

SOCIOLOGY

BEFORE ENROLLING IN DEGREE APPLICABLE COURSES, IT IS RECOMMENDED THAT YOU COMPLETE ENGL 001A AND READ 053.

041 • FAMILY ISSUES

3.0 units

Total Lecture 54.4 hours

Acceptable for credit: University of California, California State University

This course is a sociological analysis of how families function in society today. Topics include preparing children to function in society, family roles, family conflict patterns, family stress, and multigenerational cultural patterns. Traditional and recent family structures will be discussed, including extended families, nuclear families, single-parent families, gay/lesbian families, and step-families. Family communication patterns and functional and dysfunctional results will be emphasized. *This course may also be offered via distance learning. Pass/No Pass Option.*

043 • SOCIOLOGY OF RELIGION

3.0 units

Total Lecture 54.4 hours

Acceptable for credit: University of California, California State University

An exploration of the interplay of religion and other spheres of social life; an analysis of the character of religious authority and leadership; the nature of religious movements in our social system, the effects of secularization on religion; the influence on the values, beliefs and practices of group-oriented and personal religion. *This course may also be offered by via distance learning. Pass/No Pass Option.*

045 • HUMAN SEXUALITY

3.0 units

Total Lecture 54.4 hours

Acceptable for credit: University of California, California State University

This course is an up-to-date and comprehensive introduction to the topic of human sexuality, including information and perspectives from sociology, health science, psychology, and anthropology. Topics include sexual anatomy and physiology, sexual expression, sexual orientation, sexually transmitted diseases, safe sexual practices, and sexual problems. The emphasis of this course is the history, attitudes, medical aspects, and current practices of sexuality in the United States, including a special emphasis on urban and suburban areas of California. *This course may also be offered via distance learning. Pass/No Pass Option.*

046 • ADVANCED HUMAN SEXUALITY:

CURRENT ISSUES AND GLOBAL PERSPECTIVES

3.0 units

Total Lecture 54.4 hours

Advisory: SOC 045 and SOC 001

Acceptable for credit: University of California, California State University

This is a human sexuality course, dealing with current issues in the United States and with practices in various cultures throughout the world. Topics include marriage customs, rites of passage into adulthood, beauty-enhancement practices, sexual behaviors, sexual orientations, and sexually deviant behaviors, as defined by law and customs. *This course may also be offered via distance learning. Pass/No Pass Option.*

047 • SOCIOLOGY OF CRIMINOLOGY

3.0 units

Total Lecture 54.4 hours

Advisory: SOC 001

Acceptable for credit: University of California, California State University

This course is a sociological analysis of crime and criminal behavior in the United States, including the major theories regarding the causes of criminal behaviors, the effects of crime on victims, criminals and the general society, and the responses of societal agencies to criminal behavior. The roles of law enforcement, the justice system, and the correctional systems in prevention, prosecution, and rehabilitation will be discussed. Emphasis will be placed on the history of criminology in the United States, including changes in the social theories of deviance, and changes in the attitudes of the society toward criminal behavior. The role of social institutions and social service organizations will be investigated. Opportunities to visit correctional facilities, trials, police informational meetings, or rehabilitation centers will be offered. *This course may also be offered via distance learning. Pass/No Pass Option.*

TECHNOLOGY STUDIES

DIVISION: Technology
DEPARTMENT: Technology Studies
DEPT CHAIR: Christopher Martin
PHONE: 408-855-5356
COUNSELING: 408-855-5030
WEBSITE: christopher_martin@wvm.edu

INDUSTRIAL TECHNOLOGY (TECH)

The Industrial Technology (TECH) Program is a new university transfer program at Mission College, and was developed in collaboration with San Jose State University (SJSU). The program is primarily designed for those who wish to transfer to San Jose State University to obtain the Bachelor of Science degree in Industrial Technology (BSIT).

The lower division (first two years) of the BSIT program will be taken at Mission College, where the student can receive an A.S. Degree or a Certificate. Those who wish to continue on will transfer to SJSU to complete the upper division courses and receive the BSIT degree. To make the transfer seamless and automatic, all TECH courses at Mission are fully articulated with identical lower division classes at SJSU, having identical name, number, and approved course outline.

The true value of the program is that it prepares a student for the widest possible variety of technology jobs. Whether interests lean towards technical, management, sales or nearly any other aspect of the technology industry, the IT degree gives you the necessary background and preparation. Included are a sound knowledge and understanding of materials, quality control and production processes; principles of distribution and concepts of industrial management and human relations; experiences in communication skills, humanities, and social sciences; and a proficiency level in the physical sciences, mathematics, design, and technical skills to permit the graduate to resolve technical - managerial, and manufacturing production problems.

According to the Silicon Valley Leadership Group (www.svlq.org) work is plentiful and highly qualified workers are scarce. The majority of BSIT graduates receive a job offer upon graduation in a career directly related to their major program.

Of special interest to the ASIT and BSIT graduates is the rapidly growing interest in Green and Sustainable Technologies—which are transforming American industries and businesses. Because clean, reliable energy is the lifeblood of our modern society, industry and government throughout Silicon Valley are making major investments in this vital area. The student will find Green and Sustainable Technologies incorporated into the new IT curricula.

The IT program offers two major areas of concentration:

- Computer Networking Technology and
- Manufacturing Systems.

Classes are supported by hands-on laboratory experiments, at the SJSU instructional level.

THE CONCENTRATION IN COMPUTER NETWORKING TECHNOLOGY prepares the student for a career in the computer, networking, or electronics fields. Students will gain knowledge, skills, and practical experience in analog and digital systems, telecommunications and networking, control of electronics industrial processes, network management and administration, instrumentation and automation, electronics manufacturing, and microprocessor-based systems design.

Student Learning Outcomes:

Graduates of the A.S. Degree/Certificate in Computer Networking Technology will be able to: (Those who go on to receive the BSIT degree will be proficient in wider areas.)

- Solve, analyze, and integrate a variety of analog and digital circuits and systems.
- Apply telecommunication theory and management.
- Analyze, test, configure, and integrate a wide variety of network components and systems - including wireless systems.
- Use computer-aided design in the study of circuits and systems.
- Manage and administer networks using network operating systems.
- Demonstrate knowledge of current programming languages.

TECHNOLOGY STUDIES: INDUSTRIAL TECHNOLOGY

BEFORE ENROLLING IN DEGREE APPLICABLE COURSES, IT IS RECOMMENDED THAT YOU COMPLETE ENGL 001A AND READ 053.

THE CONCENTRATION IN MANUFACTURING SYSTEMS prepares the student for a career in manufacturing design and management. Graduates will gain knowledge, skills, and practical experience in innovative manufacturing processes, quality control and management, computer integrated manufacturing, robotics and control systems, and computer-aided manufacturing.

Student Learning Outcomes:

Graduates of the A.S. Degree/Certificate in Manufacturing Systems will be able to: (Those who go on to receive the BSIT degree will be proficient in wider areas.)

- Demonstrate skills in production design layout utilizing CAD solid modeling.
- Demonstrate skills in the planning, control and design of manufacturing processes.
- Describe the product life cycle and how products are manufactured.
- Identify the principles of manufactured products using polymers, composite materials, ceramics and metals.
- Apply CIM and CAD/CAM interface to industrial problems and settings.
- Integrate a design process as related to manufacturing, materials and industry standards for the design and development of new products
- Apply computerized design layout techniques for construction planning and maintenance of facilities and equipment.
- Integrate regulatory and environmental technology studies (Green Technology) into a systematic design approach.
- Recognize quality control concepts as related to the manufacturing of products.

Students will be assessed through a multitude of methods, including written quizzes, and hands-on individual and group laboratory experiments and projects.

Highlights

- State-of-the-art theory and laboratory instruction
- All courses fully articulated with San Jose State University
- Course material and instruction that is closely matched with the needs of industry
- Wide scope of course offerings to match a variety of career options in technology

A.S. Degree / Certificate

IT (Computer Networking Technology, Manufacturing Systems)

Only courses completed with a grade of C or better may be used to satisfy requirement for Certificate, A.S. Degree or transfer to SJSU.

