course also includes principles of immunology, the control of microbes, and their relationship to disease. Laboratory exercises cover microscopy, staining, aseptic techniques, identification, and microbial growth among others.

BIO 015 Introduction to Biology 4.0 Units
General Education: Opt. A: Area A; Opt. B: Area 5B, 5C; Opt. C: Area B2, B3
Transferable to UC/CSU
Hours: 48-54 lecture, 48-54 lab
Intended for non-science majors, a survey of biology including biological chemistry, cell structure and function, genetics, evolution, and ecology. The laboratory component emphasizes the scientific method to reinforce lecture concepts. Off-campus field trips may be scheduled. NOTE: Not open for credit to students who have completed BIO 003.

BIO 016 Introduction to Human Biology 3.0 Units
General Education: Opt. A: Area A; Opt. B: Area 5B; Opt. C: Area B2
Transferable to UC/CSU
Hours: 48-54 lecture
An introduction to general biology with emphasis on the human model. Topics include cell structure and function, human evolution, anatomy and physiology, genetics, and the human impact on the environment. This is a course for non-majors. NOTE: Not open for credit to students who have completed BIO 001, 002, 004, 005, 010 or 015.

BIO 016L Human Biology Laboratory 1.5 Units
Prerequisite: BIO 016 with a minimum grade of C (may enroll concurrently)
General Education: Opt. B: Area 5C; Opt. C: Area B3
Transferable to UC/CSU
Hours: 8-9 lecture, 48-54 lab
An introduction to general biology with an emphasis on the human model. Topics include microscopy, cell structure and function, human anatomy and physiology, genetics and the human impact on the environment. Off-campus field trips may be required and may involve a fee. This course is for non-majors. Note: Not open for credit to students who have completed BIO 002, 003, 004, 005 or 015.

Biology

BIO 018 Biology Of Sex 3.0 Units

General Education: Opt. A: Area A; Opt. B: Area 5B; Opt. C: Area B2, E
Transferable to UC/CSU
Hours: 48-54 lecture

The biological bases of human sex and sexuality will be discussed. Emphasis will be placed on the normal and diseased state of the male and female reproductive system. Essay and objective exams as well as written assignments will be used for student evaluations; the final exam will be comprehensive.

BIO 019 Marine Biology 4.0 Units

General Education: Opt. A: Area A; Opt. B: Area 5B, 5C; Opt. C: Area B2, B3
Transferable to UC/CSU
Hours: 48-54 lecture, 48-54 lab

The study of the diversity and natural history of life in the marine environment with an emphasis on the adaptations of organisms to their environment. Students must successfully complete both the lecture and laboratory portions of the course. Field trips may be required. Some field trips may involve a fee. This course is for non-majors. NOTE: This course is not open for credit to students who have completed BIO 001 or 002.

BIO 020 3.0 Units

Infectious Disease, Plagues, and Public Health

General Education: Option A: Area A; Option B: Area 5B; Option C: Area B2
Transferable to UC/CSU
Hours: 48-54 lecture

Examine infectious disease and the changing disease landscape from the molecular to the ecological level. Topics include cell structure and function, microorganisms, immunity, epidemiology, historical plagues, emerging diseases, prevention and treatment, and conditions that promote novel disease emergence. This is a course designed for non-science majors.

BIO 025 Human Genetics 3.0 Units

General Education: Option A: Area A; Option B: Area 5B; Option C: Area B2
Transferable to UC/CSU
Hours: 48-54 lecture

Provides an understanding of basic principles of genetics, current developments in genetics, and the influence of genes and the environment in determining human characteristics. This course is for non-science majors.

BIO 047 Independent Study 0.5 to 3.0 Units

Prerequisite: A minimum grade of C in 12.0 Units of credit, including 4.0 Units from within the discipline
Course Advisory: MATH 011 may be useful for data analysis
Transferable to CSU
Hours: 48-162 lab by arrangement

Designed for students who intend to major in biological sciences or pre-professional programs. Students may take this course up to the maximum number of units over multiple semesters.

BIO 049 Biology Honors 1.0 to 3.0 Units

Prerequisite: Eligibility for Honors Program; BIO 001, BIO 002, BIO 005, BIO 014, or BIO 015 (any of these courses may be taken concurrently).
Transferable to CSU
Hours: 24-162 lab by arrangement

Requires approval of a faculty member sponsor and the Dean of the School of Science and Mathematics. Requires students to complete an independent student project under the supervision of a member of the faculty. The project may be a laboratory or field study or a library study that leads to a thesis. In all cases, the final written product should show integration and synthesis of ideas. Students may take this course up to the maximum number of units over multiple semesters.

BIO 099 0.5 to 2.0 Units

Biology Honors: Special Dissection

Prerequisite: Completion of 24.0 units of college credit with a minimum GPA of 3.3; BIO 004 with a minimum grade of B; an ability to work independently; permission of the School Dean based on instructor availability.
Transferable to CSU
Hours: 24-108 lab by arrangement

An independent study project designed to increase understanding of human anatomy through detailed dissection and other projects assigned by the supervising instructor. The student will be evaluated through oral examination and evaluation of dissections. This course is an Open Entry/Open Exit course. Students may continue BIO 099 over multiple semesters not to exceed 2.0 units.

BIO 101 How to Study Science 0.5 Units

Hours: 8-9 lab

A step-by-step approach for success in transferable science courses. Topics include: overcoming science anxiety; learning how science courses are organized; how best to learn and retain scientific information; how to use science textbooks, common scientific terms, and symbols; how to analyze figures; how to develop test-taking skills to prepare for lecture and laboratory tests; and more.

BIO 160 2.5 Units

Review of Scientific Principles of Pre-Nursing

Prerequisite: Current acceptance or on the waiting list of an RN Program.
Hours: 40-45 lecture.

A focus on science and mathematics topics that are critical to success for students entering an RN program. Providing a clinically pertinent review of select anatomy, physiology, nutrition, and microbiology topics for students entering nursing school. Especially designed for students that have had an extended time period between finishing their pre-nursing requirements and entering nursing school. This course is taught by a panel of experts in the field. Case studies are extensively used in order to contextualize the material. This is a Pass/No Pass only course.

C-ID Designation may change periodically visit c-id.net/courses/search for current designation or consult with your counselor

Biomanufacturing

Biomanufacturing Bachelor of Science (Baccalaureate) Degree

Solano Community College is one of fifteen community colleges in the state of California to offer a pilot four year, or baccalaureate, degree. Solano Community College's degree is a Bachelor of Science in Biomanufacturing. In biomanufacturing scientists develop techniques to grow genetically engineered cells (bacterial, yeast, or animal cells) in large tanks called bioreactors and develop methods to purify the protein that the cells produce. Then technicians use analytical techniques to prove the purity of the isolated protein. In the future Biomanufacturing will be expanded to include the industrial production of biofuels, biomaterials, stem cells, and other products currently manufactured using chemical rather than biological techniques.

Program Description
The Bachelor of Science in Biomanufacturing program builds upon the Associate in Science in Industrial Biotechnology degree. In the baccalaureate program students gain knowledge in biology, chemistry, engineering, statistics, quality, regulatory affairs, and business. Students use biomanufacturing laboratory facilities to gain process development skills. Many of the courses have been designed with curriculum that aligns with the requirements of certifications from professional organizations.

Bachelor of Science Degree
The Bachelor of Science degree is awarded upon successful completion of a total of 120 units that include 60 lower-division units and ten upper-division major courses, three upper division general education courses, and electives. All courses in the major must be completed with a minimum grade of C.

Program Outcomes
Technology:
1. Identify and critically analyze two viable options for a biomanufacturing process. The critical analysis will include the technical, financial, and environmental impact of the two options as well as the identification of the benefits and disadvantages of each.
2. Produce a professional report and presentation representing their opinion regarding the advantages of selecting a specific biomanufacturing process.

Quality:
3. Demonstrate the skills needed to conduct an investigation and analysis of an Out of Specification deviation that occurred during a production step in the manufacturing of a pharmaceutical protein. The student will be able to determine the impact of the OOS deviation on the batch of protein.
4. Produce a written Corrective Action Preventative Action report in a format standard to the industry. The report will include evidence to justify their conclusions and action plan.
5. Demonstrate the ability to apply Quality by Design (QbD) principles (understanding of the product, the process, and the process control) as adopted by the U.S. Food and Drug Administration (FDA) to design a robust, stable, and controlled manufacturing process for a protein pharmaceutical that can be carried out under current Good Manufacturing Practices (cGMPs). This includes the ability to predetermine values and potential ranges of the critical quality attributes (CQAs) of the product and the critical material attributes (CMAs) of the materials. Students will also be able to determine which parameters would benefit from a Design of Experiments (DoE) approach for their optimization, and construct a strategy for experimental planning and data analysis.
6. Use a quality risk assessment approach to perform a criticality assessment to determine the Critical Process Parameters (CPPs) that would need to be monitored and controlled.

Program Requirements and Courses
The program has been designed to follow a cohort model: all students take all of the courses in order.

REQUIRED COURSES

First Semester	**Units**
BIOT 401 Biomanufacturing Process Sciences	5
BIOT 407 Advanced Topics in Quality Assurance and Regulatory Affairs	4
ENGL 400 Advanced Technical Writing: Writing in the Scientific Professions	3

Second Semester	**Units**
BIOT 402 Design of Experiments for Biomanufacturing	4
BIOT 403 Design of Biomanufacturing Facilities, Critical Utilities, Processes, and Equipment	4
BIOT 404 Bioprocess Monitoring and Control	5

Third Semester	**Units**
BIOT 405 Emerging Biomanufacturing Technologies	3
BIOT 406 Supply Chain and Enterprise Resource Planning	3
BIOT 408 Six Sigma and Lean Manufacturing	4
PHIL 400 Bioethics	3

Fourth Semester	**Units**
BIOT 409 Methods in Quality Improvements, Investigations and Audits	4
BIOT 410 Emerging Trends in Biomanufacturing Quality	3
BUS 400 Project Management	3
Total Units	**48 Units**

Biomanufacturing

BIOMANUFACTURING BACCALAUREATE DEGREE PROGRAM APPLICATION/ACCEPTANCE REQUIREMENTS

Currently the Biomanufacturing Bachelor of Science program admits students once per year in the fall. Applications are available online at *http://www.solano.edu/biomanufacturing*.

Prerequisite:
ALL of the following requirements must be met in order to APPLY to the Biomanufacturing Bachelor of Science degree program. If you are unsure about any of these items, please meet with an Academic Counselor. For counseling information, please visit http://www.solano.edu/counseling/.

1. Overall cumulative grade point average (GPA) of 2.5 for ALL college coursework.
2. Completion of, or current Spring semester enrollment in, the following prerequisites with a combined GPA of 2.5 and with no grade less than a C for each of the lower division courses: BIOT 001 (formerly BIOT 051), BIOT 052, BIOT 062, BIOT 063, CHEM 001, BIO 002.
3. Completion of lower division general education CSU/IGETC Option B or Option C program prerequisites (see SCC college catalog).
4. Students who have attended college outside the United States must have transcripts evaluated by a National Association of Credential Evaluation Services (NACES) approved independent agency, demonstrating equivalency to the above requirements (1, 2, & 3).
5. One Statement of Interest, submitted with your application, explaining why you are interested in the program. Topic below:

Write a Statement of Interest that explains why you would like to complete the Bachelor of Science degree in Biomanufacturing. In this essay, state how your background in the prerequisite courses and/or any job experience has prepared you to succeed in this rigorous program. Emphasize your laboratory background. Include any life experience, special circumstances or barriers that you had to overcome while completing the prerequisite courses.

Transcripts:
During the application process, unofficial transcripts may be submitted with the application. Upon admission to the Biomanufacturing Bachelor of Science degree program, you are required to submit one original official transcript in a sealed envelope to the Admissions and Records office from each college and university attended, including Solano Community College, prior to being granted permission to enroll and register for classes in the program.

Please send transcripts to:

Solano Community College
Admissions and Records
Attn: Biomanufacturing Baccalaureate Admissions
4000 Suisun Valley Road
Fairfield, CA 94534-3197

Foreign Transcripts:
All foreign transcripts must be evaluated by a NACES agency for determining U.S. equivalency. ***IF foreign courses were completed or degree earned**, the evaluation must state its equivalency to the Prerequisite requirements (1, 2, & 3) listed above. A list of approved agencies can be found in the Admissions and Records Office.

Biomanufacturing

Steps for Completing the Application Process

1. **New or Returning Solano Community College Students (Students currently enrolled in classes go to Step 2)**
   a. Apply: Students who have never attended Solano Community College or are former students (returning SCC students who are not currently enrolled in classes) must submit a current SCC application for admission. Access the SCC home page (www.solano.edu) and click on Application.
   b. SCC ID number: After submitting your SCC application for admission, allow 30 minutes for processing. An email will be sent to the email address you provided in the application and will include your SCC ID number, username and password for your MySolano account. When completing a new application to Solano, if you previously had an ID number, the system will re-activate that same ID number. You will need your SCC ID number to complete the application.
2. **Complete the Biomanfacturing Application**
   a. Have your SCC ID number, unofficial transcripts, and your Statement of Interest ready.
   b. All required information for admission to the Biomanufacturing Program must be submitted through the link provided on our webpage.
3. **Once Application is Submitted**
   a. Email Account: All correspondence regarding the application status will be sent to the email address you provided on the application. Applicants will not receive any paper or phone verification regarding their status. Please notify the Admissions and Records office if you have a change in email address.
   b. New student applications for fall semester enrollment will be evaluated beginning March 31st of each year. Incomplete applications will NOT be accepted.

Accepted Applicant Requirements

1. If you received notification that you have been accepted into the program, a Biomanufacturing Admitted Student Information Session must be completed before your program begins. A schedule will be made available through the School of Math and Science, Fairfield Campus.
2. Upon completion of the Admitted Student Information Session, the student must schedule an Advisement Session prior to registering for classes. Students will meet with an Academic Counselor to develop a Student Education Plan (SEP) during the Advisement Session.

Eligibility requirements, application process, and related information is available on the web at ***http://www.solano.edu/biomanufacturing***.

Cost for Biomanufacturing Bachelor of Science Degree
Lower division courses (numbered 001-399/500+) cost $46 per unit.

Upper division courses (numbered 400-499) cost $130 per unit. The additional fee for upper division units of $84 cannot be covered by the California College Promise Grant (formerly BOG Fee Waiver).

Biomanufacturing

BIOT 401 **5.0 Units**

Biomanufacturing Process Sciences and Engineering Principles

Prerequisite: Admission into the Biomanufacturing Baccalaureate program. MATH 011 with a minimum grade of C
Transferable to CSU
Hours: 48-54 lecture, 96-108 lab

Builds upon the scientific knowledge underlying chemical engineering principles (for example fluid flow, mass transfer, heat transfer, and the energy relationship of fluid systems) to design, develop, and optimize key parameters in a biomanufacturing process. Process development includes the optimization of media composition, fermenter and bioreactor design, the design of downstream processes, instrumentation, engineering systems, and process control systems to maximize the yield and integrity of a protein pharmaceutical.

BIOT 402 **4.0 Units**

Design of Experiments for Biomanfacturing

Prerequisite: Admission into the Biomanufacturing Baccalaureate program. A minimum grade of C in MATH 011
Transferable to CSU
Hours: 48-54 lecture, 48-54 lab

Teaches the formal approach called Design of Experiments (DoE), a system that optimizes a process through the methodical varying of key parameters and a formalized approach to the analysis, interpretation, and application of the results. DoE is designed to make any process more robust and to minimize variability from external sources. The course builds upon the statistical concepts required for DoE including hypothesis testing, confidence intervals, statistical models, and analysis of variance (ANOVA). The DoE approach systematically varies the parameters of a biomanufacturing project to improve its operation.

BIOT 403 **4.0 Units**

Design of Biomanufacturing Facilities, Critical Utilities, Processes, and Equipment

Prerequisite: Admission into the Biomanufacturing Baccalaureate program. Permission of faculty
Transferable to CSU
Hours: 64-72 lecture

Students analyze and evaluate how the design of a biomanufacturing facility uses one-way personnel flow and one-way material flow to maintain appropriate levels of cleanliness and sterility to promote the production of safe and effective products. Students analyze the design of the processes, equipment, and instrumentation used in biological production to generate critical utilities, aseptic systems, environmental control and monitoring, upstream production, and downstream (recovery and purification) production within a regulated environment.

BIOT 404 Bioprocess Monitoring and Control **5.0 Units**

Prerequisite: BIOT 401
Transferable to CSU
Hours: 48-54 lecture, 96-108 lab

Covers the measurement, monitoring, modeling, and control of biomanufacturing processes and the statistical methodology used for measuring, analyzing, and controlling quality during the manufacturing process including control charts and the analysis of process capabilities.

BIOT 405 **3.0 Units**

Emerging Biomanufacturing Technologies

Prerequisite: BIOT 401
Transferable to CSU
Hours: 48-54 lecture

Focuses on biomanufacturing advances and emerging technologies in biological production and protein purification operations. In the course students compare the advantages and disadvantages of the new technology to the traditional technologies and approaches.

BIOT 406 **3.0 Units**

Supply Chain and Enterprise Resource Planning in Biomanufacturing

Prerequisite: Permission of faculty
Transferable to CSU
Hours: 48-54 lecture

Students gain knowledge of how companies manage the complete flow of materials in a supply chain from suppliers to customers. This course covers the design, planning, execution, monitoring, and control of raw materials, personnel resources, inventory management, and distribution. At the end students will have the knowledge required to take the CPIM (Certified in Production and Inventory Management) certification test administered by APICS (the American Production and Inventory Control Society).

BIOT 407 **4.0 Units**

Advanced Topics in Quality Assurance and Regulatory Affairs

Prerequisite: Permission of faculty
Transferable to CSU
Hours: 64-72 lecture

Builds upon previous knowledge of quality assurance and regulatory affairs to study the harmonized quality system approaches of ICH (International Committee on Harmonisation) Q8, Q9, Q10, and Q11. The course pays special attention to the topics of quality risk management, qualification, and validation. This course content has been aligned with the American Society for Quality's Body of Knowledge for a Certified Pharmaceutical Good Manufacturing Practice Professional examination.

Biomanufacturing

BIOT 408 Six Sigma and Lean Manufacturing 4.0 Units

Prerequisite: Permission of faculty
Transferable to CSU
Hours: 64-72 lecture

Covers the Six Sigma approach to the maintenance and improvement of biomanufacturing processes. It incorporates the DMAIC phases: design, measure, analyze, improve, and control. The course covers the use and implementation of lean manufacturing tools that biomanufacturing companies use to reduce waste. At the end of the course students will be prepared to take the certification test administered by the American Society for Quality for qualification with a white belt in Six Sigma.

BIOT 409 4.0 Units

Methods in Quality Improvements, Investigations, and Audits

Prerequisite: Admission into the Biomanufacturing Baccalaureate program; Permission of faculty; BIOT 407
Transferable to CSU
Hours: 48-54 lecture, 48-54 lab

Examines the investigational methods used by quality assurance departments to analyze process deviations and make the decision about the severity of the deviation. In this course students learn to write industry-standard CAPA (Corrective Action Preventative Action) report to conclude what corrective and preventative actions result from the investigation. The course also covers how a company would perform an internal audit in anticipation of an inspection by the Food and Drug Administration or an external audit for the supplier of a key raw material. This course content has been aligned with the American Society for Quality's Body of Knowledge for a Certified Quality Technician examination.

BIOT 410 3.0 Units

Emerging Trends in Biomanufacturing Quality

Prerequisite: Admission into the Biomanufacturing Baccalaureate program; Permission of faculty; BIOT 407
Transferable to CSU
Hours: 48-54 lecture

Examines the process by which the quality systems of biomanufacturing evolve by examining a selected current trend in the laws and regulations governing pharmaceutical manufacturing. In this course students evaluate the effectiveness of the laws and regulations governing pharmaceutical manufacturing.

BUS 400 Project Management 3.0 Units

Prerequisite: Admission into the Biomanufacturing Baccalaureate program
Transferable to CSU
Hours: 48-54 lecture

Learn the core characteristics of project management including project selection, initiation, planning, execution, monitoring and control, and closing. Students learn how the management of the project's scope, time, cost, quality, human resources, communication, procurement, stakeholders, and risk lead to the ability to deliver the project on-time and on-budget, while meeting performance specifications. This course is designed to fulfill the classroom component of a Project Management Professional credential.

ENGL 400 3.0 Units

Advanced Technical Writing: Writing in the Scientific Professions

Prerequisite: Admission into the Biomanufacturing Baccalaureate program. A minimum grade of C in ENGL 001
Transferable to CSU
Hours: 48-54 lecture

Advanced study in technical writing with a focus on writing for the sciences, including memos, forms, resumés, proposals, formal and informal reports, and peer review strategies. Emphasis is on understanding the differences between academic and technical writing, including techniques for organizing, evaluating, and presenting information in the objective style required in modern technical communications, as well as current trends in technology and scientific discourse. Instruction includes writing as a process, from researching a problem to organizing and drafting a document, to testing, revising and editing that document. Students will learn to employ rhetorical strategies for effective visual and document design as well as how to address ethical, cultural, and political issues related to writing in the sciences. Currency in scientific writing and electronic publishing, including peer review, will also be emphasized. This course trains scientists to become more effective, efficient, and confident writers.

PHIL 400 Bioethics 3.0 Units

Prerequisite: Admission into Biomanufacturing Baccalaureate program.
Transferable to CSU
Hours: 48-54 lecture.

Builds upon a philosophical and critical thinking foundation to train students to be able to model sound ethical decision making in the life science and medical fields. The course requires application of moral theory to a variety of problems in the life science and medical fields such as: genetic engineering, stem cells, allocation of resources, medically assisted dying, genetic screening, genetic alteration, abortion and reproductive rights, and experiments on human or animal subjects. Enrollment in this upper division General Education course is limited to students enrolled in the Bachelors of Science in Biomanufacturing program.

Biotechnology

Industrial Biotechnology

Program Description
This program prepares graduates to work in the biotechnology industry as production technicians. A production technician operates and maintains the equipment used to manufacture protein pharmaceuticals or other products. Students will grow bacterial, yeast, and mammalian cells and recover the proteins that they produce. They will follow good manufacturing practices by maintaining records in order to comply with quality assurance procedures and government regulations. Students in the program must be able to adjust their time to a flexible schedule.

Associate in Science Degree
The Associate in Science Degree can be obtained upon completion of the 22-24 unit major, general education requirements and electives. All courses in the major must be completed with a minimum grade of C or a P if the course is taken on a Pass/No Pass basis.

Program Outcomes
Students who complete the Industrial Biotechnology Associate Degree will be able to:

1. Explain how the structure and function of protein pharmaceuticals and evaluate which protein properties a production facility can exploit to purify a particular protein from other cellular components.
2. Construct a pathway analyzing how a drug or biologic is produced by genetically engineered cells and subsequently purified.
3. Explain how the manufacturer of pharmaceuticals is regulated by the Food and Drug Administration and other international regulatory agencies and how quality systems assure the safety, purity, identity, consistency, potency, and stability of a product.

