

**181 INTRODUCTION TO C++ PROGRAMMING 4 UNITS****C-ID COMP 122**

Recommended Preparation: "C" grade or higher or "Pass" in CS 119 or equivalent, and intermediate algebra

3 hours lecture, 3 hours laboratory  
Introduction to computer programming using C++. Students with no previous programming experience in C++ will learn how to plan and create well-structured programs, write programs using sequence, selection and repetition structures, and create and manipulate sequential access files, structs, classes, pointers and arrays.

CSU, UC

**182 INTRODUCTION TO JAVA PROGRAMMING 4 UNITS****C-ID COMP 122**

Prerequisite: "C" grade or higher or "Pass" in MATH 110 or equivalent

Recommended Preparation: "C" grade or higher or "Pass" in CS 119 or equivalent or experience programming in C++ or Java

3 hours lecture, 3 hours laboratory  
Introductory course in the basics of the Java programming language focusing on object oriented methodology. Topics include classes, methods, parameters, arrays, modularity, abstraction, exception handling, and stream and file I/O. In addition to writing and using new classes, students will utilize the AWT and/or Swing libraries of classes. Basic inheritance and mobile application programming are introduced.

CSU, UC

**240 DISCRETE STRUCTURES 3 UNITS****C-ID COMP 152**

Prerequisite: "C" grade or higher or "Pass" in CS 181, CS 182 or equivalent, or experience programming in C/C++ or Java

3 hours lecture  
This course is 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.

CSU, CSU GE, UC

**281 INTERMEDIATE C++ PROGRAMMING AND FUNDAMENTAL DATA STRUCTURES 4 UNITS****C-ID COMP 132**

Prerequisite: "C" grade or higher or "Pass" in CS 181 or equivalent

3 hours lecture, 3 hours laboratory  
Continuation of CS 181. Provides the programmer with professional training in memory management, documentation, structured programming, and programming to professional standards using C++. Explores some of the more advanced concepts of preprocessing, low-level data objects, recursion, and dynamic data structures including linked lists, stacks, queues and trees. Laboratory instruction includes program development and execution.

CSU, UC

**282 INTERMEDIATE JAVA PROGRAMMING AND FUNDAMENTAL DATA STRUCTURES 4 UNITS****C-ID COMP 132**

Prerequisite: "C" grade or higher or "Pass" in CS 182 or equivalent

3 hours lecture, 3 hours laboratory  
Continuation of CS 182. Implement and analyze a variety of data structures and the algorithms used with those data structures, and create abstract data types and learn how and when to utilize them. Fundamental data structures include multidimensional arrays, linked lists, stacks, queues, heaps, trees, and hash tables; learn when to use which of the available dynamic

memory data structures. Tools for analyzing and predicting run time and memory usage are introduced, as is Big-O notation. A variety of sort algorithms are reviewed and analyzed for best, worst, and average case performance, and are compared with tree traversal algorithms. Develop increased sophistication in object-oriented basics such as inheritance, encapsulation, design of abstract data types and polymorphism, and gain experience by working on larger programs and managing large, multi-programmer projects. Laboratory instruction includes program development and execution. Mobile and database applications will be introduced.

CSU, UC

## COUNSELING (COUN)

**095 ACADEMIC AND FINANCIAL AID PLANNING .5 UNIT**

.5 hour lecture

This course will familiarize students with: (a) financial aid resources available to them to meet educational expenses; (b) Cuyamaca College's Financial Aid Satisfactory Academic Progress Policy; (c) federal/state regulations for determining and maintaining eligibility for financial aid eligibility; (d) the student's rights and responsibilities in receiving aid. Students will learn how to prepare an income and expense budget. They will receive an overview of campus resources. Finally, they will develop a two semester education plan to meet their objectives. **Pass/No Pass only. Non-degree applicable.**

**101 INTRODUCTION TO COLLEGE .5-1 UNIT**

.5-1 hour lecture

An introductory course designed to assist the student with a successful transition to college. An overview of student responsibilities, college expectations, and success strategies will be discussed. Students will learn about the college; its facilities, services, academic regulations, general education requirements, and certificate, degree and transfer options. Students will receive preliminary guidance in education planning. **Pass/No Pass only. Non-degree applicable.**

**110 CAREER DECISION MAKING 1 UNIT**

1 hour lecture

Utilization of a group seminar structure to explore and research various career and major options. Lecture, group discussion, experiential activities, and vocational assessment tools will be utilized to assist students in identifying their individual interests, values, and personality styles. Students will conduct educational and career research to relate their vocational assessment results to setting academic and career goals.

CSU

**120\* COLLEGE AND CAREER SUCCESS 3 UNITS**

3 hours lecture

This course teaches success strategies to enhance academic and lifelong learning. The course also discusses the importance of looking at the human being as an integrated physiological, social and psychological organism. Students will explore personality types and examine their own interests and values as a way to increase self-understanding and select an appropriate major and career. Students will identify their learning style and apply psychological principles of learning, memory, motivation and stress management to academic study strategies. Students will also

apply life management techniques, such as time and money management, to accomplish personal goals. Students will examine the adult stages of development and develop a plan for wellness and living a long and healthy life. Additionally, students will be given the opportunity to practice creative and critical thinking techniques.

