

CIS 60A, Photoshop I 3 units

Transfer: CSU

- *Prerequisite: CIS 1.*

This course is for the non-design student interested in learning Photoshop using personal computers (PCs). Students will learn image creation and editing using Adobe Photoshop. Students learn to create, repair and modify images, scan photos, plan composite images and create special effects for use in a variety of applications.

This class uses Photoshop CS2 in the Windows (PC) environment only.

CIS 60B, Photoshop II 3 units

Transfer: CSU

- *Prerequisite: CIS 60A.*

This course is for non-design students interested in learning the advanced features in Photoshop using personal computers (PCs). Students will learn to use advanced image creation and editing tools in Adobe Photoshop. Students will be able to create and modify images, text, and animation for the WEB as well as a variety of other applications.

This class uses Photoshop CS2 in the Windows (PC) environment only.

CIS 62A, Flash I 3 units

Transfer: CSU

- *Prerequisite: CIS 50.*

In this course students who are not design majors will learn to use Flash. Topics will include the creation of graphic elements using Flash's unique drawing tools, turning graphic elements into animation, and introduction to ActionScripting techniques for the creation of interactive movies and publish the flash movies to HTML and popular graphic formats.

This course uses Flash 8.

CIS 62B, Flash II 3 units

Transfer: CSU

- *Prerequisite: CIS 62A.*

In this course, students who are non-design majors will learn to take their Flash skills to the next level by taking advantage of its scripting language, ActionScript, which offers a more robust programming model and better object-oriented programming support. Topics will include learning how ActionScript can control graphic, sounds, and text. To create user-interface elements, and learn how Flash communicates with outside applications such as Web browsers.

This course uses Flash 8.

CIS 64, Illustrator 3 units

Transfer: CSU

- *Prerequisite: Computer Information Systems 60A.*

This course is for the non-design students interested in learning Adobe Illustrator using Personal Computers for Windows. Students will develop the skills and use a variety of tools to create sophisticated illustrations, logos, advertisements, and other business media graphics for the Web.

CIS 88A, Independent Studies in CIS 1 unit

Transfer: CSU

Please see "Independent Studies" section.

CIS 88B, Independent Studies in CIS 2 units

Transfer: CSU

Please see "Independent Studies" section.

CIS 90, Computer Internships 2 units

Transfer: CSU

- *Prerequisite: None.*

Students must arrange an approved internship prior to enrolling in this class. F-1 students must see the Immigration Coordinator at IEC before enrolling.

The Internship Program is designed to provide the student with the opportunity of on-site experience in a computer lab. Students spend a minimum of six hours per week during the semester in a supervised computer facility.

CIS 90A, Internship in Computer Applications 1 unit

Transfer: CSU

- *Prerequisite: None.*

Students must arrange an approved internship prior to enrolling in this class. F-1 students must see the Immigration Coordinator at the International Education Center before enrolling.

The Internship Program is designed to provide the student with the opportunity of on-site work experience in a computer lab. Students spend time weekly in a supervised computer facility.

CIS 90B, Internship in Computer Applications 2 units

Transfer: CSU

- *Prerequisite: None.*

Students must arrange an approved internship prior to enrolling in this class. F-1 students must see the Immigration Coordinator at the International Education Center before enrolling.

The Internship Program is designed to provide the student with the opportunity of on-site work experience in a computer lab. Students spend time weekly in a supervised computer facility.

Computer Science

Keyboarding skills of 25 words per minute or enrollment in OFTECH 1A or 9A are recommended for computer programming classes.

CS 3, Introduction to Computer Systems 3 units

Transfer: UC*, CSU

- *Prerequisite: None.*

*No UC credit for CIS 1 or 4 if taken after CS 3.

This is a beginning course intended for students who plan to take additional computer programming or computer science courses. Emphasis in the course is divided between a broad survey of the field of computer information systems and the acquisition of computer skills necessary for more advanced classes. Such skills would involve use of the operating system, file management techniques, use of an editor, and an introduction to programming.

CS 5, Programming Logic**3 units**

Transfer: CSU

- *Prerequisite: None.*

This course is designed to prepare the student for a programming course. It concentrates on problem solving using: Simple Sequence, Selection, Downtile, Case, and Dountil Control Structure. It covers Structure chart, Flowchart and Pseudocode.

CS 6, Virtual Worlds and Game Programming**3 units**

Transfer: CSU

- *Prerequisite: Computer Science 3.*

Pending approval.