REQUIRED COURSES	**Units**
BIOT 001 Principles of Biotechnology	3
BIOT 052 Business, Regulatory and Quality Practices in Biotechnology	3
BIOT 062 Cell Culture and Protein Recovery	4
BIOT 063 Biotechnology Instrumentation: Quality Control & Genetic Engineering	4
Select Option A or Option B	8-10
Required Major Total Units	**22-24**

Option A	**Units**
BIO 002 Principles of Cell and Molecular Biology	5
CHEM 001 General Chemistry I	5

Option B	**Units**
BIO 014 Principles of Microbiology	4
CHEM 010 Intermediate Chemistry	4

CSU General Education or IGETC Pattern units	**37-39**
Transferable Electives (as needed to reach 60 units)	**3-7**
Total Degree Units CSU GE or IGETC	**60**

Solano General Education	**21**
Electives (as needed to reach 60 units)	**17-19**
Total Degree Units Solano GE	**60**

** 6 units may be double counted toward both the major area of emphasis and CSU General Education or IGETC Pattern. Consult with a counselor for more information on completing this degree.*

NOTE: Prior knowledge and use of computers is advised, including word processing, spreadsheets, and databases.

Biotechnology

Industrial Biotechnology

Program Description
This program prepares graduates to work in the biotechnology industry as production technicians. A production technician operates and maintains the equipment used to manufacture protein pharmaceuticals and other products. Students will grow bacterial, yeast, and mammalian cells and recover the proteins that they produce. They will follow good manufacturing practices by maintaining records in order to comply with quality assurance procedures and government regulations. Students in the program must be able to adjust their time to a flexible schedule.

Certificate of Achievement
The Certificate of Achievement can be obtained upon completion of the 18-24-unit major. Each course must be completed with a minimum grade of C or a P if the course is taken on a Pass/No Pass basis.

Program Outcomes
Students who complete the Industrial Biotechnology Associate Degree will be able to:

1. Explain how the structure and function of protein pharmaceuticals and evaluate which protein properties a production facility can exploit to purify a particular protein from other cellular components.
2. In preparation to working at a biotechnology company, a successful student should be able to construct a pathway analyzing how a drug of biologic is produced by genetically engineered cells and subsequently purified.
3. Explain how the manufacturer of pharmaceuticals is regulated by the Food and Drug Administration and other international agencies and how quality systems assure the safety, purity, identity, consistency, potency, and stability of a product.

REQUIRED COURSES	**Units**
BIOT 001 Principles of Biotechnology	3
BIOT 052 Business, Regulatory and quality Practices in Biotechnology	3
BIOT 062 Cell Culture and Protein Recovery	4
BIOT 063 Biotechnology Instrumentation: Quality Control & Genetic Engineering	4
Choose Option A, B or C	4-10
Required Major Total Units	**18-24**

Option A	**Units**
BIO 002 Principles of Cell and Molecular Biology	5
CHEM 001 General Chemistry I	5

Option B	**Units**
BIO 014 Principles of Microbiology	4
CHEM 010 Intermediate Chemistry	4

Option C	**Units**
BIOT 160 Basic Concepts/Methods in Biotechnology	4

NOTE: Prior knowledge and use of computers is advised, including word processing, spreadsheets, and databases.

This is a Gainful Employment Program. For additional information, please visit ***http://www.solano.edu/gainful_employment/*** and select "Industrial Biotechnology."

Biotechnology

Biotechnology Laboratory Assistant

Program Description
This program serves as a Bridge to Biosciences, enabling graduates to enter the Solano College Industrial Biotechnology program or to enter an entry level position in a biotechnology company. It serves as a stackable certificate that may be followed by the Industrial Biotechnology Certificate. A Laboratory Assistant may be hired by life science related companies to prepare buffers, prepare media, operate routine laboratory equipment, and to clean glassware.

Certificate of Achievement
The Certificate of Achievement can be obtained upon completion of the 14-unit major with a minimum grade of C or a P if the course is taken on a Pass/No Pass basis.

Program Outcomes
Students who complete the Biotechnology Laboratory Certificate of Achievement will be able to:

1. Demonstrate the ability to perform routine laboratory techniques including buffer preparation, media preparation, and aseptic microbial culture.
2. Demonstrate the ability to perform mathematical (algebraic) operations required for calculations important in chemistry and biology.
3. Demonstrate the ability to read and write in a range of writing style categories typical of laboratory and scholarly environments, including lab reports, expository texts, and research-based arguments.

REQUIRED COURSES	**Units**
BIOT 160 Basic Concepts/Methods in Biotechnology	4
MATH 330 Elementary Algebra	5
ENGL 360 Focused English Fundamentals	5
Total Units:	**14**

This is a Gainful Employment Program. For additional information, please visit ***http://www.solano.edu/gainful_employment/*** and select "Biotechnology Laboratory Assistant."

Stem Cells and Cell-Based Technologies

Program Description
This program trains students to enter the emerging fields of commercial stem cell production and other cell production technologies, such as CAR-T, cancer therapies, and other cell-based therapies.

Certificate of Achievement
The Stem Cells and Cell-Based Technologies Certificate of Achievement can be obtained by completing the 24-29-unit major. All courses must be completed with a minimum grade of C or a grade of P if the course is taken on a Pass/No Pass basis.

Program Outcomes
Students who complete the Stem Cells and Cell-Based Technologies Certificate of Achievement will be able to:

1. Apply knowledge of cell biology concepts to prepare and maintain cells in culture while maintaining sterility – stem cells must be able to be cultured in an undifferentiated state or induced to differentiate into different cell types.
2. Apply knowledge of the regulation of the Food and Drug Administration and other international regulatory agencies of cell-based therapeutic agents.
3. Follow the appropriate procedures to maintain controlled documents: In a research setting, students will keep a research laboratory notebook using a standard legal format. In a manufacturing setting, students will keep the appropriate controlled documents (batch production records) required to comply with current Good Manufacturing Practice

REQUIRED COURSES	**Units**
BIOT 001 Principles of Biotechnology	3
BIOT 052 Business and Regulatory Practices in Biotechnology	3
BIOT 057 Synthetic Biology and Algae Biotechnology	3
BIOT 060 Mammalian Cell Culture	3
BIOT 061 Stem Cells and Cell-Based Technologies	3
One course from Biomanufacturing List	1-4
One course from Biology List	4-5
One course from the Chemistry List	4-5
Total Units:	**24-29**

Biomanufacturing:	**Units**
BIOT 062 Cell Culture and Protein Recovery	4
BIOT 065 Biomanufacturing Fundamentals	1

Biology	**Units**
BIO 002 Cell and Molecular Biology	5
BIO 014 Principles of Microbiology	4

Chemistry	**Units**
CHEM 001 General Chemistry	5
CHEM 010 Intermediate Chemistry	4
CHEM 012 Chemistry for the Health Sciences	5

This is a Gainful Employment Program. For additional information, please visit ***http://www.solano.edu/gainful_employment/*** and select "Stem Cells and Cell-Based Technologies."

Biotechnology

BIOT 001 Principles of Biotechnology 3.0 Units

Prerequisite: A minimum grade of C in BIO 014, BIO 002 or BIOT 160
General Education: Option B: Area 5B; Option C: Area B2
Transferable to UC/CSU
Hours: 48-54 lecture

Covering topics important in the development, production, recovery, and analysis of products produced by biotechnology. The course traces the path of a drug or biologic from the cell through the production facility, the final processing, and into the human body. It discusses the growth characteristics of the organisms used to produce pharmaceutical proteins, the techniques used in product recovery, and the techniques used in product analysis. Formerly BIOT 051. *(C-ID BIOT 101X)*

BIOT 003 3.0 Units

Fermentation: The Science of Beer and Brewing

Prerequisite: Must be at least 18 years of age to enroll
Transferable to UC/CSU
Hours: 32-36 lecture, 48-54 lab

Beer making, the oldest biotechnology process, is used to introduce students to the concept of employing living cells to produce a value-added product. The course utilizes brewing principles to explore basic scientific, agricultural, and engineering principles: yeast cell structure and growth, cellular biochemistry including metabolism and fermentation, plant physiology and the agricultural practices used to grow different varieties of barley and hops, the biochemistry of malted barley and hops, the chemical reactions that occur during mashing and brewing, and the basic engineering of brewing equipment and processes. The course also covers business, regulatory, and cultural issues related to brewing. In the laboratory, students will brew beer using modern techniques and equipment. This class is limited to students 18 and over and no one under the age of 21 will be able to taste a fermented product.

BIOT 052 3.0 Units

Business, Regulatory, and Quality Practices in Biotechnology

Transferable to CSU
Hours: 48-54 lecture

Examine how basic business principles and sound manufacturing procedures assure the quality and safety of a biopharmaceutical as the manufacturing team moves a product down the biotechnology production pipeline. The course explores the role of governmental oversight, Quality Assurance practices, and regulation during the discovery, development, and manufacturing of new products produced by biotechnology. The course includes a discussion of current Good Manufacturing Practices, Good Laboratory Practices, Quality Assurance, Quality Control, and Validation.

BIOT 057 3.0 Units

Synthetic Biology and Algea Biotechnology

Prerequisite: A minimum grade of C in BIO 002 or BIO 014
Transferable to CSU
Hours: 32-36 lecture, 48-54 lab

Combines two emerging areas in biotechnology through exploration of advances in synthetic biology and algae biotechnology. Synthetic biology applies advanced gene editing techniques for the creation of new organisms. Topics include synthetic DNA synthesis, minimal cells, manipulation of biobricks, gene circuits, CRISPR/Cas and other gene editing tools, and cell free production. These techniques can be utilized to produce biomaterials, DNA for gene therapy, and algae bio-based production. Students isolate, identify, manipulate, grow, monitor, and harvest algae for biofuels, nutraceuticals, industrial enzymes, and therapeutic proteins in the laboratory.

BIOT 060 3.0 Units

Mammalian Cell Culture

Prerequisite: BIO 002 or BIO 014 with a minimum grade of C
Transferable to CSU
Hours: 16-18 lecture, 96-108 lab

Lab-intensive course on mammalian cell culture techniques that include working under aseptic conditions, sterile techniques in a biosafety cabinet (laminar flow hood), media preparation, quantification and passage of cells, and cryopreservation of cell lines. Laboratory experience prepares students for work in industry. Students may be required to perform laboratory tasks outside of class hours to care for cells.

Biotechnology

BIOT 061 **3.0 Units**

Stem Cells and Cell Based Technologies

Prerequisite: BIO 002 or BIO 014 with a minimum grade of C
Transferable to CSU
Hours: 16-18 lecture, 96-108 lab

The principles of stem cell biology. Topics include embryonic stem cells in early development, adult stem cells, induced pluripotent stem cells, and the ethical issues involved in stem cell research. Emphasis on laboratory techniques including culture of stem cells and organoids and directed differentiation of mouse embryonic stem cells. The laboratory emphasizes analysis of stem cells by immunofluorescence and flow cytometry.

BIOT 062 Cell Culture and Protein Recovery 4.0 Units

Prerequisite: A minimum grade of C in BIO 002, BIO 014 or BIOT 160
Transferable to CSU
Hours: 32-36 lecture, 96-108 lab

This laboratory course teaches the skills needed to serve as a technician in biotechnology production. Students grow and monitor bacterial, yeast, and mammalian cells on a laboratory scale that emulates the large-scale production used in industry. Students will become familiar with the cleaning, sterilization, aseptic inoculation, operation, and monitoring of fermenters and bioreactors. Students then recover and purify proteins produced by those cell cultures. They recover and purify proteins using centrifugation, ultrafiltration, and chromatography techniques. The course emphasizes the use of current Good Manufacturing Practices (cGMP), and students gain experience following Standard Operating Procedures (SOP).

BIOT 063 **4.0 Units**

Biotechnology Instrumentation: Quality Control & Genetic Engineering

Prerequisite: A minimum grade of C in BIO 014, BIO 002 or BIOT 160
Transferable to CSU
Hours: 32-36 lecture, 96-108 lab

Familiarizes students with small scale laboratory practices, both those used in a research laboratory and those used by a quality control department in industry, to analyze the quality of a cell culture process and the purity of protein products produced by cells in culture. The course emphasizes the use of Good Laboratory Practices (GLP) in these analyses. Students will gain experience in techniques used to analyze nucleic acids and in the genetic engineering of cells. They will also gain experience with the common assays used in Quality Control including electrophoresis, High Performance Liquid Chromatography (HPLC), Enzyme Linked Immunosorbant Assay (ELISA), and Polymerase Chain Reaction (PCR) to test products generated using cell culture.

BIOT 065 **1.0 Unit**

Biomanufacturing Fundamentals

Prerequisite: A minimum grade of C in BIO 002 or BIO 014
Transferable to CSU
Hours: 8-9 lecture, 24-27 lab

Explore the basic biological, chemical, engineering, and regulatory concepts utilized to manufacture products using genetically engineered cells. This course covers host strain selection, cell banking and seed train, bioreactor operation and monitoring, recovery and purification techniques, and the regulatory environment required for biomanufacturing of products at a large scale.

BIOT 160 **4.0 Units**

Basic Concepts/Methods in Biotechnology

Hours: 32-36 lecture, 96-108 lab

This course serves as a prerequisite to Solano College's biotechnology courses by giving students knowledge of the basic concepts in biology and chemistry used in biotechnology while also developing the basic laboratory skills required to succeed in the field.

Business for Transfer (AS-T)

CAREER PATHS:

Administrative Service Manager
General and Operations Manager
Industrial Production Manager
Management Analysis
Sales Manager

Additional Career Paths and related data, including state-by-state wage info and growth in the field, can be found at www.onetonline.org.

This program map represents one possible pathway. See a counselor to create a customized education plan. Map is for the 2019-2020 catalog year.

SOLANO COMMUNITY COLLEGE

BUSINESS

Associate in Sciences for Transfer
GE Pattern: IGETC
Program Total Units: 60-61

For more information please contact: (707) 864-7229

1 FIRST SEMESTER

Total Recommended Units: 16

- **ACCT 001** 4 units — Financial Accounting
- **MATH 011** 4 units — Elementary Statistics (IGETC 2)
- **BUS 005** 3 units — Introduction to Business
- **ENG 001** 4 units — College Composition (IGETC 1A)
- **LR 010** 1 unit — Introduction to Library Research and Information Competency

2 SECOND SEMESTER

Total Recommended Units: 14

- **ACCT 002** 4 units — Managerial Accounting
- **CIS 050** 3 units — Microcomputer Apps
- **IGETC 5A with Lab** 4 units — Suggested: ASTR 010 and ASTR 020
- **IGETC 3A** 3 units — Suggested: HUM 003

3 THIRD SEMESTER

Total Recommended Units: 15

- **ECON 001** 3 units — Principles of Economics, Macroeconimcs (IGETC 4)
- **BUS 018** 3 units — Legal Environment
- **IGETC 5B** 3 units — Suggested: ANTH 001
- **IGETC 3B/Am Inst Grp 2** 3 units — Suggested: HIST 017, 018, 028, OR 037
- **IGETC 1C** 3 units — Suggested: COMM 001 or 002 or 006

4 FOURTH SEMESTER

Total Recommended Units: 15-16

- **ECON 002** 3 units — Principles of Economics, Microeconimcs
- **MATH 030** 3 units — Analytic Geometry and Calculus
- **IGETC 3B** 3 units — Suggested: HIST 017
- **IGETC 4/Am Inst Grp 1** 3 units — Suggested: PLSC 001 or 005 for Am Inst
- **IGETC 1B** 3-4 units — Suggested: PHIL 005 or ENGL 002 or ENGL 004

Required Courses/Courses in Discipline GE Courses/Categories

GET STARTED NOW!

- **Get started on your Pathway now with these recommended courses!** *Then* –See a counselor to create a **CUSTOMIZED** education plan personalized to your career and transfer goals!
- Required courses may change depending on a student's career and transfer goals, including requirements for cross-cultural and foreign language courses, and/or specific requirements for an individual CSU or UC.
- Unique transfer requirements for a specific institution can be found at **www.assist.org.**

LET US HELP YOU!

How to Apply: solano.edu/ar/apply.php

- **Questions? Talk to a Counselor Now!**
  Main Campus, Fairfield: (707) 864-7101
  Vacaville Center: (707) 863-7836
  Vallejo Center: (707) 642-8188
  Travis AFB: (707) 863-7878
  Visit online at solano.edu/counseling
- **Contact Our Career Center to Learn Your Career Options!**
  Call 707-864-7124, or email at CareerCenter@solano.edu
  Visit online at solano.edu/career
- **You Can Afford College! Learn more about Financial Aid!**
  Call 707-864-7103, or email at FinancialAid@solano.edu
  Visit online at solano.edu/financial_aid
- **College is Accessible!** Contact our Disability Services Program (DSP) at 707-864-7136.

Business

Associate in Science in Business Administration for Transfer (ADT: A.S.-T)

Program Description
This curriculum is designed to provide an opportunity for Business majors to achieve an Associate in Science Degree in Business Administration while completing the requirements for transfer to a California State University (CSU) or other four-year college or university. A baccalaureate degree is recommended preparation for those considering careers in business. Completion of this curriculum will demonstrate commitment to the field and provide comprehensive preparation for upper-division work.

Associate in Science in Business Administration for Transfer
A Solano College student who has earned the associate in science degree in business administration for transfer will be granted priority admission to the CSU into a similar (BA) degree program as long as the student meets all prescribed admission requirements. Once admitted the student will only be required to complete 60 additional upper-division units to qualify for the similar BA degree. The A.S.-T degree does not guarantee admission to a specified major or campus, but does require the California State University to grant a student priority admission consideration to a CSU campus and to a major that is similar to the transfer degree.

To earn the Associate in Science in Business Administration for Transfer degree, students must:
1. Complete 60 semester 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 in a major or area of emphasis, as determined by the community college district.
2. Obtain a minimum grade point average of 2.0.

Program Outcomes
Students who complete the Associate in Science in Business Administration for Transfer degree will be able to:
1. Recognize and describe the importance of marketing, law, economics, accounting, business administration, finance, risk analysis, and personnel management in business and formulate hypotheses based on these concepts.
2. Analyze practical business problems and utilize research and critical thinking to evaluate and recommend alternative solutions.
3. Use appropriate computer software to create and or modify relevant business documents.
4. Apply accounting concepts and principles in making business decisions.

REQUIRED COURSES	**Units**
ACCT 001 Principles of Accounting – Financial	4
ACCT 002 Principles of Accounting – Managerial	4
BUS 005 Introduction to Business	3
BUS 018 Legal Environment of Business	3
ECON 001 Principles of Economics (Macroeconomics)	3
ECON 002 Principles of Economics (Microeconomics)	3
MATH 011 Elementary Statistics	4
CIS 001 Introduction to Computer Science	3
or	
CIS 050 Microcomputer Applications	3
Required Major Total Units	**27**

CSU General Education or IGETC Pattern Units	**37–39**
CSU Transferable Electives (as needed to reach 60 transferable units)*	**3–5**
Total Degree Units	**60**

** 9 units may be double counted toward both the major area of emphasis and CSU General Education or IGETC Pattern. Consult with a counselor for more information on completing this degree.*

Business

Business, General

Program Description
This program is designed for business students planning to transfer to the University of California and/or the California State University systems.

Certificate of Achievement and Associate in Science
A Certificate of Achievement can be obtained by completing the 23-25-unit major. The Associate in Science can be obtained upon completion of the 23-25-unit major, general education requirements and electives. All courses in the major must be completed with a minimum grade of C or a P if the course is taken on a Pass/No Pass basis.

Program Outcomes
Students who complete the Business, General Certificate of Achievement/Associate Degree will be able to:

1. Recognize and describe the importance of marketing, law, economics, accounting, business administration, finance, risk analysis, and personnel management in business and formulate hypotheses based on these concepts.

REQUIRED COURSES	**Units**
ACCT 001 Principles of Accounting - Financial	4
ACCT 002 Principles of Accounting - Managerial	4
BUS 005 Introduction to Business	3
BUS 018 Legal Environment of Business	3
CIS 001 Introduction to Computer Science	3
or	
CIS 050 Microcomputer Applications	3
ECON 001 Principles of Economics (Macroeconomics)	3
or	
ECON 002 Principles of Economics (Microeconomics)	3
3-5 units from List A	3-5
Required Major Total Units	**23-25**

List A (Select 3-5 units)	**Units**
BUS 092 Business Communication	3
CIS 020 Assembly Programming	3
CIS 022 Introduction to Programming	3
CIS 023 Data Structures and Algorithms	4
MATH 011 Elementary Statistics	4
MATH 020 Analytic Geometry and Calculus I	5
MATH 021 Analytic Geometry and Calculus II	5
MATH 030 Analytic Geometry and Calculus	3
MATH 031 Analytic Geometry and Calculus	3
OCED 090 Occupational Work Experience	1-8
OCED 091 General Work Experience	1-6

Suggested math courses for the major are MATH 011 OR MATH 030.

CSU General Education or IGETC Pattern units	**37-39**
Transferable Electives (as needed to reach 60 units)	**5-9**
Total Degree Units CSU GE or IGETC	**60**
Solano General Education	**21**
Electives (as needed to reach 60 units)	**16-18**
Total Degree Units Solano GE	**60**

** 9 units may be double counted toward both the major area of emphasis and CSU General Education or IGETC Pattern. Consult with a counselor for more information on completing this degree.*

This is a Gainful Employment Program. For additional information, please visit ***http://www.solano.edu/gainful_employment/*** and select "Business, General."

Business

Business-Insurance: Property & Casualty

Program Description
This program provides essential background information needed by those wishing to work in an insurance office. Extensive employment opportunities are available in a variety of job areas from sales to accounting to database or project management.

Certificate of Achievement and Associate in Science Degree
A Certificate of Achievement can be obtained by completing the 31-unit major. The Associate in Science Degree can be obtained upon completion of the 31-unit major, SCC General Education - Option A, and electives. All courses in the major must be completed with a minimum grade of C or a P if the course is taken on a Pass/No Pass basis.

Program Outcomes
Students who complete the Business-Insurance: Property & Casualty Certificate of Achievement/Associate Degree will be able to:

1. Understand the insurance process, the segments of insurance, and the consequences of insurance contracts in mitigating loss.
2. Understand the risk management techniques available to handle exposure to loss and the use of risk modification.
3. Understand the financial and human consequences of loss. Proper and casualty exposures.
4. Apply the insurance principles in potential and real business and personal loss exposures.
5. Understand the exposures to loss faced by an individual and/or corporation.

REQUIRED COURSES	**Units**
ACCT 001 Principles of Accounting - Financial	4
BUS 005 Introduction to Business	3
BUS 018 Legal Environment of Business	3
BUS 070 Introduction to Insurance	1
BUS 071 Principles of Property and Liability Insurance	3
BUS 072 Personal Insurance	3
BUS 073 Commercial Insurance	3
BUS 074 Insurance - Code & Ethics	1
BUS 092 Business Communication	3
CIS 050 Microcomputer Applications	3
CIS 073 Microsoft Excel	3
OCED 090 Occupational Work Experience	1
Required Major Total Units	**31**
Solano General Education	**21**
Electives (as needed to reach 60 units)	**8**
Total Degree Units Solano GE	**60**

This is a Gainful Employment Program. For additional information, please visit ***http://www.solano.edu/gainful_employment/*** and select "Business Insurance: Property & Casualty."

