

# COMPUTER APPLICATIONS • COMPUTER SCIENCE AND INFORMATION TECHNOLOGY

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

## 097C • CREATING WEB PAGES - COURSE 3

1.0 unit

Total Lecture 18 hours

Advisory: CA 010A, CA 070, CA 097A, CA 097B, Eligibility for ENGL 001A and READ 053

Acceptable for credit: California State University

Expand web pages creation skills! In this course create web pages and learn more advanced HTML features in a hands-on lab. Topics include: working with XHTML, JavaScript, and cookies. This course may also be offered via distance learning. *Pass/No Pass Option.*

## 098A • CREATING WEB PAGES USING XML - COURSE 1

1.0 unit

Total Lecture 18 hours

Advisory: CA 010A, CA 070, CA 097A, Eligibility for ENGL 001A and READ 053

Acceptable for credit: California State University

This course covers the concepts of building a web page using XML. Students work with XML tags that allow them to create a variety of document types. With XML, web pages can be easily customized. XML can handle data content more effectively and it has well-defined standards. This course may also be offered via distance learning. *Pass/No Pass Option.*

## 098B • WEB PAGES USING XML - COURSE 2

1.0 unit

Total Lecture 18 hours

Advisory: CA 010A, CA 070, CA 098A, Eligibility for ENGL 001A and READ 053

Acceptable for credit: California State University

Expand your knowledge of using XML in web pages! XML is used with the most popular applications – Microsoft Office and Oracle. In this course, create web pages and learn more advanced XML features in a hands-on lab. Topics include: working with cascading and computational style sheets, element groups and the document object model. This course may also be offered via distance learning. *Pass/No Pass Option.*

## 120 • CA HELP LAB

1.0 unit

Total Lecture 54 hours

Advisory: CA 010A, CA 052 and Concurrent enrollment in CA 033A, 046D, 062B, 081B, 084A, or 097A.

This lab provides additional assistance to students currently enrolled in a Computer Applications class. It is an open entry/open exit course. May be repeated three times. *Pass/No Pass Only.*

## COMPUTER SCIENCE AND INFORMATION TECHNOLOGY

DIVISION: Business and Technology  
 DEPARTMENT: Computer Science and Information Technology  
 DEAN: Mina Jahan  
 DIVISION CHAIR: Curtis Pembrook  
 DEPT CHAIR: Wael Abdeljabbar  
 PHONE: 408-855-5250  
 COUNSELING: 408-855-5030

## COMPUTER INFORMATION SYSTEMS (CIS)

The Computer Information System (CIS) program is designed to provide students with the knowledge and skills required in the computer information systems area. The program offers students the choices of pursuing an Associate of Science (A.S) Degree in Computer Information Systems, certificates in programming and system administration, transfer program to four year colleges and universities and updating skills in the ever changing technology area.

Student Learning Outcomes:

After taking the appropriate level of CIS classes, students will be able to

- Demonstrate the ability to analyze a problem, and identify and define the computing requirements appropriate to its solution;
- Apply software development techniques that use the correct syntax and semantics of a programming language to write the source code to implement and test/debug a specified design;
- Demonstrate the ability to use current techniques, skills, and tools necessary for computing practice.

Career Options:

- Computer Programmer
- Systems and Operations Analyst
- System Administrator
- Computer Technician
- Customer Technical Support
- Management of Information Systems

Some career options require more than two years of college study.

### Computer Information Systems - A.S. Degree

The Computer Information Systems Associate of Science program prepares the student for jobs in business and government as information technology professionals.

Core Curriculum Courses (Required):	Units
CIS 037A .....Introduction to C Programming .....	4.0
CIS 043 .....Software Development With Java .....	4.0
CIS 044 .....Introduction to Data Structures Using Java .....	4.0
<b>Plus two or more additional courses from the following electives (at least 8 units):</b>	
CIS 002 .....Visual Basic.NET .....	4.0
CIS 003 .....Advanced Visual Basic.NET .....	3.0
CIS 040 .....C++ Programming .....	4.0
CIS 041 .....Advanced C++ Programming .....	3.0
CIS 044A .....Perl Programming .....	4.0
CIS 044B .....Advanced Perl Programming .....	3.0
CIS 065 .....C# .NET Programming .....	4.0
CIS 066 .....Advanced C# .NET - Web Programming .....	3.0
CIS 086 .....Web Development with PHP and MySQL .....	3.0
CIS 045 .....Linux Essentials I .....	3.0
CIS 046 .....Linux Essentials II (Shell Programming) .....	3.0
<b>Total Program A.S. Degree Requirements:</b> .....	<b>20.0 - 22.0</b>

# COMPUTER SCIENCE AND INFORMATION TECHNOLOGY

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

## Linux System Administration - Certificate of Proficiency

The Linux System Administration Certificate prepares students for system administration positions with general knowledge of the Linux operating system, scripting and administration skills.

Certificate Requirement courses:	Units
CIS 045 .....Linux Essentials I .....	3.0
CIS 046 .....Linux Essentials II (Shell Programming) .....	3.0
CIS 047 .....Linux System Administration I .....	4.0
CIS 048 .....Advanced Linux System Administration .....	3.0
<b>Total Certificate Requirements:</b> .....	<b>13.0</b>

## C/C++ Programming - Certificate of Proficiency

The C/C++ Programming certificate prepares the student for jobs in business and government as information technology professionals specializing in C/C++ programming.

Certificate Requirement Courses:	Units
CIS 037A .....Introduction to C Programming .....	4.0
CIS 040 .....C++ Programming .....	4.0
<b>Plus two or more additional courses from the following electives (at least 6 units):</b>	<b>Units</b>
CIS 045 .....Linux Essentials I .....	3.0
CIS 046 .....Linux Essentials II (Shell Programming) .....	3.0
CIS 041 .....Advanced C++ Programming .....	3.0
CIS 037B .....Advanced C Programming .....	3.0
<b>Total Certificate Requirements:</b> .....	<b>14.0</b>

## .NET Programming - Certificate of Proficiency

The .NET Programming certificate prepares the student for jobs in business and government as information technology professionals specializing in .NET programming. (This is a revision of the former C/C++/Unix Programming Level II Certificate.)

Select one of the following combinations of courses:	Units
CIS 002 .....Visual Basic.NET .....	4.0
CIS 003 .....Advanced Visual Basic.NET .....	3.0
.....or	
CIS 065 .....C# .NET Programming .....	4.0
CIS 066 .....Advanced C# .NET - Web Programming .....	3.0
<b>Plus two or more additional courses from the following electives (at least 6 units):</b>	<b>Units</b>
CIS 037A .....Introduction to C Programming .....	4.0
CIS 043 .....Software Development With Java .....	4.0
CIS 086 .....Web Development with PHP and MySQL .....	3.0
CA 084A .....Introduction to Database and SQL .....	3.0
CIT 078 .....Microsoft Server Essentials 1 .....	4.0
<b>Total Certificate Requirements:</b> .....	<b>13.0-15.0</b>

## Computer Programming - Certificate of Proficiency

The Computer Programming certificate prepares the student for jobs in business and government as information technology professionals specializing in computer programming.