Career Options

- Network Technician
- Assistant Network Administrator
- Electronics/Computer Technician
- Customer Service Support
- Network Help Desk
- Technology Process Technician
- Network Installation Support
- Monitor Manufacturing Operations
- Robotic Systems Technician
- Computer Systems Analysts
- Network Systems and Data Communications Analysts
- Network and Computer Systems Administrator
- Supervisors of Production Workers
- Manufacturing Engineer

Schedule Matrix (subject to change):

COURSE	FALL	SPRING	SUMMER	WEEKEND
TECH 031	E	E		
TECH 060	E	E		
TECH 020		E		
TECH 025	E			
TECH 040		E		
TECH 045	E			
TECH 051		E		
TECH 062	E			

COURSE	FALL	SPRING	SUMMER	WEEKEND
TECH 063		E		
TECH 064	E			
TECH 065		E		
TECH 066		E		

E= EVENING CLASSES

Industrial Technology - A.S. Degree

This program is qualified as the lower division course requirements for San Jose State University Bachelor of Industrial Technology.

Industrial Technology is a program of courses designed to prepare students for certificates and degrees to become technicians and/or technical management professionals for employment in business, industry, education, and government.

Industrial Technology professionals typically are involved with:

- Application of theories, concepts, and principles found in the humanities and the social and behavioral sciences, including a thorough grounding in communication skills.
- Understanding of the theories and the ability to apply the principles and concepts of mathematics and science.
- Understanding and application of computer hardware, systems and software fundamentals.
- Application of concepts derived from, and current skills developed in, a variety of technical and related disciplines which may include, but are not limited to, materials and production processes, manufacturing systems, industrial management and human relations, marketing, human and electronic communications, electronics, documentation and graphics communication.
- A field of technical specialization, for example, manufacturing systems, computer network technology, electronic data processing, computer-aided design, computer integrated manufacturing, construction, energy, polymers, printing, safety, or transportation.

Core Curriculum Courses + Area of Concentration

(Required for A.S., Certificate, and B.S.)

TECH 031	Quality Assurance and Control	3.0
TECH 060	Basic Electronics	4.0

Students would select one of the two areas of concentration

Manufacturing Systems Concentration

(Required for A.S., Certificate, and B.S.)

TECH 020	Design and Graphics	3.0
TECH 025	Introduction to Materials Technology	3.0
TECH 040	Product Design I	3.0
TECH 045	Facilities Design and Development	3.0

Computer Networking Concentration

(Required for A.S., Certificate, and B.S.)

TECH 062	Analog Circuits	4.0
TECH 063	Digital Circuits	4.0
TECH 064	Basic Wireless LAN	3.0
TECH 065	Networking Theory and Application	3.0
TECH 066	Network Operating Systems and Administration	3.0
Total Units		19.0 - 24.0

IT Preparation Courses – 27 units

(All are required for B.S. degree; selected courses satisfy some A.S. requirements.)

(Additional GE courses will be required for AS degree and transfer to SJSU)

CNET 083	Introduction to C# Language programming	4.0
CHEM 1A	General Chemistry	5.0
ECON 001B	Principles of Microeconomics	3.0
MATH 003A	Analytic Geometry and Calculus	5.0
PHYS 002A	General Physics	5.0
PHYS 002B	General Physics	5.0

TECHNOLOGY STUDIES: INDUSTRIAL TECHNOLOGY

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INDUSTRIAL TECHNOLOGY (TECH)

020 • DESIGN AND GRAPHICS

3.0 units

Total Lecture 36.8 hours, Total Lab 54.4 hours

Advisory: MATH 903, ENGR 010

Acceptable for credit: California State University

This course is an introduction to the design and graphical communication tools used by engineers in the industry with an emphasis on mechanical production design layout. Lectures include graphical solutions to three-dimensional design problems involving points, lines, surfaces, and the development of visualization utilizing technical sketching skills in conjunction with orthographic and pictorial projections. A formal study of tolerance analysis for fabrication purposes involving individual design projects with an emphasis on computer-aided design and graphical analytical methods is discussed. The course also includes a discussion of career choices, basic computer-aided drafting, and parametric solid modeling. *This course may be repeated one time. Pass/No Pass Option.*

025 • INTRODUCTION TO MATERIALS TECHNOLOGY

3.0 units

Total Lecture 36.8 hours, Total Lab 54.4 hours

Prerequisite: CHEM 001A, PHYS 002A

Acceptable for credit: California State University

Materials Technology is an introductory study designed to familiarize the student with four major materials groups – metals, polymers, ceramics, and composites. The course investigates the nature of materials, as well as mechanical and physical properties of materials. Additionally, the students explore other factors affecting the performance of materials in manufactured products. *Grade Only.*

031 • QUALITY ASSURANCE AND CONTROL

3.0 units

Total Lecture 36.8 hours, Total Lab 54.4 hours

Advisory: MATH 000C

Acceptable for credit: California State University

Students in this course develop an understanding of quality control concepts. Sampling, inspection, process control, and quality responsibility topics are included in the course. The course emphasizes the role played by the computer in analyzing data and developing quality related documents. *Pass/No Pass Option.*

040 • PRODUCT DESIGN I

3.0 units

Total Lecture 36.8 hours, Total Lab 54.4 hours

Advisory: DRAFT 055A, MATH 903

Acceptable for credit: California State University

This course is an introduction to the product design process. Students become familiar with manufacturing processes and industry standards in the design and development of a product. Students use a popular computer-aided drafting and parametric solid modeling software. The laboratory design projects are intended to familiarize students with the design process and designing for manufacturing. The course and projects are based on design for products that are made from metals. *This course may be repeated one time. Pass/No Pass Option.*

045 • FACILITIES DESIGN AND DEVELOPMENT

3.0 units

Total Lecture 36.8 hours, Total Lab 54.4 hours

Advisory: Eligibility for ENGL 108A and READ 053, MATH 903, ENGR 010

Acceptable for credit: California State University

This course teaches a systematic approach to design principles for the construction, planning, and maintenance of physical facilities and equipment based on plant design layout requirements. Topics in facilities include regulatory and environmental technologies (green technology), safety procedures, security issues, energy conservation, process improvement, and production line planning to maximize facility efficiency as related to OSHA. The application of computerized layout techniques is emphasized. *This course may be repeated one time. Pass/No Pass Option.*

060 • BASIC ELECTRONICS

4.0 units

Total Lecture 54.4 hours, Total Lab 54.4 hours

Advisory: MATH 903

Acceptable for credit: California State University

This is a comprehensive introductory course in basic electronics. Major topics include: DC and AC theory, Ohm's law, Kirchhoff's laws, power laws, series and parallel circuits, network theorems, schematic diagrams, instrumentation and measurement, and functions of discrete components. *Pass/No Pass Option.*

062 • ANALOG CIRCUITS

4.0 units

Total Lecture 54.4 hours, Total Lab 54.4 hours

Advisory: MATH 903

Acceptable for credit: California State University

This course covers semiconductor theory, p-n junction, bipolar transistors, JFET's, MOSFET's, optoelectronic devices, operational amplifiers and 555 timers. Device applications include such items as comparators, signal generators, active filters, instrumentation amplifiers, voltage regulators, and power supplies. *Pass/No Pass Option.*

063 • DIGITAL CIRCUITS

4.0 units

Total Lecture 54.4 hours, Total Lab 54.4 hours

Advisory: MATH 903

Acceptable for credit: California State University

This course covers logic gates emphasizing TTL and CMOS design techniques, combinational circuits, counters, registers, multiplexers, demultiplexers, encoders, decoders, DAC, ADC, and ALU. *Pass/No Pass Option.*