Insurance Specialist Job-Direct Low Unit Certificate

All courses must be completed with a minimum grade of C.

REQUIRED COURSES	**Units**
BUS 070 Introduction to Insurance	1
BUS 071 Principles of Property and Liability Insurance	3
BUS 072 Personal Insurance	3
BUS 073 Commercial Insurance	3
BUS 074 Insurance—Code & Ethics	1
Total Units	**11**

Business

Management

Program Description
This program is designed to emphasize training to improve thought processes and to provide familiarity with the analytical tools of management, sound decision-making, and how to get things done through and with people. Also, this option is designed for initial employment upon graduation and for job advancement opportunities.

Certificate of Achievement and Associate in Science Degree
A Certificate of Achievement can be obtained by completing the 21-unit major. The Associate in Science Degree can be obtained by completing the 21-unit major, SCC General Education -Option A, and electives. All courses for this major must be completed with a minimum grade of C or a P if the course is taken on a Pass/No Pass basis.

Program Outcomes
Students who complete the Management Certificate of Achievement/Associate Degree will be able to:

1. Demonstrate oral and written skills unique in the business community.
2. Apply leadership, ethical standards, and team building skills necessary for managerial positions in the 21st century.
3. Conduct a personal SWOT analysis for a future small business venture.
4. Design a comprehensive business plan for a future small business venture.
5. Demonstrate the ability to use technology in analyzing and solving business problems.
6. Use basic computation skills to analyze and solve business problems requiring the use of mathematics.

REQUIRED COURSES	**Units**
(listed in recommended sequence)	
BUS 005 Introduction to Business	3
MGMT 050 Principles of Management	3
MGMT 055 Management/Leadership Skills	3
MGMT 191 Human Relations	3
or	
MGMT 193 Human Resource Management	3
BUS 092 Business Communication	3
CIS 050 Microcomputer Applications	3
BUS 181 Business Mathematics	3
Required Major Total Units	**21**
Solano General Education	**21**
Electives (as needed to reach 60 units)	**18**
Total Degree Units Solano GE	**60**

This is a Gainful Employment Program. For additional information, please visit ***http://www.solano.edu/gainful_employment/*** and select "Management."

Business

Management
Retail Management

Program Description
Designed to serve the needs of the employees and employers within the retail industry. The program provides the knowledge and skills needed to prepare students for both entry level jobs and upward mobility opportunities in this dynamic and ever changing segment of our economy. Program emphasis is placed on professional and career development.

Certificate of Achievement and Associate in Science Degree
A Certificate of Achievement in Retail Management can be obtained by completing the 25-unit major. The Associate in Science Degree can be obtained by completing the 25-unit major, SCC General Education - Option A, and electives. All courses for this major must be completed with a minimum grade of C or a P if the course is taken on a Pass/No Pass basis.

Program Outcomes
Students who complete the Retail Management Certificate of Achievement/Associate Degree will be able to:

1. Demonstrate oral and written skills unique in the business community.
2. Apply leadership, ethical standards, and team building skills necessary for managerial positions in the 21st century.
3. Conduct a personal SWOT analysis for a future small business venture.
4. Design a comprehensive business plan for a future small business venture.
5. Demonstrate the ability to use technology in analyzing and solving business problems.
6. Use basic computation skills to analyze and solve business problems requiring the use of mathematics.

REQUIRED COURSES	**Units**
(listed in recommended sequence)	
BUS 092 Business Communication	3
CIS 050 Microcomputer Applications	3
ACCT 001 Principles of Accounting - Financial	4
MKT 171 Introduction to Marketing	3
MKT 174 Retail Merchandising	3
MGMT 191 Human Relations	3
MGMT 193 Human Resource Management	3
MGMT 050 Principles of Management	3
or	
MGMT 055 Management/Leadership Skills	3
Required Major Total Units	**25**
Solano General Education	**21**
Electives (as needed to reach 60 units)	**14**
Total Degree Units Solano GE	**60**

NOTE: This program is approved by the Western Association of food chains for awarding of the industry WAFC Certificate.

This is a Gainful Employment Program. For additional information, please visit ***http://www.solano.edu/gainful_employment/*** and select "Retail Management."

Business

Management
Small Business Management

Program Description
This program is designed for those planning to start their own business, buy an existing business, buy a franchise, or who already own their own business. This option emphasizes learning the concepts and practical skills necessary to be a successful, professional entrepreneur. Specifically designed for working adults, the courses emphasize a systematic approach to business which focuses on the integration of theoretical and practical skills.

Certificate of Achievement and Associate in Science Degree
A Certificate of Achievement can be obtained by completing the 28-unit major. The Associate in Science Degree can be obtained by completing the 28-unit major, SCC General Education - Option A, and electives. All courses for this major must be completed with a minimum grade of C or a P if the course is taken on a Pass/No Pass basis.

Program Outcomes
Students who complete the Small Business Management Certificate of Achievement/Associate Degree will be able to:

1. Demonstrate oral and written skills unique in the business community.
2. Apply leadership, ethical standards, and team building skills necessary for managerial positions in the 21st century.
3. Conduct a personal SWOT analysis for a future small business venture.
4. Design a comprehensive business plan for a future small business venture.
5. Demonstrate the ability to use technology in analyzing and solving business problems.
6. Use basic computation skills to analyze and solve business problems requiring the use of mathematics.

REQUIRED COURSES	**Units**
(listed in recommended sequence)	
MGMT 055 Management/Leadership Skills	3
MKT 174 Retail Merchandising	3
ACCT 050 Computer Accounting	3
BUS 005 Introduction to Business	3
BUS 018 Legal Environment of Business	3
BUS 181 Business Mathematics	3
BUS 182 Small Business Mathematics	1
BUS 092 Business Communication	3
6 units from List A	6
Required Major Total Units	**28**

List A: (select 6 units)	**Units**
ACCT 001 Principles of Accounting - Financial	4
ACCT 002 Principles of Accounting - Managerial	4
BUS 060 Introduction to International Business	3
ECON 001 Principles of Economics (Macroeconomics)	3
ECON 002 Principles of Economics (Microeconomics)	3
MGMT 055 Management/Leadership Skills	3
MGMT 191 Human Relations	3
MKT 173 Principles of Selling	3
MKT 174 Retail Merchandising	3
OCED 090 Occupational Work Experience	2-3
OCED 091 General Work Experience	2-3
OT 054A Beginning Keyboarding A	1.5
OT 054B Beginning Keyboarding B	1.5
OT 055A Intermediate Keyboarding/ Word Processing A	1.5
OT 055B Intermediate Keyboarding/ Word Processing B	1.5

Solano General Education	**21**
Electives (as needed to reach 60 units)	**11**
Total Degree Units Solano GE	**60**

This is a Gainful Employment Program. For additional information, please visit ***http://www.solano.edu/gainful_employment/*** and select "Small Business Management."

Business

Marketing

Program Description
Marketing involves a variety of activities including selection of target customer, product development, promotion, pricing and distribution. It applies equally to services, ideas, non-profit organizations, and the individual.

Certificate of Achievement and Associate in Science Degree
A Certificate of Achievement can be obtained by completing the 30-unit major. The Associate in Science Degree can be obtained by completing the 30-unit major, SCC General Education - Option A, and electives. All courses for this major must be completed with a minimum grade of C or a P if the course is taken on a Pass/No Pass basis.

Program Outcomes
Students who complete the Marketing Certificate of Achievement/Associate Degree will be able to:
1. Apply marketing research principles to a company's product or service.
2. Apply advertising principles to promote a firm's image and product/service offering.
3. Develop a marketing plan for a business using the fundamental elements of the marketing mix.

REQUIRED COURSES	**Units**
BUS 005 Introduction to Business	3
BUS 018 Legal Environment of Business	3
BUS 181 Business Mathematics	3
CIS 001 Introduction to Computer Science	3
or	
CIS 050 Microcomputer Applications	3
ECON 002 Principles of Economics (Microeconomics)	3
MGMT 050 Principles of Management	3
or	
MGMT 191 Human Relations	3
MKT 171 Introduction to Marketing	3
MKT 172 Market Management and Planning	3
MKT 173 Principles of Selling	3
MKT 174 Retail Merchandising	3
Required Major Total Units	**30**
Solano General Education	**21**
Electives (as needed to reach 60 units)	**9**
Total Degree Units Solano GE	**60**

This is a Gainful Employment Program. For additional information, please visit ***http://www.solano.edu/gainful_employment/*** and select "Marketing."

Business

Office Technology
Administrative Assistant

Program Description
This program is designed to develop technical and communication skills required for management support. Computer literacy, keyboarding skills, document formatting, proofreading and grammatical skills, presentation skills, spreadsheet, and organizational skills are emphasized.

Certificate of Achievement and Associate in Science Degree
A Certificate of Achievement can be obtained by completing the 30.5-unit major. An Associate in Science Degree can be obtained upon completion the 30.5-unit major, SCC General Education - Option A, and electives. All courses for the major must be completed with a minimum grade of C or a P if the course is taken on a Pass/No Pass basis.

Program Outcomes
Students who complete the Administrative Assistant Certificate of Achievement/Associate Degree will be able to:
1. Demonstrate mastery of the alpha and numeric typewriting keyboard.
2. Demonstrate mastery in the keyboarding of correspondence, manuscripts, and compositions under timed conditions with established accuracy and formatting standards using proper techniques.
3. Develop a high degree of competency and a broad knowledge of skills as they relate to general office procedures.

REQUIRED COURSES:	**Units**
(listed in recommended sequence)	
CIS 066 Microsoft Word	3
CIS 001 Introduction to Computer Science	3
or	
CIS 050 Microcomputer Applications	3
BUS 092 Business Communication	3
CIS 073 Microsoft Excel	3
OT 151 Office Systems & Procedures	3
OCED 090 Occupational Work Experience	1
CIS 090 Introduction to PowerPoint	1.5
CIS 091 Microsoft Outlook	1.5
OT 054A Beginning Keyboarding A	1.5
OT 054B Beginning Keyboarding B	1.5
OT 055A Intermediate Keyboarding/ Word Processing A	1.5
OT 055B Intermediate Keyboarding/ Word Processing B	1.5
OT 162 Ten-Key	1
BUS 097 Work Readiness	1.5
BUS 181 Business Mathematics	1
OT 056 Business Grammar and Proofreading	2
Required Major Total Units:	**30.5**
Solano General Education	**21**
Electives (as needed to reach 60 units)	**8.5**
Total Degree Units Solano GE	**60**

This is a Gainful Employment Program. For additional information, please visit ***http://www.solano.edu/gainful_employment/*** and select "Office Technology Administrative Assistant."

Office Technology
Medical Front Office Clerk

Program Description
The goal of this program is to prepare students to enter the health care industry at an entry-level position in two semesters.

Certificate of Achievement
The Certificate of Achievement can be obtained upon completion of the 26-unit major. All courses must be completed with a minimum grade of C or a P if the course is taken on a Pass/No Pass basis.

Program Outcomes
Students who complete the Medical Front Office Clerk Certificate of Achievement will be able to:

1. Demonstrate alpha and numeric keyboarding skills at 40 wpm with established accuracy.
2. Demonstrate computer literacy and word processing skills related to formatting business documents.
3. Use medical terminology for human diseases.
4. Demonstrate the differences in medical insurance and explain the duties of a medical office assistant, HIPPA.
5. Demonstrate ability to type medical documents and facility at using medical software such as Medisoft.
6. Employ the necessary soft skills to apply and find employment and keep it.

REQUIRED COURSES: ..... **Units**
(listed in recommended sequence)

Semester 1: ..... **Units**
NURS 111 Medical Terminology 3
OT 060 Administrative Medical Assistant 3
CIS 066 Microsoft Word 3
OT 054A Beginning Keyboarding A 1.5
OT 054B Beginning Keyboarding B 1.5
CIS 091 Microsoft Outlook 1.5

Semester 2: ..... **Units**
BUS 097 Work Readiness 1.5
OT 056 Business Grammar and Proofreading 2
OT 059 Medical Keyboarding and Computer Applications 3
OT 061 Health Insurance 3
OT 101 Study of Human Diseases for Medical Assistants 3
Total Units 26

This is a Gainful Employment Program. For additional information, please visit ***http://www.solano.edu/gainful_employment/*** and select "Medical Front Office Clerk."

Office Technology/ Business Information Worker

BSOT 105 Computer Literacy 1.0 Unit
Course Advisory: Keyboarding speed of 30 wpm
Hours: 16-18 lecture
An introduction to computer terminology and fundamental hardware and software applications. Topics include industry standard Microsoft Office (word processing, spreadsheet, and presentation) application programs, file management, email, instant messaging, and internet browsing and searching.

BSOT 106 MS Outlook 1.0 Unit
Course Advisory: Keyboarding speed of 30 wpm and BSOT 105, CIS 001, or CIS 050 with a minimum grade of C
Hours: 16-18 lecture
Explores personal management software and use of Microsoft Outlook functions. Topics include management of e-mail, organization of contacts, creation and scheduling of events using the calendar, and creating and managing tasks for personal and business use. Customization of Outlook features is also covered.

BSOT 110 Keyboarding I 1.0 Unit
Course Advisory: BSOT 105 with a minimum grade of C
Hours: 16-18 lecture
Covers effective keyboarding skills with an emphasis on building correct touch-typing techniques for alphanumeric, symbol, and punctuation keys. Provides a foundation for developing keyboarding speed and accuracy. Successful completion of this class results in a minimum keyboarding speed of 15 net words per minute on a two-minute timed writing.

BSOT 111 MS Word I 1.0 Unit
Course Advisory: BSOT 105 and BSOT 110 with a minimum grade of C and CIS 001 or CIS 050 with a minimum grade of C
Hours: 16-18 lecture
Provides an introduction to word processing with Microsoft Word including basic document creation, formatting, and editing. Students create, edit, and format business letters, multiple-page reports, newsletters, and cover letters. This course begins preparation for the Microsoft Office User certification exam for Word.

BSOT 112 MS Excel I 1.0 Unit
Course Advisory: keyboarding speed of 30 wpm and BSOT 105, CIS 001, or CIS 050 with a minimum grade of C
Hours: 16-18 lecture
Provides a basic understanding of Microsoft Excel beginning with spreadsheet design, creation, revision, formatting, and printing a workbook. Basic formulas, functions, and syntax are introduced along with an introduction to using charts and graphs. Problem solving for Excel solutions is also emphasized. This course begins preparation for the Microsoft Office Certification exam for Excel.

BSOT 113 MS Access I 1.0 Unit
Course Advisory: BSOT 105 and BSOT 110 with a minimum grade of C and CIS 001 or CIS 050 with a minimum grade of C
Hours: 16-18 lecture
Provides a basic understanding of fundamental relational database design and management. Introduces building and editing basic tables, forms, queries, and reports. This course begins preparation for the Microsoft Office Specialist exam for MS Access.

BSOT 114 MS PowerPoint I 1.0 Unit
Course Advisory: BSOT 105 and BSOT 110 with a minimum grade of C and CIS 001 or CIS 050 with a minimum grade of C
Hours: 16-18 lecture
Introduces the process of planning, creating, editing, viewing, and printing PowerPoint presentations. Topics include adding text, graphics, and multimedia elements and creating master pages and templates. Integration with other Microsoft programs is also covered.

BSOT 120 Keyboarding II 1.0 Unit
Course Advisory: BSOT 105 and BSOT 110 with a minimum grade of C
Hours: 16-18 lecture
Covers intermediate keyboarding with correct touch-typing techniques, including alphanumeric, and symbol keyboarding and 10-Key numeric keypad. Skill-building includes introductory formatting of documents using Microsoft Word. Successful completion of this class results in a minimum keyboarding speed of 30 net words per minute on a three-minute timed writing.

BSOT 121 MS Word II 1.0 Unit
Course Advisory: Keyboarding speed of 30 wpm and BSOT 111 with a minimum grade of C
Hours: 16-18 lecture
Covers an intermediate level of word processing with Microsoft Word, including complex document creation, mail merge, columns, formatting, plus integration with other applications, and collaborating on documents using Microsoft Word. Themes, templates, and styles are also covered. This course continues preparation for the Microsoft Office User Exam for Microsoft Word.

BSOT 122 MS Excel II 1.0 Unit
Course Advisory: Keyboarding speed of 30 wpm and BSOT 112 with a minimum grade of C
Hours: 16-18 lecture
Provides an intermediate understanding of Microsoft Excel. Analyzing data, working with multiple worksheets and functions, pivot tables, resolving conflicts, tracking changes, data validation, chart formatting, templates, and macros are covered. Problem solving for Excel solutions is also emphasized. This course continues preparation for the Microsoft Office Certification exam for Excel.

BSOT 123 MS Access II 1.0 Unit
Course Advisory: Keyboarding speed of 30 wpm and BSOT 113 with a minimum grade of C
Hours: 16-18 lecture
Provides an intermediate understanding of database design and management. Advanced Queries, table design, custom forms and reports as well as integration of Access with the web and other programs are covered. This course continues preparation for the Microsoft Office Specialist exam for MS Access.

BSOT 124 MS PowerPoint II 1.0 Unit
Prerequisite: BSOT 114 with a minimum grade of C
Course Advisory: Keyboarding speed of 30 wpm
Hours: 16-18 lecture
Covers the use of PowerPoint as a tool for designing, producing, and controlling visual elements to build and deliver effective presentations. Topics include creating templates, customizing, protecting, and publishing presentations as well as inserting audio, video, and animations and integrating with other programs.

BSOT 125 Adobe Acrobat 1.0 Unit
Prerequisite: CIS 001 or CIS 050 with a minimum grade of C
Course Advisory: Keyboarding speed of 30 wpm; BSOT 105 and BSOT 110 with a minimum grade of C
Hours: 16-18 lecture
An introduction to the basic components of Adobe Acrobat software. Topics include creating portable document files (PDF), working with PDF files, annotation and editing of files plus interactive forms. Distribution and management of PDFs is also covered.

BSOT 130 Keyboarding III 1.0 Unit
Prerequisite: Keyboarding speed of 30 wpm with 4 errors or less on a 3 minute timed writing
Course Advisory: BSOT 120 with a minimum grade of C
Hours: 16-18 lecture
Provides advanced keyboarding techniques that build on intermediate touch-typing techniques including alphanumeric, and symbol keyboarding as well as 10-Key numeric keypad. Skill-building includes document production with advanced formatting using MS Word, and individualized remedial drills. Successful completion of this class results in a minimum net keyboarding speed of 45 words per minute on a five-minute timed writing.

BSOT 131 MS Word III 1.0 Unit
Prerequisite: Keyboarding speed of 30 wpm
Course Advisory: BSOT 121 with a minimum grade of C
Hours: 16-18 lecture
An advanced level of word processing with Microsoft Word, including creation of templates, macros, advanced table formatting, and use of long documents and subdocuments. Customizing and automating work and online forms are also covered. This course completes preparation for the Microsoft Office User exam for Word.

BSOT 132 MS Excel II 1.0 Unit
Prerequisite: BSOT 122 with a minimum grade of C
Course Advisory: Keyboarding speed of 30 wpm
Hours: 16-18 lecture
Provides an advanced understanding of Microsoft Excel. Financial and what-if analysis, data tables, scenario management, importing and exporting data, enhancing with Visual Basic, sub-routines, modifying default settings, and problem-solving tools are covered. Problem solving for Excel solutions is also emphasized. This course completes preparation for the Microsoft Office Certification exam for Excel.

BSOT 133 MS Access II 1.0 Unit
Prerequisite: BSOT 123 with a minimum grade of C
Course Advisory: Keyboarding speed of 30 wpm
Hours: 16-18 lecture
Covers advanced database design and management. Action Queries, table relationships, and automating tasks with macros are covered. Visual Basic for Applications is introduced to enhance database construction and functionality. Managing replication and synchronization is included.

Business

BUS 005 Introduction to Business 3.0 Units
Transferable to UC/CSU
Hours: 48-54 lecture
A study and analysis of the principles of business by providing a multidisciplinary examination of how culture, society, economic systems, legal, international, political, financial institutions and human behavior interact. The course introduces students to contemporary business principles, practices, and terminology. Students will gain an understanding and appreciation of the private enterprise system and how the functional areas of business work, interrelate and affect a business organization's policy and practices within the U.S. and global society. Students also gain the knowledge to demonstrate how these policies and practices impact the primary areas of business such as: leadership, human resource management, organized labor practices, marketing, organizational communication, technology, entrepreneurship, legal, accounting, financial practices, the stock and securities market and how they affect a business' ability to achieve its organizational goals. The course explores business career opportunities, provides the prerequisite knowledge needed for success in other business courses, and prepares students for transfer to upper-division business degree programs.
(C-ID BUS 110)

BUS 018 Legal Environment of Business 3.0 Units
Transferable to UC/CSU
Hours: 48-54 lecture
An introduction to the study of law, with specific emphasis on the legal environment of business. Includes the legal process, legal institutions, ethics, jurisdiction, U.S. Constitution, contracts, agency, the Uniform Commercial Code (UCC), torts, employment law, property, bankruptcy law, forms of business organization, corporations, consumer protection, government regulation and Alternative Dispute Resolution (ADR), along with ethical concerns and current public policy issues. Written examinations required. *(C-ID BUS 120)*

BUS 060 3.0 Units
Introduction to International Business
Transferable to CSU
Hours: 48-54 lecture
An overview designed to provide a global perspective in a continuously emerging international marketplace, including topics such as foreign investing, impact of financial markets, international marketing, cultural understanding, and operation of multinational and small companies.

BUS 070 Introduction to Insurance 1.0 Unit
Transferable to CSU
Hours: 16-18 lecture
Provides students with the background needed prior to taking the other insurance courses. Included are topics such as property/casualty insurance, distribution of insurance products and services to the consumer, how insurance company departments function, civil laws or tort and contract, basic commercial and personal Insurance Services Office (ISO) contracts, and the risk management process.

BUS 071 3.0 Units
Principles of Property and Liability Insurance
Transferable to CSU
Hours: 48-54 lecture
Prepares students for employment in the insurance industry, which consists of many different types of employment opportunities, from selling insurance to working in a variety of positions in an insurance company.

BUS 072 Personal Insurance 3.0 Units
Transferable to CSU
Hours: 48-54 lecture
A basic introduction to personal insurance. Includes information about automobile insurance; homeowners' insurance; other residential insurance, such as fire and earthquake insurance; marine insurance; and other personal property.

BUS 073 Commercial Insurance 3.0 Units
Transferable to CSU
Hours: 48-54 lecture
Prepares students for employment in the insurance industry. Emphasis for this course is on commercial insurance. The insurance industry offers many different types of employment opportunities, from selling insurance to working in an insurance office.

BUS 074 Insurance - Code & Ethics 1.0 Unit
Transferable to CSU
Hours: 16-18 lecture
Enables students to understand and apply proper ethical business behavior and obligations, especially as they relate to those working in the field of insurance.