Choose a minimum of 12 units from the following:	Units
CIS 037A .....Introduction to C Programming .....	4.0
CIS 043 .....Software Development With Java .....	4.0
CIS 002 .....Visual Basic.NET .....	4.0
CIS 003 .....Advanced Visual Basic.NET .....	3.0
CIS 040 .....C++ Programming .....	4.0
CIS 041 .....Advanced C++ Programming .....	3.0
CIS 044A .....Perl Programming .....	4.0
CIS 044B .....Advanced Perl Programming .....	3.0
CIS 065 .....C# .NET Programming .....	4.0
CIS 066 .....Advanced C# .NET - Web Programming .....	3.0
CIS 086 .....Web Development with PHP and MySQL .....	3.0
CIS 045 .....Linux Essentials I .....	3.0
CIS 046 .....Linux Essentials II (Shell Programming) .....	3.0
<b>Total Certificate Requirements:</b> .....	<b>12.0</b>

## COMPUTER INFORMATION SYSTEMS (CIS)

NOTE: Maximum credit that can be transferred to UC is a total of six CIS courses.

### 002 • VISUAL BASIC.NET 4.0 units

Total Lecture 54 hours  
Advisory: MATH 903, Eligibility for ENGL 001A and READ 053  
Acceptable for credit: University of California, California State University

This course is an introduction course to computer programming using Visual Basic. This course introduces the fundamentals of computer hardware, software and programming, including algorithms, flowcharting, program design and coding. Students learn to design, code, and execute programs using Visual Basic programming language in a Microsoft Visual Studio development environment. The course covers Controls, Events, Strings, Input Output (I/O) Techniques, Subprograms/Functions, Decision Making and Looping Techniques, Arrays and Sequential Files. *Pass/No Pass Option.*

### 003 • ADVANCED VISUAL BASIC.NET 3.0 units

Total Lecture 36 hours; Total Lab 54 hours  
Advisory: CIS 002, Eligibility for ENGL 001A and READ 053  
Acceptable for credit: University of California, California State University

This course builds upon CIS 002, Visual Basic.net, to cover additional form controls and objects, exception handling and a review of text files. This course also includes an introduction to object-oriented programming (OOP) concepts of classes, objects and inheritance. This course also includes introduction to databases and programming for the Web. This course may be offered via distance learning. *Pass/No Pass Option.*

### 037A • INTRODUCTION TO C PROGRAMMING 4.0 units

Total Lecture 54 hours; Total Lab 54 hours  
Advisory: Eligibility for ENGL 001A and READ 053  
Acceptable for credit: University of California, California State University.

This course is an introduction to the concepts and methods of computer programming using C language. C is a powerful, low-level, general purpose programming language widely used in industry. This course may be offered via distance learning. *Pass/No Pass Option.*

### 040 • C++ Programming 4.0 units

Total Lecture 54 hours; Total Lab 54 hours  
Advisory: CIS 037A, Eligibility for ENGL 001A and READ 053  
Acceptable for credit: University of California, California State University

This is an introductory course in programming using Visual C++. Students learn to design, code, and execute programs using the Visual C++ programming language in a Microsoft Visual Studio development environment. This class includes object-oriented programming concepts and topics. This course may be offered via distance learning. *Pass/No Pass Option.*

### 041 • ADVANCED C++ Programming 3.0 units

Total Lecture 36 hours; Total Lab 54 hours  
Advisory: CIS 037A, Eligibility for ENGL 001A and READ 053  
Acceptable for credit: University of California, California State University

This course builds upon CIS 40, C++ Programming, to cover advanced topics in object-oriented programming, including inheritance, polymorphism and class libraries. Students learn the object oriented approach of building large scale software programs. This course may be offered via distance learning. *Pass/No Pass Option.*

### 043 • SOFTWARE DEVELOPMENT WITH JAVA 4.0 units

Total Lecture 54 hours; Total Lab 54 hours  
Advisory: CIS 037A and CIS 054B  
Corequisite: CIS 183  
Acceptable for credit: University of California, California State University

This course is an introduction to the concepts and methods of computer programming with an emphasis on OOP, (Object-Oriented Programming). Java programming language concepts include introduction to objects and classes, designing classes, data types, iterations, loops, testing and debugging techniques. This course also includes applets, GUI (graphical user interface), arrays lists, arrays, streams and exception handling. This course may be offered via distance learning. *Pass/No Pass Option.*

# COMPUTER SCIENCE AND INFORMATION TECHNOLOGY

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## **044 • INTRODUCTION TO DATA STRUCTURES USING JAVA**

**4.0 units**

*Total Lecture 54 hours; Total Lab 54 hours*

*Advisory: CIS 043 and MATH 003A, Eligibility for ENGL 001A and READ 053  
Acceptable for credit: University of California, California State University*

This course is an advanced course in Java Programming Language. It covers basic data structures such as stacks, lists, dynamic arrays, trees, and the algorithms of their implementation. Other topics introduced are the definition and terminology of graphs, internal and external sorting, merging, searching, Hashing, Big-O notation, and Standard collection of Classes. This course may be offered via distance learning. Pass/No Pass Option.

## **044A • INTRODUCTION TO PERL PROGRAMMING**

**4.0 units**

*Total Lecture 54 hours; Total Lab 54 hours*

*Advisory: MATH 903 or MATH 903M, Eligibility for ENGL 001A and READ 053  
Acceptable for credit: University of California, California State University*

This is an introductory course in Perl programming. This course includes instruction on the basic features of Perl scripting/programming. It covers regular expressions, operators, arrays, functions, file handlers, system interface and exception handling. Pass/No Pass Option.

## **044B • ADVANCED PERL PROGRAMMING**

**3.0 units**

*Total Lecture 36 hours; Total Lab 54 hours*

*Advisory: CIS 044A; Eligibility for ENGL 001A and READ 053  
Acceptable for credit: University of California, California State University*

This course builds upon CIS 44A, Perl programming, to cover Perl library, object-oriented Perl, creating classes and objects, using inheritance and polymorphism, CGI, networking, and interfacing with OS. This course also includes references and databases. This course may be offered via distance learning. Pass/No Pass Option.

## **045 • LINUX ESSENTIALS I**

**3.0 units**

*Total Lecture 45 hours; Total Lab 27*

*Advisory: Eligibility for ENGL 001A and READ 053  
Acceptable for credit: California State University*

This is an introductory course in the Linux operating system. Students learn the basic Linux commands and utilities, including files, editors and shell scripting. This course may be offered via distance learning. Pass/No Pass Option.

## **045A • INTRODUCTION TO UNIX OPERATING SYSTEM**

**1.0 unit**

*Total Lecture 18 hours*

*Advisory: MATH 903 and CIS 054A  
Acceptable for credit: California State University*

An introduction to the UNIX operating system, its structure and capabilities. UNIX is one of the most recently developed and most popular operating systems. Pass/No Pass Option.

## **045B • UNIX/LINUX OPERATING SYSTEM**

**3.0 units**

*Total Lecture 54 hours*

*Advisory: Eligibility for ENGL 001A and READ 053  
Prerequisite: CIS 037A or equivalent, CIS 045A or equivalent, MATH 000C or equivalent  
Acceptable for credit: University of California, California State University*

This is an introductory course in UNIX shell programming using different shell programs available in AT&T UNIX 5.0 system. The course will include use of Bourne shell and C-shell programming theory and concepts. These concepts include interpretation of different quote characters, shell variables, decision making commands, and looping mechanism. Students will also learn passing arguments to shell scripts, reading data from terminal/file, I/O redirection and subshells and using special UNIX commands. This course will also include use of restricted shell "rsh" and introduction to Korn shell commands. Pass/No Pass Option.

## **046 • LINUX ESSENTIALS II (SHELL PROGRAMMING)**

**3.0 units**

*Total Lecture 45 hours; Total Lab 27*

*Advisory: CIS 045, Eligibility for ENGL 001A and READ 053  
Acceptable for credit: California State University*

This course builds upon CIS 045, Linux Essentials I, to cover shell and scripting in depth. Students learn to program in Bourne Again Shell, including variables, expressions, control structure, files and subroutines. This course also includes networking, internet and Perl scripting. This course may be offered via distance learning. Pass/No Pass Option.