064 • BASIC WIRELESS LAN

3.0 units

Total Lecture 44.8 hours, Total Lab 27.2 hours

Acceptable for credit: California State University

This course is designed to introduce students to the fundamentals of wireless LAN technology. The course covers the basics of RF technology, cellular radio, cellular system architecture, wireless network protocols, WLAN technology, broadband wireless and emerging wireless technologies. Topics include RF transmission theories, wireless communication, GSM, TDMA, CDMA, Bluetooth, and 802.11a/b/g/n protocols. *Pass/No Pass Option.*

065 • NETWORKING THEORY AND APPLICATION

3.0 units

Total Lecture 44.8 hours, Total Lab 27.2 hours

Acceptable for credit: California State University

This is a comprehensive introductory course in networks and networking concepts with an emphasis on Local Area Network (LAN) technology. The course covers all major aspects of networking technology such as Network architecture, Network hardware, and Network operating systems. The course also includes different topologies, transmission media, access methods, interface techniques, control and administration topics, and discuss major network standards and protocols. Students also learn different architectures, and hardware/software architectural compatibility. Additionally, this course will include LAN operating systems, gateways/servers, network control and management, and implementation consideration/product review. (Also listed as CIS-081). *Pass/No Pass Option.*

066 • NETWORK OPERATING SYSTEMS AND ADMINISTRATION

3.0 units

Total Lecture 44.8 hours, Total Lab 27.2 hours

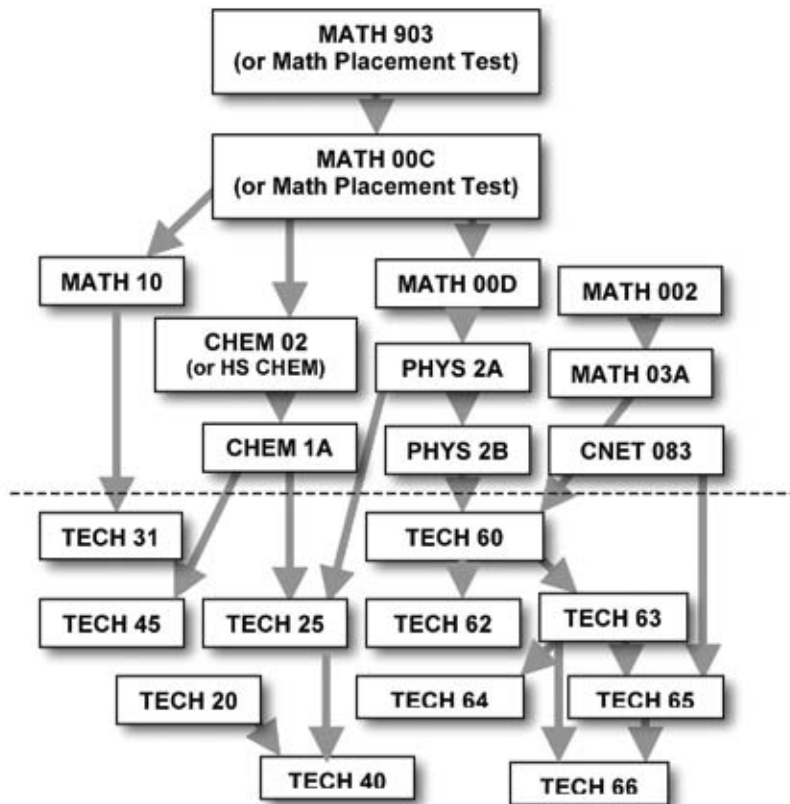
Acceptable for credit: California State University

This introductory course is designed to give an overview of the major network operating systems, and the basics of system administration to students in the networking technology area. The course covers the basic network features, and system administration aspects of Microsoft Windows, Novell Netware and Linux/UNIX. Students also learn the security features, the file system and the network administration of each of the network operating systems. *Pass/No Pass Option.*

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Industrial Technology Recommended Progression

All *Preparation* courses (those above the dotted line) must eventually be taken by ALL BSIT graduates. This chart gives the suggested *advisory* order at Mission, and the required *prerequisite* order at SJSU.



TECHNOLOGY STUDIES: CET • CNET

BEFORE ENROLLING IN DEGREE APPLICABLE COURSES, IT IS RECOMMENDED THAT YOU COMPLETE ENGL 001A AND READ 053.

COMPUTER ELECTRONICS TECHNOLOGY

(CET)

The Computer Electronics Technology (CET) is an option within the broader based CNET program that offers an A.S. Degree and a Certificate. The CET option offers a broadly based course of study with a strong emphasis on computers. The course of study is designed to train students for a wide variety of technical jobs, and touches on all of the major aspects of the high-tech industry: basic electronics, mathematics, solid state, analog, digital, programmable logic, microprocessors, circuit simulation, object-oriented programming, A+ certification, telecommunications, networking, wireless, and many other areas of elective study. Most classes are supported by hands-on laboratory experience. Selected classes will transfer to a comparable 4-year program, such as the Electronics and Computer Technology B.S. degree offered by San Jose State University. (The CET option is NOT intended to transfer into a B.S. degree in Electrical Engineering [EE].)

Student Learning Outcomes:

Upon completion of the CET option, the student will be able to:

- Design, solve, troubleshoot, and measure a variety of analog/digital circuits and systems.
- Use a variety of generating and measuring instruments, such as DMVs and digital oscilloscopes
- Write and debug programs using languages (such as C#)
- Design, analyze and troubleshoot a variety of circuits and systems using a circuit simulator (such as PSpice)
- Pass the A+ Certification Exam with reasonable certainty
- Explain the structure and operation of various networks (such as PSTN, LANs and WANs)

Students will be assessed through a multitude of assessment methods

Including written quizzes, laboratory assignments, and group projects.

Highlights:

- Solid foundation in basic electronics, with a strong emphasis on computer technology
- A board-based comprehensive curriculum addressing the needs of both the transfer and non-transfer student
- Excellent state-of-the-art laboratory facilities
- Extensive use of PSpice circuit simulation
- In-depth A+ Certification preparation

Career Choices -

- Customer service support
- Assistant programmer
- Technical sales
- Design/Engineering aide
- Entry-level engineer
- Electronics/Computer Tech

A.S. Degrees/Certificate:

Computer Electronics Technology +

Only courses completed with a grade of C or better may be used to satisfy requirements for a Certificate.

Schedule Matrix (subject to change):

COURSE	FALL	SPRING	SUMMER	WEEKEND
CNET 052	E	E		
CNET 062	E			
CNET 063		E		
CNET 071	E			
CNET 073		E		
CNET 078	E			
CNET 079		E		
CNET 082	E			
CNET 083		E		
CNET 088A	E			
CNET 088B		E		
CNET 090A	E			
CNET 090B		E		

E= EVENING CLASSES

Computer Electronics Technology A.S. Degree and Certificate

Core Curriculum Courses (Required)	Units
CNET 052 DC Circuit Theory and Analysis	4.0
CNET 062 AC Circuit Theory and Analysis	4.0
CNET 063 Digital/Programmable Logic.....	4.0
CNET 071 Solid State Devices and Circuits.....	4.0
CNET 073 Microprocessors/Microcontrollers	4.0
CNET 078 Telecommunications/Networking	3.0
CNET 082 Analog/Circuit Simulation/Calculus	3.0
CNET 083 Object-Oriented Programming	4.0
CNET 090A..... Computer Service Tech (A+) - Hardware	4.0
CNET 090B Computer Service Tech (A+) - Operating System.....	4.0
Plus 3 units from the following:**	Units
(**Other course work can be accepted for credit upon approval of the department)	
CNET 060 Science: How Changed World	3.0
CNET 066A..... Level I: Eng. High-Tech Assembly	3.0
CNET 066B Level II: Eng. High-Tech Assembly	3.0
CNET 067 Computer Diagnostics, Repair and Upgrade	3.0
CNET 077 Inside the IBM PC	2.0
CNET 079 Adv. Software Design.....	3.0
CNET 081 Intro to Local Area Networking.....	3.0
CNET 084 Circuit Simulation Using PSpice.....	3.0
CNET 088A..... Introduction to RF/Microwave/Wireless	3.0
CNET 088B Advanced RF/Microwave/Wireless	3.0
CNET 177 Laboratory Skills	0.5
DRAFT 058A Electronics Drafting.....	3.0
Total Program A.S. Degree/Certificate Requirements:.....	41.0