Business

BUS 092 Business Communication 3.0 Units
Transferable to CSU
Hours: 48-54 lecture
A study of communication theory in the planning and preparation of various types of letters, memos, emails, reports, resumes, and oral presentations along with analysis of group dynamics, symbolic communication, interview techniques and listening skills. This course applies the principles of ethical and effective communication to written and oral reports for a variety of business situations. The course emphasizes planning, organizing, composing, and revising business documents using word processing software for written documents and presentation-graphics software to create and deliver professional-level oral reports. This course is designed for students who already have college-level writing skills.

BUS 097 Work Readiness 1.5 Units
Hours: 24-27 lecture
Covers the process of assessing the job market and completing a resume and application. Topics include how to be successful on the job and gain satisfaction and rewards from work. The course emphasizes soft skills needed in the workplace, including social and communication skills and personal characteristics and desirable habits of an employee. Additional emphasis on conforming to the expectations of the employer.

BUS 099 Business Honors 1.0 to 3.0 Units
Prerequisite: Completion of 24.0 units of college credit with a minimum GPA of 3.3; a minimum of 5.0 units in the discipline with a minimum grade of B; an ability to work independently; permission of the School Dean based on instructor availability
Transferable to CSU
Hours: 48-162 lab by arrangement
A comprehensive study and analysis of a topic of student scholarship which is centered on important topics or issues within the business field. Students may take this course up to the maximum number of units over multiple semesters.

BUS 148A 3.0 Units
Small Business Project-Based Path for Entrepreneurs
Hours: 48-54 lecture
Emphasizes activities and techniques through project management that develops competencies needed to become a successful leader. Students receive instruction and project-based activities in the areas of entrepreneurship, project management, personal and workplace skill, oral and written techniques, and networking.

BUS 181 Business Mathematics 1.0 to 3.0 Units
Hours: 16-54 lecture
An application of essential mathematical skills necessary for success in business. Includes a review of fractions, decimals, percents, ratios, the percentage formula, and general business applications; covers advanced business applications such as interest, discount, markup, payroll, pricing policies, cash and trade discounts, and financial statements. This is a self-paced, programmed learning class. Students may take this course up to the maximum number of units over multiple semesters. This is an Open Entry/Open Exit, Variable unit course; Online course is not Open Entry/Open Exit.

BUS 182 Small Business Mathematics 1.0 Unit
Hours: 16-18 lecture
An application of essential mathematical skills necessary for persons operating a successful business. It includes asset and inventory management; ratio analysis, depreciation, taxation applied to sales, excise, and real property; investments and insurance, and basic statistics. This is a self-paced, programmed learning class. This is an Open Entry/Open Exit course; Online course is not Open Entry/Open Exit.

BUS 208 0.5 Unit
Employee Relations and Personnel Policies
Hours: 8-9 lecture
Good employees are made through effective training, development, and relations. This course explores techniques used in training and developing good employees. The elements that comprise a sound employee relations program are presented. This is a Pass/No Pass only course.

BUS 400 Project Management 3.0 Units
Prerequisite: Admission into the Biomanufacturing Baccalaureate degree program
Transferable to CSU
Hours: 48-54 lecture
Learn the core characteristics of project management including project selection, initiation, planning, execution, monitoring and control, and closing. Students learn how the management of the project's scope, time, cost, quality, human resources, communication, procurement, stakeholders, and risk lead to the ability to deliver the project on-time and on-budget, while meeting performance specifications. This course is designed to fulfill the classroom component of a Project Management Professional credential.

C-ID Designation may change periodically visit c-id.net/courses/search for current designation or consult with your counselor

Business

Management

MGMT 050 Principles of Management 3.0 Units
Transferable to CSU
Hours: 48-54 lecture
An introduction and comprehensive survey of the theory and practices relevant to the management principles of: planning, organizing, staffing, directing and controlling. The course explores the nature and role of management/ supervision in a contemporary environment focusing on the strategic planning, decision-making and problem-solving processes that affect organizational effectiveness and efficiency. Includes quantitative and qualitative methodology used in systems and contingency approach to management.

MGMT 055 Management/Leadership Skills 3.0 Units
Transferable to CSU
Hours: 48-54 lecture
A comprehensive development, analysis, and application of fundamental skills needed for the successful practice of supervision/leadership. This course addresses the quality principles of leadership applied to work processes, decision making and problem solving, communication, stress and time management, and delegating/facilitating in a team environment. The focus of the course is on job-relevant skills. Class exercises are employed to teach the various skills.

MGMT 191 Human Relations 3.0 Units
Hours: 48-54 lecture
A comprehensive study and analysis of the concepts and skills associated with human behavior and relationships. The course stresses effective supervision and leadership practices as applied to human interaction

MGMT 193 Human Resource Management 3.0 Units
Hours: 48-54 lecture
Human resource administration of public and private organizations including personnel and administrative practices. The student will examine the evolution of unions including the various labor relations acts, collective bargaining processes, grievance procedures, and arbitration. Supervisor's and the steward's roles are emphasized for effectively maintaining negotiated contracts. The course focuses on actual personnel problems, principles and methods involved in recruitment, selecting and placement of employees with regard to affirmative action programs, training, experience and aptitude

Marketing

MKT 171 Introduction to Marketing 3.0 Units
Hours: 48-54 lecture
A comprehensive study and analysis of initiating the marketing process (for both profit and non-profit organizations) with special emphasis on understanding the consumer and detailed studies of demographics and target marketing. Includes the role of marketing research, the process of defining a marketing problem and then systematically collecting and analyzing information to recommend actions to improve an organization's marketing activities.

MKT 172 3.0 Units
Marketing Management and Planning
Hours: 48-54 lecture.
Marketing methodology related to all channels of distribution including pricing strategies, new product/ services, and the development and evaluation of breakthrough opportunities. Practical applications in dealing with government regulations and the career field of sales, promotion/advertising.

MKT 173 Principles of Selling 3.0 Units
Hours: 48-54 lecture
The application of traditional selling skills including the approach, demonstrating the product, answering the customer's objections, and closing the sale to the customer's satisfaction.

MKT 174 Retail Merchandising 3.0 Units
Hours: 48-54 lecture
A comprehensive study of the principles and practices of merchandising management of product/services, with emphasis on store location analysis, layout, customer services, buying, sales promotion, consumer credit, and understanding consumer needs and wants. Course includes practical applications related to start-up of a new business and legal constraints of organizing, selling, advertising, consumer relations and personnel practices.

C-ID Designation may change periodically visit c-id.net/courses/search for current designation or consult with your counselor

Office Technology

OT 054A Beginning Keyboarding A 1.5 Units
Transferable to CSU
Hours: 24-27 lecture
An individualized beginning keyboarding course taught on the computer. Touch typing is developed for the alphabet, punctuation, symbols, and top row number keys. Speed will be built to a minimum of 20 words per minute. Students may test out of the course if they can meet a minimum of 20 wpm with proper technique.

OT 054B Beginning Keyboarding B 1.5 Units
Prerequisite: OT 054A with a minimum grade of C or permission of faculty
Transferable to CSU
Hours: 24-27 lecture
An individualized beginning keyboarding course taught on the computer. Touch typing is developed for the alphabet, punctuation, symbols, and top row number keys. Speed will be built to a minimum of 30 words per minute. Materials studied include production of documents such as correspondence, memos, reports and tables in standard formats.

OT 055A 1.5 Units
Intermediate Keyboarding/Word Processing A
Prerequisite: OT 054B with a minimum grade of C or permission of faculty
Course Advisory: CIS 066 with a minimum grade of C
Transferable to CSU
Hours: 24-27 lecture
A keyboarding course using a computer with units of study including skill building, correspondence, reports, compositions, tables, special projects, and business forms. Speed will be built to a minimum of 35 words per minute.

OT 055B 1.5 Units
Intermediate Keyboarding/Word Processing B
Prerequisite: OT 055A with a minimum grade of C or permmission of faculty
Transferable to CSU
Hours: 24-27 lecture
An individualized keyboarding course using a computer with units of study including skill building, correspondence, reports, compositions, tables, special projects, and business forms. Speed will be built to a minimum of 40 words per minute.

OT 056 2.0 Units
Business Grammar and Proofreading
Transferable to CSU
Hours: 32-36 lecture
Prepares students for professional work in an office with a heavy emphasis on business grammar and proofreading.

OT 060 Administrative Medical Assistant 3.0 Units
Transferable to CSU
Hours: 48-54 lecture
Introduction to the responsibilities of an Administrative Medical Office Assistant including: HIPPA (legal and ethical considerations), interpersonal-skills, scheduling appointments in person and by telephone, records and file management, written communications, and financial duties.

OT 061 Health Insurance 3.0 Units
Transferable to CSU
Hours: 48-54 lecture
Introduction to health insurance claims processing and reimbursement issues. Discusses the major health care insurance programs and the impact of federal regulations. The course introduces the use of diagnosis and procedures coding. Teaches the student how to accurately complete a claim.

OT 100 1.0 Unit
Skill Building on the Computer Keyboard
Course Advisory: Ability to touch type at 20 wpm
Hours: 16-18 lecture
Individualized skill building keyboarding course taught on the microcomputer. Speed and accuracy skills are enhanced on the alphabet, punctuation, and numbers. The unit of study includes identifying the specific needs of the individual and then assigning diagnostic drills, skill-development practice and pre-and post-testing. The skill building goal will be to increase typing speed or straight copy 3- to 5-minute timed writings between 5 to 10 words per minute above the starting rate with an accuracy level of not more than one error per minute.

OT 101 3.0 Units
Study of Human Diseases for Medical Assistants
Hours: 48-54 lecture
Study of the pathological process, imparting basic knowledge to paramedical personnel. The student will study the basic concepts, terminology, etiology and characteristics of pathological processes. Diseases are classified according to both causative agents and the body system to which they relate.

OT 151 Office Systems & Procedures 3.0 Units
Corequisite: One unit of OCED 090
Prerequisite: Typing rate of 45 words per minute and microcomputer word processing skills
Hours: 48-54 lecture
An advanced level course designed to complete the training of Office Technology program students in office systems and procedures. Course should be taken during the student's final semester of the program or as a refresher for experienced business students. One unit of work experience will be required in the specialty area of the student's major.

OT 158 Medical Office Computer Applications 3.0 Units
Corequisite: NURS 111 with a minimum grade of C
Hours: 48-54 lecture
Navigates through the operations of a web-based Electronic Health Record/Total Practice Management program.

OT 162 Ten-Key 1.0 Unit
Hours: 16-18 lecture
Individualized course offering the fundamentals of operating the ten-key microcomputer number keypad. The touch system of operation and continuous speed and accuracy development are emphasized throughout the course.

OT 163 Introduction to Diagnostic Coding 3.0 Units
Prerequisite: A minimum grade of C in OT 101 and NURS 111
Course Advisory: A minimum grade of C in BIO 016 and BIO 016L
Hours: 48-54 lecture
Introduction to the basic principles of coding disease and procedures using the INTERNATIONAL CLASSIFICATION OF DISEASE, Clinical Modification (ICD-CM) and the ICD-CM coding handbook for the entry-level coders. Current ICD-CM books only will be utilized in this course. The accuracy of coding using the ICD-CM manual is the focus of this course. The impact of coding on reimbursement will be discussed.

OT 164 Intermediate ICD PCS Coding 3.0 Units
Prerequisite: A minimum grade of C in OT 101 and NURS 111.
Hours: 48-54 lecture
Explores the guidelines, conventions, and process for selecting procedural codes for inpatient claims. The course will focus on Prodcedural Coding System (PCS) coding in compliance with The Centers for Medicare and Medicaid Services (CMS) and the National Center for Health Statistics (NCHS) guidelines for coding and reporting using the International Classification of Diseases, Procedure Coding System (ICD-PCS). ICD-PCS is a procedure classification published by the United States for classifying procedures performed in hospital inpatient health care settings.

OT 166 Current Procedural Coding 3.0 Units
Prerequisite: NURS 111; OT 101
Course Advisory: A minimum grade of C in OT 063 and 064
Hours: 48-54 lecture
Covers the principles and mechanics of coding professional services rendered using the CURRENT PROCEDURAL TERMINOLOGY (CPT-IV) coding system.

Chemistry (AS)

CAREER PATHS:

Biochemist and Biophysicist
Biochemical Engineer
Chemist
Chemical Engineer
Chemistry Teacher
Chemical Plant and System Operator

Additional Career Paths and related data, including state-by-state wage info and growth in the field, can be found at www.onetonline.org.

This program map represents one possible pathway. See a counselor to create a customized education plan. Map is for the 2019-2020 catalog year.

SOLANO COMMUNITY COLLEGE

Chemistry
Associate in Sciences
GE Pattern: IGETC
Program Total Units: 70

For more information please contact:
(707) 864-7211

1 FIRST SEMESTER

Total Recommended Units: 18

- **CHEM 001** 5 units — General Chemistry (IGETC 5A with lab)
- **ENGL 001** 4 units — College Composition (IGETC 1A)
- **LR 010** 1 units — Library Research and Information Competency
- **MATH 00[illegible] (IGETC 2)** [illegible] units — Analytic Geometry and Calculus I
- **IGETC 3A** 3 units

2 SECOND SEMESTER

Total Recommended Units: 17

- **CHEM 002** 5 units — General Chemistry
- **Math 021** 5 units — **(prerequisite for PHYS 006)** Analytic Geometry and Calculus II
- **IGETC 1B** 4 units — Suggested: ENGL 002 or 004
- **IGETC** [illegible] units — Suggested: PLSC001 or PLSC 005

3 THIRD SEMESTER

Total Recommended Units: 19

- **CHEM 003** 5 units — Organic Chemistry 1
- **PHYS 006** 5 units — Physics for Science and Engineering I
- **IGETC 1C** 3 units — Suggested: Comm 001
- **IGETC 4** 3 units
- **IGETC 3A or 3B** 3 units

4 FOURTH SEMESTER

Total Recommended Units: 16

- **CHEM 004** 5 units — Organic Chemistry II
- **PHYS 007** 5 units — Physics for Science and Engineering II
- **IGETC 4** 3 units
- **IGETC 3B** 3 units — Suggested: Hist 017 or 018 or 028 or 029 or 037

Required Courses/Courses in Discipline GE Courses/Categories

GET STARTED NOW!

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- Required courses may change depending on a student's career and transfer goals, including requirements for cross-cultural and foreign language courses, and/or specific requirements for an individual CSU or UC.
- Unique transfer requirements for a specific institution can be found at **www.assist.org.**

LET US HELP YOU!

How to Apply: solano.edu/ar/apply.php

- **Questions? Talk to a Counselor Now!**
  Main Campus, Fairfield: (707) 864-7101
  Vacaville Center: (707) 863-7836
  Vallejo Center: (707) 642-8188
  Travis AFB: (707) 863-7878
  Visit online at solano.edu/counseling
- **Contact Our Career Center to Learn Your Career Options!**
  Call 707-864-7124, or email at CareerCenter@solano.edu
  Visit online at solano.edu/career
- **You Can Afford College! Learn more about Financial Aid!**
  Call 707-864-7103, or email at FinancialAid@solano.edu
  Visit online at solano.edu/financial_aid
- **College is Accessible!** Contact our Disability Services Program (DSP) at 707-864-7136.

Chemistry

Chemistry

Program Description
This program is designed to foster an understanding of the fundamental principles of chemistry in a variety of applications. Students will learn how chemical knowledge is derived, theorized, and applied in solving problems in everyday life.

Associate in Science Degree
The Associate in Science Degree can be obtained by completing the 26-30-unit major, general education requirements, and electives. All courses in the major must be completed with a minimum grade of C or a P if the course is taken on a Pass/No Pass basis.

Program Outcomes
Students who complete the Chemistry Associate Degree will be able to:
1. Demonstrate skills for various lab techniques.
2. Formulate and write names applying International Union of Pure and Applied Chemistry rules for chemical compounds.
3. Interpret and analyze chemical data.
4. Identify and write different types of chemical reactions.

REQUIRED COURSES	**Units**
CHEM 001 General Chemistry I	5
CHEM 002 General Chemistry II	5
CHEM 003 Organic Chemistry I	5
CHEM 004 Organic Chemistry II	5
BIO (any course except 048 or 098)	3-5
One course from List A	3-5
Required Major Total Units	**26–30**

List A: (select one course)	**Units**
PHYS 002 General Physics (Non-calculus)	5
PHYS 006 Physics for Science and Engineering	5
PHYS 010 Descriptive Physics	3

CSU General Education or IGETC Pattern units	**37-39**
Transferable Electives (as needed to reach 60 units)	**0-3**
Total Degree Units CSU GE or IGETC	**60-62**
Solano General Education	**21**
Electives (as needed to reach 60 units)	**9-13**
Total Degree Units Solano GE	**60**

**7 units may be double counted toward both the major area of emphasis and CSU General Education or IGETC Pattern. Consult with a counselor for more information on completing this degree.*

CHEM 001 General Chemistry I 5.0 Units
Prerequisite: CHEM 160 with a minimum grade of C (recommended for students with no previous chemistry) or CHEM 010 with a minimum grade of C (recommended for students who have had an introductory level chemistry course) or a score of 3, 4, or 5 on the Chemistry AP exam; and MATH 104 with a minimum grade of C or eligibility for MATH 002 based on a Multiple Measures Evaluation
General Education: Opt. A: Area A; Opt. B: Area 5A, 5C; Opt. C: Area B1, B3
Transferable to UC/CSU
Hours: 48-54 lecture, 96-108 lab
Presents principles of general chemistry for students in science, engineering, medical and related professions. Topics include atomic structure and theory, the periodic table, bonding, gas laws, stoichiometry, solutions, ionization, thermochemistry and equilibrium. This course requires significant math skills and previous knowledge of fundamental chemistry concepts. Field trips and online work may be required. *(CHEM 001 = C-ID CHEM 110)*
(CHEM 001 + CHEM 002 = C-ID CHEM 120S)

CHEM 002 General Chemistry II 5.0 Units
Prerequisite: CHEM 001 with a minimum grade of C
General Education: Opt. A: Area A; Opt. B: Area 5A, 5C; Opt. C: Area B1, B3
Transferable to UC/CSU
Hours: 48-54 lecture, 96-108 lab
A continuation of chemical principles and theory covered in CHEM 001 with emphasis on electrochemistry, chemical equilibrium, acid-base equilibrium, thermodynamics, descriptive chemistry and quantitative and qualitative analysis. This course requires significant math skills and previous knowledge of fundamental chemistry concepts. Field trips and online work may be required.
(CHEM 001 + CHEM 002 = C-ID CHEM 120S)

C-ID Designation may change periodically visit c-id.net/courses/search for current designation or consult with your counselor

Chemistry

CHEM 003 Organic Chemistry I 5.0 Units

Prerequisite: CHEM 002 with a minimum grade of C
General Education: Opt. A: Area A; Opt. B: Area 5A, 5C; Opt. C: Area B1, B3
Transferable to UC/CSU
Hours: 64-72 lecture, 64-72 lab

First half of a two semester course sequence (CHEM 003 and CHEM 004) that begins a survey of organic chemistry for students in chemical, biological, health science, and related professions. Topics include analysis of structure and nomenclature, bonding, isomerism, and basic reaction mechanisms of organic chemicals. Functional groups considered include alkanes, alkenes, alkynes, alcohols, and alkyl halides and ethers. Basic organic laboratory procedures are introduced along with spectral analysis, simple syntheses, and reactions described in lecture. Field trip may be required. Online homework and quizzes may be required. *(CHEM 003 = C-ID CHEM 150) (CHEM 003 + CHEM 004 = C-ID CHEM 160S)*

CHEM 004 Organic Chemistry II 5.0 Units

Prerequisite: CHEM 003 with a minimum grade of C
General Education: Opt. A: Area A; Opt. B: Area 5A, 5C; Opt. C: Area B1, B3
Transferable to UC/CSU
Hours: 64-72 lecture, 64-72 lab

Second half of a two semester course sequence (CHEM 003 and CHEM 004) that begins a survey of organic chemistry for students in chemical, biological, health science, and related professions. Topics include analysis of structure, nomenclature, and reaction mechanisms of conjugated systems, aromatics, organometallics, aldehydes, ketones, amines, carboxylic acids and acid derivatives, and various functional groups, carbohydrates, lipids, amino acids, proteins, and nucleic acids. The laboratory will emphasize more advanced work and the application of instrumentation in organic chemistry. Field trip may be required. Online homework and quizzes may be required.
(CHEM 003 + CHEM 004 = C-ID CHEM 160S)

CHEM 010 Intermediate Chemistry 4.0 Units

Prerequisite: Recommendation of MATH 104 based on a Multiple Measures Evaulation
Course Advisory: CHEM 160 strongly recommended for students who have never taken Chemistry
General Education: Opt. A: Area A; Opt. B: Area 5A, 5C; Opt. C: Area B1, B3
Transferable to UC/CSU
Hours: 48-54 lecture, 48-54 lab

A general chemistry course often required for nursing students and for students majoring in physical therapy, occupational therapy, industrial technology and home economics, it emphasizes the chemistry of inorganic compounds and covers selected topics such as atomic theory, bonding, equations, gas laws, solutions, acid-base theory, and oxidation-reduction. Field trip may be required. Online homework may be required. NOTE: Not open for credit to students who have completed CHEM 001. *(C-ID CHEM 101)*

CHEM 011 4.0 Units

Basic Organic Chemistry & Biochemistry

Prerequisite: CHEM 001 or CHEM 010 with a minimum grade of C.
General Education: Opt. A: Area A; Opt. B: Area 5A, 5C; Opt. C: Area B1, B3
Transferable to UC/CSU
Hours: 48-54 lecture, 48-54 lab.

Presents an overview of organic chemistry and biochemistry for majors in nursing, home economics, liberal arts and technical fields. Field trip may be required. Online work may be required. *(C-ID CHEM 102)*

CHEM 012 Chemistry for the Health Sciences 5.0 Units

Course Advisory: CHEM 160 strongly recommended for students who have never taken Chemistry before; recommendation of MATH 104 based on a Multiple Measures Evaluation
General Education: Opt. A: Area A; Opt. B: Area 5A; Opt. C: Area B1, B3
Transferable to UC/CSU
Hours: 48-54 lecture, 96-108 lab

An overview of general, organic chemistry, and biochemistry for majors in nursing and other allied health occupations. Topics covered include chemical bonding, chemical equations, gas laws, solutions, acid-base theory, oxidation-reduction, functional groups and properties of organic compounds, and the structure and function of carbohydrates, lipids, proteins, and nucleic acids. These topics are discussed in the context of cellular metabolism and human health. This course is not a prerequisite for any chemistry course. Field trip may be required. Online homework may be required. NOTE: Not open for credit to students who have completed CHEM 011. Formerly CHEM 051.

CHEM 160 Introductory Chemistry 4.0 Units

General Education: Opt. A: Area A
Hours: 48-54 lecture, 48-54 lab

The fundamental principles of inorganic chemistry. Field trips may be required. Online work may be required. NOTE: Not open to students who have completed CHEM 001, CHEM 010, or equivalent.