## **046A • UNIX SHELL PROGRAMMING**

**3.0 units**

*Total Lecture 54 hours*

*Advisory: MATH 903  
Prerequisite: CIS 045B  
Corequisite: CIS 181A*

*Acceptable for credit: University of California, California State University*

This is a beginning course in UNIX Shell Programming using different shell programs available with the AT&T UNIX 5.0 operating system. The course will include use of Bourne Shell and C-Shell Programming theory and concepts. These concepts include interpretation of different quote characters, shell variables, decision making commands, and looping mechanism. Students will also learn passing arguments to shell scripts, terminal/file I/O, subshells and using special UNIX commands. Additionally, this course will also include use of restricted shell "rsh" and introduction to Korn shell commands. Pass/No Pass Option.

## **047 • LINUX SYSTEM ADMINISTRATION I**

**4.0 units**

*Total Lecture 54 hours; Total Lab 54 hours*

*Advisory: CIS 045, Eligibility for ENGL 001A and READ 053  
Acceptable for credit: California State University*

This is an introductory course in Linux system administration. Students learn hands-on skills for Linux administration, including system initialization, file system management, user and services administration and network configuration. This course may be offered via distance learning. Pass/No Pass Option.

## **047A • INTRO TO UNIX SYSTEM ADMINISTRATION**

**3.0 units**

*Total Lecture 45 hours; Total Lab 27 hours*

*Advisory: MATH 903  
Prerequisite: CIS 046A  
Acceptable for credit: California State University*

This is an introductory course in the UNIX system administration series. This course includes review of basic UNIX commands, bringing up/shutting down the system and monitoring processes using administration tools. The course also includes mounting and unmounting the file system. This course utilizes UNIX tools to administer users accounts and groups and administer devices, printers and networking services. This course includes planning, setting up and administering mail services, customizing send mail configuration files, use of shell programming, UNIX tools to administer hardware and troubleshooting file access problems. Pass/No Pass Option.

## **047B • ADVANCED UNIX SYSTEM ADMINISTRATION**

**3.0 units**

*Total Lecture 45 hours; Total Lab 27 hours*

*Advisory: MATH 903  
Prerequisite: CIS 047A  
Acceptable for credit: California State University*

This is an advanced course in the UNIX system administration series. This course includes setup, configuration, maintenance and performance issues of Domain Name Servers (DNS), Network File System (NFS), Network Information Service (NIS) and Network Information Service Plus (NIS+). DNS, NFS, NIS, NIS+ are configured on a networked UNIX System. The course also includes configuration, setting up and mounting Berkeley Internet Name Domain (BIND) and troubleshooting DNS and BIND. Shell programming with nslookup and C programming with Resolver Library Routines is also included. The course also includes the use of Service Access Facility (SAF), using SAF commands, setting up modems, character terminals and printing services, installing and managing application software. Pass/No Pass Option.

## **048 • ADVANCED LINUX SYSTEM ADMINISTRATION**

**3.0 units**

*Total Lecture 36 hours; Total Lab 54 hours*

*Advisory: CIS 047  
Acceptable for credit: California State University*

This is an advanced course in the Linux system administration series. Students learn to set-up and configure Linux based servers and networks. The course covers file systems, file sharing, mail server, LDAP, DNS, fire wall, web server and network security. This course may be offered via distance learning. Pass/No Pass Option.

# COMPUTER SCIENCE AND INFORMATION TECHNOLOGY

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

## 065 • C# .NET PROGRAMMING

4.0 units

Total Lecture 54 hours, Total Lab 54 hours  
Advisory: MATH 903 or MATH 903M, Eligibility for ENGL 001A and READ 053  
Acceptable for credit: California State University

This course is an introductory course to computer programming using C#. This course introduces the fundamentals of computer hardware, software and programming, including algorithms, flowcharting, program design and coding. Students learn to design, code, and execute programs using C# programming language in a Microsoft Visual Studio development environment. This course may be offered via distance learning. *Pass/No Pass Option.*

## 066 • ADVANCED C# .NET - WEB PROGRAMMING

3.0 units

Total Lecture 36 hours, Total Lab 54 hours  
Advisory: CIS 065, Eligibility for ENGL 001A and READ 053  
Acceptable for credit: California State University

This course builds upon CIS 65, C#.NET programming, to cover web-based programming including graphical user interfaces with Web forms, ASP.NET and database access. Students learn to design, code, and execute programs using Visual C# programming language in a Microsoft Visual Studio development environment. This course may be offered via distance learning. *Pass/No Pass Option.*

## 086 • WEB DEVELOPMENT WITH PHP AND MYSQL

3.0 units

Total Lecture 54 hours  
Advisory: CA 097A, Eligibility for ENGL 001A and READ 053  
Acceptable for credit: University of California, California State University

Learn to create dynamic web applications! This course includes web page set up using HTML and Javascript, basic PHP programming elements, MySQL database basics and how to create a database driven web application using PHP and MySQL. This course is cross listed as CA 086. *Pass/No Pass Option.*

## 171A • COMPUTER LAB: INTRODUCTION PROGRAMMING IN PASCAL

1.0 unit

Total Lab 54 hours  
Advisory: MATH 903  
Corequisite: CIS 004A  
Acceptable for credit: University of California, California State University

This course is designed for students writing programs in PASCAL and using the Mission Computer lab for PASCAL programming. It is required for CIS 4A students using the computer lab. *Pass/No Pass Option.*

## COMPUTER INFORMATION TECHNOLOGY (CIT)

Student Learning Outcomes:

After taking the appropriate level of CIT classes, students will be able to

- Demonstrate confidence to work independently to setup and maintain computer and networking systems.
- Demonstrate techniques to anticipate and prepare for a variety of unknown situations that might impact the operation of a computer system or network.
- Demonstrate understanding of how computers communicate with each other and the methods employed to assure that the communication is reliable.
- Demonstrate attitudes that are beneficial to maintaining the security of a computer/network system and assisting people to use that system or network.
- Demonstrate an appreciation of the IT career field and the need to be lifelong learners.

Career Options:

- System Administrator
- Computer Technician
- Customer Technical Support
- Network Engineer

Some career options require more than two years of college study.

## Computer Network Technology - AS Degree

This program prepares students to design, administer, maintain, and troubleshoot networks of different sizes. Skills gained include specification preparation, network management, network design, equipment and system sales, and software development. Laboratory courses provide students with hands-on experience to demonstrate the principles of enterprise networking. Courses provide learning opportunities for students new to the field, as well as those who are experienced professionals. Specialized courses are also among the optional electives in this program, available to help students prepare for Cisco Certified Network Associate (CCNA), Cisco Certified Network Professional (CCNP), Microsoft Certified Information Technology Professional (MCITP), Server Administrator and Enterprise Administrator certification exams.

Core Curriculum Courses (Required):	Units
CIT 012 .....Introduction to Networking .....	4.0
CIT 021 .....Cisco Network Fundamentals (Cisco-1) .....	4.0
CIT 022 .....Routing Protocols and Concepts (Cisco-2) .....	4.0
CIT 078 .....Microsoft Server Essentials 1 .....	4.0

Plus two or more additional courses from the following electives (at least 8 units):

	Units
CIT 011 .....Desktop Operating Systems (A+, Part 1) .....	4.0
CIT 014 .....Introduction to Computer Hardware (A+, Part 2) .....	4.0
CIT 016 .....IT Security & Ethical Hacking .....	4.0
CIT 023 .....LAN Switching and Wireless (Cisco-3) .....	4.0
CIT 024 .....Accessing the WAN (Cisco-4) .....	4.0
CIT 079 .....Microsoft Server Essentials 2 .....	4.0
<b>Total Certificate Requirements: .....</b>	<b>16.0</b>

## Cisco Certified Network Associate (CCNA) Certificate of Achievement

The Cisco Certified Network Associate (CCNA) program is designed to provide the knowledge and skills needed to install, operate and troubleshoot a small to medium size enterprise branch network, which includes connecting to multiple WANs, basic security measures, and wireless extension of the network.