CSU, CSU GE, UC

**130 STUDY SKILLS AND TIME MANAGEMENT 1 UNIT**

1 hour lecture

Designed to prepare students to adjust to the academic community by learning to plan and study effectively within given time limitations. Strategies include: time management, goal setting, textbook mastery, library research skills, note-taking, exam preparation, stress reduction, and educational planning.

CSU

**140 SELF AWARENESS AND INTERPERSONAL RELATIONSHIPS 3 UNITS**

3 hours lecture

This course analyzes the cognitive, behavioral, humanistic, and existential theories as they relate to the awareness of the self and the dynamics of healthy relationships. Using many of the skills suggested by the above theories, students will define and utilize personal achievement techniques, basic principles of healthy functioning, and effective coping strategies that facilitate the process of intra and interpersonal change and relationships. Utilizing the major theories in the field of psychology and psychotherapy, the development of a healthy and strong identity and an empowered sense of self will be explored.

CSU, CSU GE

**150\* TRANSFER SUCCESS 1 UNIT**

1 hour lecture

This course provides the information needed for a student to transfer to a baccalaureate institution, including strategies to achieve academic success and research skills essential to developing a comprehensive educational plan. Topics include the community college transfer process, selection of major, student support services, comparing and contrasting a variety of universities, and clarification of one's educational goal.

CSU, UC

\*120 and 150 combined; maximum UC credit, one course

## ECONOMICS (ECON)

**110 ECONOMIC ISSUES AND POLICIES 3 UNITS**

3 hours lecture

A one-semester course that provides general elementary knowledge of basic economic concepts and serves as an introduction to more advanced economics courses. Surveys current economic subjects including consumer economics, inflation, recession, competition, monopoly, world trade and competing economic systems. *Not open to students with credit in ECON 120 or 121.*

AA/AS GE, CSU, CSU GE, IGETC, UC credit limit

**120 PRINCIPLES OF  
MACROECONOMICS 3 UNITS****C-ID ECON 202**

Prerequisite: "C" grade or higher or "Pass" in MATH 110 or equivalent (MATH 110 is recommended for Business majors)

3 hours lecture

Introductory course focusing on aggregate economic analysis. Topics include: market systems; economic cycles including recession, unemployment and inflation; national income accounts; macroeconomic equilibrium; money and financial institutions; monetary and fiscal policy; and international trade and finance. Includes some use of graphs and elementary algebra.

AA/AS GE, CSU, CSU GE, IGETC, UC

**121 PRINCIPLES OF  
MICROECONOMICS 3 UNITS****C-ID ECON 201**

Prerequisite: "C" grade or higher or "Pass" in MATH 110 or equivalent (MATH 110 is recommended for Business majors)

3 hours lecture

Principles of economic analysis and decision-making from the viewpoint of the individual consumer, worker, and firm. Focuses on the price system allocation of resources and income, supply and demand analysis, the structure of American industry, and applications to current economic policy and problems. Includes some use of graphs and elementary algebra.

AA/AS GE, CSU, CSU GE, IGETC, UC

**EDUCATION (ED)****151 EFFECTIVE TUTORING  
STRATEGIES 1 UNIT**

1 hour lecture

This course is designed to prepare students for tutoring college students. Provides an overview of effective learner-centered, process oriented, tutoring strategies and practices. Topics include basic study skills, the tutoring cycle, learning styles, learning disabilities, behaviors and stresses that affect learning, communication skills, and diversity/cultural awareness. Students interested in working in the Tutoring Center must have a grade of "B" or higher in subject matter to qualify. **Pass/No Pass only. Non-degree applicable.**

**200 TEACHING AS A PROFESSION 3 UNITS****C-ID EDUC 200**

3 hours lecture

This course introduces students to the concepts and issues related to teaching diverse learners in today's contemporary schools, kindergarten through grade 12 (K-12). Career exploration, historical and philosophical foundations of education, critical issues, California's content standards and frameworks, teaching performance standards, and conditions for effective learning are discussed. A minimum of 45 hours of structured fieldwork in public school elementary classrooms that represent California's diverse student population, and includes cooperation with at least one carefully selected and campus-approved certificated classroom teacher is required. *Limitation on enrollment: must meet health and safety requirements for public school field experience placement.*

CSU, UC

**ELECTRONICS  
TECHNOLOGY (ET)****110 INTRODUCTION TO BASIC  
ELECTRONICS 4 UNITS**

3 hours lecture, 3 hours laboratory

Exploratory course of study in the laws of physics as they relate to electricity and electronics. Topics include: the history of electrical science, atomic structure, basic electrical laws, DC and AC circuits, semiconductors, integrated circuits, amplifiers, wave forms, electrical test equipment, circuit construction, and electrical safety. Background in basic algebra and use of scientific calculators is highly desirable.