Early Childhood Education (AS-T)

CAREER PATHS:

Childcare Worker
Preschool Teacher
Kindergarten Teacher
Child, Family, or School Social Worker
Education Administrator

Additional Career Paths and related data, including state-by-state wage info and growth in the field, can be found at www.onetonline.org.

This program map represents one possible pathway. See a counselor to create a customized education plan. Map is for the 2019-2020 catalog year.

SOLANO COMMUNITY COLLEGE

Early Childhood Education
Associate in Sciences for Transfer
GE Pattern: CSUGE
Program Total Units: 62

For more information please contact: (707) 864-7251

1 FIRST SEMESTER

Total Recommended Units: 14

- **CDFS 038** 3 units — Child, Growth & Development (CSUGE Area E)
- **CDFS 062** 3 units — Intro to Early Childhood Education
- **ENGL 001** 4 units — College Composition (CSUGE Area A2)
- [illegible] — Introduction to Library Research and Information Competency
- **CSUGE Area B4** 3 units — Suggested: MATH 012

2 SECOND SEMESTER

Total Recommended Units: 17

- **CDFS 064** 3 units — Observation and Assessment
- **CDFS 050** 3 units — Child, Family & Community
- **CSUGE Area B2** 4 units — With lab.
- **CSUGE Area A3** 4 units — Suggested: ENGL 002 or ENGL 004
- [illegible] — Am Inst Grp 1 — Suggested: PLSC 001 or PLSC 005

3 THIRD SEMESTER

Total Recommended Units: 15

- **CDFS 054 or NUTR 054** 3 units — Child Health, Safety, and Nutrition
- **CDFS 063** 3 units — Introduction to Curriculum
- **CDFS 053** 3 units — Teaching in a Diverse Society
- **CSUGE Area A1** 3 units — Suggested: COMM 001 or 002 or 006
- **CSUGE Area C2** 3 units

4 FOURTH SEMESTER

Total Recommended Units: 16

- **CDFS 065** 4 units — Early Childhood Education Practicum 1
- **CSUGE Area B1 or B2** 3 units — Whichever not taken.
- **CSUGE Area D** 3 units
- **CSUGE Area C1** 3 units
- **CSUGE Area D/ Am Inst Grp 2** 3 units — Suggested: HIST 017 or 018

Required Courses/Courses in Discipline GE Courses/Categories

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  Vallejo Center: (707) 642-8188
  Travis AFB: (707) 863-7878
  Visit online at solano.edu/counseling
- **Contact Our Career Center to Learn Your Career Options!**
  Call 707-864-7124, or email at CareerCenter@solano.edu
  Visit online at solano.edu/career
- **You Can Afford College! Learn more about Financial Aid!**
  Call 707-864-7103, or email at FinancialAid@solano.edu
  Visit online at solano.edu/financial_aid
- **College is Accessible!** Contact our Disability Services Program (DSP) at 707-864-7136.

Child Development and Family Studies

Associate in Science in Early Childhood Education for Transfer (ADT: A.S.-T)

Program Description
Successful completion of this major prepares students to work in the field of early childhood education. Students will learn about child development, health and safety, observation and assessment, and techniques for effective classroom teaching including child guidance, curriculum development, and educating in a culturally respectful manner. One semester of practicum is required. This program aligns with the statewide Early Childhood Education Curriculum Alignment Project (CAP) which is designed to aid in student transfer. The CAP courses include: CDFS 038, CDFS 050, CDFS 053, CDFS 054 (or NUTR 054), CDFS 062, CDFS 063, CDFS 064, and CDFS 065.

Associate in Science in Early Childhood Education for Transfer
The Associate in Science in Early Childhood Education for Transfer is especially appropriate for students who plan to complete a bachelor's degree in Early Childhood Education or Child Development at a CSU campus. Students completing and Associate in Science in Early Childhood Education for Transfer degree are guaranteed admission to the CSU system, but not to a particular campus or major. Students transferring to a CSU campus that does accept the Associate in Science in Early Childhood Education for Transfer will be required to complete nor more than 60 units after transfer to earn a bachelor's degree. This degree also prepares students for Early Childhood Education degree programs at other four-year institutions, but does not come with the same guarantees. In all cases, students should consult with a counselor for more information on university admission and transfer requirements.

To earn the Associate in Science in Early Childhood Education for Transfer Degree, students must:

1. Complete 60 semester 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 in a major or area of emphasis, as determined by the community college district.
2. Obtain a minimum grade point average of 2.0.

Program Outcomes
Students who complete the Associate in Science in Early Childhood Education for Transfer degree will be able to:

1. Demonstrate an understanding of child development theory, current research, and trends in the field, and their application to responsive practice in early care settings.
2. Demonstrate an understanding of the context of individual development including the centrality of family, culture, and community through developing techniques for creating meaningful relationships between home and school.
3. Develop curriculum and early care environments that are derived from unbiased observation and assessment of children's interests and developmental levels.
4. Demonstrate reflective practice in their work with young children by building awareness of self as teacher, child as learner, and early childhood pedagogy.

REQUIRED COURSES
The following 25 CDFS units are required for the Early Childhood Education for transfer degree. Some may double count for general education and the major (CDFS 038, CDFS 050). It is recommended that full time students enroll in CDFS 038, CDFS 050, and CDFS 062 in their first semester. Second semester students should take CDFS 054, CDFS 063, and CDFS 064. In the second year students should take CDFS 065, CDFS 053, and complete their other general education requirements. Practicum placements (CDFS 065) will be made at the Solano College Children's Program. Prior to the first week of enrollment in practicum, students will be required to pass a criminal record check and be fingerprinted at the District's expense.

REQUIRED COURSES	**Units**
CDFS 038 Child Growth and Development	3
CDFS 050 Child, Family and Community	3
CDFS 053 Teaching in a Diverse Society	3
CDFS 054 Child Health, Safety, and Nutrition	3
CDFS 062 Introduction to Early Childhood Education: Principles and Practices	3
CDFS 063 Introduction to Curriculum	3
CDFS 064 Observation and Assessment	3
CDFS 065 Early Childhood Education Practicum I	4

Required Major Total Units	**25**
CSU General Education or IGETC Pattern units	**37-39**
CSU Transferable Electives (as needed to reach 60 transferable units)*	**2-5**
Total Degree Units	**60**

** 6 units may be double counted toward both the major area of emphasis and CSU General Education or IGETC Pattern. Consult with a counselor for more information on completing this degree.*

Child Development and Family Studies

Early Childhood Education

Program Description
This program offers comprehensive study of child development, strategies for child guidance, techniques for effective classroom interaction with emphasis on the child in the context of family and culture, and curriculum that enhances the development of the whole child. The Child Development and Family Studies Department is a participant in the Curriculum Alignment Project (CAP). A key effort of the Curriculum Alignment Project is to facilitate the transfer of the courses below as an integrated course of study promoting access to ongoing education and degree attainment. These courses will easily transfer between many California State Universities. The CAP courses include: CDFS 038, CDFS 050, CDFS 053, CDFS 054 (or NUTR 054), CDFS 062, CDFS 063, CDFS 064, and CDFS 065.

Certificate of Achievement and Associate in Science Degree
A Certificate of Achievement can be obtained upon successful completion of the 35-unit major. The Associate in Science degree can be obtained by completing the 35-unit major, general education requirements, and electives. All courses in the major must be completed with a minimum grade of C or a P if the course is taken on a Pass/No Pass basis.

Program Outcomes
Students who complete the Early Childhood Education Certificate of Achievement/Associate Degree will be able to:

1. Demonstrate an understanding of child development theory, current research, and trends in the field, and their application to responsive practice in early care setting.
2. Implement techniques that strengthen home and school partnerships in order to gain an ecological perspective of children's development.
3. Develop curriculum and early care environments that are derived from unbiased observation and assessment of children's interests and developmental levels.
4. Demonstrate reflective practice in their work with young children by building awareness of self as teacher, child as learner, and early childhood pedagogy.

REQUIRED COURSES
Full-time students are advised to enroll in CDFS 038, CDFS 050, CDFS 062, and a required curriculum course (CDFS 077 or 078) during their first semester. Second semester students should take CDFS 054, CDFS 063, and CDFS 064. In the third and fourth semesters, students should take practicum (CDFS 065 and CDFS 066), CDFS 053, and a required curriculum course (CDFS 077 or 078). Students will spend their first semester of ECE Practicum I (CDFS 065) assigned to the Solano College Children's Program. A second semester may be spent either on campus or off campus (CDFS 066). Off campus placements will be made with an approved teacher from the Early Childhood Mentor Project. Prior to the first week of enrollment in CDFS 065 or 066, students will be required to pass a criminal record check and be fingerprinted at District expense.

REQUIRED COURSES	**Units**
CDFS 038 Child Growth and Development	3
CDFS 050 Child, Family and Community	3
CDFS 053 Teaching in a Diverse Society	3
CDFS 054 Child Health, Safety, and Nutrition	3
or	
NUTR 054 Child Health, Safety, and Nutrition	3
CDFS 062 Introduction to Early Childhood Education: Principles and Practices	3
CDFS 063 Introduction to Curriculum	3
CDFS 064 Observation and Assessment	3
CDFS 065 Early Childhood Education Practicum I	4
CDFS 066 Early Childhood Education Practicum II	4
CDFS 077 Art and Scientific Inquiry for ECE	3
CDFS 078 Literacy and Music for ECE	3
Required Major Total Units	**35**
CSU General Education or IGETC Pattern units	**37-39**
Total Degree Units CSU GE or IGETC	**65-66**
Solano General Education	**21**
Electives (as needed to reach 60 units)	**4**
Total Degree Units Solano GE	**60**

** 6-9 units may be double counted toward both the major area of emphasis and CSU General Education or IGETC Pattern. Consult with a counselor for more information on completing this degree.*

This is a Gainful Employment Program.
For additional information, please visit
http://www.solano.edu/gainful_employment/
and select "Early Childhood Education."

Child Development and Family Studies

Associate Teacher

Program Description
The Associate Teacher Certificate of Achievement meets the education requirements for the associate teacher level of the Child Development Permit Matrix issued by the State of California Commission on Teacher Credentialing and Community Care Licensing, Title 22 requirements for a fully qualified teacher. After meeting additional experience requirements, graduates are qualified to apply for a Child Development Permit, which is required to work in federal and state funded programs for children aged 0-5.

Certificate of Achievement
A Certificate of Achievement can be obtained by completing the 12-unit major with a minimum grade of C in each course or a P if taken on a Pass/No Pass basis.

Program Outcomes
Students who complete the Associate Teacher Certificate of Achievement will be able to:

1. Understand and apply developmental theories from conception through adolescence.
2. Design a play based curriculum which supports children using developmental, inclusive and anti-bias principles.
3. Identify and analyze quality early childhood practices including professionalism, self-reflection, play-based holistic learning, multiculturalism, and relationship building to ascertain their impact on children's development.
4. Demonstrate the ability to access community resources which support and empower children and families.

REQUIRED COURSES	**Units**
CDFS 038 Child Growth and Development	3
CDFS 050 Child, Family and Community	3
CDFS 062 Introduction to Early Childhood Education: Principles and Practices	3
CDFS 063 Introduction to Curriculum	3
Total Units	**12**

This is a Gainful Employment Program. For additional information, please visit ***http://www.solano.edu/gainful_employment/*** and select "Associate Teacher."

CDFS 038 Child Growth and Development 3.0 Units
General Education: Option A: Area B2; Option B: Area 4; Option C: Area D, E
Transferable to UC/CSU
Hours: 48-54 lecture
Examine the major physical, cognitive, and psychosocial developmental milestones (typical and atypical) and theories from conception through adolescence. Emphasis is placed on the interaction between maturational processes and environmental factors. Current research and methodologies are examined. Child observations and analysis are included. Field trip may be required. *(C-ID CDEV 100)*

CDFS 040 Family Relationships 3.0 Units
General Education: Option A: Area B2; Option B: Area 4; Option C: Area D, E
Transferable to UC/CSU
Hours: 48-54 lecture
A study of sociological and psychological factors influencing relationships, particularly dating, family, and marital relationships, as well as alternative lifestyles in contemporary society, including factors that affect communication and interpersonal interactions within relationships.

CDFS 050 Child, Family and Community 3.0 Units
General Education: Option A: Area B2; Option C: Area D, E
Transferable to CSU
Hours: 48-54 lecture
An examination of the developing child in a societal context focusing on the interrelationships of family, school and community, including historical and socio-cultural influences. Socialization and identity development are emphasized, as are teacher strategies for building respectful, reciprocal relationships that support and empower children and families. *(C-ID CDEV 110)*

CDFS 052 Children with Special Needs 3.0 Units
Course Advisory: CDFS 038
Transferable to CSU
Hours: 48-54 lecture
An introductory study of children with special needs, including causes of disabilities, their incidence, care, management, and general remedial procedures. Emphasis is on the child with disabilities in the home and community settings.

CDFS 053 Teaching in a Diverse Society 3.0 Units
General Education: Option A: Area B2, E; Option B: SCC Cross-Cultural; Option C: Area D; SCC Cross-Cultural
Transferable to CSU
Hours: 48-54 lecture
Examination of teaching young children in a diverse society in an effort to support optimal identity development, competency, and inclusion. Theoretical and practical implications of oppression and privilege will be explored as they apply to children, families, programs, classrooms, and teaching. Various classroom strategies will emphasize culturally and linguistically appropriate anti-bias approaches. Course includes self-examination and reflection on issues related to social identity, stereotypes and bias, social and educational access, media, and schooling. *(C-ID ECE 230)*

CDFS 054 Child Health, Safety, and Nutrition 3.0 Units
Course Advisory: CDFS 038 and CDFS 062
General Education: Option A: Area B2; Option C: Area E
Transferable to CSU
Hours: 48-54 lecture
Introduction to the laws, regulations, standards, policies and procedures and early childhood curriculum related to child health safety and nutrition. The key components that ensure physical health, mental health and safety for both children and staff will be identified along with the importance of collaboration with families and health professionals. Focus on integrating the concepts into everyday planning and program development for all children. This course is the same course as NUTR 054.

CDFS 062 3.0 Units
Introduction to Early Childhood Education: Principles and Practices
Prerequisite: CDFS 038 (may enroll concurrently)
Transferable to CSU
Hours: 48-54 lecture
An examination of the underlying theoretical principles of developmentally appropriate practices applied to programs, environments, emphasizing the key role of relationships, constructive adult-child interactions, and teaching strategies in supporting physical, social, creative and intellectual development for all young children. This course includes a review of the historical roots of early childhood programs and the evolution of the professional practices promoting advocacy, ethics and professional identity. *(C-ID ECE 120)*

CDFS 063 Introduction to Curriculum 3.0 Units
Prerequisite: CDFS 038 with a minimum grade of C
Course Advisory: CDFS 062 with a minimum grade of C
Transferable to CSU
Hours: 48-54 lecture
An overview of knowledge and skills related to providing appropriate curriculum and environments for young children from birth to age 6. Students will examine a teacher's role in supporting development and fostering children's curiosity and learning. Through observation and assessment strategies students will develop appropriate play-based curriculum. An overview of content areas will include but not be limited to: Language and literacy, social and emotional learning, sensory learning, art and creativity, music, math, and science. Field trip may be required. *(C-ID ECE 130)*

CDFS 064 Observation and Assessment 3.0 Units
Course Advisory: CDFS 038
Transferable to CSU
Hours: 48-54 lecture
A focus on the appropriate use of assessment and observation strategies to document development, growth, play and learning to join with families and professionals in promoting children's success. Recording strategies, rating systems, portfolios, and multiple assessment tools are explored. *(C-ID ECE 200)*

CDFS 065 4.0 Units
Early Childhood Education Practicum I
Prerequisite: A minimum grade of C in CDFS 050, CDFS 062, and CDFS 063
Transferable to CSU
Hours: 16-18 lecture, 144-162 lab by arrangement
Supervised laboratory experience with infants through preschool children in the Solano College Early Learning Center. Students will spend 8 hours in practicum, 1 hour in a teacher meeting, and 1 hour in seminar for a total of 10 hours per week. Students will utilize practical classroom experiences to make connections between theory and practice, develop professional behaviors, and build a comprehensive understanding of children and families. Child centered, play-oriented approaches to teaching, learning, and assessment; and knowledge of curriculum content areas will be emphasized as student teacher design, implement and evaluate experiences that promote positive development and learning for all young children. During the first week of enrollment, students will be required to be fingerprinted and cleared through Department of Justice and have a negative TB skin test at the District's expense. *(C-ID ECE 210)*

CDFS 066 4.0 Units
Early Childhood Education Practicum II
Prerequisite: CDFS 065 with a minimum grade of C
Transferable to CSU
Hours: 16-18 lecture, 144-162 lab by arrangement
Emphasizes curriculum activities, comprehensive case studies, methods of child observation, and relationships of theories to practices. Students may be placed in the Solano College Children's Programs on campus or with a Mentor teacher (selected by the SCC/ECE Mentor teacher selection committee) off campus. Students will spend 8 hours in practicum, 1 hour in a teacher meeting, and 1 hour in seminar for a total of 10 hours per week. During the first week of enrollment, students will be required to be fingerprinted and cleared through Department of Justice and have a negative TB skin test at the District's expense.

CDFS 070 Lifespan Human Development 3.0 Units
General Education: Option A: Area B2; Option C: Area D, E
Transferable to CSU
Hours: 48-54 lecture
A survey of human development throughout the life cycle, including physical, social, intellectual, and emotional development from conception to death. Includes direct observation.

CDFS 075 3.0 Units
Care of Infants and Toddlers: Social and Emotional Foundations
Transferable to CSU
Hours: 48-54 lecture
Examine relationship-based infant/toddler group care, with an emphasis on social and emotional development. Theoretical foundations of quality care are addressed including the importance of home-family connections, cultural continuity, and responsive practice. Skills for individualizing care, routines, and working with children with special needs are explored.

CDFS 076 3.0 Units
Care of Infants and Toddlers: Curriculum and Environments
Transferable to CSU
Hours: 48-54 lecture
Based on theory and an holistic approach to development, this course explores quality environments and curriculum for infants and toddlers. Through observation and assessment, students develop skills for creating meaningful cognitive, physical, literacy, and social and emotional experiences in group care.

CDFS 077 Art and Scientific Inquiry for ECE 3.0 Units
Transferable to CSU
Hours: 48-54 lecture
An exploration of art and science curriculum appropriate to the development of young children. Emphasis is placed on children's use of art and science to foster creativity, inquiry, and knowledge about themselves and the physical world. The curriculum planning process as applied to early childhood STEAM (science, technology, engineering, art, and mathematics) experiences is emphasized. Field trip may be required.

CDFS 078 Literacy and Music for ECE 3.0 Units
Transferable to CSU
Hours: 48-54 lecture
An exploration of language, literacy, music, and movement in early childhood education. Emphasis is placed on understanding and creating developmentally appropriate and culturally inclusive classroom experiences that promote emergent literacy and musical expression. Students will evaluate materials for quality and engage in teaching practices that promote children's holistic learning such as singing, instrument use, movement activities, teacher-child interaction, storytelling, puppetry, and dramatic play.

CDFS 080 Early Childhood Administration 3.0 Units
Prerequisite: CDFS 038 and CDFS 062 with a minimum grade of C
Transferable to CSU
Hours: 48-54 lecture
An overview of the fundamental duties and responsibilities of Early Childhood Administration, including preparation, implementation and evaluation of the program goals and budget controls. Meets requirements set by the California Commission on Teacher Credentialing for Site Supervisor and Program Director permit and State of California Community Care Licensing.

CDFS 081 Early Childhood Staff Supervision 3.0 Units
Prerequisite: CDFS 038, CDFS 050, and CDFS 062 with a minimum grade of C
Transferable to CSU
Hours: 48-54 lecture
A presentation of the fundamentals involved in becoming a more effective supervisor and methods and procedures in dealing with selection, supervision and evaluation of staff in an early childhood setting. Meets the requirements set by the California Commission on Teacher Credentialing for the Site Supervisor and Program Director Permit and State of California Community Care Licensing.

CDFS 082 2.0 Units
Adult Supervision: The Mentor Teacher
Prerequisite: CDFS 038, CDFS 050, and CDFS 062 with a minimum grade of C
Transferable to CSU
Hours: 32-36 lecture
Methods and principles of supervising student teachers in early childhood classrooms. Emphasis on the role of experienced classroom teachers who function as mentors to new teachers while simultaneously addressing the needs of children, parents and other staff. Required for the Master Teacher, Site Supervisor, and Program Director Permits issued by the California Commission on Teaching Credentialing.

CDFS 099 1.0 to 3.0 Units
Early Childhood Education Honors
Prerequisite: Completion of 24.0 units of college credit with a minimum GPA of 3.3; a minimum of 5.0 units in the discipline with a minimum grade of B; an ability to work independently; permission of the School Dean based on instructor availability
Transferable to CSU
Hours: 48-162 lab by arrangement
An independent study and research class in the areas of infant, toddler, and preschool early education programs. The student and instructor design an outlined program of study. Students may continue CDFS 099 over multiple semesters not to exceed 3 units.

Communication Studies (AA-T)

CAREER PATHS:

Speech-Language Pathologist
Communication Teacher
Media and Communication
Public Relations Specialist

Additional Career Paths and related data, including state-by-state wage info and growth in the field, can be found at www.onetonline.org.

This program map represents one possible pathway. See a counselor to create a customized education plan. Map is for the 2019-2020 catalog year.

SOLANO COMMUNITY COLLEGE

Communication Studies

Associate in Arts for Transfer
GE Pattern: IGETC
Program Total Units: 61-62

For more information please contact: (707) 864-7114

1 FIRST SEMESTER

Total Recommended Units: 14-15

COMM 001 Intro to Public Speaking (IGETC 1C)	3 units	
COMM 012 Intercultural Communication (IGETC 4)	3 units	
ENGL 001 English Composition (IGETC 1A)	4 units	
LR 010 Library Research and Information Competency	1 unit	
IGETC 2 Suggested: Math 011 or 012	3-4 units	

2 SECOND SEMESTER

Total Recommended Units: 17

COMM 006 Argumentation and Debate	3 units	
COMM 010 Interpersonal Communication	3 units	
IGETC 4	3 units	
IGETC 5A or 5B With Lab	4 units	
IGETC 1 Suggested: ENGL 002 or ENGL 004		

3 THIRD SEMESTER

Total Recommended Units: 15

COMM 002 Fundamentals of Persuasive Speaking	3 units	
Transferable Elective Course #001-049	3 units	
IGETC 3A Suggested: ART 012 or CINA 011 or MUSC 013 or THEA 013	3 units	
IGETC 3B/Am Inst Grp 1 Suggested: HIST 017 or 018 or 028 or 029 or 037	3 units	
IGETC 4	3 units	

4 FOURTH SEMESTER

Total Recommended Units: 15

COMM LIST A, B, or C of ADT	3 units	
IGETC 4/Am Inst Grp 2 Suggested: PLSC 001 or 005	3 units	
IGETC 3 A or B	3 units	
Transferable Elective Course #001-049	3 units	
IGETC 5A or 5B without lab. Whichever previously not taken.	3 units	

Required Courses/Courses in Discipline GE Courses/Categories

GET STARTED NOW!