Using Alice, an authoring tool, students will build interactive, animated 3-D virtual worlds. Virtual worlds are interactive, simulated environments that accept human input and provide output in the form of images, sounds, and forces. The software students create will enable them to move around in the virtual world and see it from different angles. Students will create interactive "virtual worlds," games and simulations that can be viewed in a web page. By building these virtual worlds, students will learn the basics of Object-Oriented programming and basic programming logic.

CS 8, System Design and Documentation**3 units**

Transfer: CSU

- *Skills Advisory: Computer Science 3 and 11 or Computer Science 13 or 16 or 36.*

Students design a business system from data collection to final output including forms design, flowcharts, computer program procedures, and documentation.

CS 9A, Technology Project Management I**3 units**

Transfer: CSU

- *Prerequisite: Computer Science 3 or Computer Information Systems 1.*

This course covers the fundamentals of Project Management theory, implementation, and best practices. It is aimed at students who work mostly in the Technology sectors covering software and website development, and other areas of computer science or information systems. Students will learn the theory, as well as the use of Project Management software to plan, track and manage project resources. Topics covered include project life cycles, tasks, schedules, resources, and costs. *CS 9A is the same course as CIS 9A. Credit may be earned for one, not both.*

CS 9B, Technology Project Management II**3 units**

Transfer: CSU

- *Prerequisite: CS 9A or CIS 9A*

This course covers advanced topics of Project Management theory and practice. Students will learn how to manage projects with changing tasks and schedules, and to adjust their resources and budgets. Also covered are leadership and communication skills. Students will complement the theory with case studies and the use of Project Management software.

CS 10, Discrete Structures**3 units**

Transfer: UC, CSU

- *Prerequisite: Math 8.*

This course is intended for computer science, engineering, and mathematics majors. Topics include sets and relations, permutations and combinations, graphs and trees, induction, and Boolean algebras.

Computer Science 10 is the same course as Math 10. Students may receive credit for one, but not both.

CS 11, COBOL Programming**3 units**

Transfer: UC, CSU

- *Skills Advisory: Computer Science 3.*

COBOL (Common Business Oriented Language) is specifically designed to facilitate business programming solutions and large volume processing. This course emphasizes structured, modular, top-down design and programming using tools such as hierarchy charts, flowcharts, and pseudocode and includes both interactive and batch programs. *See counselor for transfer credit limitations.

CS 12, Advanced COBOL Programming**3 units**

Transfer: UC, CSU

- *Prerequisite: Computer Science 11.*

This second semester course covers advanced topics in structured COBOL. Students write business application programs of moderate length using advanced features such as report writing, sorting, table handling, etc. *See counselor for transfer credit limitations.

CS 13, Pascal Programming**3 units**

Transfer: UC, CSU

- *Skills Advisory: Computer Science 3.*

This course introduces computer science concepts using Pascal, a language designed to allow the structured formulation of algorithms. Topics to be covered include data types, functions, procedures, text processing, arrays, records, file manipulation, sets, and pointers.

CS 15, Visual Basic Programming**3 units**

Transfer: UC, CSU

- *Prerequisite: Computer Science 3.*

This introductory course covers basic programming constructs and techniques using VB.Net. Students will learn how to plan, create and debug code based on Object Oriented Programming design and analysis techniques. Topics covered include Data Types, Variables, Decision Statements, Loops, Arrays Input/Output, and basics of Object Oriented Programming using Classes and Objects.

VB .NET compiler software is included in course material. This course helps students pass Microsoft Certification Exams.

CS 16, Basic Programming**3 units**

Transfer: UC, CSU

- *Skills Advisory: Computer Science 3.*

This course introduces computer programming using BASIC, a language originally designed with introductory instruction as a goal. This course is relevant to anyone who wants to understand the fundamentals of programming a computer or those planning further study in computer science. *See counselor for transfer credit limitations.

CS 17, Assembly Language Programming 3 units

Transfer: UC, CSU

- *Prerequisite: Computer Science 50.*

Assembly Language allows the programmer to fully utilize all of the special features of the computer in the most efficient manner. It also aids the high-level language programmer in writing subroutines. The student will write Assembly Language programs that utilize the Intel Pentium chip architecture.

Students must have access to a Pentium-chip compatible computer system. Software included in course material.

