

**CIS 051 INTRODUCTION TO DATA ANALYSIS 4.0 UNITS***Total Lecture: 54 hours, Total Lab: 54 hours**Advisory: CIS 007**Acceptable for credit: California State University*

This is an introductory course on data analysis. It provides a foundation for understanding data analysis principles, tools and applications. Topics include data loading and storage, data manipulation, data cleaning and preparation, data wrangling, plotting, visualization and analysis. Students will use Python programming language and Python libraries such as NumPy, Pandas, Matplotlib in the course. *Pass/No Pass Option.*

**CIS 052 DATA VISUALIZATION 4.0 UNITS***Total Lecture: 54 hours, Total Lab: 54 hours**Acceptable for credit: California State University*

In this course students will learn how to become a master at communicating business-relevant implications of data analyses. After finishing this course, students will be able to effectively import data, clean and transform it and convey the results of the analysis to the stakeholders. Students will learn how to best convey the story behind the data using the most effective visuals as well as using Tableau to make effective and interactive dashboards. *Pass/No Pass Option..*

**CIS 053 INTRODUCTION TO MACHINE LEARNING 3.0 UNITS***Total Lecture: 54 hours, Total Lab: 54 hours**Advisory: CIS 051**Acceptable for credit: California State University*

This course is an introductory course in machine learning and predictive analytics. Students will learn the fundamentals of developing models with cleaned and prepared data. They will gain an understanding of the algorithms of machine learning and learn to build predictive models using Python. Topics included-supervised learning, forecasting numeric values with multiple linear regression, decision trees and unsupervised learning. Students will use machine learning Python libraries such as scikit-learn to implement machine learning algorithms. *Pass/No Pass Option.*

**CIS 055 DATABASE MANAGEMENT SYSTEMS I 3.0 UNITS***Total Lecture: 45 hours, Total Lab: 27 hours**Advisory: CIS 001**Acceptable for credit: California State University*

This course is the first of two courses that covers the current, classical database systems, database design, and architecture. Entity-relationship and enhanced entity models. Relational model, normalization techniques, emerging standard of SQL query language, XML, embedded, and dynamic SQL. Introduces students to widely used database systems such as Oracle, Microsoft SQL server, and MySQL. Students will work in groups to implement and design a commercial database application project. *Pass/No Pass Option.*

**CIS 056 DATABASE MANAGEMENT SYSTEMS II 3.0 UNITS***Total Lecture: 45 hours, Total Lab: 27 hours**Advisory: CIS 055**Acceptable for credit: California State University*

This course is the second of two courses that covers database management and SQL programming, stored procedures, functions, packages, and database triggers, relational database systems, object-oriented data model, database trends, web database topics, architectures, introduction to interface languages. Students will work in groups to implement a commercial database application project. *Pass/No Pass Option.*

**CIS 060 MOBILE APPS PROGRAMMING - IOS 4.0 UNITS***Total Lecture: 54 hours, Total Lab: 54 hours**Advisory: CIS 040 or CIS 043**Acceptable for credit: California State University,*

This course is an introduction to programming iOS applications using an object-oriented paradigm. Students learn to develop simple to more advanced applications using Swift, Model-View-Control framework, graphical-user interface, classes, methods, and messages. *Pass/No Pass Option.*

**CIS 063 MOBILE APPS PROGRAMMING - ANDROID 4.0 UNITS***Total Lecture: 54 hours, Total Lab: 54 hours**Advisory: CIS 043**Acceptable for credit: California State University*

This course is an introduction to programming applications for the Android operating system. Students learn to develop simple to more advanced applications using the latest Java technologies and the Android SDK. *Pass/No Pass Option.*

## COMPUTER INFORMATION TECHNOLOGY (CIT)

**CIT 011 INTRODUCTION TO COMPUTER HARDWARE AND SOFTWARE (A+) 4.0 UNITS***Total Lecture: 54 hours, Total Lab: 54 hours**Acceptable for credit: California State University*

This course covers the fundamentals of computer hardware and software and advanced concepts such as security, networking, mobile devices such as tablets and smartphones, client-side virtualization, and the responsibilities of an IT professional. It helps students prepare for entry-level career opportunities in ICT and the CompTIA A+ certification. It also provides a learning pathway to Cisco CCNA. Hands-on lab activities are an essential element of the course. The Virtual Laptop and Virtual Desktop are stand-alone tools designed to supplement classroom learning and provide an interactive "hands-on" experience in learning environments with limited physical equipment. The use of Packet Tracer supports alignment with the new CompTIA A+ certification objectives. *Pass/No Pass Option. C-ID # ITIS 110*

**CIT 012 INTRODUCTION TO NETWORKING 4.0 UNITS***Total Lecture: 54 hours, Total Lab: 54 hours**Acceptable for credit: California State University*