- **Get started on your Pathway now with these recommended courses!** *Then* –See a counselor to create a **CUSTOMIZED** education plan personalized to your career and transfer goals!
- Required courses may change depending on a student's career and transfer goals, including requirements for cross-cultural and foreign language courses, and/or specific requirements for an individual CSU or UC.
- Unique transfer requirements for a specific institution can be found at **www.assist.org.**

LET US HELP YOU!

How to Apply: solano.edu/ar/apply.php

- **Questions? Talk to a Counselor Now!**
  Main Campus, Fairfield: (707) 864-7101
  Vacaville Center: (707) 863-7836
  Vallejo Center: (707) 642-8188
  Travis AFB: (707) 863-7878
  Visit online at solano.edu/counseling
- **Contact Our Career Center to Learn Your Career Options!**
  Call 707-864-7124, or email at CareerCenter@solano.edu
  Visit online at solano.edu/career
- **You Can Afford College! Learn more about Financial Aid!**
  Call 707-864-7103, or email at FinancialAid@solano.edu
  Visit online at solano.edu/financial_aid
- **College is Accessible!** Contact our Disability Services Program (DSP) at 707-864-7136.

Communication Studies

Associate in Arts in Communication Studies for Transfer (ADT: A.A.-T)

Program Description
The Communication Studies Program is broad-based and concerned with the preparation and delivery of messages in interpersonal, public and business situations. This program focuses on understanding the communication process and improving communication skills. The program prepares the students to pursue professional goals in a variety of career possibilities including: Community College Teacher, Speech Writer, Communication Consultant, Lawyer, Minister, Personnel Director, Sports Broadcast Journalist, Public Relations, Political Campaign Aide, Sales, Counselor.

Associate in Arts Degree for Transfer
The Associate in Arts in Communication Studies for Transfer (AA-T) is especially appropriate for students who plan to complete a bachelor's degree in Communication Studies at a CSU campus. Students completing this degree (AA-T in Communication Studies) are guaranteed admission to the CSU system, but not to a particular campus or major. Students transferring to a CSU campus that does accept the AA-T in Communication Studies will be required to complete no more than 60 units after transfer to earn a bachelor's degree. This degree also prepares students for communication studies degree programs at other four-year institutions, but does not come with the same guarantees. In all cases, students should consult with a counselor for more information on university admission and transfer requirements.

To earn the Associate in Arts in Communication Studies for Transfer degree, a student must:

1. Complete 60 semester 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 in a major or area of emphasis, as determined by the community college district.
2. Obtain a minimum grade point average of 2.0.

Program Outcomes
Students who complete the Associate in Arts in Communication Studies for Transfer Degree will be able to:

1. Critically evaluate speeches, debates, and other communicative performances.
2. Comprehend the skills and techniques necessary to be organized, confident communicators in a variety of classroom settings.
3. Understand the process of communication and communication methods in multiple contexts.
4. Communicate utilizing a variety of performance methods.

REQUIRED COURSES	**Units**
COMM 001 Introduction to Public Speaking	3
Two courses from List A	6
Two courses from List B	6
One course from List C	3

List A: (select two courses)

COMM 006 Argumentation and Debate	3
COMM 008 Group Communication	3
COMM 010 Interpersonal Communication	3

List B: (select two courses)

COMM 002 Fundamentals of Persuasive Speaking	3
COMM 012 Intercultural Communication	3
COMM 015 Oral Interpretation of Literature	3
COMM 050 Forensics/Speech Workshop	1-4
COMM 060 Business and Professional Communication.	3
Any List A course not used	3

List C: (select one course)

ANTH 002 Cultural Anthropology	3
COMM 075 Sports Broadcasting	3
PSYC 001 Introduction to Psychology	3
SOC 001 Introduction to Sociology	3
Any List A or List B course not used	3

Required Major Total Units	**18**
CSU General Education or iGETC Pattern units	**37-39**
CSU Transferable Electives (as needed to reach 60 transferable units)*	**9-11**
Total Degree Units	**60**

** 6 units may be double counted toward both the major area of emphasis and CSU General Education or IGETC Pattern. Consult with a counselor for more information on completing this degree.*

Communication Studies

Sports Broadcasting

Program Description
The Certificate of Achievement in Sports Broadcasting offers students hands-on experience in the basics of television and internet sports broadcasting. Areas of concentration include performance and technical training for a variety of televised sporting events and productions. The Certificate is geared for those who are interested in obtaining employable skills in a short timeframe. The Certificate of Achievement may be completed in one year and serves as a professional development opportunity.

Certificate of Achievement
A Certificate of Achievement can be obtained by completing the 12-unit major with a minimum grade of C or a P if taken on a Pass/No Pass basis.

Program Outcomes
Students who complete the Sports Broadcasting Certificate of Achievement will be able to:

1. Obtain and demonstrate skill set for entry level positions in broadcasting and electronic media productions.
2. Amass a minimum of 200 experience hours working on sports production tasks and to acquire recorded audio/video content to compile a demo tape.
3. Broadcast production assignments totaling 200 hours, exams, self-evaluation journals, and viewer response and evaluations.
4. Demonstrate ability to work as an individual as well as an effective team member on sports productions.

REQUIRED COURSES	**Units**
COMM 075A Sports Broadcasting – Fall Sports	3
COMM 075B Sports Broadcasting – Spring Sports	3
COMM 080A TV Sports Production – Fall Sports	3
COMM 080B TV Sports Production – Spring Sports	3
Total Degree Units	**12**

This is a Gainful Employment Program. For additional information, please visit ***http://www.solano.edu/gainful_employment/*** and select "Sports Broadcasting"

COMM 001 Introduction to Public Speaking 3.0 Units
General Education: Option A: Area D3; Option B: Area 1C; Option C: Area A1
Transferable to UC/CSU
Hours: 48-54 lecture
A public speaking course which includes instruction and practice in the various forms of public address and the techniques for orally presenting ideas clearly, concisely, and coherently. Students are required to outline speeches frequently and/or complete a detailed manuscript of the speech; to read a college-level public speaking textbook and apply its principles in the preparation of their speeches; to critically analyze public speeches of various types. (*C-ID COMM 110*)

COMM 002 3.0 Units
Fundamentals of Persuasive Speaking
General Education: Option A: Area D3; Option B: Area 1C; Option C: Area A1, A3
Transferable to UC/CSU
Hours: 48-54 lecture
Instruction and practice in the various forms of persuasive speaking including, but not limited to, sales presentations, speeches of praise/blame, propaganda, and opposing viewpoints. Students are required to outline persuasive speeches frequently; to read a college-level persuasive speaking textbook and apply its principles in the preparation of their persuasive speeches; to critically analyze persuasive speeches; and to deliver persuasive speeches of various types. These speeches will be presented in class, in person, to an audience of peers. Faculty evaluation will be done in the classroom in person. (*C-ID COMM 190*)

C-ID Designation may change periodically visit c-id.net/courses/search for current designation or consult with your counselor

Communication Studies

COMM 006 Argumentation and Debate 3.0 Units
General Education: Option A: Area D3; Option B: Area 1C; Option C: Area A1, A3
Transferable to UC/CSU
Hours: 48-54 lecture
Instruction and practice in the principles of argumentation and in the various forms of debate including the analysis of propositions, research, evidence and reasoning. Students are required to practice various forensic debating techniques through the presentation of their outlined advocate/government and opposition cases after investigating major contemporary issues; to read a college level argumentation and debate textbook and apply its principles in the preparation of their cases, and to critically analyze debate cases. These debates will be presented in class, in person, to an audience of peers. Faculty evaluation will be done in the classroom in person. (*C-ID COMM 120*)

COMM 008 Group Communication 3.0 Units
Transferable to UC/CSU
Hours: 48-54 lecture
Increases students' understanding of group communication behaviors related to problem-solving, decision-making, leadership, group roles, norms and conformity and to prepare students to function more effectively in groups. This course is for students majoring in speech communication, business, international business, education, nursing, and all fields of study and certifications that require group and team-building skills.
(*C-ID COMM 140*)

COMM 010 Interpersonal Communication 3.0 Units
General Education: Option A: Area D3
Transferable to UC/CSU
Hours: 48-54 lecture
Communication principles as applied to different interpersonal communication situations including verbal and non-verbal communication, listening, overcoming barriers to communication, and conflict resolution.
(C-ID COMM 130)

COMM 012 Intercultural Communication 3.0 Units
General Education: Option A: Area E; Option B: Area 4, SCC Cross-Cultural; Option C: Area D, SCC Cross-Cultural
Transferable to UC/CSU
Hours: 48-54 lecture
An introduction to the challenges and promises of intercultural communication with application to American culture, subcultures, and different cultures of the world. Specific focus will be development of the ability to acknowledge and understand the unique voice of people from the African, Asian, Latina, Middle Eastern, and Pacific Island cultures as well as co-cultures within the United States. Through lectures, readings, films, group discussions, written and oral assignments, students will learn the skills necessary to achieve positive outcomes when communicating with others that are perceived as different. *(C-ID COMM 150)*

COMM 015 Oral Interpretation of Literature 3.0 Units
General Education: Option A: Area C
Transferable to UC/CSU
Hours: 48-54 lecture
Study of literature through oral performance that includes development of skills in the analysis and interpretation of prose, poetry, and dramatic literature. Emphasis on vocal and physical techniques to orally communicate understanding of the literature performed.
(C-ID COMM 170)

COMM 049 Speech Honors 1.0 to 3.0 Units
Prerequisite: Completion of 30 or more units of transferable college credit including 6 units of transferable COMM; ENGL 001 with a minimum grade of B; an ability to work independently; and permission of the School Dean based on instructor availability
Transferable to CSU
Hours: 48-162 lab by arrangement
An independent study program designed for students who have completed the available Communication Studies offerings and wish to continue work in one of these areas, or work with an instructor in a specialized area of oral communication. The student and instructor design an outlined program of study. Students may take this course up to the maximum number of units over multiple semesters.

C-ID Designation may change periodically visit c-id.net/courses/search for current designation or consult with your counselor

Communication Studies

COMM 050 **1.0 to 4.0 Units**
Forensics/Speech Workshop
Transferable to CSU
Hours: 16-18 lecture, 0-162 lab
Provides training in the principles of all forms of competitive speaking, oral interpretation and debate, including participation in intercollegiate competitions and appearances before campus and community groups. Students attend intercollegiate forensic tournaments and festivals or speak before campus or community audiences. Participation may include weekends and off campus travel. This is an Open entry/Open exit course. *(C-ID COMM 160)*

COMM 060 **3.0 Units**
Business and Professional Communication
General Education: Option A: Area D3
Transferable to CSU
Hours: 48-54 lecture
Presents practical communication skills to allow students to achieve effective verbal communication in business situations, community activities and other areas of daily life. Areas of discussion include basic practical communication skills. Assignments and exercises are employed to allow students to achieve effective verbal communication in business situations, community activities, and other areas of daily life, including giving and receiving instructions, interviewing, verbal and non-verbal communication.

COMM 075A **3.0 Units**
Sports Broadcasting - Fall Sports
Transferable to CSU
Hours: 24-27 lecture, 72-81 lab
A professional approach to the basics of on-air and internet sports broadcasting of football, soccer, volleyball and tennis. Areas of concentration include performance training for play-by-play description, color commentary, compiling and organizing statistical data for football, soccer, volleyball and tennis broadcasts. The course includes an in-depth approach to careers in broadcast communication with concentration on all aspects of research preparation and delivery presentation to establish and sustain a career in sports broadcasting in one or more of the following sports: football, soccer, volleyball and/or tennis. Students will be required to attend weekly athletic events to fulfill activity hours. Events typically on TWRF.

COMM 075B **3.0 Units**
Sports Broadcasting - Spring Sports
Transferable to CSU
Hours: 24-27 lecture, 72-81 lab
A professional approach to the basics of on-air and internet sports broadcasting of baseball, softball, basketball, hockey and swimming. Areas of concentration include performance training for play-by-play description, color commentary, compiling and organizing statistical data for baseball, softball, basketball, swimming and hockey broadcasts. The course includes an in-depth approach to careers in broadcast communication with concentration on all aspects of research preparation and delivery presentation to adequately and effectively establish and sustain a career in sports broadcasting in one or more of the following sports: baseball, softball, basketball, hockey and/or swimming. Students will be required to attend weekly athletic events to fulfill activity hours. Events typically on TWRFS.

COMM 080A **3.0 Units**
TV Sports Production - Fall Sports
Transferable to CSU
Hours: 24-27 lecture, 72-81 lab
Instruction and training in the fundamentals of televised sports productions, both in the studio and on location. The course focuses on all aspects of production: directing, board operation, computer graphics, videography, instant replay and pre- and post-production editing as it pertains to football, soccer, tennis and volleyball. Students required to attend weekly athletic events to fulfill activity hours. Events typically on TWRF afternoons and/or evenings.

COMM 080B **3.0 Units**
TV Sports Production - Spring Sports
Transferable to CSU
Hours: 24-27 lecture, 72-81 lab
Instruction and training in the fundamentals of televised sports productions, both in the studio and on location. The course focuses on all aspects of production: directing, board operation, computer graphics, videography, instant replay and pre- and post-production editing as it pertains to basketball, baseball, softball, basketball, hockey and swimming. Students required to attend weekly athletic events to fulfill activity hours. Events typically on TWRFS afternoons and/or evenings.

Computer Information Science

Associate in Science in Computer Science for Transfer (ADT: A.S.-T)

Program Description
Successful completion of this major will assure competence in computer science through programming and basic data structures, providing an adequate background for employment in many computer system and technology areas as well as providing a firm foundation for students planning to pursue a baccalaureate degree in Computer Science and related disciplines.

Associate in Science for Transfer Degree
The Associate in Science for Transfer is especially appropriate for students who plan to complete a bachelor's degree in Computer Science at a CSU campus. Students completing an AS-T degree are guaranteed admission to the CSU system, but not to a particular campus or major. Students transferring to a CSU campus that does accept the AS-T will be required to complete no more than 60 units after transfer to earn a bachelor's degree. This degree also prepares students for Computer Science degree programs at other four-year institutions, but does not come with the same guarantees. In all cases, students should consult with a counselor for more information on university admission and transfer requirements.

To earn the Associate in Computer Science for Transfer Degree, a student must:
1. 1. Complete 60 semester units that are eligible for transfer to the California State University, including both of the following:
   a. The Intersegmental General Education Transfer Curriculum (IGETC) requirements.
   b. A minimum of 18 semester units in a major or area of emphasis, as determined by the community college district.
2. Obtain a minimum grade point average of 2.0.

Program Outcomes
Students who complete the Associate in Science in Computer Science for Transfer degree will be able to:
1. Analyze, document and construct a solution to a problem by applying appropriate computer science concepts and ideas.
2. Effectively communicate solution(s).
3. Demonstrate their ability to program in at least one programming language.

REQUIRED COURSES	**Units**
CIS 020 Assembly Programming	3
CIS 021 Discrete Structures for Computer Science	3
CIS 022 Introduction to Programming	3
CIS 023 Data Structures and Algorithms	3
MATH 020 Analytic Geometry and Calculus I	5
MATH 021 Analytic Geometry and Calculus II	5
PHYS 006 Physics for Science and Engineering	5
One Biology course	5
Required Major Total Units	**32**

Biology (select one course)	**Units**
BIO 002 Cell and Molecular Biology	5
BIO 003 Evolution, Ecology, & Biodiversity	5

CSU General Education or IGETC Pattern Units	**37**
CSU Transferable Electives (as needed to reach 60 transferable units)*	**1**
Total Degree Units	**60**

** 10 units may be double counted toward both the major area of emphasis and CSU General Education or IGETC Pattern. Consult with a counselor for more information oncompleting this degree.*

Computer Information Science

Computer Programming

Program Description
This program is designed to prepare the student for employment as a computer programmer trainee.

Certificate of Achievement and Associate in Science Degree
A Certificate of Achievement can be obtained upon completion of the 33-unit major. The Associate in Science Degree may be obtained by completing the 33-unit major, SCC General Education - Option A, and electives. All courses in the major must be completed with a minimum grade of C or a P if the course is taken on a Pass/No Pass basis.

Program Outcomes
Students who complete the Computer Programming Certificate of Achievement/Associate Degree will be able to:

1. Construct applications that use GUI (graphical user interface) components and access databases for data permanence.
2. Develop a programming solution to a data structure problem using object-oriented methodologies and appropriate data structures and algorithms.
3. Implement a well-designed, properly normalized relational database after analyzing user requirements and business rules.

REQUIRED COURSES	**Units**
(listed in recommended sequence)	
CIS 001 Introduction to Computer Science	3
BUS 092 Business Communication	3
CIS 022 Introduction to Programming	3
CIS 055 MS Windows Operating Systems	3
CIS 023 Data Structures and Algorithms	3
CIS 015 Programming in Visual Basic.NET	3
CIS 089 Essential Networking Technologies	3
CIS 078 Access - Database Management System	3
CIS 052 UNIX Operating System	3
CIS 020 Assembly Programming	3
3 units from Recommended Electives	3
Required Major Total Units	**33**

Recommended Electives (select 3 units)	**Units**
ACCT 001 Principles of Accounting - Financial	4
ACCT 002 Principles of Accounting – Managerial	4
BUS 005 Introduction to Business	3
CIS 035 Introduction to Java Programming	3
CIS 060 Introduction to the Internet	1.5
CIS 061 Creating Web Pages	3
CIS 066 Microsoft Word	3
CIS 068 Object Oriented Game Programming with Flash	3
CIS 073 Microsoft Excel	3
CIS 080 SQL Database Management Systems	3
OCED 090 Occupational Work Experience	1- 8
OCED 091 General Work Experience	1-6

Solano General Education	**21**
Electives (as needed to reach 60 units)	**6**
Total Degree Units Solano GE	**60**

Note: Students planning to transfer to a four-year college and major in Management Information Systems/ Computer Science should see a counselor regarding Business Articulation Agreements for a particular university campus.

This is a Gainful Employment Program. For additional information, please visit ***http://www.solano.edu/gainful_employment/*** and select "Computer & Info Science: Computer Programming."

Computer Information Science

Microcomputer Applications

Program Description
This option is designed to prepare the student for employment as a microcomputer applications specialist.

Certificate of Achievement and Associate of Science Degree
A Certificate of Achievement can be obtained upon completion of the 30-unit major. The Associate in Science Degree may be obtained by completing the 30-unit major, SCC General Education - Option A, and electives. All courses in the major must be completed with a minimum grade of C or a P if the course is taken on a Pass/No Pass basis.

Program Outcomes
Students who complete the Microcomputer Applications Certificate of Achievement/Associate Degree will be able to:

1. Demonstrate knowledge of application software such as word processing, spread sheets, personal information management, database, operating systems, and networking, presentation and html editors.
2. Understand Visual Basic programming.
3. Demonstrate effective oral and written communication.

REQUIRED COURSES	**Units**
(listed in recommended sequence)	
CIS 001 Introduction to Computer Science	3
CIS 015 Programming in Visual Basic.NET	3
CIS 055 MS Windows Operating Systems	3
CIS 061 Creating Web Pages	3
CIS 066 Microsoft Word	3
CIS 073 Microsoft Excel	3
CIS 078 Access - Database Management System	3
CIS 089 Essential Networking Technologies	3
CIS 090 Introduction to PowerPoint	1.5
CIS 091 Microsoft Outlook	1.5
BUS 092 Business Communication	3
Required Major Total Units	**30**
Solano General Education	**21**
Electives (as needed to reach 60 units)	**9**
Total Degree Units Solano GE	**60**

This is a Gainful Employment Program. For additional information, please visit
http://www.solano.edu/gainful_employment/and select "Computer & Info Science: Microcomputer Applications."

Computer Information Science

Web Design and Development

Program Description
This program is designed to prepare the student for employment as a website designer or developer. Career Opportunities: Web Designer, Web Development, Motion Graphic/Animation Video Editor, Print Designer.

Certificate of Achievement and Associate in Science Degree
A Certificate of Achievement can be obtained upon completion of the 22.5-unit major. The Associate in Science Degree may be obtained by completing the 22.5-unit major, SCC General Education - Option A, and electives. All courses in the major must be completed with a minimum grade of C or a P if the course is taken on a Pass/No Pass basis.

Program Outcomes
Students who complete the Web Design and Development Certificate of Achievement/Associate Degree will be able to:

1. Produce functional web pages replete with responsive web elements.
2. Properly use design elements and an HTML editor in creating web pages.
3. Develop a project incorporating CSS, search forms, tables, photo galleries, shared borders, themes, interactive components, dynamic web pages and publish to a server.
4. Create web elements for print design and production.
5. Create and edit production quality animation and video

REQUIRED COURSES	**Units**
CIS 001 Introduction to Computer Science	3
CIS 061 Creating Web Pages	3
CIS 062 Creating Web Interactivity with Flash	3
CIS 069 Multimedia for the Web	3
CIS 070 Adobe Photoshop for the Web	3
CIS 085 Digital Publishing with InDesign	3
CIS 087 Adobe Illustrator for the Web	3
BUS 097 Work Readiness	1.5
Required Major Total Units	**22.5**
Solano General Education	**21**
Electives (as needed to reach 60 units)	**16.5**
Total Degree Units Solano GE	**60**

This is a Gainful Employment Program. For additional information, please visit ***http://www.solano.edu/gainful_employment/***and select "Web Design and Development."

Computer Information Science

Computer Applications Specialist Job-Direct Low Unit Certificate

The required courses must be completed with a minimum grade of C.

REQUIRED COURSES	**Units**
BUS 097 Work Readiness	1.5
CIS 066 Microsoft Word	3
CIS 073 Microsoft Excel	3
CIS 078 Access - Database Management System	3
Total Units	**10.5**

Microsoft Office Specialist Job-Direct Low Unit Certificate

The required courses must be completed with a minimum grade of C.

REQUIRED COURSES	**Units**
CIS 066 Microsoft Word	3
CIS 073 Microsoft Excel	3
CIS 078 Access-Database Management System	3
CIS 090 Introduction to PowerPoint	1.5
CIS 091 Microsoft Outlook	1.5
Total Units	**12**

Database Specialist Job-Direct Low Unit Certificate

The required courses must be completed with a minimum grade of C.

REQUIRED COURSES	**Units**
CIS 072 Extensible Markup Language (XML)	1.5
CIS 078 Access - Database Management System	3
CIS 080 SQL Database Management Systems	3
Total Units	**7.5**

Motion Graphic Editor Job-Direct Low Unit Certificate

The required courses must be completed with a minimum grade of C.

REQUIRED COURSES	**Units**
CIS 062 Creating Web Interactivity	3
CIS 069 Multimedia for the Web	3
CIS 087 Adobe Illustrator for the Web	3
Total Units	**9**

Digital and Print Publishing Job-Direct Low Unit Certificate

The required courses must be completed with a minimum grade of C.

REQUIRED COURSES	**Units**
CIS 070 Adobe Photoshop for the Web	3
CIS 085 Digital Publishing with InDesign	3
CIS 087 Adobe Illustrator for the Web	3
BUS 097 Work Readiness	1.5
Total Units	**10.5**

Web Programmer Job-Direct Low Unit Certificate

The required courses must be completed with a minimum grade of C.