This program prepares students for the globally-recognized Cisco certification CCNA.

Students must complete all courses.	Units
CIT 021 .....Cisco Network Fundamentals (Cisco-1) .....	4.0
CIT 022 .....Routing Protocols and Concepts (Cisco-2) .....	4.0
CIT 023 .....LAN Switching and Wireless (Cisco-3) .....	f4.0
CIT 024 .....Accessing the WAN (Cisco-4) .....	4.0
<b>Total Certificate Requirements: .....</b>	<b>16.0</b>

## Cisco Certified Network Professional (CCNP) Certificate of Achievement

The CCNP Certificate equips students with the knowledge and skills needed to plan, implement, secure, maintain, and troubleshoot converged enterprise networks. The CCNP curriculum is designed to reflect the job skills and responsibilities that are associated with professional-level job roles such as network engineer, systems engineer, network support engineer, network administrator, network consultant, and system integrator.

The CCNP certificate consists of three courses: CCNP Route: Implementing IP Routing, CCNP Switch: Implementing IP Switching, and CCNP Tshoot: Maintaining and Troubleshooting IP Networks.

Students must complete all courses	Units
CIT 025 ..... Cisco 5 - Implementing Cisco IP Routing .....	4.0
CIT 026 ..... Cisco 6 - Implementing Cisco IP Switched Networks .....	4.0
CIT 027 ..... Cisco 7 - Troubleshooting Cisco IP Switched Networks .....	4.0
<b>Total Program Certificate Requirements:.....</b>	<b>12.0</b>

# COMPUTER SCIENCE AND INFORMATION TECHNOLOGY

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## Certified Network Engineer (CNE) Certificate of Achievement

The Certified Novell Engineer (CNE) track is designed to fully prepare students to the install, configure, and design Novell networks. The track focuses on Novell products, but also includes support courses that are not vendor specific and better prepares the student to actually work in the field. Completion of the track prepares students to take and pass the Novell Certification exams.

Core Curriculum Courses (Required)	Units
CIT 011 .....Desktop Operating Systems.....	4.0
CIT 012 .....Network Hardware & Software.....	4.0
CIT 014 .....Introduction to Computer Hardware.....	4.0
CIT 060 .....Netware Administration.....	3.0
CIT 062 .....Netware Advanced Administration.....	2.0
CIT 063 .....NDS Design and Implementation.....	3.0
CIT 064 .....Service and Support.....	3.0
CIT 067 .....Integrating NetWare with Windows O.S.....	3.0
CIT 160 .....Netware Administration Lab.....	1.0
CIT 162 .....Netware Advanced Administration Lab.....	1.0
COMM 015 .....Career Communications.....	3.0
<b>Total Program Certificate Requirements:</b> .....	<b>31.0</b>

## Microsoft Windows Server Certificate of Proficiency

The Microsoft Windows Server certificate focuses on the latest Microsoft Windows Server administration skills, such as: planning server roles; maintaining server security; planning data storage, network load balancing, and server backups; managing software deployment and versioning; monitoring IPv6, server performance and capacity, and AD replication; scheduling server deployments; and designing a rollback contingency plan.

Students must complete the following courses:	Units
CIT 078 .....Microsoft Server Essentials 1.....	4.0
CIT 079 .....Microsoft Server Essentials 2.....	4.0
CIT 016 .....IT Security & Ethical Hacking.....	4.0
<b>Total Certificate Requirements:</b> .....	<b>12.0</b>

## Microsoft Certified Database Administration (MCDBA) Certificate of Achievement

The Microsoft Certified Database Administrator (MCDBA) track is designed to fully prepare students to install, configure and administer Microsoft database related products. The track focuses on Microsoft, but also includes support courses that are not vendor specific and better prepares the student to actually work in the field. Completion of the track prepares students to take and pass the Microsoft series of Certification exams.

Core Curriculum Courses (Required)	Units
CIT 041 .....Microsoft OS Essentials.....	3.0
CIT 043 .....Microsoft Server.....	3.0
CIT 044 .....Supporting MS Windows Network Infrastructure.....	3.0
CIT 049 .....System Administration for Microsoft SQL Server.....	3.0
CIT 051A.....Designing and Implementing Databases with Microsoft® SQL Server.....	3.0
CIT 052A.....Designing and Implementing a Data Warehouse Using MS SQL Server.....	3.0
CIT 141 .....Microsoft OS Essentials Lab.....	1.0
CIT 143 .....Microsoft Server Lab.....	1.0
COMM 015 .....Career Communications.....	3.0

**Plus choose one course from the following:**

CIT 107 .....Distributed Applications with Microsoft Visual C++.....	3.0
CIT 108 .....Distributed Applications w/ Microsoft Visual Basic.....	3.0
<b>Total Program Certificate Requirements:</b> .....	<b>26.0</b>

## Oracle Database Administration (DBA) Certificate of Achievement

The Oracle Database Administrator (DBA) track is designed to fully prepare students to install, configure and administer Oracle database related products. The track focuses on Oracle, but also includes support courses that are not vendor specific and better prepares the student to actually work in the field. Completion of the track prepares students to take and pass the Oracle series of Certification exams.

Core Curriculum Courses (Required)	Units
CA 084A.....Introduction to Oracle: SQL and PL/SQL.....	3.0
OR.....	
CIT 049 .....System Administration for Microsoft SQL Server.....	3.0
CIT 082 .....DBA: Architecture and Admin.....	3.0
CIT 084 .....DBA: Backup and Recovery.....	3.0
CIT 086 .....DBA: Performance Tuning.....	3.0
CIT 088 .....DBA: Network Administration.....	3.0
CIT 182 .....DBA: Architecture and Admin Lab.....	1.0
CIT 184 .....DBA: Backup and Recovery Lab.....	1.0
CIT 186 .....DBA: Performance Tuning Lab.....	1.0
CIT 188 .....DBA: Network Administration Lab.....	1.0
COMM 015 .....Career Communications.....	3.0

## Plus choose one course from the following:

CIT 107 .....Distributed Applications with MS Visual C++.....	3.0
CIT 108 .....Distributed Applications with MS Visual Basic.....	3.0
<b>Total Program Certificate Requirements:</b> .....	<b>25.0</b>

## COMPUTER INFORMATION TECHNOLOGY (CIT)

### 011 • DESKTOP OPERATING SYSTEMS (A+ PART I) 4.0 units

Total Lecture 54 hours, Total Lab 54 hours  
Advisory: MATH 903, Eligibility for ENGL 001A and READ 053  
Acceptable for credit: California State University

This is the first of a two-course program designed to prepare students for the A+ certification exam. The course provides a complete, step-by-step approach to learning the fundamentals of supporting and troubleshooting computer software. This course uses CompTIA A+ training materials to equip the student with the knowledge and skills necessary to become proficient in core computer principles for the software component. This course is beneficial for any postal maintenance or information systems personnel involved with the installation, upgrade, and troubleshooting of microcomputer (PC) software. This course may be offered via distance learning. *Pass/No Pass Option.*

### 012 • INTRODUCTION TO NETWORKING 4.0 units

Total Lecture 54 hours, Total Lab 54 hours  
Advisory: Eligibility for ENGL 001A and READ 05  
Acceptable for credit: California State University