AA/AS GE, CSU, CSU GE

**ENGINEERING  
(ENGR)**

**\*UC credit limit: all CADD courses, ENGR 119, ENGR 129, OH 200, OH 201 combined: maximum credit, one course**

**100 INTRODUCTION TO ENGINEERING  
AND DESIGN 4 UNITS****C-ID ENGR 110**

3 hours lecture, 3 hours laboratory

Introduction to engineering as a way of perceiving the world. Overview of design and analytical techniques, problem solving and strategic thinking, disciplines, and ethics. Fundamentals of engineering graphics as a universal language and application to the visualization, representation, and documentation of designed artifacts, including orthographic projections, pictorial, section, and detail views; creation of basic to intermediate solid parts and assemblies; dimensioning and tolerancing practices; thread notation per ASME Y14.5M-1994. This course covers the principles of engineering drawings in visually communicating engineering designs, and an introduction to solid modeling and computer-aided design (CAD). Assignments develop technical sketching and 2D and 3D CAD skills. The use of solid modeling CAD software (SolidWorks and Creo Parametric) is an integral part of the course, as is the production of physical prototypes using 3D printing and other techniques. This course focuses on the design process and on spatial reasoning and visualization.

AA/AS GE, CSU, UC

**119 BASIC ENGINEERING CAD 3 UNITS**

Prerequisite: "C" grade or higher or "Pass" in CADD 115 or ENGR 100 or equivalent

Recommended Preparation: Working knowledge of basic computer operations and file administration  
2 hours lecture, 4 hours laboratory  
CAD (Computer-Aided Drafting) fundamentals for engineers. Basic drawing techniques and commands in AutoCAD. Includes geometric construction, multiview and singleview projections, section views, dimensions, and text. *Not open to students with credit in CADD 120, 120ABCD.*

CSU, \*UC credit limit

**120 ENGINEERING COMPUTER  
APPLICATIONS 3 UNITS**

Prerequisite: "C" grade or higher or "Pass" in MATH 180 or equivalent or concurrent enrollment

2 hours lecture, 3 hours laboratory

Use of computerized mathematical analysis, computer programming, and computer graphics as tools for solving engineering problems.

CSU, UC

**125 INTRO 3D SOLID MODELING 3 UNITS**

Prerequisite: "C" grade or higher or "Pass" in CADD 115 or ENGR 100 or equivalent

Recommended preparation: Working knowledge of basic computer operations and file administration  
2 hours lecture, 4 hours laboratory

Advanced graphic communication using solid modeling techniques and software (SolidWorks). Techniques include feature based part construction using extrudes, cuts and revolves; advanced surface shaping using lofts and sweeps; and assembly construction and constraining in an engineering design environment. Students will continue to develop 2D drafting skills including proper organization and layout of component drawing views, dimensioning and tolerancing in accordance with ANSI standard, sectioning and detailing, detail descriptive geometry, and introduction to manufacturing processes of mechanical parts such as sheet metal process and molding, introduction to 3D printing technology. *Also listed as CADD 125. Not open to students with credit in CADD 125.*

CSU, UC, UC credit limit

**129 ENGINEERING SOLID  
MODELING 3 UNITS**

Prerequisite: "C" grade or higher or "Pass" in CADD 115 or ENGR 100 or equivalent

2 hours lecture, 4 hours laboratory

Advanced 3D computer-aided mechanical design and drafting. This parametric modeling course provides skills and knowledge of appropriate software (Creo Parametric) and feature based part construction using extrudes, cuts, revolves, lofts and sweeps. Students will enhance their skills in model assembly and assembly drawings including proper organization and layout of component drawing views, dimensioning and tolerancing, sectioning and detailing. 3D printing technology (additive manufacturing) is integrated to this course. *Also listed as CADD 129. Not open to students with credit in CADD 129.*

CSU, \*UC credit limit

**175 MECHATRONICS: INTRODUCTION  
TO MICROCONTROLLERS AND  
ROBOTICS 3 UNITS**

2 hours lecture, 3 hours laboratory

Mechatronics is the combination of mechanical, electronic, and computer engineering to create automatic "intelligent" devices. Microcontrollers offer an easy and flexible way to do this. This course introduces the use of microcontrollers to operate motors, lights, and other electromechanical devices in response to inputs from sensors. Application of these ideas through the development of an autonomous robot. *Also listed as CS 175. Not open to students with credit in CS 175.*

CSU, UC

**176 MECHATRONICS:  
PROTOTYPE DESIGN 3 UNITS**

Prerequisite: "C" grade or higher or "Pass" in CS 175 or ENGR 175 or equivalent

2 hours lecture, 3 hours laboratory

This course focuses on electromechanical product development. Control of single chip microcontrollers including memory-mapped I/O (Input/Output), direct access to registers, and fine control of timing. Development of custom circuits including manufacture of printed circuits. Control of DC and AC motors and stepper motors. Development of mechanisms and transmissions. Introduction to manufacturing techniques. This course includes a capstone design project. *Also listed as CS 176. Not open to students with credit in CS 176.*

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