COMPUTER NETWORKING ELECTRONICS TECHNOLOGY (CNET)

041 • TCP/IP FOR THE PC

3.0 units

Total Lecture 54.4 hours

Advisory: MATH 903

Acceptable for credit: California State University

This course will introduce students to the Transmission Control Protocol / Internet Protocol (TCP/IP) suite for the PC platform. The course also covers the fundamentals of the Internet and the most popular Internet applications for DOS and Windows (Windows 9x/ME, Windows 2000/XP). Students will also learn the basics of Internet Protocol (IP) routing, including the concept of the Domain Name System (DNS), and the Intranet. *Pass/No Pass Option.*

042 • INTRO TO NETWORK OPERATING SYSTEMS

3.0 units

Total Lecture 54.4 hours

Advisory: MATH 903

Acceptable for credit: California State University

This course is designed to give an overview of major Network Operating systems (NOS) to students in the Networking Technology area. The course will cover the basic network features of Microsoft Windows NT, Novell Netware and UNIX. Students will also learn the security features, the file system, and the network management of the Network Operating System. *Pass/No Pass Option.*

043 • ROUTER AND INTERNETWORKING FUNDAMENTALS

3.0 units

Total Lecture 44.8 hours, Total Lab 27.2 hours

Advisory: CET/CIS 081 and CNT 041

Acceptable for credit: California State University

This course is designed to introduce students to the fundamentals of interconnecting computer networks. The course covers the basics of internetworking components such as repeaters, hubs, bridges, switches, routers, and gateways. Topics also include Local Area Network (LAN) protocols, Virtual LAN (VLAN) concepts, Wide Area Network (WAN) technologies and protocols, and major routing protocols includes Distance-Vector and Link-State routing protocol. *Pass/No Pass Option.*

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044 • NETWORK MANAGEMENT FUNDAMENTALS 3.0 units

Total Lecture 44.8 hours, Total Lab 27.2 hours
Advisory: CNET 041, CNET 043 and CNET 081
Acceptable for credit: California State University

This course is designed to introduce students to the fundamentals of network management. The course covers the basics of SNMP protocol, including SNMP software and hardware support. Topics also include guidelines for effective use of SNMP tools in managing typical small to medium networks. *Pass/No Pass Option.*

045 • INTRODUCTION TO LAN/WAN DESIGN 3.0 units

Total Lecture 54.4 hours
Advisory: CNET 041, CNET 043 and CNET 081
Acceptable for credit: California State University

This course is designed to introduce students to the basics of network design. The course covers the fundamentals of network design principles including guidelines and design goals for the LAN and WAN environment, and network issues such as network traffic and scalability. Topics also include routing fundamentals, user requirements, bandwidth consideration, and layout process. *Pass/No Pass Option.*

046 • ROUTING AND SWITCHING TECHNOLOGY 3.0 units

Total Lecture 44.8 hours, Total Lab 27.2 hours
Advisory: CNET 041, CNET 043 and CNET 081
Acceptable for credit: California State University

This is a comprehensive course in all important aspects of routing and switching technology. The course covers the basics of IP routing concepts, router configuration, router operating systems, routing protocols, multi-layer switching technology, switch configuration and switching protocols. Topics also include TCP/IP, routing hardware, layer-3 switching, routing diagnostics, and network analysis. *Pass/No Pass Option.*

047 • ADVANCED NETWORK PROTOCOLS 3.0 units

Total Lecture 54.4 hours
Advisory: CNET 041 and CNET 043
Acceptable for credit: California State University

This is a comprehensive course in network protocols. The course covers the advanced topics in TCP/IP including in-depth analysis of related network protocols such as ARP, ICMP, IGMP, BootP, DHCP, Frame Relay, ATM, xDSL, ISDN. Topics also include CIDR, VLSM, Novell IPX, NetBIOS, AppleTalk, Voice over IP (VoIP), mobile IP, detailed analysis of the new IP v6 and its potential impact on the Internet. *Pass/No Pass Option.*

052 • DC CIRCUIT THEORY AND ANALYSIS 4.0 units

Total Lecture 54.4 hours, Total Lab 54.4 hours
Advisory: MATH 903
Acceptable for credit: California State University

A comprehensive introductory course in electronics. DC voltages, resistance, series and parallel circuits. An introduction to voltage and current divider rules. Thevenin's theorems, and other pertinent DC concepts. Emphasis is on lab procedures and use of electronic test equipment. *Materials Fee: \$20.00. Grade Only.*

053 • ELECTRONICS CALCULATIONS 3.0 units

Total Lecture 54.4 hours
Advisory: MATH 903
Acceptable for credit: California State University

A study of advanced algebraic and trigonometric concepts as they pertain to AC electronics: sine waves, vector algebra, complex number, decibels, and time constants. Use of a scientific calculator in solution of problems is emphasized. *Grade Only.*

055 • THE IBM PC: A TECHNICAL INTRODUCTION 3.0 units

Total Lecture 44.8 hours, Total Lab 27.2 hours
Advisory: MATH 903
Acceptable for credit: California State University

This is a technically-based course on the IBM PC and clones, and covers how it works as well as how to use it. Topics include: the central processing unit, instruction processing, disk memory, video systems, printers; networking; operating system fundamentals, introductory programming; and a brief overview of major applications. (Also listed as CIS 55). *Pass/No Pass Option.*

060 • SCIENCE: HOW IT HAS CHANGED OUR WORLD 3.0 units

Total Lecture 54.4 hours
Advisory: MATH 000C
Acceptable for credit: California State University

This course will deal with the union of science and technology. These technologies will include applications of physics, chemistry, biology, electronics, computer science and others as applied to such fields as computers, medicine, communications, navigation, LASERS, meteorology, and nuclear power generation. The roots of basic science will be stressed. These concepts will be reinforced by classroom demonstrations and field trips. It is designed for science and non-science majors alike. All students are welcome. No previous knowledge and background in science or technology is required, and the level of mathematics is limited to elementary algebra. *Pass/No Pass Option.*

062 • AC CIRCUIT THEORY AND ANALYSIS 4.0 units

Total Lecture 54.4 hours, Total Lab 54.4 hours
Advisory: MATH 903 and CET 052
Acceptable for credit: California State University

A comprehensive introductory course in electronics covering AC theory. Includes sinusoidal waveforms, AC measurements, AC series circuits, AC parallel circuits, RC filters, series and parallel resonant circuits, transformers, and the use of electronic instruments including the DMM, frequency generator, frequency counter and oscilloscope in the lab. *Grade Only.*

063 • DIGITAL/PROGRAMMABLE LOGIC 4.0 units

Total Lecture 54.4 hours, Total Lab 54.4 hours
Advisory: MATH 903 and CET 052
Acceptable for credit: California State University

This is a comprehensive course in digital electronics, including basic number systems, shift registers, counters, multiplexers, arithmetic logic units, and fundamentals of design and application. Course will include computer-aided design using programmable logic. All theoretical concepts will be reinforced by practical lab applications. Student projects will be breadboarded and tested using digital designers, oscilloscopes and meters. *Grade Only.*

064 • MICROCOMPUTER SOFTWARE DESIGN 3.0 units

Total Lecture 44.8 hours, Total Lab 27.2 hours
Advisory: MATH 903
Acceptable for credit: California State University

This course will cover the major aspects of software design in a product development environment. A high-level structured language such as C or Java will be the primary programming language. Additional topics may include structured design and software development techniques. *Grade Only.*

