

quantitative gravimetric and volumetric experiments are provided. Fee charged. Prerequisite: concurrent enrollment in MATH 1314. Core Curriculum satisfied for Natural Lab Sciences.

CHEM 1412 General Chemistry (Inorganic) (40.0501.52 03) 4.3.4

A continuation of CHEM 1411. Reaction rates, elementary thermodynamics, solution and solution equilibria, electrochemistry, chemistry of the representative elements and nuclear chemistry. The laboratory is a continuation with emphasis on optical and electrical measurements of quantitative experiments; in this term use is also made of a system of qualitative analysis. Fee charged. Prerequisite: CHEM 1411. Core Curriculum satisfied for Natural Lab Sciences.

CHEM 2423 Organic Chemistry (40.0504.52 03) 4.3.4

Present-day theories and principles of organic chemistry. An integrated introductory course stressing nomenclature of the main classes of compounds; the determination of structure, stereochemistry, resonance and molecular orbital method of chemical bonding; reaction mechanisms and techniques or organic synthesis. Fee charged. Prerequisite: CHEM 1412 or 1407 with consent of instructor. Core Curriculum satisfied for Natural Lab Sciences.

CHEM 2425 Organic Chemistry (40.0504.52 03) 4.3.4

Continuation of CHEM 2423. Emphasis on reaction mechanisms, carbohydrates, fats, amino acids, heterocyclic, alkaloids and natural products. The laboratory emphasis is organic qualitative analysis. Fee charged. Prerequisite: CHEM 2423. Core Curriculum satisfied for Natural Lab Sciences.

Computer Information Systems

With the continual development and use of computers in business and industry, the need is increasing for personnel proficient in business programming, networking, equipment repair, software applications, as well as computer operations. To address these skills, the Computer Science Department offers two Associate of Applied Science workforce degrees (AAS), an Associate of Science transfer degree (AS), and four workforce certificate programs.

The Associate of Science (AS) degree is designed to prepare students for transfer to a four-year university as a Computer Science or Computer Information Systems major. The program will provide students with a background in basic academic areas such as mathematics and the sciences, as well as introductory work in the computer areas of logic design, programming concepts, and programming languages.

The department offers an Associate of Applied Science (AAS) degree and a certificate in Computer Information Systems that provides training for careers in business programming, database support, software applications, and computer operations. Additionally, an Associate of Applied Science (AAS) Computer Networking degree is designed

to prepare students to perform tasks in network technology relating to network management, technical support, hardware/software installation, security servers, and equipment repair. Network and A+ certification training is available.

The program graduate will be able to assemble computers based on customer requirements, install network wiring and interfaces at customer sites, install and debug network software, and maintain network hardware and software.

Suggested Course of Study for University Transfer Students (60 Credit Hours)

Freshman Year	Sophomore Year
PSYC 1100 or EDUC 1100	COSC 1337
COSC 1336	GOVT 2305
COSC 1401 or BCIS 1405	GOVT 2306
ENGL 1301	Lab Science (8 Credit Hours)
ENGL 1302	Humanities (3 Credit Hours)
HIST 1301	MATH 1324
HIST 1302	MATH 1325
MATH 1314	Social/Behavioral Science (3 Credit Hours)
PHED 1134	SPCH 1315 or 1321
PHED Activity (1 Credit Hour)	
Visual/Fine Arts (3 Credit Hours)	

Note: Completion of the Field of Study may require an additional term(s).