This course is an introduction to networking using the latest operating systems, security techniques, and wireless standards, plus step-by-step instructions for installing and configuring network devices. It also introduces the fundamental building blocks that form a modern network, such as protocols, topologies, hardware, and network operating systems. Further, it provides in-depth coverage of the most important concepts in networking, such as TCP/IP, Ethernet, wireless transmission and security. *Materials Fee. This course may be offered via distance learning. Pass/No Pass Option.*

### 014 • INTRODUCTION TO COMPUTER HARDWARE (A+ PART II) 4.0 units

Total Lecture 54 hours, Total Lab 54 hours  
Acceptable for credit: California State University

This is the second of a two-course program designed to prepare students for the A+ certification exam. This course will teach students to install, configure, and upgrade microcomputer modules and peripherals. Students will also learn to diagnose and troubleshoot common module problems and system malfunctions. Students will also learn specific terminology, facts, ways and means of dealing with classifications, categories and principles of motherboards, processors, and memory in microcomputer systems. *Pass/No Pass Option.*

# COMPUTER SCIENCE AND INFORMATION TECHNOLOGY

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

## 016 • IT SECURITY & ETHICAL HACKING

4.0 units

Total Lecture 54 hours, Total Lab 54 hours  
Advisory: Eligibility for ENGL 001A and READ 053  
Acceptable for credit: California State University

This course is an introduction to IT security and ethical hacking using the latest operating systems, security techniques, and wireless standards. It also covers the fundamentals of system security, network infrastructure, access control, assessments and audits, cryptography, and organizational security. Student will gain hands-on experience with various ethical hacking methods and techniques. This course may be offered via distance learning. Pass/No Pass Option.

## 021 • CISCO NETWORK FUNDAMENTALS (CISCO-1)

4.0 units

Total Lecture 54 hours, Total Lab 54 hours  
Advisory: Eligibility for ENGL 001A and READ 053  
Acceptable for credit: California State University

This course is the first of four courses leading to the Cisco Certified Network Associate (CCNA) designation. This course introduces the architecture, structure, functions, components, and models of the Internet and other computer networks. It uses the OSI and TCP layered models to examine the nature and roles of protocols and services at the application, network, data link, and physical layers. The principles and structure of IP addressing and the fundamentals of Ethernet concepts, media, and operations are introduced to provide a foundation for the curriculum. Labs use a "model Internet" to allow students to analyze real data without affecting production networks. Packet Tracer (PT) activities help students analyze protocol and network operation and build small networks in a simulated environment. At the end of the course, students build simple LAN topologies by applying basic principles of cabling, performing basic configurations of network devices, including routers and switches, and implementing IP addressing schemes. This course may also be offered via distance learning. Materials Fee. Pass/No Pass Option.

## 022 • ROUTING PROTOCOLS AND CONCEPTS (CISCO - 2)

4.0 units

Total Lecture 54 hours, Total Lab 54 hours  
Advisory: Eligibility for ENGL 001A and READ 053  
Prerequisite: CIT 021  
Acceptable for credit: California State University

This course is the second of four courses leading to the CCNA designation. It describes the architecture, components, and operation of CISCO routers, and explains the principles of routing and routing protocols. Students analyze, configure, verify, and troubleshoot the primary routing protocols (CISCO) RIPv1, RIPv2, EIGRP, and OSPF. By the end of this course, students recognize and correct common routing issues and problems. Students participate in procedural labs, and then present basic configuration, implementation, and troubleshooting. Packet Tracer (PT) activities reinforce new concepts and allow students to model and analyze routing processes that may be difficult to visualize or understand. This course may be offered via distance learning. Pass/No Pass Option.

## 023 • LAN SWITCHING AND WIRELESS (CISCO-3)

4.0 units

Total Lecture 54 hours, Total Lab 54 hours  
Advisory: Eligibility for ENGL 001A and READ 053  
Prerequisite: CIT 022  
Acceptable for credit: California State University

This course is the third of four courses leading to the CCNA designation. This course provides a comprehensive, theoretical, and practical approach to learning the technologies and protocols needed to design and implement a converged switched network. Students learn about the hierarchical network design model and how to select devices for each layer. Students learn how to configure a switch for basic functionality and how to implement Virtual LANs, VTP, and Inter-VLAN routing in a converged network. The different implementations of Spanning Tree Protocol in a converged network are presented, and students develop the knowledge and skills necessary to implement a WLAN in a small-to-medium network. This course may be offered via distance learning. Pass/No Pass Option.

## 024 • ACCESSING THE WAN (CISCO - 4)

4.0 units

Total Lecture 54 hours, Total Lab 54 hours  
Advisory: Eligibility for ENGL 001A and READ 053  
Prerequisite: CIT 023  
Acceptable for credit: California State University

This course is the fourth of four courses leading to the CCNA designation. This course discusses the WAN technologies and network services required by converged applications in Enterprise networks. The course uses the Cisco Network Architecture to introduce integrated network services and explains how to select the appropriate devices and technologies to meet network requirements. Students learn how to implement and configure common data link protocols and how to apply WAN security concepts, principles of traffic, access control, and addressing services. Finally, students learn how to detect, troubleshoot, and correct common enterprise network implementation issues. This course may also be offered via distance learning. Pass/No Pass Option.

## 025 • IMPLEMENTING CISCO IP ROUTING

4.0 units

Total Lecture 54 hours, Total Lab 54 hours  
Advisory: Eligibility for ENGL 001A and READ 053  
Prerequisite: CIT 024  
Acceptable for credit: California State University

This course teaches students how to implement, monitor, and maintain routing services in an enterprise network. Students will learn how to plan, configure, and verify the implementation of complex enterprise LAN and WAN routing solutions, using a range of routing protocols in IPv4 and IPv6 environments. The course also covers the configuration of secure routing solutions to support branch offices and mobile workers. Comprehensive labs emphasize hands-on learning and practice to reinforce configuration skills. This course may be offered via distance learning. Pass/No Pass Option.

## 026 • IMPLEMENTING CISCO IP SWITCHED NETWORKS

4.0 units

Total Lecture 54 hours, Total Lab 54 hours  
Advisory: Eligibility for ENGL 001A and READ 053  
Prerequisite: CIT 024  
Acceptable for credit: California State University

This course teaches students how to implement, monitor, and maintain switching in converged enterprise campus networks. Students learn how to plan, configure, and verify the implementation of complex enterprise switching solutions. The course also covers the secure integration of VLANs, WLANs, voice, and video into campus networks. Comprehensive labs emphasize hands-on learning and practice to reinforce configuration skills. This course may be offered via distance learning. Pass/No Pass Option.

## 027 • TROUBLESHOOTING CISCO IP SWITCHED NETWORKS

4.0 units

Total Lecture 54 hours, Total Lab 54 hours  
Advisory: Eligibility for ENGL 001A and READ 053  
Prerequisite: CIT 024  
Acceptable for credit: California State University

This course teaches students how to monitor and maintain complex, enterprise routed and switched IP networks. Skills learned include the planning and execution of regular network maintenance, as well as support and troubleshooting using technology-based processes and best practices, in a systematic and ITIL-compliant approach. Extensive labs emphasize hands-on learning and practice to reinforce troubleshooting techniques. This course may be offered via distance learning. Pass/No Pass Option.

## 028 • INTERNETWORKING TROUBLESHOOTING CISCO 8

3.0 units

Total Lecture 45 hours, Total Lab 27 hours  
Prerequisite: CIT 025  
Acceptable for credit: California State University

This course is designed to provide students with classroom and laboratory experience in current and emerging networking technology that will prepare them for the Cisco Certified Networking Professional (CCNP) exam: Cisco Internetwork Troubleshooting. Instruction includes troubleshooting methodology, network documentation, and debug. Pass/No Pass Option.