066A • LEVEL I-INTRODUCTION TO ENGINEERING HIGH-TECH ASSEMBLY(THROUGH-HOLE/SMT) 3.0 units

Total Lecture 44.8 hours, Total Lab 27.2 hours
Acceptable for credit: California State University

This is a fundamental, overview course on engineering high-tech assembly. Coverage includes such topics as micro-electronic production, touch-up, component preparation and replacement as applied to multi-layer PC boards, component package processes, cabling, and hardware assembly. This course is designed to provide a total understanding of current engineering practices on high-tech PC board production process with Through-Hole(TH), Mixed-Tech(MT), and Surface Mounted(SM) Technologies. *May be repeated one time. Pass/No Pass Option.*

066B • LEVEL II-ENGINEERING ASSEMBLY REWORKS TECHNICIAN(EART) ON MIXED TECHNOLOGY 3.0 units

Total Lecture 44.8 hours, Total Lab 27.2 hours
Acceptable for credit: California State University

This is a second level high-tech manufacturing engineering assembly course on microelectronic production, touch-up, and engineering rework as applied to multi-layer PC boards. The course focuses on Engineering Change Notation(ECN) includes PCB and rework troubleshooting, bridging methodology, trace and pad replacement, and defective trace repair. This course is designed to provide the current engineering technician with a complete understanding of, as well as practical skills related to, the essential high-tech PC board production process with Mixed-Tech and Surface Mounted technologies. *May be repeated one time. Pass/No Pass Option.*

TECHNOLOGY STUDIES: CNET

BEFORE ENROLLING IN DEGREE APPLICABLE COURSES, IT IS RECOMMENDED THAT YOU COMPLETE ENGL 001A AND READ 053.

067 • COMPUTER DIAGNOSTICS, REPAIR, AND UPGRADE

3.0 units

Total Lecture 44.8 hours, Total Lab 27.2 hours
Advisory: MATH 903

Acceptable for credit: California State University

This is an introductory course on the diagnostics, repair, and upgrade of IBM PC/clones. This course requires no previous experience with computers, and is designed to provide for a wide range of needs: from entry-level high-tech positions, to job retraining, to skill upgrading. This course will include hardware configuration, software diagnostics, maintenance procedures, memory upgrade, floppy and hard disk installation and setup, power supply analysis, troubleshooting, and much more. *May be repeated one time. Pass/No Pass Option.*

071 • SOLID STATE DEVICES AND CIRCUITS

4.0 units

Total Lecture 54.4 hours, Total Lab 54.4 hours
Advisory: MATH 903 and CET 052

Acceptable for credit: California State University

A comprehensive course in semiconductor devices and circuits, including diode, bipolar and FET transistor characteristics and specifications. Emphasis is on biasing and DC/AC analysis of amplifier and buffer configurations. Practical applications include amplifiers, power supplies, regulators, and other circuits and systems. Practical lab exercises will reinforce the theoretical concepts. *Grade Only.*

073 • MICROPROCESSORS/MICROCONTROLLERS

4.0 units

Total Lecture 54.4 hours, Total Lab 54.4 hours
Advisory: MATH 903 and CET 063

Acceptable for credit: California State University

This is a comprehensive course on microprocessors and microcontrollers, featuring a balanced hardware/software approach. Emphasis will be on the Intel family of microprocessors. Laboratory experience will emphasize hardware design, assembly-language programming, and basic concepts of interfacing and troubleshooting. *Grade Only.*

077 • INSIDE THE IBM PC

2.0 units

Total Lab 36.8 hours

Advisory: MATH 903

Acceptable for credit: California State University

This is an intermediate-level technically-based course on the IBM PC. It emphasizes system hardware, operating system theory, and design of IBM PC and compatible computers. Topics include: video formats, disk and keyboard basics, ROM BIOS software, DOS interrupts, RS232 serial interface, PC bus structure, DMA, mouse, coprocessors, modems, sound, and structure of EXE files. *Pass/No Pass Option.*

078 • TELECOMMUNICATIONS/NETWORKING

3.0 units

Total Lecture 44.8 hours, Total Lab 27.2 hours
Advisory: MATH 903

Acceptable for credit: California State University

This is an introductory course in telecommunications and networking. Topics include related computer hardware and software, the PLL, PCM, the phone system, modems, DSL, fiber optics, error correction, and local and wide-area networks. Theory is enhanced by laboratory and demonstration experience. *Pass/No Pass Option.*

079 • C# PROGRAMMING AND .NET FRAMEWORK

3.0 units

Total Lecture 44.8 hours, Total Lab 27.2 hours
Advisory: MATH 903 and CET 083

Acceptable for credit: California State University

This class provides a comprehensive description of the C# language. The students will learn this new art of programming that goes beyond the programming heritage from C/C++, Visual Basic, and Java. *Grade Only.*

082 • ANALOG/CIRCUIT SIMULATION/CALCULUS

3.0 units

Total Lecture 44.8 hours, Total Lab 27.2 hours
Advisory: MATH 903 and CET 052

Acceptable for credit: California State University

This course stresses operational amplifier (OP AMP) theory and application as applied to closed-loop feedback systems. Topics covered include feedback configurations, active filters, oscillators, and A/D converters. Calculus is introduced during the presentation of integrators and differentiators. Practical laboratory experience will emphasize computer circuit simulation. *Grade Only.*

083 • OBJECT-ORIENTED PROGRAMMING

4.0 units

Total Lecture 54.4 hours, Total Lab 54.4 hours
Advisory: MATH 903 and CET 064

Acceptable for credit: California State University

This is an introductory class in software design using an object-oriented programming language such as C++, Java, or C#. Course includes such topics as arrays, classes, inheritance, graphical user interface (GUI), interaction, animation, and multi-threading. Emphasis will be on direct hands-on laboratory experience. *Grade Only.*

084 • CIRCUIT SIMULATION USING PSpICE

3.0 units

Total Lecture 44.8 hours, Total Lab 27.2 hours

Advisory: MATH 903

Acceptable for credit: California State University

This is an introductory course on circuit simulation using PSpice for Windows. It is appropriate for students or working professionals. Topics include: drawing circuits, displaying waveforms, Monte Carlo analysis, parametric analysis, Fourier analysis, complex numbers, and many more. Simulated applications circuits include DC, AC, devices & circuits, operational amplifiers, and digital systems. No previous experience with circuit simulation is required, although a basic knowledge of DC/AC and Devices and Circuits would be helpful. *Grade Only.*

088A • INTRODUCTION TO RF/MICROWAVE/WIRELESS (Formerly known as CET 088)

3.0 units

Total Lecture 54.4 hours

Advisory: CET 062

Acceptable for credit: California State University

This is an introductory course providing a conceptual understanding of RF/Microwave Components, such as amplifiers, filters, oscillators, synthesizers, mixers, etc. Coverage includes RF systems such as Broadcasting, Radar, Satellite, and Fixed Wireless. It simplifies the subject of RF electronics through the use of analogies and metaphors. Students will learn the vocabulary and jargon used throughout the industry. *Pass/No Pass Option.*

088B • ADVANCED RF/MICROWAVE/WIRELESS

3.0 units

Total Lecture 54.4 hours

Advisory: CET 088A

Acceptable for credit: California State University

This is an advanced course providing a conceptual understanding of RF/Microwave Components, such as transmission line theory, wave guides, amplifiers, filters, oscillators, synthesizers, mixers, etc. The course includes Maxwell equations and wave propagation. *Pass/No Pass Option.*

090A • COMPUTER SERVICE TECHNICIAN (A+) HARDWARE

4.0 units

Total Lecture 54.4 hours, Total Lab 54.4 hours

This course covers the Core Hardware portion of the two-part A+ Certification exam. The course covers a basic knowledge of installing, configuring, upgrading, troubleshooting, and repairing desktop computer systems. Theory will be supported and reinforced by direct hands-on laboratory experience. *Grade Only.*

090B • COMPUTER SERVICE TECHNICIAN (A+) OPERATING SYSTEMS

4.0 units

Total Lecture 54.4 hours, Total Lab 54.4 hours

This course covers the Core Operating System portion of the two-part A+ Certification exam. Major topics include a basic knowledge of Command Line Prompt, Windows 9x and Windows 2000 for installing, configuring, upgrading, troubleshooting, and repairing desktop computer systems. Theory will be supported and reinforced by direct hands-on laboratory experience. *Grade Only.*

177 • LABORATORY SKILLS

0.5 units

Total Lab 27.2 hours

Advisory: MATH 903

Students will improve their laboratory and programming skills through guided laboratory work related to the CNET program course of study. *May be repeated two times. Pass/No Pass Option.*

BEFORE ENROLLING IN DEGREE APPLICABLE COURSES, IT IS RECOMMENDED THAT YOU COMPLETE ENGL 001A AND READ 053.