AAS IN COMPUTER INFORMATION SYSTEMS (60 Credit Hours)

First Semester	Second Semester
PSYC 1100 or EDUC 1100	ITSW 1404
ITSC 1405	ITSW 1307
COSC 1401 or BCIS 1405	ITSC 1425
ITSC 1301	ENGL 1301
MATH 1314	
Third Semester	Fourth Semester
IMED 1316	ACCT 2301
ITSW 1310	COSC 1337
SPCH 1315	ITSC 1364
COSC 1336	GOVT 2306
ITNW 1425	Visual/Fine Arts Elective

CERTIFICATE IN BUSINESS COMPUTER APPLICATIONS**(36 Credit Hours)****First Semester**

PSYC 1100 or EDUC 1100 Learning Frameworks
 POFT 1127 Introduction to Keyboarding*
 ITSC 1301 Introduction to Computers*
 ITSC 1409 Integrated Software Applications*
 ITSC 1405 PC Operating Systems - Windows

Second Semester

ITSW 1404 Introduction to Spreadsheets
 ITSW 1310 Photoshop I
 POFT 2312 Business Correspondence & Communication
 POFT 1321 Business Math

Third Semester

IMED 1316 Web Page Design*
 ACNT 1411 Introduction to Computerized Accounting
 or ACNT 1403 Introduction to Accounting I
 ITSW 1307 Introduction to Database

* Tech Prep course, which may have been completed in high school.

AAS IN NETWORKING (65 Credit Hours)

First Semester	Second Semester
PSYC 1100 or EDUC 1100 ITSC 1409* or COSC 1401 or BCIS 1405 MATH 1314 POFT 1127 ITSC 1405 ENGL 1301	ITSW 1307 ITNW 1425 SPCH 1321 ITSC 1425 IMED 1316
Third Semester	Fourth Semester
ITSC 2339 ITNW 2413 ITNW 2405 ITNW 1451 GOVT 2306	ITSY 1442 ITNW 1454 ITSC 1364 - Practicum (FieldExp.) Visual/Fine Arts Elective

* Tech Prep course, which may have been completed in high school.

CERTIFICATE IN COMPUTER SUPPORT TECH (28 Credit Hours)**First Semester**

PSYC 1100 or EDUC 1100 Learning Frameworks
 ITSC 1405 Introduction to PC Operating Systems
 ITSC 1425 Personal Computer Hardware
 ITNW 2413 Networking Hardware

Second Semester

ITNW 2405	Network Administration
ITNW 1425	Fundamentals of Networking Technologies
ITSC 2339	Personal Computer Help Desk Support
ITNW 1451	Fundamentals of Wireless LANs

CERTIFICATE IN COMPUTER NETWORK TECH (39 Credit Hours)**First Semester**

PSYC 1100 or EDUC 1100	Learning Frameworks
ITSC 1405	Introduction to PC Operating Systems
ITSC 1425	Personal Computer Hardware
ITNW 2413	Networking Hardware

Second Semester

ITNW 1425	Fundamentals of Networking Technologies
ITNW 1451	Fundamentals of Wireless LANs
ITNW 1454	Implementing and Supporting Servers

Third Semester

ITNW 2405	Network Administration
ITSY 1442	Information Technology Security
ITSC 2339	Personal Computer Help Desk Support
ITSC 1364	Practicum: Computer Information Systems

CERTIFICATE IN CISCO/C-TECH (21 Credit Hours)**First Semester**

PSYC 1100 or EDUC 1100	Learning Frameworks
ITCC 1301	Cisco Exploration I*
ITNW 1425	Fundamentals of Networking

Second Semester

ITCC 1304	Cisco Exploration II*
ITNW 2413	Networking Hardware

Third Semester

ITCC 2308	Cisco Exploration III*
ITCC 2310	Cisco Exploration IV*

* Tech Prep course, which may have been completed in high school

BCIS 1405 Business Computer Applications 4.3.3

Computer terminology, hardware, software, operating systems and information systems relating to the business environment. The main focus of this course is on business applications of software, including word processing, spreadsheets, databases, presentation graphics, and business oriented utilization of the Internet. Equivalent to COSC 1401.

COSC 1336 Programming Fundamentals I 3.2.4

Introduces the fundamental concepts of structured programming. Topics include software development methodology, data types, control structures, functions, arrays, and the mechanics of running, testing, and debugging.