REQUIRED COURSES	**Units**
CIS 015 Programming in Visual Basic.NET	3
CIS 035 Introduction to Java Programming	3
CIS 068 Object Oriented Game Programming with Flash	3
CIS 075 Client-Side Web Programming	3
CIS 081 Server-Side Web Programming	3
Total Units	**15**

Digital Media and Web Development Job-Direct Low Unit Certificate

The required courses must be completed with a minimum grade of C.

REQUIRED COURSES	**Units**
CIS 061 Creating Web Pages	3
CIS 062 Creating Web Interactivity	3
CIS 070 Adobe Photoshop for the Web	3
CIS 087 Adobe Illustrator for the Web	3
Total Units	**12**

Computer Information Science

CIS 001 Introduction to Computer Science 3.0 Units
Course Advisory: keyboarding speed 30 wpm
General Education: Option A: Area D3
Transferable to UC/CSU
Hours: 48-54 lecture, 16-18 lab
An introduction to the hardware and software components of basic computer information systems. Also, an examination of information systems and their role in business. A review of historical, social and cultural implications of computer technology in today's society. Course content will include hands-on familiarization with a computer operating system and common application software. Additionally, the course includes an introduction to computer programming using an object-oriented programming language such as Java, Python, C++ or Visual Basic.Net. Students will learn to develop problem specifications, detailed analyses, design algorithms, and construct structured computer programs.

CIS 015 Programming in Visual Basic.NET 3.0 Units
Prerequisite: CIS 001 with a minimum grade of C
Transferable to UC/CSU
Hours: 48-54 lecture, 16-18 lab
An introduction to Object Oriented Programming (OOP) using Visual Basic.NET, emphasizing problem-solving techniques using structured design and development. An extensive coverage of the Visual Basic computer language will be conducted using the Microsoft.Net environment. Students will construct forms and define procedures, events, properties, methods and objects to solve a variety of business-oriented problems.

CIS 020 Assembly Programming 3.0 Units
Prerequisite: A minimum grade of C in CIS 015, CIS 022 or CIS 035
General Education: Option A: Area D3
Transferable to UC/CSU
Hours: 32-36 lecture, 48-54 lab
A hardware-oriented programming course dealing with programming a computer at the assembler language level. Emphasis will be on the assembly language of computers. *(C-ID CIS 142)*

CIS 021 3.0 Units
Discrete Structures for Computer Science
Prerequisite: A minimum grade of C in CIS 023 and Math 020
General Education: Option B: Area 2
Transferable to UC/CSU
Hours: 32-36 lecture, 48-54 lab
An introduction to the discrete structures used in Computer Science with an emphasis on their applications. Topics covered include: Functions, Relations and Sets; Basic Logic; Proof Techniques; Basics of Counting; Graphs and Trees; and Discrete Probability. *(C-ID COMP 152)*

CIS 022 Introduction to Programming 3.0 Units
Prerequisite: CIS 001 with a minimum grade of C
General Education: Option A: Area D
Transferable to UC/CSU
Hours: 48-54 lecture, 16-18 lab
An introduction to computer programming. The course's content will include 'hands-on' development of structured algorithms and programs through top-down design, modular and object oriented programming, and standardized control structures. Taught using an object-oriented computer programming language such as C++, C#, Java, etc. *(C-ID COMP 122)*

CIS 023 Data Structures and Algorithms 3.0 Units
Prerequisite: CIS 022 with a minimum grade of C
General Education: Option A: Area D3
Transferable to UC/CSU
Hours: 32-36 lecture, 48-54 lab
A study of the basic concepts associated with the creation and manipulation of data structures and their related processing algorithms. Topics include software engineering principles, the selection, design, and implementation of data structures including arrays, sequential and random access files, strings, stacks, queues, linked lists, and binary trees, and the development of efficient algorithms for sorting, searching, and manipulating these data structures. Taught using an object-oriented computer programming language such as C++, C#, Java, etc. *(C-ID CIS 132)*

CIS 035 Introduction to Java Programming 3.0 Units
Prerequisite: A minimum grade of C in CIS 015, CIS 022 or CIS 023
Transferable to UC/CSU
Hours: 32-36 lecture, 48-54 lab
Introduces Object Oriented Programming (OOP) using the Java programming language. Includes hands-on development of Java applets and Java applications using objects, classes, interfaces and Graphical User Interface (GUI) components.

CIS 049 1.0 to 3.0 Units
Computer and Information Science Honors
Prerequisite: Completion of 24.0 units of college credit with a minimum GPA of 3.3; a minimum of 5.0 units in the discipline with a minimum grade of C; an ability to work independently; permission of the School Dean based on instructor availability
Transferable to CSU
Hours: 48-162 lab by arrangement
Designed for honor students who intend to major in one of the Computer and Information Science options. Students are expected to design their own projects and must submit them to the instructor for approval. Students may take this course up to the maximum number of units over multiple semesters.

C-ID Designation may change periodically visit c-id.net/courses/search for current designation or consult with your counselor

Computer Information Science

CIS 050 Microcomputer Applications 3.0 Units
Course Advisory: Basic keyboarding skills at 30 wpm
Transferable to CSU
Hours: 48-54 lecture
An introduction to microcomputers and the more frequently used applications software. The course is designed for the microcomputer user who is not a computer science major. The purpose of this course is to help students to understand the concepts and fundamentals of working with: an operating system with its associated graphical user interface, word processing, spreadsheets, databases and presentation software.

CIS 052 UNIX Operating System 3.0 Units
Course Advisory: CIS 055 with a minimum grade of C
Transferable to CSU
Hours: 48-54 lecture
An analysis of the UNIX operating system, its terminology, user utilities, file structure, file security, commands, shells, shell programming, system architecture, and system administration. Emphasis will be placed on the shell environment, shell programming and utilities. The course will include hands-on exercises for the students to complete using the UNIX operating system (Currently taught using LINUX).

CIS 055 MS Windows Operating Systems 3.0 Units
Course Advisory: CIS 001 with a minimum grade of C; basic keyboarding skills
Transferable to CSU
Hours: 48-54 lecture
How to use the Graphical User Interface (GUI) and the command line interface in carrying out system tasks in the MS Windows operating systems. Topics include file management, hard disk management, system tools, batch files, connectivity, and the registry.

CIS 060 Introduction to the Internet 1.5 Units
Transferable to CSU
Hours: 24-27 lecture
Prepares students to use the Internet, a world wide computer network. Emphasis is on introducing features of the Internet, including electronic mail, the World Wide Web, Gopher, FTP (file transfer protocol), Telnet, and Usenet, as well as other Internet services and utilities. Students will explore hands-on the vast resources of the Internet, learn to access information using a variety of methods, and will construct a simple Web page.

CIS 061 Creating Web Pages 3.0 Units
Course Advisory: CIS 001
Transferable to CSU
Hours: 48-54 lecture
Prepares students to develop web sites that interact with databases. Emphasis is on the creation of Web sites with interactive Web pages, data access Web pages, and web pages with interactive components. Students will explore hands-on access to the Internet and an HTML editor to create and maintain Web sites.

CIS 062 Creating Web Interactivity 3.0 Units
Course Advisory: A minimum grade of C in both CIS 001 and CIS 061
Transferable to CSU
Hours: 48-54 lecture
Covers the creation of vector-based graphics, animation, and interactivity within the Web environment. Emphasis will be placed on applying design principles to the elements of motion and interactivity. The basic operating principles of Adobe Animate will be applied in order to create Web content with animation, interactive buttons, and sound. Issues of optimal delivery and web accessibility will also be covered. A portfolio-quality professional level capstone project will be developed and presented.

CIS 066 Microsoft Word 3.0 Units
Course Advisory: CIS 001 or CIS 050 with a minimum grade of C; ability to keyboard at 30 wpm
Transferable to CSU
Hours: 48-54 lecture
An in-depth study of the functions of the word processing program. Students will learn how to use basic and advanced program features to create and design business documents.

CIS 069 Multimedia For the Web 3.0 Units
Course Advisory: CIS 061 with a minimum grade of C
Transferable to CSU
Hours: 48-54 lecture
An in-depth look at designing multimedia for the Web. Topics include developing graphic elements such as buttons, background textures and images for a Web site, using Cascading Style Sheets to position graphics, using Adobe Animate CC to create web site interactivity, adding audio and/or video to a Web site, and manipulating Web multimedia file formats.

Computer Information Science

CIS 070 Adobe Photoshop for the Web 3.0 Units
Course Advisory: CIS 001 or CIS 050 with a minimum grade of C
Transferable to CSU
Hours: 48-54 lecture
Emphasizes the use of computer technology to create and manipulate raster and vector digital images. Students use Photoshop techniques to produce digital creations for the web. Layers, filter effects, blending modes, and other editing tools will be used to produce digital images appropriate for print and electronic reproduction. The elements of Photoshop for use in industry-standard web and print production will be explored.

CIS 073 Microsoft Excel 3.0 Units
Course Advisory: CIS 001 with a minimum grade of C; ability to keyboard at 30wpm
Transferable to CSU
Hours: 48-54 lecture
A thorough study of spreadsheet operation and enables the student to use the spreadsheet to perform mathematical computations and analysis. Students will create graphic representations of the information contained in a spreadsheet, perform list management routines, use functions, perform 'what if' analysis, customize toolbars and menus, and create macros using Visual Basic for Applications.

CIS 078 3.0 Units
Access - Database Management System
Course Advisory: CIS 001 with a minimum grade of C
Transferable to CSU
Hours: 48-54 lecture
An introduction to relational database management using microcomputers. Microsoft's Access database management program is used. Students will learn how to create and maintain relational database structures, organize and manipulate data, ask questions of the data, create custom forms for entering data and custom reports for printing the data. How to publish objects on the Internet's World Wide Web is presented. The student will learn how to construct a complete application combining previously created tables, queries, forms, and reports. Visual BASIC Applications (VBA) and Structured Query Language (SQL) are introduced. Advanced database design is explored and the student learns how to 'normalize' a database structure.

CIS 080 SQL Database Management Systems 3.0 Units
Course Advisory: CIS 001; CIS 078
Transferable to CSU
Hours: 48-54 lecture
Provides knowledge and skills in advanced database systems that use the SQL language such as IBM's DB2, Oracle, Sybase and Microsoft's SQL Server. This course is designed for the end user, the database designer and the database administrator. Microsoft SQL Server 2008 is the database system currently used for this course.

CIS 081 Server-Side Web Programming 3.0 Units
Course Advisory: A minimum grade of C in both CIS 001 and CIS 061
Transferable to CSU
Hours: 48-54 lecture
Emphasizes the creation of interactive web sites using a server-sided scripting language such as ASP.Net, CGI, or Perl. Topics include core features of the server-side scripting language, control structures, functions, arrays, form validations, regular expressions, environmental variables, and database-driven web applications.

CIS 083 Web Server Administration 3.0 Units
Course Advisory: CIS 001 and CIS 061 with a minimum grade of C
Transferable to CSU
Hours: 48-54 lecture
Web server installation and administration for the internet and intranet. Topics covered include the installation, configuration, management and tuning of web services, security, online transaction processing, and FTP services.

CIS 085 Digital Publishing with InDesign 3.0 Units
Course Advisory: CIS 001 or CIS 050 with a minimum grade of C
Transferable to CSU
Hours: 48-54 lecture
An introduction to the graphics software program, Adobe InDesign. Students will learn to produce and publish publications, employing vector graphics, and typography as well as color and print management. This course will establish an understanding of the basic features in Adobe InDesign for use in both print and digital media.

CIS 087 Adobe Illustrator for the Web 3.0 Units
Course Advisory: CIS 001 or CIS 050 with a minimum grade of C
Transferable to CSU
Hours: 48-54 lecture.
An introduction to the graphics software program, Adobe Illustrator. Students will learn to create vector shapes, import, export and modify graphics, and use Illustrator tools. This course will establish an understanding of the basic features in Adobe Illustrator for use in digital media.

CIS 089 Essential Networking Technologies 3.0 Units
Course Advisory: CIS 001 with a minimum grade of C
Transferable to CSU
Hours: 48-54 lecture
A general introductory overview of networking. Network design, media, protocols, architectures, operations, and administration will be discussed. Local area networks, wide area networks, and network connectivity (including Internet) are covered. This course is the foundation of all other network classes and helps prepare the student to be successful when taking various certified examinations.

CIS 090 Introduction to PowerPoint 1.5 Units
Course Advisory: CIS 001 or CIS 050 with a minimum grade of C; ability to keyboard 30 wpm
Transferable to CSU
Hours: 24-27 lecture
An introduction to features and design concepts utilized in developing powerful presentations using a package software such as Microsoft PowerPoint.

CIS 091 Microsoft Outlook 1.5 Units
Course Advisory: CIS 001 or CIS 050 with a minimum grade of C; basic keyboarding skills
Transferable to CSU
Hours: 24-27 lecture
An introduction to Outlook's features. Students will work with the Contact address book; Inbox and e-mail; Journal; Notes; Tasks; use Calendar to track and schedule appointments, events and meetings; work with forms and templates; use Outlook with other applications.

CIS 106 Computer Literacy 1.0 Unit
Hours: 16-18 lecture, 8-9 lab.
A brief introduction to information technology for novices. Including an introduction to computer components, as well as hands-on activities utilizing the Windows operating system, word processing and spreadsheet software and the internet.

CIS 110 Wireless LANs 1.5 Units
Course Advisory: CIS 001 with a minimum grade of C
Hours: 24-27 lecture, 8-9 lab
Planning, designing, installing and configuring wireless LANs. The course offers in-depth coverage of wireless networks with extensive step-by-step coverage of IEEE 802.11b/a/g/pre-n implementation, design, security, and troubleshooting.

CIS 162 A+ Computer Hardware Technology 4.0 Units
Hours: 48-54 lecture, 48-54 lab
Presents the structure of modern personal computer architecture including the names, purpose, and characteristics of components such as motherboards, CPUs, RAM, disk drive storage, printers and networks. This course also addresses upgrading computer components, optimizing computer performance, preventative maintenance, safety, and computer hardware troubleshooting. Prepares the student for CompTIA A+ Hardware Service Technician Certification.

CIS 164 4.0 Units
A+ Computer Operating Systems Technology
Course Advisory: CIS 162
Hours: 48-54 lecture, 48-54 lab
Presents the purpose and capabilities of computer operating systems, operating system components and utilities. The course emphasizes initial investigation of personal computer operating systems and demonstrates the uses of the operating system and other software for isolating troubles and completing the repair of personal computers. Prepares the student for CompTIA A+ Operating Systems Technologies certification.

CIS 166 Computer Network+ Technology 4.0 Units
Hours: 48-54 lecture, 48-54 lab
Presents the architecture of computer networks, including the names, purpose, and characteristics of network components such as network interface card (NIC), hubs, routers, cabling and connectors; as well as topologies, protocols and standards. This course also addresses network implementation, network support and troubleshooting. Prepares the student for CompTIA Network+ Computer Network Certification. As a team, in a laboratory environment, the class will assemble and implement a complete network, with a server running a Microsoft server network operation system (NOS) and several computers running the Microsoft Windows XP Professional Operating System. All of the required cabling will be assembled in the lab by the students under the supervision of the instructor.

CIS 168 Computer Security+ Technology 4.0 Units
Prerequisite: CIS 166 with a minimum grade of C
Hours: 48-54 lecture, 48-54 lab
Presents the vulnerability, threats, and risks to data and other computer assets from spyware, Trojan horses, viruses, worms, and other security attacks. This course also addresses the fundamental policies and procedures for maintaining the security of a computer network. Prepares the student for the Computing Technology Industry Association's (CompTIA) Security+ Certification.

C-ID Designation may change periodically visit c-id.net/courses/search for current designation or consult with your counselor

Cosmetology

Cosmetology

Program Description
The Cosmetology program is approved by the Board of Barbering and Cosmetology. It is designed to prepare the student to take the California State Board of Cosmetology examination for licensure and is subject to its regulations regarding the education and training of cosmetologists. Units include theory and practice in fundamental skills in all phases of beauty culture. There is no reciprocity for transfer students. All students are required to complete all technical, practical, and program requirements.

Certificate of Achievement and Associate in Science Degree
A Certificate can be obtained by completing the 43.5-unit major. The Associate in Science Degree can be obtained by completing the 43.5-unit major, and SCC General Education - Option A. All courses in the major must be completed with a minimum grade of C or a P if the course is taken on a Pass/No Pass basis.

Program Outcomes
Students who complete the Cosmetology Certificate of Achievement/Associate Degree will be able to:

1. Compare and contrast the skills as required by the California State Board of Barbering and Cosmetology.
2. Interpret and apply cosmetology theories.
3. Students will have completed the mandated clinic laboratory hours, technical subjects, practical operations and business fundamentals.

REQUIRED COURSES	**Units**
COSM 100 Cosmetology I	17.5
COSM 101 Cosmetology II	17.5
COSM 102 Cosmetology III	8.5
Required Major Total Units	**43.5**
Solano General Education	**21**
Electives (as needed to reach 60 units)	**0**
Total Degree Units Solano GE	**64.5**

The Cosmetology program is approved by the California State Board of Barbering and Cosmetology.

This is a Gainful Employment Program. For additional information, please visit ***http://www.solano.edu/gainful_employment/*** and select "Cosmetology."

Cosmetology

COSM 100 Cosmetology I 17.5 Units

Hours: 80-90 lecture, 600-675 lab

The first course in a series that provides the fundamental training towards the state mandated minimum hours designed to prepare the student for the California State Board of Cosmetology examination for licensure. A combination of both lecture and laboratory activities introduces the student to theoretical concepts, principles and practice in the beauty industry. Critical thinking skills are developed in the areas of communication, hair care, nail care, record keeping, and business decorum. Students enrolling in this course must attend the Mandatory Information Sessions. See the schedule of classes for location, dates and times. The cost of start-up materials, uniforms, textbooks, and equipment kit is approximately $1.000.00. To qualify for the State Board of Cosmetology examination for a cosmetology license, students must have completed all state mandated clocked time including the following: designated subject areas of technical instruction, designated subject areas of practical operations, completed the 10th grade or the equivalent, be at least 17 years of age, and current state or federally issued photographic identification. For more information; *www.barbercosmo.ca.gov.*

COSM 101 Cosmetology II 17.5 Units

Prerequisite: COSM 100 with a minimum grade of C
Hours: 80-90 lecture, 600-675 lab

The second in a series of courses in Cosmetology to provide the training towards the state mandated hours of intensive training and study designed to prepare the student for the California State Board of Cosmetology examination for cosmetology licensing. Focus is on the continued study of the beauty industry. This course provides the students with the opportunity to synthesize and utilize cosmetology knowledge and skills in providing more advanced services for multiple clients.

COSM 102 Cosmetology III 8.5 Units

Prerequisite: COSM 101 with a minimum grade of C
General Education: Cosmetology
Hours: 40-45 lecture, 288-324 lab

The third in a series of courses in Cosmetology designed to provide the training towards the state mandated hours and prepare the student for the California State Board of Cosmetology examination for license. Topics include the principles and practices of cosmetology with emphasis on the essential knowledge and skills for license and working within the cosmetology industry. Students are able to increase practical application skills and processes by providing multiple clients with hair care, skin care and nail care services in the client laboratory.

COSM 106 Cosmetology IV 0.5 to 3.0 Units

Prerequisite: COSM 100 with a minimum grade of C
Hours: 24-162 lab

Meets the needs of students who are preparing to take the state examination for cosmetology licensure or have not completed state mandates to qualify for the cosmetology state examination. This course reviews basic skills and mandates required by the state board. Reinforcement of entry level industry skills is emphasis of this course. This course is designed to give Cosmetology students a chance to make up hours for Board of Cosmetology certification requirements. Open entry/Open exit.

Counseling

Program Description
These courses are designed to assist students in making a successful adjustment to college, develop academic and career plans and goals, acquire learning skills, obtain job-seeking skills and employment, and develop interpersonal skills for life and work. The courses do not lead to a certificate, degree or transfer agreement in themselves. However, these courses may apply to other programs and may also be used toward lower division general education.

COUN 005 Career/Life Planning 3.0 Units
General Education: Option A: Area B2; Option C: Area E
Transferable to UC/CSU
Hours: 48-54 lecture
Helps students demonstrate an understanding and appreciation of the impact and significance of career choices on their social, psychological and physiological experiences throughout the life span. This course is also designed to help students identify their interests, skills, values and personality traits (self-assessment profile), conduct career research and exploration, and learn current job seeking skills. Students will analyze the relationship between themselves, their life choices and the ongoing process of career planning and self-development throughout the life span. UC limitation of credit: 3 units COUN courses numbered 001-009.

COUN 006 University Transfer Success 1.0 Unit
Transferable to UC/CSU
Hours: 16-18 lecture
Provides students with a concrete plan for understanding and succeeding in transferring to a four-year college or university. Topics include the following: Major selection; college options; application processes; academic preparation and student education plans. UC limitation of credit: 3 units Counseling courses numbered 001-009.

COUN 007 Student Life Success 3.0 Units
Transferable to UC/CSU
Hours: 48-54 lecture
An exploration of the sociological, physiological, psychological, and intellectual factors that impact student's academic and personal success over a lifetime. Topics include: accepting personal responsibility, discovering self-motivation, mastering self-management, employing interdependence, increasing self-awareness, adopting life-long learning, developing emotional intelligence, and believing in one's self. UC limitation of credit: 3 units Counseling courses numbered 001-009.

COUN 008 1.0 Unit
Math, Engineering and Science Achievement (MESA) Enrichment
Transferable to UC/CSU
Hours: 16-18 lecture
Assists students in acquiring the knowledge and skills necessary to reach their educational goals in mathematics, engineering and science-related fields. Topics to be covered include: strengths assessment; math and science study skills; transfer preparation and career strategies. Students will synthesize and compare and contrast information to draw conclusions on course topics. UC limitation of credit: 3 units Counseling courses numbered 001-009.

COUN 015 Valuing Diversity 3.0 Units
General Education: Option A: Area B2, E; Option B: Area 4; Option C: Area D, SCC Cross-Cultural
Transferable to UC/CSU
Hours: 48-54 lecture
An examination of the complexities of interpersonal relationships among several cultures in our society including self-concept, values, beliefs, communication and lifestyle. This course will invite exploration of individual cultural perception in order to promote respect for differences and to develop a sense of community. Examination requirements include written essays that demonstrate critical thinking.

COUN 023 Psychology for Modern Life 3.0 Units
General Education: Option A: Area B2; Option B: Area 4; Option C: Area D
Transferable to UC/CSU
Hours: 48-54 lecture
Examines the fundamental concepts of psychology as they relate to daily life. Topics include methods of psychology, stages of personality development, personal relationships, values, communication, motivation, emotions, lifestyle and attitudes. Concepts will be introduced to foster the student's understanding of his/her own personal development. Theories and research will be applied across a diversity of settings.