COMPUTER NETWORK TECHNOLOGY (CNT)

The Computer Network Technology (CNT) is an option within the broader based CNET Program that offers an A.S. Degree and Certificate. The course of study is designed to give the student a broad-based and practical background in all major aspects of networking technology. The curriculum includes LAN/WAN design, network operating systems, switches and routers, network administration and troubleshooting, network protocols and management, and WAN technologies such as ATM, ISDN, DSL, FDDI, and wireless networking. Classes include extensive laboratory practice, such as hands-on experience with CISCO routers and switches, wireless systems, and NOS configuration, installation and troubleshooting. Selected classes will transfer to a comparable 4-year program in the networking field.

Students who have taken coursework at other institutions may receive credit upon department evaluation and receive CNET credit for TECH classes.

Student Learning Outcomes:

Upon completion of the CNT option, the student will be able to:

- Provide technical support to network administrators
- Perform standard maintenance of a LAN/WAN system
- Deliver technical assistance to users across the network
- Troubleshoot routing problems
- Analyze, troubleshoot, and design small-scale/campus LANs
- Assist administrators in managing networks
- Set up a home wireless LAN
- Install and troubleshoot network operating systems

Highlights:

- Strong foundation in all aspects of networking, with emphasis on practical hands-on laboratory experience
- A comprehensive curriculum addressing the needs of beginning students as well as working professionals
- Excellent state-of-the-art network laboratory with 3COM and CISCO and wireless equipment

A.S. Degree / Certificate

Computer Network Technology (CNT)

Career Choices -

- Asst. Network Administrator
- Network Support Staff
- Network Help Desk
- Network Mgmt Specialist
- Network Technician
- PC/Network Installation Support

Some career options require more than two years of college study

Schedule Matrix (subject to change):

COURSE	FALL	SPRING	SUMMER	WEEKEND
TECH 060	E	E		
TECH 062		E		
TECH 063	E			
CNET 073		E		
CNET 078		E		
CNET 079	E			
CNET 083		E		
CNET 088A	E			
CNET 088B	E			
CNET090A	E			
CNET 090B	E			
DRAFT*058A		E		

E= EVENING CLASSES

Computer Networking Technology A.S. Degree and Certificate

Core Curriculum Courses (Required)	Units
CNET 041 TCP/IP for the PC	3.0
CNET 042 Intro to Network Operating Systems	3.0
CNET 043 Router & Internetworking Fundamentals	3.0
CNET 044 Network Management Fundamentals	3.0
CNET 045 Introduction to LAN/WAN design	3.0
CNET 046 Routing and Switching Technology	3.0
CNET 047 Advanced Network Protocols	3.0
CNET 078 Telecommunications / Networking	3.0
CNET/CIS 081 Local Area Networks	3.0
CNET 090A A+ (hardware)	4.0
CNET 090B A+ (operating systems)	4.0
Total Program A.S. Degree/Certificate Requirements:	35.0

Computer Networking Technology Network Associate - Certificate

Core Curriculum Courses	Units
CNET 055 IBM PC: A Technical Introduction	3.0
CNET 078 Data Communications	3.0
CNET/CIS 081 Introduction to Networking and LAN	3.0
CNET 041 TCP/IP for the PC	2.0
CNET 042 Introduction to Network Operating Systems	3.0
CNET 043 Internetworking Fundamentals	3.0
Total Program Certificate Requirements:	17.0

TECHNOLOGY STUDIES: DESIGN DRAFTING TECHNOLOGY

BEFORE ENROLLING IN DEGREE APPLICABLE COURSES, IT IS RECOMMENDED THAT YOU COMPLETE ENGL 001A AND READ 053.

DESIGN DRAFTING TECHNOLOGY (DRAFT)

Mission College offers students the opportunity to major in a program of Design Drafting Technology, leading to an Associate of Science Degree and/or Technician Certificate in the fields of Electronic Design, Mechanical Design and/or Electro/Mechanical Design.

The Mechanical, Electronic or Electro/Mechanical Design Drafting Technician Certificate will be awarded to students who complete the units of required drafting courses and demonstrate technical proficiency as a Designer. The Design programs require between 36 and 38 units to complete, depending on the student's elective course choices. An Associate of Science Degree in Design Drafting Technology will be awarded to students who earn a Design Drafting Certificate and meet all other college requirements for graduation. Consult the Design Drafting advisor for detailed information.

NOTE: It is highly recommended that each student keep a complete record of work to present for evaluation by university program advisors and/or employers.

Student Learning Outcomes:

Students who complete courses in the Design Drafting Technology Department will demonstrate skills necessary to be successful mechanical, electronic or electro-mechanical designers as determined by industry. Students will demonstrate successful team building strategies and will:

- Produce design documentation to industry standards using Computer-Aided Design/ Drafting (CAD) software.
- Apply principles of geometric dimensioning & tolerancing, materials and process design specifications to production drawings.
- Apply mechanical design concepts in 3D using the latest solid-modeling software.
- Produce electronic printed circuit board designs, including surface-mount and IC technology, using CAD schematic PCB software.

Students will be assessed through a multitude of assessment methods including written quizzes, tests and papers and hands-on individual and group projects.

Highlights:

- State-of-the-art Computer Aided drafting laboratory.
- Experienced instructors, many are Designers in local industry.
- The latest releases of electronic, mechanical and solid modeling CAD software.

Career Options:

- CAD Designer/ Drafter (E/M-Mech, HVAC, Facility, Arch, Civil)
- CAD Technician (MFG, HVAC, ENG.)
- CAD Printed Circuit Board designer
- CAD Printed Circuit Board checker
- Quality control and Documentation technician
- CAD Checker/ Manager
- Planning Assistants

Some career options may require more than two years of college study. Classes beyond the Associate Degree level may be required for preparation for transfer to a university program.

A.S. Degrees:

- Design Drafting-Electronic
- Design Drafting-Mechanical
- Design Drafting-Electro/Mechanical

Certificates:

- Design Drafting-Electronic
- Design Drafting-Mechanical
- Design Drafting-Electro/Mechanical

Only courses completed with a grade of C or better may be used to satisfy requirements for a certificate.