# COMPUTER SCIENCE AND INFORMATION TECHNOLOGY

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## 029 • CISCO SECURITY

4.0 units

Total Lecture 54 hours, Total Lab 54 hours

Prerequisite: CIT 024

Advisory: Eligibility for ENGL 001A and READ 053 Acceptable for credit: California State University

This course provides a next step for individuals who want to enhance their CCNA-level skill set and help meet the growing demand for network security professionals. The curriculum provides an introduction to the core security concepts and skills needed for the installation, troubleshooting, and monitoring of network devices to maintain the integrity, confidentiality, and availability of data and devices. CCNA Security helps prepare students for entry-level security career opportunities and the globally recognized Cisco CCNA Security certification. This course includes a hands-on, career-oriented e-learning solution with an emphasis on practical experience to help students develop specialized security skills, along with critical thinking and complex problem solving skills. This course may be offered via distance learning. *Pass/No Pass Option.*

## 041 • MICROSOFT OS ESSENTIALS

3.0 units

Total Lecture 54 hours

Advisory: CIS 054B

Corequisite: CIT 141

Acceptable for credit: California State University

The goal of this course is to provide individuals who are new to Microsoft Windows 2000 with the knowledge necessary to understand and identify the tasks involved in supporting Windows 2000 Networks. This is an introductory course designed to provide knowledge of user accounts, Windows 2000 groups and group scopes, permissions, security, Active Directory terminology, optimizing IP address allocation, Windows 2000 utilities, and Web services. *Pass/No Pass Option.*

## 043 • MICROSOFT SERVER

3.0 units

Total Lecture 54 hours

Prerequisite: CIT 041

Corequisite: CIT 143

Acceptable for credit: California State University

Students will learn to install and configure Microsoft Windows 2000 Professional on stand-alone computers and on client computers that are part of a workgroup or a domain. In addition, this course provides the skills and knowledge necessary to install and configure Windows 2000 Server to create file, print, and Terminal servers. *Pass/No Pass Option.*

## 044 • SUPPORTING MS 2000 NETWORK INFRASTRUCTURE

3.0 units

Total Lecture 36 hours, Total Lab 54 hours

Prerequisite: CIT 041

Acceptable for credit: California State University

Students will learn to install, configure, and administer Microsoft Windows 2000 Active Directory services. The course also focuses on implementing Group Policy and understanding the Group Policy tasks required to centrally manage users and computers. Students will use Group Policies to configure and manage the user desktop environment, to configure and manage software, and to implement and manage security settings. Students will install and manage Windows 2000 Domains and Domain Controllers through Active Directory. *Pass/No Pass Option.*

## 045 • IMPLEMENTING AND ADMINISTERING MS DIRECTORY SERVICES

3.0 units

Total Lecture 36 hours, Total Lab 54 hours

Advisory: CIS 054B

Prerequisite: CIT 043

Acceptable for credit: California State University

Students will learn the knowledge and skills necessary to design a Microsoft Windows directory services infrastructure in an enterprise network. At the end of the course, students will be able to describe guidelines for gathering business and administrative information from an organization, and explain how an architect uses that information to design an Active Directory structure for an enterprise; design an Active Directory naming strategy; develop a plan to secure and delegate administrative authority over Active Directory objects based on the administrative model of an organization. *Pass/No Pass Option.*

## 046 • DESIGNING A SECURE WINDOWS 2000 NETWORK

3.0 units

Total Lecture 45 hours, Total Lab 27 hours

Advisory: CIS 054B

Prerequisite: CIT 044

Acceptable for credit: California State University

Students will learn to design a security framework for small, medium, and enterprise networks using Microsoft Windows 2000 technologies. Students will learn how to provide secure access to local network users, to remote users and remote offices, between private and public networks and provide secure access to partners. Group Policy, site topology, Virtual Private Networks (VPNs), e-commerce, printer security, and security for non-Microsoft clients are also taught in the course. *Pass/No Pass Option.*

## 049 • SYSTEMS ADMINISTRATION FOR MS SQL/SERVER

3.0 units

Total Lecture 36 hours, Total Lab 54 hours

Prerequisite: CIT 041

Acceptable for credit: California State University

This course provides students with the knowledge and technical skills required to install, configure, administer, and troubleshoot the client/server database management system of Microsoft SQL Server. The student will also learn to manage files and databases; choose and configure a login security method; plan and implement database permissions; secure SQL Server in an enterprise network; perform and automate administrative tasks; create custom administrative tools; monitor and optimize SQL Server performance; and replicate data from one SQL Server to another. *Pass/No Pass Option.*

## 051A • DESIGNING AND IMPLEMENTING DATABASES WITH MS SQL SERVER

3.0 units

Total Lecture 45 hours, Total Lab 27 hours

Prerequisite: CIT 043

Acceptable for credit: California State University

This course provides students with the knowledge and technical skills required to implement a database solution with Microsoft SQL Server client/server database management system. The student will also learn various elements of the Transact-SQL language; how to configure the data storage architecture of SQL Server; and how to create and manage files, file groups, databases, tables, and transaction logs. At the conclusion of the course, the student will be able to enforce data integrity; create and maintain indexes; write queries that retrieve and modify data using joins and sub queries; and write queries that summarize data. Student will also manage locking options and transactions to ensure data concurrency and recoverability and design views, triggers, and stored procedures. *Pass/No Pass Option.*

## 052A • DESIGNING AND IMPLEMENTING DATA WAREHOUSE USING MS SQL SERVER

3.0 units

Total Lecture 45 hours, Total Lab 27 hours

Advisory: CIS 054B

Prerequisite: CIT 043

Acceptable for credit: California State University

This course provides students with the knowledge and skills required to plan, implement, and maintain a data warehouse using Microsoft SQL Server client/server database management system. At the conclusion of the course, students will be able to design a data warehousing system, and implement a database designed with a star schema in SQL Server. The student will also gather data from primary data sources, transform it, and place it in a SQL Server staging database; create a cube using online analytical processing (OLAP) services; analyze cube data using existing client applications; query cubes using multidimensional expressions (MDX); build custom OLAP clients using Microsoft ActiveX Data Objects (Multidimensional) (ADO MD), Object Linking and Embedding (OLE) DB for OLAP, and Decision Support Objects (DSO); and query warehouse data using Microsoft English Query. *Pass/No Pass Option.*

# COMPUTER SCIENCE AND INFORMATION TECHNOLOGY

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

## 055 • IMPLEMENTING AND SUPPORTING MICROSOFT PROXY

3.0 units

Total Lecture 45 hours, Total Lab 27 hours

Advisory: CIS 054B

Prerequisite: CIT 044

Acceptable for credit: California State University

Students will learn to design, install, configure and troubleshoot Proxy Server. The course covers Proxy architecture, methods of controlling Internet access, using Microsoft Management Console to administer Proxy Server. The student will also learn to configure the cache, use Performance Monitor to gather Proxy Server performance statistics, and implement methods for improving performance. This course also covers Web publishing; reverse hosting and reverse proxy, hierarchical and distributed arrays, and packet filtering. *Pass/No Pass Option.*

## 057A • IMPLEMENTING AND SUPPORTING MS EXCHANGE SERVICES

4.0 units

Total Lecture 54 hours, Total Lab 54 hours

Advisory: CIS 054B

Prerequisite: CIT 043

Acceptable for credit: California State University

This course provides students with the knowledge and skills required to deploy and administer/support Microsoft Exchange Server. This course covers use of Exchange Server to create and manage recipient objects and maintain an existing Exchange Server organization. Students will also learn to design and implement a new organization; create and manage public folders; perform basic backup procedures; monitor server performance and configure link monitors between connected sites; and manage electronic forms in an organization. *Pass/No Pass Option.*