Prerequisite: Math 1314 or instructor permission.

- COSC 1337 Programming Fundamentals II** 3.2.4
Review of control structures and data types with emphasis on structured data types. Applies the object-oriented programming paradigm, focusing on the definition and use of classes, along with the fundamentals of object-oriented design. Includes basic analysis of algorithms, searching and sorting techniques, and an introduction to software engineering. Prerequisite: COSC 1336.
- COSC 1401 Introduction to Computing** 4.3.3
Overview of computer systems—hardware, operating systems, and microcomputer application software, including the Internet, word processing, spreadsheet, presentation graphics, and databases. Current issues such as the effect of computers on society, and the history and use of computers in business, educational, and other modern settings are also studied. Prerequisite: keyboarding skills. Equivalent to BCIS 1405.
- COSC 1430 Object Oriented Programming** 4.3.3
An introduction to problem solving and programming development through the use of object-oriented programming. Prerequisite: Math 1314.
- IMED 1316 Web Page Design** 3.2.3
Instruction in web page design and related graphic design issues including mark-up languages, web sites, and browsers. End-of-Course Outcomes: Identify how the Internet functions with specific attention to the World Wide Web and file transfer; apply design techniques in the creation and optimization of graphics and other embedded elements; demonstrate the use of World Wide Web Consortium (W3C) formatting and layout standards; create, design, test and debug a Web site. Prerequisite: ITSC 1405 and COSC 1401 or ITSC 1409.
- ITCC 1301 Cisco Exploration I - Network Fundamentals** 3.1.7
A course introducing the architecture, structure, functions, components, and models of the Internet. Describes the use of OSI and TCP layered models to examine the nature and roles of protocols and services at the applications, network, data link, and physical layers. Covers the principles and structure of IP addressing and the fundamentals of Ethernet concepts, media, and operations. Build simple LAN topologies by applying basic principles of cabling; perform basic configurations of network devices, including routers and switches; and implementing IP addressing schemes. Prerequisite: instructor permission.
- ITCC 1304 Cisco Exploration II - Routing Protocols and Concepts** 3.1.7
This course describes the architecture, components, and operation of routers; and explains the principles of routing and routing protocols. Students analyze,

configure, verify, and troubleshoot the primary routing protocols RIPv1, RIPv2, EIGRP, and OSPF. Recognize and correct common routing issues and problems. Model and analyze routing processes. Prerequisite: ITCC 1301.

- ITCC 2308 Cisco Exploration III - LAN Switching and Wireless 3.1.7**
 This course helps students develop an in-depth understanding of how switches operate and are implemented in the LAN environment for small and large networks. Detailed explanations of LAN switch operations. VLAN routing and wireless network operations. Analyze, configure, verify, and troubleshoot VLANs, RSTP, VTP, and wireless networks. Campus network design and Layer 3 switching concepts are introduced. Prerequisite: ITCC 1304.
- ITCC 2310 Cisco Exploration IV - Accessing the WAN 3.1.7**
 This course explains the principles of traffic control and access control lists (ACLs) and provides an overview of the services and protocols at the data link layer for wide-area access. Describes user access technologies and devices and discover how to implement and configure Point-to-Point Protocol (PPP), Point-to-Point Protocol over Ethernet (PPPoE), DSL, and Frame Relay. WAN security concepts, tunneling, and VPN basics are introduced. Discuss the special network services required by converged applications and an introduction to quality of service (QoS). Prerequisite: ITCC 2308 or concurrent enrollment in ITCC 2308.
- ITNW 1337 Introduction to the Internet 3.2.3**
 Introduction to the Internet with emphasis on using the World Wide Web to locate, transfer, and publish information. Survey of emerging technologies on the Internet. Prerequisite: ITSC 1409.
- ITNW 1425 Fundamentals of Networking Technologies 4.3.4**
 Instruction in networking technologies and their implementation. Topics include OSI reference model, network protocols, transmission media, and networking hardware and software. End-of-Course-Outcomes: Identify and use network transmission media; explain the OSI model; recognize the primary network topologies/protocols, identify their characteristic, and determine which would be most appropriate for a proposed network; identify the functions of a network operating system and distinguish between centralized, client/serve, and peer-to-peer systems; and distinguish between Local Area Networks (LANs) and Wide Area Networks (WANs) and identify the components used to expand a LAN into a WAN.
- ITNW 1451 Fundamental of Wireless LANs 4.3.3**
 Designing, planning, implementing, operating, and troubleshooting wireless LANs (WLANs). Includes WLAN design, installation, and configuration; and WLAN security issues and vendor interoperability strategies. End-of-Course-Outcomes: Explain wireless technologies, topographies, and standards; design, install, configure, monitor, maintain, and troubleshoot wireless NetWorks; and implement wireless security using MAC filtering, Authentication, Authorization and 802.1x technologies.