Schedule Matrix (subject to change):

COURSE	FALL	SPRING	SUMMER	WEEKEND
DRAFT 022	E			
DRAFT 051A	E	E		X
DRAFT 051B	E	E		X
DRAFT 051C		E		
DRAFT 055A	E	E		
DRAFT 055B	E	E		
DRAFT 055C	E	E		
DRAFT 058A	E	E		X
DRAFT 058B	E	E		X
DRAFT 058C	E	E		X
DRAFT 058D	E	E		X
DRAFT 060	E			
DRAFT 070	E	E	X	X
DRAFT 071A	E	E		
DRAFT 071B	E	E		
DRAFT 072	E	E		X
DRAFT 075	E			
DRAFT 092		E		
DRAFT 103		E		

D= DAY CLASSES; E= EVENING CLASSES; X= WEEKEND

Design Drafting - Electronic - A.S. Degree and Certificate

Core Curriculum Courses (Required)	Units
DRAFT 022..... Descriptive Geometry	3.0
DRAFT 051A Technical Drafting - Beginning	3.0
DRAFT 051B Technical Drafting - Intermediate	3.0
DRAFT 051C Technical Drafting - Advanced Generalization	3.0
DRAFT 058A Electronic Drafting.....	3.0
DRAFT 058B Electronic Drafting - Printed Circuit Board Design.....	3.0
DRAFT 058C Electro/Mechanical Packaging Design.....	3.0
DRAFT 058D Surface Mount and Integrated Circuit Design Technology	3.0
DRAFT 070..... Introduction to CAD.....	3.0
DRAFT 071A Advanced CAD Applications - Electronic	3.0
DRAFT 071B CAD Applications-PCB.....	3.0
DRAFT 092..... Design Drafting Laboratory/Portfolio	2.0
Plus one of the following:	Units
CET 052 DC Principles	4.0
DRAFT 055A Illustration/3-D CAD	3.0
DRAFT 060..... Dimensioning & Tolerancing	3.0
DRAFT 072..... CAD Applications-Electronics	3.0
DRAFT 103..... Materials and Processes.....	2.0
Total Program A.S. Degree/Certificate Requirements:.....	36.0 - 38.0

Design Drafting - Mechanical - A.S. Degree and Certificate

Core Curriculum Courses (Required)	Units
DRAFT 022..... Descriptive Geometry	3.0
DRAFT 051A Technical Drafting - Beginning	3.0
DRAFT 051B Technical Drafting - Intermediate	3.0
DRAFT 051C Technical Drafting - Advanced Generalization	3.0
DRAFT 060..... Dimensioning & Tolerancing	3.0
DRAFT 103..... Materials and Processes.....	2.0
DRAFT 092..... Design Drafting Laboratory/Portfolio.....	2.0
DRAFT 058C Electro/Mechanical Packaging Design.....	3.0
DRAFT 070..... Introduction to CAD.....	3.0
DRAFT 072..... CAD Applications-Electronic	3.0
DRAFT 055A Illustration/3-D CAD	3.0
DRAFT 055B Solid Modelling Illustration	3.0
Plus one of the following:	Units
DRAFT 058A Electronic Drafting.....	3.0
ENGR 003 Science at Work	4.0
Total Program A.S. Degree/Certificate Requirements:.....	36.0 - 38.0

TECHNOLOGY STUDIES: DESIGN DRAFTING TECHNOLOGY

BEFORE ENROLLING IN DEGREE APPLICABLE COURSES, IT IS RECOMMENDED THAT YOU COMPLETE ENGL 001A AND READ 053.

Design Drafting -Electro/Mechanical A.S. Degree and Certificate

Core Curriculum Courses (Required)	Units
DRAFT 022..... Descriptive Geometry	3.0
DRAFT 051A Technical Drafting - Beginning	3.0
DRAFT 051B Technical Drafting - Intermediate	3.0
DRAFT 051C Technical Drafting - Advanced Generalization	3.0
DRAFT 058A Electronic Drafting.....	3.0
DRAFT 058B Electronic Drafting - Printed Circuit Board Design	3.0
DRAFT 058D Surface Mount and Integrated Circuit Design Technology	3.0
DRAFT 060..... Dimensioning & Tolerancing	3.0
DRAFT 070..... Introduction to CAD.....	3.0
DRAFT 071..... CAD Applications - Electronic	3.0
DRAFT 092..... Design Drafting Laboratory/Portfolio.....	2.0
DRAFT 103..... Materials and Processes.....	2.0
Plus one of the following:	Units
DRAFT 055A Illustration/3-D CAD	3.0
DRAFT 055B Illustration/Solid Modelling	3.0
DRAFT 058C Electro/Mechanical Packaging Design.....	3.0
DRAFT 072..... CAD Applications-Mechanical.....	3.0
DRAFT 071B CAD Applications-PCB.....	3.0
Total Program A.S. Degree/Certificate Requirements:.....	36.0 - 38.0

DESIGN DRAFTING TECHNOLOGY (DRAFT)

See the Industrial Technology Program for a description of the required TECH courses.

022 • DESCRIPTIVE GEOMETRY 3.0 units

Total Lecture 36.8 hours, Total Lab 72 hours
Advisory: MATH 903
Prerequisite: DRAFT 051A
Acceptable for credit: California State University

The student determines the true size, shape and length of lines, planes and intersections not congruent with the standard orthographic planes of projection. This course, created for Design Drafting majors, helps develop the student's ability to visualize in three dimensions, and is useful to anyone pursuing a career in Engineering and Design. *Materials Fee: \$5.00. Pass/No Pass Option.*

051A • TECHNICAL DRAFTING-BEGINNING 3.0 units

Total Lecture 36.8 hours, Total Lab 72 hours
Advisory: MATH 903, DRAFT 070
Acceptable for credit: California State University

The study of drafting practices includes orthographic projections (multi-view), full and half sections, primary auxiliaries, pictorial drawing, dimensioning practices freehand sketching and lettering practice. Basic computer aided drafting (CAD) will be experienced. *May be repeated one time. Materials Fee: \$5.00. Pass/No Pass Option.*

051B • TECHNICAL DRAFTING-INTERMEDIATE 3.0 units

Total Lecture 36.8 hours, Total Lab 72 hours
Advisory: MATH 903, DRAFT 072
Prerequisite: DRAFT 51A
Acceptable for credit: California State University

This course is a continuation of the study of orthographic projection, plus secondary auxiliaries, threads and fasteners, revolutions developments and intersections, dimensioning and tolerancing, axonometric projection, broken out, revolved, removed and offset section drawings. CAD will be used to produce drawings. *May be repeated one time. Materials Fee: \$5.00. Pass/No Pass Option.*

051C • TECHNICAL DRAFTING-ADVANCED GENERALIZATION 3.0 units

Total Lecture 36.8 hours, Total Lab 72 hours
Advisory: MATH 903
Prerequisite: DRAFT 51B and DRAFT 072
Acceptable for credit: California State University

This course will introduce the American National standards and specifications as they are applied to the following special fields in drafting: machine drafting (detail and sub-assemblies), sheet metal fabrication drawing, casting and forging drawings, gears and cams, welding representation (weldments). Design process and documentation standards will be stressed. *May be repeated one time. Materials Fee: \$5.00. Pass/No Pass Option.*

055A • ILLUSTRATION: 3-D CAD 3.0 units

Total Lecture 36.8 hours, Total Lab 72 hours
Advisory: MATH 903
Prerequisite: DRAFT 070, DRAFT 051A
Acceptable for credit: California State University

In this course the student will study and create 3-D communications using traditional technical illustration techniques and computer aided modeling programs. Computer generated, three dimensional, solid model, illustrations will be created using a computer to shape, shadow and graphically represent the desired design. *May be repeated one time. Materials Fee: \$5.00. Pass/No Pass Option.*

055B • ILLUSTRATION: SOLID MODELING 3.0 units

Total Lecture 36.8 hours, Total Lab 72 hours
Advisory: MATH 903
Prerequisite: DRAFT 055A
Acceptable for credit: California State University

In this course the student will study and create three dimensional representational drawings using a computer-modeling program. Computer generated, three dimensional, solid models, will be created using a computer to shape, shadow and graphically represent the desired object for the purpose of manufacturing. *May be repeated one time. Materials Fee: \$5.00. Pass/No Pass Option.*

055C • ADVANCED 3D SOLID MODELING 3.0 units

Total Lecture 36.8 hours, Total Lab 72 hours
Prerequisite: DRAFT 055B
Acceptable for credit: California State University

This course introduces the student to three-dimensional solid modeling used in the design and fabrication of mechanical parts and assemblies. Using computer solid-modeling software the student will create advance 3D shapes connecting solid model parts into working assemblies for the study of function and the analysis of tolerances and fits. *May be repeated one time. Materials Fee: \$5.00. Pass/No Pass Option.*