C-ID Designation may change periodically visit c-id.net/courses/search for current designation or consult with your counselor

Counseling

COUN 058 Life Management 3.0 Units
General Education: Option A: Area B2
Transferable to CSU
Hours: 48-54 lecture
A survey of the areas of life which influence decision-making. Students are introduced to areas of human development (emotional, intellectual, physical, and social) which influence decision making. They will analyze and evaluate differences in values, motivation, and goals. Includes introduction to financial, time and stress management, and communication skills. Requires written papers and problem-solving exercises.

COUN 062 3.0 Units
Helping Skills: Creating Alliances & Facilitating Change
Transferable to CSU
Hours: 48-54 lecture
An introduction to the basic helping skills that enable the student to build an alliance, effect change and empower others within a multicultural society. A helping model is introduced and helping skills such as attending, active listening, demonstrating empathy, assessment and referral are discussed, role played and applied in an experiential manner to a number of common challenges. In addition, the pertinent legal and ethical guidelines of the professional helping relationship are presented, discussed and applied throughout the course.

COUN 064A Practicum I 4.0 Units
Prerequisite: COUN 062; HS 051; HS 053
Transferable to CSU
Hours: 32-36 lecture, 96-108 lab by arrangement
The first of a two-course sequence in a supervised Human Services practicum experience at an approved agency or educational setting. In order to develop and apply culturally sensitive and ethically sound helping skills, students will work a minimum of 100 hours and participate actively in a two hour weekly seminar. Placement at most sites will involve a criminal background check.

COUN 064B Practicum II 4.0 Units
Prerequisite: COUN 064A
Course Advisory: HS 055
Transferable to CSU
Hours: 32-36 lecture, 96-108 lab by arrangement
The second semester of a two-course sequence in a supervised Human Services Practicum, required for Human Services majors. Students will further develop culturally and ethically competent helping skills as they continue to work in their approved site or work in a new approved site. Students will continue to hone and apply more advanced and educationally informed helping skills. This additional 100 hours in an approved site and its supporting 2 hour weekly seminar will meet the Human Services certificate and Associate degree requirement and will help students further clarify their potential for a longer range educational and career path in Human Services, Social Work or Counseling. Practicum Sites often require students to pass a criminal background check.

COUN 091 Foundations for College Success 0.5 Unit
Course Advisory: Possession of all relevant academic records and other test results and transcripts including SAT, ACT, AP and IB
Transferable to CSU
Hours: 8-9 lecture
Provides an in-depth introduction to college and the required initial student education plan. It seeks to maximize the new student's successful experience by introducing Solano College's student support services; certificate, associate degree and transfer preparation requirements; and the essential personal motivators for college success. Students will provide their academic records, e.g. high school and college transcripts, assessments and tests such as SAT/ACT/AP/IB which will assist them in creation of the initial student education plan.

COUN 098 Performance Psychology 3.0 Units
General Education: Option C: Area E
Transferable to CSU
Hours: 48-54 lecture
Explores the psychological, social and physiological factors influencing optimal performance in life's endeavors including academics, performing arts, sport, and in interpersonal and business relationships. Topics include student evaluation of self care, life balance, confidence, arousal management, motivation, goal attainment, concentration, positive self talk, commitment, uses of imagery and visualization, active listening and demonstrating empathy. Briefly listed as 009 for 2016-2017 catalog.

C-ID Designation may change periodically visit c-id.net/courses/search for current designation or consult with your counselor

COUN 102A **0.5 Unit**
Time Management & Goal Setting
Hours: 8-9 lecture
Introduces goal setting and time management techniques such as analyzing time usage, prioritizing and developing a schedule to assist students to achieve their educational and career goals. Other COUN 102 series courses may be taken concurrently. NOTE: Not open for credit to students who have completed COUN 007 with a minimum grade of C.

COUN 102B **0.5 Unit**
Test Taking, Test Anxiety & Memory
Hours: 8-9 lecture
Introduces test taking, test anxiety and memory concepts and techniques to assist students in achieving their educational and career goals. Other COUN 102 series courses may be taken concurrently. Note: Not open for credit to students who have completed COUN 007 with a minimum grade of C.

COUN 102C Study Systems **0.5 Unit**
Hours: 8-9 lecture
Introduces note-taking, reading and study environment concepts/strategies and identifies attitudes and learning styles to assist students in achieving their educational and career goals. Other COUN 102 series courses may be taken concurrently. Note: Not open for credit to students who have completed COUN 007 with a minimum grade of C.

COUN 103 Disability and Success **3.0 Units**
Hours: 48-54 lecture
College, career, and life preparation course to assist students with disabilities in accessing services and completing their community college and career goals. It includes the SCC Disability Service Program, the College community, community agencies serving people with disabilities, laws and disabilities, coping with a disability, self advocacy, success in the classroom, and a final “Plan for Personal Disability Management.” Student will receive a letter grade.

COUN 310 **1.0 Unit**
Transition to College for Students with Disabilities
Hours: 16-18 lecture
Transition course for high school seniors who are planning on entering the Community College system and receiving Disability Services. It includes the Student Support and Success Program process of entering into college, the difference between college and high school for students with disabilities. Students will obtain a beginning understanding of how to navigate successfully through the Community College system and Disability Services. Pass/No-Pass Only.

COUN 510 Assessment/Orientation/Planning 0.0 Units
Hours: 1 lecture, 2 lab
Mandatory new student assessment, orientation and initial counseling. Includes reading, writing and mathematics assessments; overview of the programs and services that support student retention and success, time management practices, policies and procedures of Solano College and a preliminary Student Education Plan (SEP).

Administration of Justice (AS-T)

CAREER PATHS:

Police Detective
Lawyer
Criminal Investigator and Special Agent
Substance Abuse and Behavorial Disorder Counselor
Mental Health and Substance Abuse Social Worker
Criminal Justice and Law Enforcement Teacher

Additional Career Paths and related data, including state-by-state wage info and growth in the field, can be found at www.onetonline.org.

This program map represents one possible pathway. See a counselor to create a customized education plan. Map is for the 2019-2020 catalog year.

SOLANO COMMUNITY COLLEGE

Administration of Justice
Associate in Arts for Transfer
GE Pattern: CSUGE
Program Total Units: 62

For more information please contact: (707) 864-7229

1 FIRST SEMESTER

Total Recommended Units: 15

- **CJ 001** 3 units — Introduction to Criminal Justice
- **ENG 001** 4 units — College Composition (CSUGE A2)
- **LR 010** 1 units — Introduction to Library Research and Information Competency
- **CSUGE AREA A1** 3 units — Suggested: COMM 001

2 SECOND SEMESTER

Total Recommended Units: 17

- **CJ 002** 3 units — Concepts of Criminal Law
- **CJ 011** 3 units — Community Relations
- **SOC 001 or PSYCH 001** 3 units (CSUGE D)
- **CSUGE Area B2** 4 units — Suggested: with lab
- Suggested: ENGL 002 or ENGL 004

3 THIRD SEMESTER

Total Recommended Units: 15

- **CJ 053** 3 units — Legal Aspects of Evidence
- **CSUGE Area C2** 3 units — Suggested: HIST 017, 018, 028, 029, or 037
- **CSUGE Area B1** 3 units — Suggested: without lab
- **CSUGE Area C1** 3 units
- **CSUGE Area E** 3 units

4 FOURTH SEMESTER

Total Recommended Units: 15

- **CJ 051** 3 units — Criminal Investigation
- **CJ 064** 3 units — Principles and Procedures of the Criminal Justice System
- **CJ 056** 3 units — Juvenile Procedures
- **CSUGE Area D** 3 units — Suggested: PLSC 001 or PLSC 005
- **CSUGE Area C1 OR C2** 3 units

Required Courses/Courses in Discipline GE Courses/Categories

GET STARTED NOW!

- **Get started on your Pathway now with these recommended courses!** *Then* – See a counselor to create a **CUSTOMIZED** education plan personalized to your career and transfer goals!
- Required courses may change depending on a student's career and transfer goals, including requirements for cross-cultural and foreign language courses, and/or specific requirements for an individual CSU or UC.
- Unique transfer requirements for a specific institution can be found at **www.assist.org.**

LET US HELP YOU!

How to Apply: solano.edu/ar/apply.php

- **Questions? Talk to a Counselor Now!**
  Main Campus, Fairfield: (707) 864-7101
  Vacaville Center: (707) 863-7836
  Vallejo Center: (707) 642-8188
  Travis AFB: (707) 863-7878
  Visit online at solano.edu/counseling
- **Contact Our Career Center to Learn Your Career Options!**
  Call 707-864-7124, or email at CareerCenter@solano.edu
  Visit online at solano.edu/career
- **You Can Afford College! Learn more about Financial Aid!**
  Call 707-864-7103, or email at FinancialAid@solano.edu
  Visit online at solano.edu/financial_aid
- **College is Accessible!** Contact our Disability Services Program (DSP) at 707-864-7136.

Criminal Justice

Associate in Science in Administration of Justice for Transfer (ADT: A.S.-T)

Program Description
This program offers core and selective courses which provide the student with a base of knowledge and proficiencies in the area of criminal justice. The program operates with the cooperation and participation of local criminal justice agencies. All instructors in the program have experience in the criminal justice field. Courses are scheduled both day and evening to accommodate full-time or part-time students seeking to acquire or upgrade skills and to prepare the criminal justice student for a four-year degree in the CSU system.

Associate in Science in Criminal Justice for Transfer
The Associate in Science in Administration of Justice for Transfer degree is designed for students who plan to complete a bachelor's degree in Administration of Justice at a CSU campus. Students completing an Associate in Science in Administration of Justice for Transfer degree are guaranteed admission to the CSU system, but not to a particular campus or major. Students transferring to a CSU campus that accepts the Associate in Science in Administration of Justice will be required to complete no more than 60 units after transfer to earn a bachelor's degree. The Associate in Science in Administration of Justice for Transfer degree also provides students with the learning experience on how to preserve and maintain social order by gaining critical skills in these key areas: law enforcement; corrections, probation, and parole; juvenile justice, delinquency, and juvenile corrections; criminology theory and crime control; and criminal justice leadership and administration. With this transfer degree, students will gain an understanding of both adult and juvenile justice systems, as well as the skills to apply innovative programmatic efforts. From due process to constitutional protections to the importance of case law in American criminal justice, the student will be exposed to the specific legal and ethical challenges for each branch of the U.S. criminal justice system.

To earn the Associate in Science in Administration of Justice for Transfer, students must:
1. Complete 60 semester 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 in a major or area of emphasis, as determined by the community college district.
2. Obtain a minimum grade point average of 2.0.

Program Outcomes
Students who complete the Associate in Science in Administration of Justice for Transfer will be able to:
1. Demonstrate an understanding of the American Criminal Justice system and the scope of responsibilities of the various local, state, and federal law enforcement agencies beginning with arrest through parole.
2. Articulate the system's objectives, the crime problem, and role expectations of criminal justice personnel, and describe the various agencies and each subsystem within the system.
3. Describe the system's responsibilities to the community, factors in crime causation, the social implications of crime and communication barriers between the system and the community.
4. Articulate the differences between the major criminological theories of the causes of crime and how those theories relate to policies toward crime and criminal behavior.
5. Analyze legal concepts and make rational decisions about case processing.
6. Demonstrate knowledge of the rules of evidence, legal definitions, and concepts of evidentiary law. Apply basic investigative proficiencies.
7. Demonstrate critical thinking and analytical skills acquired in the social sciences in preparation for continuance of college-level education at a four-year college.

REQUIRED COURSES	**Units**
CJ 001 Introduction to Criminal Justice	3
CJ 002 Concepts of Criminal Law	3
Select Two Courses from List A	6
Select Two Courses from List B	6

List A (select two courses)	**Units**
CJ 011 Community Relations	3
CJ 051 Criminal Investigation	3
CJ 053 Legal Aspects of Evidence	3
CJ 056 Juvenile Procedures	3

List B (select two courses)	**Units**
CJ 064 Principles and Procedures of the Criminal Justice System	3
PSYC 001 Introduction to Psychology.	3
SOC 001 Introduction to Sociology	3
Total Units	**18**

Required Major Total Units	**18**
CSU General Education or IGETC Pattern Units	**37-39**
CSU Transferable Electives (as needed to reach 60 transferable units)*	**5-12**
Total Degree Units.	**60**

** 0 - 9 units may be double counted toward both the major area of emphasis and CSU General Education or IGETC Pattern. Consult with a counselor for more information on completing this degree.*

Criminal Justice

Criminal Justice, Corrections

Program Description
This program offers core and selective courses which provide the student with a base of knowledge and proficiencies in the area of corrections. The program operates with the cooperation and participation of local corrections agencies. All instructors in the program have experience in the corrections field. Courses are scheduled both day and evening to accommodate full-time or part-time students seeking to acquire or upgrade skills in the corrections field.

Certificate of Achievement and Associate in Science Degree
The Certificate of Achievement can be obtained upon completion of the 30-unit major. The Associate in Science Degree can be obtained upon completion of the 30-unit major, general education requirements, and electives. All courses in the major must be completed with a minimum grade of C or a P if the course is taken on a Pass/No Pass basis.

Program Outcomes
Students who complete the Criminal Justice, Corrections Certificate of Achievement/Associate Degree will be able to:

1. Demonstrate an understanding of the American Criminal Justice system and the scope of responsibilities of the various local, state, and federal law enforcement agencies beginning with arrest through parole.
2. Articulate the system's objectives, the crime problem, and role expectations of criminal justice personnel, and describe the various agencies and each subsystem within the system.
3. Describe the system's responsibilities to the community, factors in crime causation, the social implications of crime and communication barriers between the system and the community

REQUIRED COURSES	**Units**
CJ 001 Introduction to Criminal Justice	3
CJ 002 Concepts of Criminal Law	3
CJ 011 Community Relations	3
CJ 051 Criminal Investigation	3
CJ 052 Investigative Report Writing	3
CJ 053 Legal Aspects of Evidence	3
CJ 058 Fundamentals of Crime and Delinquency	3
CJ 059 Interviewing and Counseling	3
6 units from List A	6
Required Major Total Units	**30**

List A: (Select 6 units)	**Units**
CJ 057 Criminal Justice Career Development	3
CJ 060 Probation and Parole	3
CJ 062 Legal Aspects of Correction	3

CSU General Education or IGETC Pattern units	**37-39**
Total Degree Units CSU GE or IGETC	**64-66**

Solano General Education	**21**
Electives (as needed to reach 60 units)	**9**
Total Degree Units Solano GE	**60**

** 3 units may be double counted toward both the major area of emphasis and CSU General Education or IGETC Pattern. Consult with a counselor for more information on completing this degree.*

This is a Gainful Employment Program. For additional information, please visit ***http://www.solano.edu/gainful_employment/*** and select "Criminal Justice: Corrections."

Criminal Justice

Criminal Justice, Law Enforcement

Program Description
This program was established with the cooperation of the Solano County Criminal Justice Advisory Committee and offers courses for both pre-service and in-service students. All instructors have experience in law enforcement, and courses are scheduled day or evening to accommodate full-time and part-time students seeking to acquire or upgrade skills in the field.

Certificate of Achievement and Associate in Science Degree
The Certificate of Achievement can be obtained upon completion of the 30-unit major. The Associate in Science Degree can be obtained upon completion of the 30-unit major, general education requirements, and electives. All courses in the major must be completed with a minimum grade of C or a P if the course is taken on a Pass/No Pass basis.

Program Outcomes
Students who complete the Criminal Justice, Law Enforcement Certificate of Achievement/Associate Degree will be able to:

1. Demonstrate an understanding of the responsibilities of law enforcement, courts, and corrections, and their applicability to adults and juveniles.
2. Articulate the roles of the criminal and civil court systems.
3. Identify and describe the three proximate cause theories of attributed liability

REQUIRED COURSES	**Units**
CJ 001 Introduction to Criminal Justice	3
CJ 002 Concepts of Criminal Law	3
CJ 011 Community Relations	3
CJ 051 Criminal Investigation	3
CJ 052 Investigative Report Writing	3
CJ 053 Legal Aspects of Evidence	3
CJ 058 Fundamentals of Crime and Delinquency	3
CJ 059 Interviewing and Counseling	3
6 units from List A	6
Required Major Total Units	**30**

List A: (select 6 units)	**Units**
CJ 056 Juvenile Procedures	3
CJ 057 Criminal Justice Career Development	3
CJ 064 Principles and Procedures of the Criminal Justice System	3

CSU General Education or IGETC Pattern units	**37-39**
Total Degree Units CSU GE or IGETC	**64-66**

Solano General Education	**21**
Electives (as needed to reach 60 units)	**9**
Total Degree Units Solano GE	**60**

** 3 units may be double counted toward both the major area of emphasis and CSU General Education or IGETC Pattern. Consult with a counselor for more information on completing this degree.*

This is a Gainful Employment Program. For additional information, please visit ***http://www.solano.edu/gainful_employment/*** and select "Criminal Justice: Law Enforcement."

Criminal Justice

CJ 001 Introduction to Criminal Justice 3.0 Units
Course Advisory: ENGL 001 with a minimum grade of C
General Education: Option A: Area B2; Option B: Area 4; Option C: Area D
Transferable to UC/CSU
Hours: 48-54 lecture
Introduction to the characteristics of the criminal justice system in the United States. Focus is placed on examining crime measurement, theoretical explanations of crime, responses to crime, components of the system, and current challenges to the system. The course examines the evolution of the principles and approaches utilized by the justice system and the evolving forces which have shaped those principles and approaches. Although justice structure and process is examined in a cross cultural context, emphasis is placed on the US justice system, particularly the structure and function of US police, courts, and corrections. Students are introduced to the origins and development of criminal law, legal process, and sentencing and incarceration policies. *(C-ID AJ 110)*

CJ 002 Concepts of Criminal Law 3.0 Units
Course Advisory: ENGL 001 with a minimum grade of C
Transferable to UC/CSU
Hours: 48-54 lecture
A study of the history, philosophy and development of law and various legal systems; case law and legal research; corpus delicti, mental elements, capacity to commit crimes, and defenses; classification of crimes and penalties; elements of major crimes. *(C-ID AJ 120)*

CJ 011 Community Relations 3.0 Units
Transferable to UC/CSU
Hours: 48-54 lecture
Examines the complex, dynamic relationship between the justice system and the community in addressing crime and conflict. The emphasis is on the challenges and prospects of administering justice within a diverse multicultural population. Topics covered may include crime prevention, restorative justice, conflict resolution and ethics. *(C-ID AJ 160)*

CJ 051 Criminal Investigation 3.0 Units
Course Advisory: CJ 001
Transferable to CSU
Hours: 48-54 lecture
Addresses the techniques, procedures, and ethical issues in the investigation of crime, including organization of the investigative process, crime scene searches, interviewing and interrogating, surveillance, source of information, utility of evidence, scientific analysis of evidence and the role of the investigator in the trial process. Introduces the fundamentals of investigation, crime scene search and recording, collection and preservation of evidence, scientific aid, interviews and interrogation, follow-up and case preparation. *(C-ID AJ 140)*

CJ 052 Investigative Report Writing 3.0 Units
Course Advisory: CJ 001; CJ 002; CJ 051
Transferable to CSU
Hours: 48-54 lecture
Presents investigative report writing in criminal justice relative to police, probation, institutional and parole activities. Includes practical experience in preparing field notes, statements, and reports.

CJ 053 Legal Aspects of Evidence 3.0 Units
Course Advisory: CJ 001
Transferable to CSU
Hours: 48-54 lecture
A study of the origin, development, philosophy and constitutional basics of evidence; constitutional and procedural considerations affecting arrest, search and seizure; kinds of degrees of evidence and rules governing admissibility; judicial decisions interpreting individual rights and case studies. *(C-ID AJ 124)*

CJ 056 Juvenile Procedures 3.0 Units
Transferable to CSU
Hours: 48-54 lecture
Presents the organization, function, and jurisdiction of juvenile agencies; the processing and detention of juveniles; juvenile case disposition; juvenile statutes and court procedures. *(C-ID AJ 220)*

CJ 057 Criminal Justice Career Development 3.0 Units
Course Advisory: CJ 001
Transferable to CSU
Hours: 48-54 lecture
Examines criminal justice career positions, employment standards and current occupational opportunities in the field. Includes practical aspects of various jobs and provides information and practice in entrance examination taking, oral interviews, and general preparation for various occupations within the criminal justice field.

C-ID Designation may change periodically visit c-id.net/courses/search for current designation or consult with your counselor

CJ 058 **3.0 Units**
Fundamentals of Crime and Delinquency
Course Advisory: CJ 001
Transferable to CSU
Hours: 48-54 lecture
Introduction to major types of criminal behavior, patterns of career offenders, factors which contribute to the production of criminality of delinquency. Includes methods used in dealing with violators in the justice system; the changing roles of police courts and after-care process of sentence, probation, prisons, and parole; changes of the law in crime control and treatment processes.

CJ 059 Interviewing and Counseling **3.0 Units**
Course Advisory: CJ 001
Transferable to CSU
Hours: 48-54 lecture
Overview of the interviewing and counseling techniques available to practitioners in law enforcement, the courts, and corrections emphasizing communication and practical skills.

CJ 060 Probation and Parole **3.0 Units**
Course Advisory: CJ 001; CJ 058
Transferable to CSU
Hours: 48-54 lecture
Presents the philosophy and history of correctional services. A survey of the correctional sub-systems of institutions by type and function, probation concepts and parole operations. A discussion of correctional employee responsibilities as applied to offender behavior modifications through supervisory control techniques. Covers rehabilitation goals as they affect individual and intimate cultural groups in both confined and field settings.

CJ 062 Legal Aspects of Correction **3.0 Units**
Course Advisory: CJ 058
Transferable to CSU
Hours: 48-54 lecture
Presents the legal aspects of corrections and code provisions relative to all phases of the correctional system.

CJ 064 **3.0 Units**
Principles and Procedures of the Criminal Justice System
Course Advisory: CJ 001
Transferable to CSU
Hours: 48-54 lecture
A detailed study of the role and responsibility of each sub-system within the criminal justice system; an examination of the philosophy, history, structure, operation and interrelation of each sub-system component; a description of procedure from initial entry of the individual into the system to the final disposition.

CJ 070A **3.0 Units**
Forensic Crime Scene Investigation - Basic
Transferable to CSU
Hours: 48-54 lecture
An introduction to the basic methods and processes used during a forensic examination of a crime scene. This course includes topics such as crime scene and evidence photography, methods of searching for and determining items of evidentiary value, scene sketching and measuring techniques, best practices for evidence collection and packaging, establishing chain of custody, scene integrity, field processing techniques for developing forensic evidence, and crime scene report writing. This course is intended for students seeking a career in forensic science, crime scene investigation, or law enforcement. Field trips may be offerred to labs at local or regional forensic labs, coroner's office, or related law enforcemnt venues.

CJ 070B **3.0 Units**
Forensic Crime Scene Investigation - Advanced
Prerequisite: CJ 070A with a minimum grade of C
Transferable to CSU
Hours: 48-54 lecture
Advanced forensic examination techniques for crime scene and evidence examination. This course includes topics such as blood spatter reconstruction, shooting trajectory and reconstruction, forensic vehicle examinations, collection of forensic evidence at autopsies, nighttime photography, and crime scene court testimony. This course is intended for students seeking a career in forensic science, crime scene investigation, or law enforcement.