CS 18, Advanced Assembly Language Programming 3 units

Transfer: UC, CSU

- *Prerequisite: Computer Science 17.*

This course is a continuation of Assembly Language Programming. The student will write complex assembly programs utilizing the full range of the computer's features. Problem solving through planning coding, testing, and debugging will be emphasized. *See counselor for transfer credit limitations.

Students must have access to a Pentium-chip compatible computer system. Software included in course material.

CS 19, Advanced Visual Basic Programming 3 units

Transfer: UC, CSU

- *Prerequisite: Computer Science 15.*

This course covers advanced programming techniques using Visual Basic .NET. Topics include Structures, Classes, Events, Inheritance, and Polymorphism, Overloading, Dynamic Binding, Multiple Document Interface, Windows API, Collections, and Exception Handling. Students also learn how to interface to Databases and build Web forms.

VB. NET compiler software is included in course material. This course helps students pass Microsoft Certification Exams.

CS 20A, Data Structures with C++ 3 units

Transfer: UC, CSU

- *Prerequisite: Computer Science 52.*

This advanced programming course will use the C++ language to teach methods of representing and manipulating data within a computer. Topics include stacks, queues, trees, sorting, searching, modeling, and dynamically created storage spaces. Students will learn the problem solving skills necessary to write and read complex computer programs, and to make important design decisions.

Software included in course material.

CS 20B, Data Structures with Java 3 units

Transfer: UC, CSU

- *Prerequisite: Computer Science 56.*

This advanced programming course will use the Java language to teach methods for representing and manipulating data within a computer. Topics include stacks, queues, trees, sorting, searching, modeling, and dynamically created storage spaces. Students will learn the problem solving skills necessary to write and read complex computer programs, and to make important design decisions.

CS 22, Introduction to Mobile Robots 3 units

Transfer: CSU

- *Prerequisite: Computer Science 3.*

This course describes the hardware, software, and operation of mobile robots that interact with changing environments. Hardware includes computers and other controllers, motors and artificial muscles, arms, grippers, ultrasonic sensors, whiskers, and cameras. Using a graphical interface on a PC, students will learn to program and operate a robot that can recognize objects and speech, talk back, and navigate around a cluttered room.

CS 23, Expert Systems and Chatbots 3 units

Transfer: CSU

- *Prerequisite: Computer Science 3.*

This course introduces expert systems. An expert system mimics the thought processes of an expert who gives advice on some narrow topic such as oil exploration, disease diagnosis, or computer design. A chatbot or virtual person, in many ways an embodiment of Alan Turing's vision of a thinking machine, is an expert system that converses much like people. A chatbot with an animated character, personality, facial expressions, and lip-synced speech, provides a more natural interface to websites and the computer. Students will build one or more chatbots.

CS 24, Introduction to Industrial Robots 3 units

Transfer: CSU

- *Prerequisite: Computer Science 3.*

This introductory course surveys industrial robots including articulated arms that have motions similar to human arms, cable-supported robots, and parallel robots. These robots assemble and test electronic boards, weld, paint, fill boxes of candy, and handle other tasks that are either dangerous for humans or can be done more efficiently with robots. Students will use animated simulators and off-line programs to program these robots and then use their programs to operate both virtual and physical robots. This course also introduces safety procedures and project management.

CS 25, Embedded Systems 3 units

Transfer: CSU

- *Prerequisite: Computer Science 3.*

This is an introductory course on embedded systems design- the use of computers in devices such as cell phone, car, wrist watch, home security system, etc. rather than as stand-alone units. Students are directed to design solutions for real world applications using hardware and software. We will discuss the characteristics that define an embedded system and contrast those against that of a stand-alone computer. We will also look at a variety of applications utilizing embedded processors (microcontrollers). Finally, we will write programs that interact directly with external hardware utilizing a Stamp microprocessor development board.

CS 32, Database Programming in Visual Basic.Net 3 units

Transfer: CSU

- *Prerequisite: Computer Science 15.*

Visual Basic.Net is an object-oriented programming lan-

guage that is part of the .Net Microsoft suite. It provides graphical programming environment used to create applications for Microsoft Windows and the web. This course deals with advanced topics for Visual Basic.Net. Topics include Object Oriented Programming, Database Interfaces Programming, and SQL Query Language.

VB .NET compiler software is included in course material. This course helps students pass Microsoft Certification Exams.