058A • ELECTRONIC DRAFTING 3.0 units

Total Lecture 36.8 hours, Total Lab 72 hours
Advisory: MATH 000C
Corequisite: DRAFT 071A
Acceptable for credit: California State University

This is a study of computer aided design (CAD) electronic drawing, symbols, method and techniques which covers block diagrams, schematics, interconnecting and wiring diagrams, printed circuits, electronic assembly drawings, and electronic terminology. *May be repeated one time. Materials Fee: \$5.00. Pass/No Pass Option.*

058B • PRINTED CIRCUIT BOARD DESIGN 3.0 units

Total Lecture 36.8 hours, Total Lab 72 hours
Advisory: MATH 903
Prerequisite: DRAFT 058A
Acceptable for credit: California State University

This course is an introduction to CAD schematic capture printed circuit design. Discrete, analog and digital printed circuit layout and trace techniques will be taught along with printed circuit documentation and parts list requirements. The student will gain an understanding of production considerations for the manufacturing of printed circuit boards. *May be repeated one time. Materials Fee: \$5.00. Pass/No Pass Option.*

TECHNOLOGY STUDIES: DESIGN DRAFTING TECHNOLOGY

BEFORE ENROLLING IN DEGREE APPLICABLE COURSES, IT IS RECOMMENDED THAT YOU COMPLETE ENGL 001A AND READ 053.

058C • ELECTRO/MECHANICAL PACKAGING DESIGN 3.0 units

Total Lecture 36.8 hours, Total Lab 72 hours

Advisory: MATH 903

Prerequisite: DRAFT 051A

Acceptable for credit: California State University

This course covers the design and drafting of electro/mechanical exterior and interior parts, mounting frames, and unit enclosures. The functional and aesthetic design aspects of enclosures will be studied. *Materials Fee: \$5.00. Pass/No Pass Option.*

058D • SURFACE MOUNT & INTEGRATED CIRCUIT DESIGN TECHNOLOGY 3.0 units

Total Lecture 36.8 hours, Total Lab 72 hours

Advisory: MATH 903

Prerequisite: DRAFT 058B

Acceptable for credit: California State University

This is an advanced design course for printed circuit/electro-mechanical designers. The course includes the terminology and design of land patterns for surface mount components based on manufacturability, solderability and reliability identified in industrial specifications. This course will also include basic integrated circuit mask design and the design of multilayer printed circuit boards as they relate to surface mount design technology. *May be repeated one time. Materials Fee: \$5.00. Pass/No Pass Option.*

060 • DIMENSIONING AND TOLERANCING 3.0 units

Total Lecture 54.4 hours

Advisory: MATH 903

Prerequisite: DRAFT 051A

Acceptable for credit: California State University

This course covers interpretation of drawings for manufacturing as prescribed by the American National Standards Institute (ANSI Y14.5M); application of the precepts described in the ANSI Y14.5M); and a discussion of the advantages and methods for implementation of this geometric system to ensure quality and reliability of product. *Materials Fee: \$5.00. Pass/No Pass Option.*

070 • INTRODUCTION TO COMPUTER AIDED DRAFTING 3.0 units

Total Lecture 36.8 hours, Total Lab 72 hours

Advisory: MATH 903 and DRAFT 051A

Acceptable for credit: California State University

This course introduces the beginning student to the operation of Computer Aided Design and Drafting (CADD) systems. Students receive hands-on instruction using AutoCad software on both MS DOS and WINDOWS platforms. Formal written assignments and laboratory-project work are required. The CADD skills provided are a prerequisite for industry employment. *May be repeated one time. Materials Fee: \$5.00. Pass/No Pass Option.*

071A • COMPUTER AIDED DESIGN APPLICATION ELECTRONIC 3.0 units

Total Lecture 36.8 hours, Total Lab 72 hours

Advisory: MATH 903 and DRAFT 070

Corequisite: DRAFT 058A

Acceptable for credit: California State University

This class is designed to accommodate the needs of students and the electronic industry in the area of Computer Aided Design and Drafting systems equipment operation. Students will be afforded the opportunity to acquire "hands-on" experience using Protel Schematic capture and Advanced PCB Computer Aided Drafting system. These skills are a prerequisite for employment as an operator in industry. Formal laboratory and written assignments are required. *May be repeated one time. Materials Fee: \$5.00. Pass/No Pass Option.*

071B • CAD APPLICATIONS-ELECTRONICS PCB 3.0 units

Total Lecture 36.8 hours, Total Lab 72 hours

Advisory: MATH 903

Prerequisite: DRAFT 071A

Acceptable for credit: California State University

This class is an advanced design course for printed circuit designers. The course teaches and uses the automated Computer-Aided-Design (CAD) program Protel Advanced PCB (Printed Circuit Board). Students learn to use the CAD system to design and document multi-layer printed circuit boards. Using schematic capture, design rules check, loading the netlist, manual and autorouting, students will design and produce professional electronic design documentation used in the contemporary electronic industry. *May be repeated one time. Materials Fee: \$5.00. Pass/No Pass Option.*

072 • COMPUTER AIDED DESIGN APPLICATIONS MECHANICAL 3.0 units

Total Lecture 36.8 hours, Total Lab 72 hours

Advisory: MATH 903

Prerequisite: DRAFT 070

Acceptable for credit: California State University

This class is designed to accommodate the needs of students and the industry in the area of Advanced Mechanical Computer-Aided Design and Drafting (CADD) systems equipment operation. Students will be afforded the opportunity to acquire "hands-on" experience in the operation of an AutoCAD system for up to four hours a week. These skills are a prerequisite for employment as an operator in the industry today. Formal lab and written assignments are required. *May be repeated one time. Materials Fee: \$5.00. Pass/No Pass Option.*

075 • DESIGN DRAFTING LABORATORY/PORTFOLIO 2.0 units

Total Lab 108.8 hours

Advisory: MATH 903

Prerequisite: DRAFT 051C, DRAFT 058D, DRAFT 072

This is a self-paced course individualized instruction course using Computer Aided Design and Drafting (CADD) application software in conjunction with the PC computer systems. Depending on the needs of the student one or more of the four different CADD application software packages available will be used to gather, develop and formalize a student portfolio demonstrating his/her design capabilities. This course will culminate with a formal portfolio presentation. This should be taken the final semester of the certificate/Associate Degree program. *May be repeated one time. Materials Fee: \$5.00. Pass/No Pass Option.*

103 • MATERIALS AND PROCESSES 2.0 units

Total Lecture 36.8 hours

Advisory: MATH 903

Acceptable for credit: California State University

Materials and Processes has two areas of technological curriculum. The Industrial Materials curriculum involves the study of engineering materials to include the physical properties, classifications, testing and applications as related to drafting and design documentation. The Manufacturing Processes curriculum involves the study of the production techniques used to convert materials into finished products to include the selection criteria, economics of manufacturing and quality considerations. *May be repeated one time. Materials Fee: \$5.00. Pass/No Pass Option.*

DIRECTED STUDIES

Directed Studies consists of independent work of special interest to the student and are offered in a number of departments. No more than a total of 6 units in all departments may be counted toward and Associate Degree. Consult your instructor or a counselor for more information.

091, 092, 093 DIRECTED STUDIES

For (091): Lab by arrangement 3 hours

For (092): Lab by arrangement 6 hours

For (093): Lab by arrangement 9 hours

Total Lab 54.4 hours 108.8, 161.6 hours

1.0 unit

2.0 units

3.0 units

Prerequisite: An interview appointment must be made with the instructor to determine objectives and to write a contract.

Acceptable for credit: May be acceptable at the University of California and/or California State University campuses contingent upon a review of the course outline. Please consult a counselor for details.

Directed studies are investigations of special interest to the student which are related to, but not included in regular courses offered by the college. *Pass/No Pass Option. Repeatable to a maximum combined limit of 6 units.*