## 057B • INSTALLING, CONFIGURING AND ADMINISTERING MS EXCHANGE SERVICES

4.0 units

Total Lecture 54 hours, Total Lab 54 hours

Advisory: CIS 054B

Prerequisite: CIT 043

Acceptable for credit: California State University

This course provides students with the knowledge and skills required to create, configure and administer the various messaging connectors; configure directory and public folder replication; and configure Exchange Server for connectivity to the Internet. The course also examines how Exchange Server provides for connectivity to foreign messaging systems such as Lotus cc:Mail, Lotus Notes, and Microsoft Mail and Schedule. *Pass/No Pass Option.*

## 060 • NETWARE ADMINISTRATION

3.0 units

Total Lecture 54 hours

Advisory: CIS 054B

Corequisite: CIT 160

Acceptable for credit: California State University

This course provides students with the necessary knowledge and skills to perform fundamental network management tasks on a NetWare 5.1 network. Topics include an introduction to NetWare and NDS, setting up and managing network access for users, managing file system security, implementing Novell Distributed Print Services, and using ZENWORKS for Desktops to manage workstations and application. *Pass/No Pass Option.*

## 062 • NETWARE ADMINISTRATION - ADVANCED

2.0 units

Total Lecture 36 hours

Prerequisite: CIT 060

Corequisite: CIT 162

Acceptable for credit: California State University

The course is designed to provide students with an advanced skill set and abilities to handle more challenging network situations than were presented in the NetWare 5.1 Administration course. This course is appropriate for Network administrators who have completed the NetWare 5.1 Admin & Net Tech courses or who have acquired the same knowledge & skills from practical job experience administering a NetWare 4 network. *Pass/No Pass Option.*

## 063 • NDS DESIGN AND IMPLEMENTATION

3.0 units

Total Lecture 36 hours, Total Lab 54 hours

Advisory: CIS 054B

Prerequisite: CIT 060

Acceptable for credit: California State University

The goal of this course is to provide individuals a solid foundation using the NDS (Novell Directory Services) design. Students will learn how to design and implement an NDS strategy using proven methods from Novell Consulting Services. They will also create and complete an NDS design strategy using supplied templates, which can be reused to create NDS designs in their working environment. *Pass/No Pass Option.*

## 064 • SERVICE AND SUPPORT

3.0 units

Total Lecture 36 hours, Total Lab 54 hours

Advisory: CIS 054B

Prerequisite: CIT 060

Acceptable for credit: California State University

The goal of this course is to provide individuals a solid foundation on the prevention, diagnosis, and resolution of hardware-related problems encountered when working with NetWare. While the course assumes the use of NetWare 4.x or NetWare 5.x, the skills learned will have a great deal of practical value to network administrators as they optimize and maintain systems while using many other Novell products. *Pass/No Pass Option.*

## 067 • INTEGRATING NETWARE WITH WINDOWS O.S.

3.0 units

Total Lecture 36 hours, Total Lab 54 hours

Advisory: CIS 054B

Prerequisite: CIT 060

Acceptable for credit: California State University

The goal of this course is to provide individuals a solid foundation on the Windows O.S networking and how to integrate Windows O.S with a NetWare network. Students will integrate Windows O.S Workstations, Windows O.S Servers, and Windows NT/2000 domains with a NetWare network. *Pass/No Pass Option.*

## 070 • DESIGNING A SECURE CHECKPOINT NETWORK I

3.0 units

Total Lecture 54 hours

Advisory: CIS 054B

Prerequisite: CIT 024

Acceptable for credit: California State University

Students will learn to design a security framework for small, medium, and enterprise networks using Checkpoint Firewall technologies. Students will learn how to provide secure access to local network users, to remote users and remote offices, between private and public networks and provide secure access to partners. Network security policies, firewall architecture, Virtual Private Networks (VPNs), log management, user authentication, Network Address Translation (NAT), load balancing and content filtering are also taught in the course. This course is part of the Checkpoint Academy. *Pass/No Pass Option.*

## 072 • DESIGNING A SECURE CHECKPOINT NETWORK II

3.0 units

Total Lecture 54 hours

Advisory: CIS 054B

Prerequisite: CIT 024

Acceptable for credit: California State University

This course is the second of the Checkpoint Firewall classes and is aimed at preparing students to pass their CCSE exam. Students will learn to design a security framework for small, medium, and enterprise networks using Checkpoint Firewall technologies. Students will learn how to provide secure access to local network users, to remote users and remote offices, between private and public networks and provide secure access to partners. Advanced security policies, firewall architecture, Virtual Private Network (VPN) implementation, log management, user authentication, Network Address Translation (NAT), load balancing and content filtering are also taught in the course. This course is part of the Checkpoint Academy. *Pass/No Pass Option.*

# COMPUTER SCIENCE AND INFORMATION TECHNOLOGY

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## 078 • MICROSOFT SERVER ESSENTIALS 1

4.0 units

Total Lecture 54 hours, Total Lab 54 hours  
Advisory: Eligibility for ENGL 001A and READ 053  
Acceptable for credit: California State University

This is an introductory level course. The goal of this course is to provide individuals who are new to the latest Microsoft Windows Server platform the necessary knowledge to design and manage different tasks involved in supporting the MS server based networks. This course provides knowledge of user management, group management, group policy management, security management, Active Directory concepts, DHCP, DNS and Web services. This course may be offered via distance learning. *Pass/No Pass Option.*

## 079 • MICROSOFT SERVER ESSENTIALS 2

4.0 units

Total Lecture 54 hours, Total Lab 54 hours  
Advisory: Eligibility for ENGL 001A and READ 053  
Acceptable for credit: California State University

Students learn about the virtualization technology and how to install and configure the latest Windows Server OS in a virtualized environment. Students also create a network domain from scratch involving client computers running OS like Windows and Linux. In addition, this course provides the skills and knowledge necessary to install and configure latest Windows Server OS to create shared resources like print servers. Students also learn about the Windows security management as well as interfacing with the other OS like Linux and Unix. This course may be offered via distance learning. *Pass/No Pass Option.*

## 082 • DBA: ARCHITECTURE AND ADMINISTRATION

3.0 units

Total Lecture 54 hours  
Prerequisite: CA084A or CIT 049  
Corequisite: CIT 182  
Acceptable for credit: California State University

This course is designed to give the Oracle database administrator (DBA) a firm foundation in basic administrative tasks and provide the necessary knowledge and skills to set up, maintain, and troubleshoot an Oracle7, Oracle8, or Oracle8i database. The student learns to use an administration tool to startup and shutdown a database, create a database, manage file and database storage, and manage users and their privileges. In addition, the student learns to organize the database and to move data into and between databases under different environments. Hands-on practices help to reinforce key concepts, and students have an opportunity to troubleshoot real life issues when they are given examples of questions frequently asked of Oracle Worldwide Support. This class is preparation for the Oracle Database Administrator certification exam. *Pass/No Pass Option.*

## 084 • DBA: BACKUP AND RECOVERY

3.0 units

Total Lecture 54 hours  
Prerequisite: CIT 082  
Corequisite: CIT 184  
Acceptable for credit: California State University