CS 33, C # Programming 3 units

Transfer: CSU

- *Prerequisite: Computer Science 19 or Computer Science 50.*

C# (read as C-Sharp) is a modern object-oriented language that enables programmers to quickly build solutions for the Microsoft.NET platform. In this class, programmers will learn to build C# components for use by Web and Windows-based applications. Students will generate MSIL (Microsoft Intermediate Language) code and PE (Portable Executable) files that utilize the services of the CLR (Common Language Runtime) which are all part of the Microsoft.NET platform. *Software included in course material.*

CS 36, Fortran Programming 3 units

Transfer: UC, CSU

- *Advisory: Computer Science 3.*

Fortran is a high level language used predominantly in mathematical and scientific applications. Upon completion of CS 36, students will understand the syntax and semantics of Fortran, be able to apply the fundamental principles of top down algorithmic design (using pseudocode and flowcharts) to the solution of computer problems, and know how to code, test, and debug programs in this language.

CS 37, Web Programming in VB .Net 3 units

Transfer: CSU

- *Prerequisite: Computer Science 15.*

VB .Net is an object oriented programming language that is part of the .Net Microsoft suite. This course covers web application development, including the use of ASP and VB .NET. Topics include ASP .NET, Web forms and controls, web data access, state management, and web services.

CS 40, Operating Systems 3 units

Transfer: UC, CSU

- *Prerequisite: Computer Science 17 or 50.*
- *Advisory: Computer Science 3 and one programming course.*

This course provides a functional understanding of operating systems. Topics include memory and process management under multiprogramming, devices and file systems, and user interfaces. Foundation concepts reviewed at the outset include hardware architecture, CPU instruction sets and machine language, number systems, and data structures. UNIX is used to demonstrate concepts, commands, and programming languages.

CS 41, Linux Network Administration 3 units

Transfer: CSU

- *Prerequisite: Computer Science 50.*

This course introduces the Linux operating system to students as users, programmers, and administrators. Students install Linux to create a dual-boot system in class, and use a memory-loadable boot CD version at home. Use of fundamen-

tal commands, their graphical interface counterparts, editors, and programming tools are emphasized. Students learn to write shell script programs; read, compile, and execute a series of demonstration C programs; and install applications using the open source software distribution model. Central disciplines of local administration are covered, including user account management, backup, task scheduling, logging, and local system security.

CS 42, Computer Architecture 3 units

Transfer: UC, CSU

- *Prerequisite: Math 20.*

This course provides an introduction to fundamental operations and components that make computers possible. Topics include: number systems; Boolean algebra and logic gates (AND, OR, NOT, XOR, and NAND); simplification of Boolean functions; combination logic; sequential logic; design of the adder, subtractor, ROM, decoder, and multiplexer; register transfer logic; and processor logic, control logic, and microcomputer system design.

CS 50, C Programming 3 units

Transfer: UC, CSU

- *Prerequisite: Computer Science 3.*

This course will include a review of the concepts of structured programming, error checking, sorting, searching, data types, advanced array handling methods, pointers, and data structures. Applications in business, mathematics, and science will be discussed.

CS 51, Visual C++ Programming 3 units

Transfer: UC, CSU

- *Prerequisite: Computer Science 52.*

C++ handles large programs by packaging sections of inter-related code into discrete, independent parts named objects. Visual C++ adds the Microsoft Foundation Class library making it a powerful Windows programming tool. This course will cover Dynamic Link Libraries, advanced view handling, customizing status bars, operator overloading OLE containers and servers, the Microsoft Foundation class library, serialization, windows timers, graphics, metafiles, multiview programs, graphics display controls, and screen capture. *Software included in course material.*

CS 52, C++ Programming 3 units

Transfer: UC, CSU

- *Prerequisite: Computer Science 50.*

This course is a continuation of C language programming using the C++ superset of C. C++ offers the following enhancements to C: operator and function overloading, information hiding, inheritance, and virtual functions. C++ will be used in the context of both traditional and object-oriented programming. *Software included in course material.*

CS 54, Object-Oriented Analysis and Design 3 units

Transfer: UC, CSU

- *Prerequisite: Computer Science 19 or 52 or 55.*

This course covers the major object-oriented modeling methodologies: UML, OMT and BOOCH. The course explores

the use of these methodologies in the context of designing and implementing object-oriented software application.
Software included in course material.