- ITNW 1454 Implementing and Supporting Servers** 4.3.3
Implement, administer, and troubleshoot information systems that incorporate servers in a networked computing environment. End-of-Course-Outcomes: Configure peripherals and devices; set up servers, configure directory replication; manage licensing; create and manage system policies, and profiles; administer remote servers, and disk resources; create and share resources; implement fault-tolerance; configure servers for interoperability; install and configure Remote Access Service (RAS); and identify and monitor performance bottlenecks and resolve configuration problems.
- ITNW 2405 Network Administration** 4.3.3
Topics include network components, user accounts and groups, network file systems, file system security, and network printing. Describe the components of a local area network and their relationship; create and administer user accounts and groups; plan and set up network file systems; create effective file system security; and implement and administer network printing.
- ITNW 2413 Networking Hardware** 4.3.3
Maintain network hardware devices. Topics include network cables, servers, and workstations; network connectivity devices such as routers, hubs, bridges, gateways, repeaters, and uninterruptible power supplies, and other networking hardware devices. End-of-Course-Outcomes: Build network cables; identify and implement connectivity devices, select appropriate network power management devices; and determine the necessary computer hardware requirements for workstations and servers. Suggested Prerequisite: Fundamentals of Networking or equivalent work experience.
- ITSC 1301 Introduction to Computers** 3.3.0
Overview of computer information systems. Introduces computer hardware, software, procedures, and human resources. End-of-Course Outcomes: Identify the components of a computer system; use common applications; explain the impact of computers on society; identify computer careers; identify fundamental programming structures; identify ethical use of computers; and use basic operating system functions. Suggested Prerequisite: Keyboarding proficiency.
- ITSC 1364 Practicum - Computer Info Systems** 3.0.21
Practical, general workplace training supported by an individualized learning plan developed by the employer, college, and student. End-of-Course-Outcomes: As outlined in the learning plan, apply the theory, concepts, and skills involving specialized materials, tools, equipment, procedures, regulations, laws, and interactions within and among political, economic, environmental, social, and legal systems associated with the occupation and the business/industry and will demonstrate legal and ethical behavior, safety practices, interpersonal and teamwork skill, and appropriate written and verbal communication skills using the terminology of the occupation and the business/industry.