This course introduces participants to the critical task of planning and implementing Oracle database backup and recovery strategies. The class addresses backup and recovery techniques and examines various backup, failure, restore, and recovery scenarios. This class includes a one-day interactive workshop that provides participants with the opportunity to walk through numerous real-world backup, restore and recovery case studies. In hands-on exercises, participants examine backup methodologies based on business requirements in a mission critical enterprise. This course is intended for MIS Managers, Application Developers, Database Administrators, Technical Support Professionals, System Administrators, and Network Administrators. *Pass/No Pass Option.*

## 086 • DBA: PERFORMANCE TUNING

3.0 units

Total Lecture 54 hours  
Prerequisite: CIT 082  
Corequisite: CIT 186  
Acceptable for credit: California State University

This course will introduce participants to a series of tuning steps which can be used to improve the performance of the Oracle8i Server. The focus is on database rather than specific operating system performance issues. The course is intended for Application Developers, Technical Support Professionals, Network Administrators, Data Administrators, and MIS Managers. *Pass/No Pass Option.*

## 088 • DBA: NETWORK ADMINISTRATION

3.0 units

Total Lecture 54 hours  
Prerequisite: CIT 082  
Corequisite: CIT 188  
Acceptable for credit: California State University

The Oracle 8i Networking class will enable students to identify networking business trends and security problems. Oracle's networking solutions to the business problems and trends will be presented. Students will learn about Net8 components and will learn how to configure both a simple and more complex Net8 environment. The course is intended for Database Administrators, Application Developers, MIS Managers, Technical Support Professionals, and Network Administrators. *Pass/No Pass Option.*

## 107 • DISTRIBUTED APPLICATIONS WITH MS VISUAL C++

3.0 units

Total Lecture 45 hours, Total Lab 27 hours  
Prerequisite: CIT 049  
Acceptable for credit: California State University

This course provides students with the knowledge and technical skills required to implement data storage architecture by creating and managing files, file groups, and transaction logs. This course will teach students to use the Microsoft® Visual C++® development system to create component object model (COM) objects using Visual C++ and the Active Template Library (ATL) and to create single document interface (SDI) applications using Microsoft Foundation Class (MFC) and the Visual C++ development system. *Pass/No Pass Option.*

## 108 • DISTRIBUTED APPLICATIONS WITH MS VISUAL BASIC

3.0 units

Total Lecture 45 hours, Total Lab 27 hours  
Prerequisite: CIT 049  
Acceptable for credit: California State University

This course provides students with the knowledge and technical skills required to create data services, and retrieve and manipulate data by using different cursor location. It includes client-side and server-side or cursor types such as forward-only, static, dynamic, and keyset. Students will learn how to execute a statement on a database and how to return records to a Visual Basic application. *Pass/No Pass Option.*

## 111 • SERVLETS AND JSP

3.0 units

Total Lecture 36 hours, Total Lab 54 hours  
Prerequisite: GDES 046  
Acceptable for credit: California State University

The goal of this course Servlets and JavaServer Pages technology provide a powerful, efficient, portable, and secure alternative to Common Gateway Interface (CGI) programming for developing professional e-commerce sites, Web-enabled applications and to create interactive web pages including secure access to the web site, database interactivity, generate dynamic web pages and maintain client session data (i.e. cookies). *Pass/No Pass Option.*

## 112 • CLIENT, SERVER AND WEB MANAGEMENT

3.0 units

Total Lecture 36 hours, Total Lab 54 hours  
Prerequisite: GDES 046  
Acceptable for credit: California State University

The goal of this course is to develop skills and understanding in designing e-Commerce websites. This is a course that goes beyond "formatting" web pages with HyperText Markup Language (HTML). This course extends web page "functionality" with interactivity, multimedia, security, and database capability using prior knowledge of a scripting language (HTML, JavaScript, etc.). Topics include design principles, examples of scripts (JavaScript, ASP, ActiveX, VBScript, Servlets, JSP, Perl or CGI) and discussion of security (SET, SSL etc.). *Pass/No Pass Option.*

## 113 • DATABASE FOR THE WEB

3.0 units

Total Lecture 36 hours, Total Lab 54 hours  
Prerequisite: GDES 046  
Acceptable for credit: California State University

This is a course that goes beyond mere "desktop" database management. Participants explore dynamic web applications that interact with a database using client-side scripts, server-side scripts, and compiled server programs. Students learn web-enabled databases concepts, relational database principles, Structured Query Language (SQL) and Hyper Text Markup Language (HTML). *Pass/No Pass Option.*

# COMPUTER SCIENCE AND INFORMATION TECHNOLOGY

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## **141 • MICROSOFT OS ESSENTIALS LAB**

**1.0 unit**

*Total Lab 54 hours*

*Advisory: CIS 054B*

*Corequisite: CIT 041*

*Acceptable for credit: California State University*

The goal of this lab course is to provide individuals who are new to Microsoft Windows 2000 with the knowledge necessary to understand and identify the tasks involved in supporting Windows 2000 Networks. *Pass/No Pass Option.*

## **143 • MICROSOFT SERVER LAB**

**1.0 unit**

*Total Lab 54 hours*

*Prerequisite: CIT 041*

*Corequisite: CIT 043*

*Acceptable for credit: California State University*

Students will install and configure Microsoft Windows 2000 Professional on stand-alone computers and on client computers that are part of a workgroup or a domain. In addition, this course provides the skills and knowledge necessary to install and configure Windows 2000 Server to create, file, print, and terminal servers. *Pass/No Pass Option.*

## **160 • NETWORK ADMINISTRATION LAB**

**1.0 unit**

*Total Lab 54 hours*

*Advisory: CIS 054B*

*Corequisite: CIT 060*

*Acceptable for credit: California State University*

This lab course provides students with the necessary knowledge and skills to perform fundamental network management tasks on a NetWare 5.1 network. *Pass/No Pass Option.*

## **162 • NETWORK ADMINISTRATION - ADVANCED LAB**

**1.0 unit**

*Total Lab 54 hours*

*Prerequisite: CIT 060*

*Corequisite: CIT 062*

*Acceptable for credit: California State University*

The lab course is designed to provide students with an advanced skill set and abilities to handle more challenging network situations than were presented in the NetWare 5.1 Administration course. *Pass/No Pass Option.*

## **182 • DBA: ARCHITECTURE AND ADMINISTRATION LAB**

**1.0 unit**

*Total Lab 54 hours*

*Prerequisite: CA 084A*

*Corequisite: CIT 082*

*Acceptable for credit: California State University*

This lab course is designed to give the Oracle database administrator (DBA) a firm foundation in basic administrative tasks and provide the necessary knowledge and skills to set up, maintain, and troubleshoot an Oracle7, Oracle8, or Oracle8i database. *Pass/No Pass Option.*

## **184 • DBA: BACKUP AND RECOVERY LAB**

**1.0 unit**

*Total Lab 54 hours*

*Prerequisite: CIT 082*

*Corequisite: CIT 084*

*Acceptable for credit: California State University*

This lab course introduces participants to the critical task of planning and implementing Oracle database backup and recovery strategies. *Pass/No Pass Option.*

## **186 • DBA: PERFORMANCE TUNING LAB**

**1.0 unit**

*Total Lab 54 hours*

*Prerequisite: CIT 082*

*Corequisite: CIT 086*

*Acceptable for credit: California State University*

This lab course will introduce participants to a series of tuning steps which can be used to improve the performance of the Oracle8i Server. *Pass/No Pass Option.*

## **188 • DBA: NETWORK ADMINISTRATION LAB**

**1.0 unit**

*Total Lab 54 hours*

*Prerequisite: CIT 082*

*Corequisite: CIT 088*

*Acceptable for credit: California State University*

The Oracle 8i Networking lab course will enable students to identify networking business trends and security problems. *Pass/No Pass Option.*