CS 55, Java Programming 3 units

Transfer: UC, CSU

- *Prerequisite: Computer Science 19 or 50.*

Java is a general-purpose language for writing platform-independent, robust, secure programs. This course is intended for students who have completed a course in C programming. Students will learn how to develop Java applications and applets. Topics covered include the Java programming language, object-oriented programming (OOP), the Java applications programming interface (API), and graphical user interfaces (GUI's).

CS 56 Advanced Java Programming 3 units

Transfer: UC, CSU

- *Prerequisite: Computer Science 55.*

Java is a general-purpose language for writing platform-independent robust, secure programs. This course continues where CS 55 leaves off in developing mastery of the use of Java programming language and its extensive APIs. Topics covered include exceptions, multithreading, multimedia, Input/Output, Java Database Connectivity (JDBC), Servlets, Remote Method Invocation (RMI), and networking.

CS 60, Database Concepts and Applications 3 units

Transfer: CSU

- *Prerequisite: Computer Science 3 and one programming course.*

This course provides an introduction to modern database concepts, emphasizing the relational database model. Topics include design methodologies, normalization of tables, referential integrity, SQL, security, and event driven programming. Principles are applied by performing exercises using Microsoft Access.

CS 61, Microsoft SQL Server Database 3 units

Transfer: CSU

- *Prerequisite: Computer Science 3.*

Microsoft SQL Server is a popular midrange relational database management system (DBMS) that is used in client/server systems and as a personal DBMS. It can be accessed through the Internet. Topics covered in this course include installing the software, principles of relational databases; creating databases, tables, indexes, and views; inserting, deleting, and updating raw data; updating transactions; and querying the database. With the Transact-SQL extensions, topics include creating functions, procedures, and triggers stored in the database.

CS 65, Oracle Programming 3 units

Transfer: CSU

- *Prerequisite: Computer Science 3 and one programming class.*

This course is a practical hands-on overview of the database software called Oracle. Oracle is the most widely used database in the world. It runs on PC's, minicomputers and mainframes, and Oracle programmers and developers are very much in demand. This course will review SQL*PLUS, PL/SQL database concepts, Developer 2000 (Oracle's GUI developing software), and Designer 2000 (Oracle's application analysis & design software).

CS 66, Advanced Oracle 3 units

Transfer: CSU

- *Prerequisite: Computer Science 65.*

This course expands on topics covered in the basic Oracle course. The topics include SQL, SQL*Plus, Developer 2000, and DBA tasks. In addition, it will cover in detail the varied aspects of Designer 2000, a software suite instrumental in analyzing, designing, and building large scale Oracle applications.

CS 68, Oracle Database Administrator 3 units

Transfer: CSU

- *Prerequisite: Computer Science 65.*

This course offers hands-on experience as an Oracle9i Database Administrator (DBA) using an Oracle server. Topics include a DBA's responsibilities, Oracle architecture, installing Oracle9i software, configurational options, managing RAM and disk space, managing RAM and disk space, managing database changes, managing transactions, tuning and monitoring database resources such as space, transactions, memory, and file usage.

CS 70, Network Fundamentals and Architecture 3 units

Transfer: CSU

- *Prerequisite: Computer Science 50.*

This course is an introduction to networks and networking concepts, emphasizing the internet protocols. Topics include media and network design, protocol layering, addressing and routing, socket programming, firewalls and security, monitoring and administration, and distributed networks. UNIX is used for practical demonstration.

CS 71, Introduction to Windows NT Workstation 3 units

Transfer: CSU

- *Prerequisite: Computer Science 70.*

This course is an introduction to the Windows NT Operating System. Topics include installation and configuration of the Windows NT Workstation, files and directories, security structures, TCP/IP and NetWare connectivity, printing, performance tuning, and troubleshooting.

CS 73, Computer Security Concepts 3 units

Transfer: CSU

Prerequisites: Computer Science 3 or Computer Information Systems 1.

In this introductory course students will learn how to defend and protect critical computer assets from various security threats including computer worms and viruses. This course will describe fundamental techniques and principles for modeling and analyzing security. Students will learn how to express security requirements, translate requirements into policies, implement mechanisms that enforce policy, and ensure that these policies are effective. Current industry best practices for safeguarding computer resources will be discussed. Various case studies will outline the typical way that security failures get exploited by attackers and how these attacks can be discovered, understood, and countered.