- ITSC 1405 Introduction to PC Operating Systems** 4.3.3
A study of personal computer operating systems. Topics include installation and configuration, file management, memory and storage management, control of peripheral devices, and use of utilities. End-of-Course Outcomes: Install, configure, and maintain the operating system; perform basic file management operations; organize and allocate primary and secondary storage; access and control peripheral devices; and run utilities.
- ITSC 1409 Integration of Software Application I** 4.3.3
Integration of applications from popular business productivity software suites. Instruction in embedding data, linking and combining documents using word processing, spreadsheets, databases, and/or presentation media software. End-of-Course Outcomes: Use word processing, spreadsheet, database, and/or presentation media software; apply integration techniques; and produce combined documents. Prerequisite: Keyboarding proficiency.
- ITSC 1425 Personal Computer Hardware** 4.3.3
A study of current personal computer hardware including personal computer assembly and upgrading, setup and configuration, and troubleshooting. End-of-Course Outcomes: Assemble/setup and upgrade personal computer systems; diagnose and isolate faulty components, optimize system performance; and install/connect peripherals. Prerequisite: ITSC 1405 and COSC 1401 or ITSC 1409.
- ITSC 2321 Integration of Software Application II** 3.2.3
Continued study of computer applications from business productivity software suites. Instruction in embedding data and linking and combining documents using word processing, spreadsheets, databases, and/or presentation media software. End-of-Course Outcomes: Use word processing, spreadsheet, database, and/or presentation media software; apply integration techniques to produce documents; and explain the process of integrating data between applications. Prerequisite: ITSC 1409 or COSC 1401.
- ITSC 2339 Personal Computer Help Desk Support** 3.2.3
Diagnosis and solution of user hardware and software related problems with on-the-job and/or simulated projects. End-of-Course Outcomes: Demonstrate rapport with users in problem-solving situation; analyze user problems and lead them through solutions; maintain problem logs, and formulate problem-solving methodologies. Prerequisite: ITSC 1405 and COSC 1401 or ITSC 1409.
- ITSW 1307 Introduction to Database** 3.2.3
Introduction to database theory and the practical applications of a database. End-of-Course Outcomes: Identify database terminology and concepts; plan, define, and design a database; design and generate tables, forms, and reports; and devise and process queries.

- ITSW 1310 Photoshop I** 3.2.3
Instruction in the utilization of presentation software to produce multimedia presentations. Graphics, text, sound, animation and/or video may be used in presentation development. End-of-Course-Outcomes: identify presentation media terminology and concepts; create presentations using text, visual and/or distribution on computers or other media; and modify sequence and slide master.
- ITSW 1404 Introduction to Spreadsheets** 4.3.3
Instruction in the concepts, procedures, and application of electronic spreadsheets. End-of-Course Outcomes: Define spreadsheet terminology and concepts; create formulas and functions; use formatting features; and generate charts, graphs, and reports. Prerequisite: ITSC 1409 or COSC 1401.
- ITSY 1442 Information Technology Security** 4.3.3
Instruction in security for network hardware, software, and data, including physical security; backup procedures; and relevant tools; encryption; and protection from viruses. End-of-Course-Outcomes: Discuss the physical security of file servers and other network components using NIST Guidelines and Best Practices; develop backup procedures to provide for data security; use network operating system features to implement network security; discuss the nature of computer and network threats and vulnerabilities and methods to prevent their effects; use relevant tools to provide for network security; and use of encryption techniques to protect network data.

Cosmetology

The Cosmetology Department offers students opportunities to prepare for an exciting and challenging career in the professional beauty service industry. The department provides specialty courses in manicuring and esthetician as well as the Operator, Nail Technician, and Cosmetology Instructor certificates. Through clinical settings, students obtain the skills needed to shampoo, cut, and style hair; and skills needed to provide chemical services, facial and scalp treatments, manicures and pedicures. After students complete the program and required clock hours, they are eligible to take the Texas Cosmetology Commission licensing examinations. Graduates from the program have many career opportunities, including owning your own salon, entering the fashion world as an expert makeup or stylist artist, becoming a beauty consultant, or traveling as a stylist for a cruise ship line.

CERTIFICATE IN COSMETOLOGY TRAINING PROGRAM

(42 Credit Hours)

First Semester

PSYC 1100 or EDUC 1100	Learning Frameworks
CSME 1401	Orientation to Cosmetology
CSME 1405	Fundamentals of Cosmetology
CSME 1310	Intro to Haircutting & Related Theory
CSME 2310	Intermediate Haircutting & Related Theory