CS 74A, Security in VB.NET Applications 3 units

Transfer: CSU

- *Prerequisite: Computer Science 15.*

This course provides students with the tools needed to implement security in designing and developing applications written in Microsoft Visual Basic .NET. Topics include encryption, security practices, securing remote applications such as ASP and remote databases. Upon completion of this course, students will be able to develop applications that can handle threats and respond to them more securely.

CS 74B, Security in J2EE Applications 3 units

Transfer: CSU

- *Prerequisite: Computer Science 55.*

This course provides students with the tools needed to implement security in designing and developing applications utilizing the Java 2 Platform. Topics include encryption, security practices, securing remote applications such as secure web servers and remote databases. Upon completion, students will be able to develop applications that can handle threats and respond to them more securely.

CS 80, Internet Programming 3 units

Transfer: CSU

- *Prerequisite: Computer Science 3.*

This course surveys the many technologies that are used to program multitiered, client/server, database-intensive, Web-based applications. Topics include: HTML, Dynamic HTML, client-side and server-side scripting (with JavaScript, VBScript, and Perl), graphics, e-commerce, security, Web servers, databases, Active Server Pages (ASP), Common Gateway Interface (CGI), eXtensible Markup Language (XML), and servlets.

CS 81, JavaScript and Dynamic HTML 3 units

Transfer: CSU

- *Prerequisite: Computer Science 80.*

This introductory programming course teaches the fundamentals of computer programming with the JavaScript language, the standard for client-side Web programming. It offers a thorough treatment of programming concepts with programs that yield visible or audible results in Web pages and Web-based applications. It shows how to use Core and Client-Side JavaScript and the Document Object Model to build interactive, high-performance Web sites.

This course uses JavaScript which is open-source (free) software.

CS 82, ASP.NET Programming in C# 3 units

Transfer: CSU

- *Prerequisite: Computer Science 33.*

Server-side Web programming allows programmers to create content and process data supplied in Web forms to create websites. These applications process data submitted from Web forms and access backend databases to dynamically generate Web pages. Students will design and write web pages using ASP 2.0 (Active Server Pages), Visual Studio .NET and the C# programming language.

CS 83, Server-Side Java Web Programming 3 units

Transfer: CSU

- *Prerequisite: Computer Science 55 and 81.*

This course teaches how to design and write applications that extend Web servers. These applications process data submitted from Web forms and access backend databases to dynamically generate Web pages. This course covers the Java Servlets and JavaServer Pages (JSP) server-side technologies.

CS 84, Programming with XML 3 units

Transfer: CSU

- *Prerequisite: Computer Science 80 and Computer Science 55 or 52 or 33.*

XML (Extensible Markup Language) is a flexible way to create "self-describing data" and to share both the format and content on the World Wide Web, intranets and elsewhere within an enterprise. In this advanced course, students will use XML and learn to tag and transform XML documents so that they can be processed by web browsers, databases and other XML processors. With the industry-standard SAX and DOM API standards, students will create XML applications that read, write and modify XML documents.

This course assists students in passing Microsoft Certification Exams.

CS 85 PHP Programming, 3 units

Transfer: CSU

- *Prerequisite: Computer Science 81.*

This course teaches how to design and write applications that extend Web servers. These applications process data submitted from Web forms and access back-end databases to dynamically generate Web pages. This course covers the PHP server-side technology. PHP, which stands for "PHP: Hypertext Preprocessor" is a widely-used, Open Source, general-purpose scripting language that is especially suited for Web development and can be embedded into HTML.

This course uses PHP and MySQL which are open-source (free) software.

CS 88A, Independent Studies in Computer Science 1 unit

Transfer: CSU

Please see "Independent Studies" section.

CS 88B, Independent Studies in Computer Science 2 units

Transfer: CSU

Please see "Independent Studies" section.

CS 88C, Independent Studies in Computer Science 3 units

Transfer: CSU

Please see "Independent Studies" section.

CS 90, Internship, Computers 2 units

- *Prerequisite: None.*

Students must arrange an approved internship prior to enrolling in this class. F-1 students must see the Immigration Coordinator at IEC before enrolling.

The Internship Program is designed to provide the student with the opportunity of on-site experience in a computer lab. Students spend a minimum of six hours per week during the semester in a supervised computer facility.

CS 90A, Internship in Computer Science 1 unit

Transfer: CSU

- *Prerequisite: None.*

Students must arrange an approved internship prior to enrolling in this class. F-1 students must see the Immigration Coordinator at the International Education Center before enrolling.

The Internship Program is designed to provide the student with the opportunity of on-site work experience in a computer lab. Students spend time weekly in a supervised computer facility.

CS 90B, Internship in Computer Science 2 units

Transfer: CSU

- *Prerequisite: None.*

Students must arrange an approved internship prior to enrolling in this class. F-1 students must see the Immigration Coordinator at the International Education Center before enrolling.

The Internship Program is designed to provide the student with the opportunity of on-site work experience in a computer lab. Students spend time weekly in a supervised computer facility.

Cosmetology

New Student Orientation, Tuesday August 1, 4:00pm in BUS 143.

COSM 10, Introduction to Cosmetology and Related Science (2,2) 2 units

- *Prerequisite: None.*

This is the first class required for all entering students who wish to be licensed for Cosmetology, Manicuring, or Esthetics by the state of California.

This course provides essential Cosmetology related theory carefully formulated to prepare a student to pass the written State Board Examination. Students are instructed in personal relations with employer, employees, co-workers, and clients. Basic concepts of bacteriology, sanitation, health and safety, physiology pertaining to head, face, hands and arms, and the State Board of Cosmetology State Regulations are included.

COSM 11A, Hair Cutting 1 (.5,.5) 0.5 unit

- *Prerequisite: None.*

This is the first hair cutting class required for all entering students who wish to be licensed for Cosmetology by the state of California.

This course is designed to teach beginning students basic techniques of haircutting to create a variety of hair designs.

COSM 11B, Hair Styling 1 (.5,.5) 0.5 unit

- *Prerequisite: None.*

This is the first hairstyling class required for all entering students who wish to be licensed for Cosmetology by the state of California.

This course is an introduction to hairstyling. The students will learn how to create hairstyles to pass the state board of cosmetology with the technique of rollers, pin curls, and finger waving.

COSM 11C, Hair Coloring 1 (.5,.5) 0.5 unit

- *Prerequisite: None.*

This is the first hair coloring class required for all entering students who wish to be licensed for Cosmetology by the state of California.

The student will learn hair coloring and bleaching techniques and applications. This class is required to pass the California State Board of Cosmetology exam.

COSM 11D, Permanent Wave 1 (.5,.5) 0.5 unit

- *Prerequisite: None.*

This is the first permanent wave class required for all entering students who wish to be licensed for Cosmetology by the state of California.

This course is designed for the student to learn permanent waving techniques and applications. It will provide a complete foundation for all permanent wave procedures. This class will enable the student to pass the California State Board of Cosmetology exam.

COSM 14, Ethnic Hair Styling 1 (1,1) 1 unit

- *Prerequisite: None.*

This class is required for all students who wish to be licensed for Cosmetology by the state of California.

This course is an introduction to ethnic hair care. Students will learn chemical and thermal hair straightening and soft perm techniques using the basic manipulative skills and proper application of thermal hair processing, curling, and chemical relaxing for excessively curly hair.

COSM 16, Nail Care 1 (.5,.5) 0.5 unit

- *Prerequisite: None.*

This is the first nail care class required for all entering students who wish to be licensed for Cosmetology or Manicuring by the state of California.

This course provides an introduction to the basic manipulations skills in manicuring and pedicuring. The course includes the basic concepts of physiology pertaining to the hand and arm. This course is one of four in a series necessary to qualify a student to take the State Board of Barbers and Cosmetology Exam.

COSM 18, Skin Care 1 (.5,.5) 0.5 unit

- *Prerequisite: None.*

This is the first skin care class required for all entering students who wish to be licensed for Cosmetology or Esthetics by the state of California.

Student will learn the proper methods to execute a manual facial, facial massage, tweezing, skin analysis, client consultation, and use of skin care products.

COSM 20, Related Science 2 (1,1) 1 unit

- *Prerequisite: None.*

This class is required for all entering students who wish to be licensed for Cosmetology, Manicuring, or Esthetics by the state of California.

This course provides essential Cosmetology related theory carefully formulated to prepare a student to pass the written State Board Examination. Students are instructed in basic concepts of health, safety and related chemistry.

COSM 21A, Hair Cutting 2 (.5,.5) 0.5 unit

- *Prerequisite: Cosmetology 11A.*

This is the second hair cutting class required for all entering students who wish to be licensed for Cosmetology by the state of California.

This course is a continuation of Cosmetology 11A. The stu-