This course introduces the fundamental building blocks that form the modern network, such as protocols, media, topologies and hardware. It then provides in-depth coverage of the most important concepts in contemporary networking, such as TCP/IP, Ethernet, wireless transmission, virtual networks, security and troubleshooting. This course helps students prepare for entry-level career opportunities in ICT and the CompTIA Network+ certification. It also provides a learning pathway to Cisco CCNA. *Pass/No Pass Option. C-ID # ITIS 150.*

**CIT 013 AWS 1 CLOUD PRACTITIONER - FOUNDATIONAL 3.0 UNITS***Total Lecture: 45 hours, Total Lab: 27 hours**Prerequisite: CIT 021**Acceptable for credit: California State University*

This introductory course provides an overall understanding of cloud computing concepts, AWS core services, security, architecture, storage, networking, pricing, and support. *Pass/No Pass Option.*

**CIT 014 AWS 2 SOLUTIONS ARCHITECT  
- ASSOCIATE 4.0 UNITS**

Total Lecture: 54 hours, Total Lab: 54 hours

Prerequisite: CIT 013

Acceptable for credit: California State University

This course will help students develop technical expertise in cloud computing and prepare them for the AWS Certified Solutions Architect – Associate certification exam. The curriculum is delivered through instructor-led classes, knowledge assessments, hands-on labs, and project work. The course covers AWS Cloud, management console, S3 storage, Networking and VPC, cloud migration, continuity, Scalability, database. *Pass/No Pass Option.*

**CIT 016 CYBERSECURITY AND  
ETHICAL HACKING 4.0 UNITS**

Total Lecture: 54 hours, Total Lab: 54 hours

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. Students gain hands-on experience with various ethical hacking methods and techniques. *Pass/No Pass Option. C-ID # ITIS 160.*

**CIT 017 CYBER SECURITY ESSENTIALS 4.0 UNITS**

Total Lecture: 54 hours, Total Lab: 54 hours

Prerequisite: CIT 021

Acceptable for credit: California State University

The Cybersecurity Essentials course develops foundational understanding of cybersecurity and how it relates to information and network security. This course explores the importance of cybersecurity, data confidentiality, and best practices for using the internet and social media safely. This course introduces students to characteristics of cybercrime, security principles, technologies, and procedures to defend networks. Through interactive, multimedia content, lab activities, and multi-industry case studies, students build technical and professional skills to pursue careers in cybersecurity. *Pass/No Pass Option.*

**CIT 018 CCNA CYBER SECURITY  
OPERATIONS 4.0 UNITS**

Total Lecture: 54 hours, Total Lab: 54 hours

Prerequisite: CIT 017

Acceptable for credit: California State University

The CCNA Cybersecurity Operations course introduces the knowledge and skills needed for a Security Analyst working with a Security Operations Center team. It teaches core security skills needed for monitoring, detecting, investigating, analyzing, and responding to security events, thus protecting systems and organizations from cybersecurity risks, threats, and vulnerabilities. *Pass/No Pass Option.*

**CIT 021 INTRODUCTION TO CISCO NETWORKS  
(CISCO-1) 4.0 UNITS**

Total Lecture: 54 hours, Total Lab: 54 hours

Acceptable for credit: California State University

Introduction to Cisco Networks (ITN) is the first course in the CCNA curriculum. It covers the architecture, structure, functions and components of the Internet and other computer networks. Students achieve a basic understanding of how networks operate and how to build simple local area networks (LAN), perform basic configurations for routers and switches, and implement Internet Protocol (IP). *Pass/No Pass Option. C-ID # ITIS 150.*

**CIT 022 SWITCHING, ROUTING, AND  
WIRELESS ESSENTIALS 4.0 UNITS**

Total Lecture: 54 hours, Total Lab: 54 hours

Prerequisite: CIT 021

Acceptable for credit: California State University

Switching, Routing, and Wireless Essentials (SRWE) course is the second course in the CCNA curriculum. It covers the architecture, components, and operations of routers and switches in small networks and introduces wireless local area networks (WLAN) and security concepts. Students learn how to configure and troubleshoot routers and switches for advanced functionality using security best practices and resolve common issues with protocols in both IPv4 and IPv6 networks. *Pass/No Pass Option.*

**CIT 023 ENTERPRISE NETWORKING,  
SECURITY, AND AUTOMATION 4.0 UNITS**

Total Lecture: 54 hours, Total Lab: 54 hours

Prerequisite: CIT 022

Acceptable for credit: California State University

Enterprise Networking, Security, and Automation (ENSA) is the third course in the CCNA curriculum. It describes the architecture, components, operations, and security to scale for large, complex networks, including wide area network (WAN) technologies. The course emphasizes network security concepts and introduces network virtualization and automation. Students learn how to configure, troubleshoot, and secure enterprise network devices and understand how application programming interfaces (API) and configuration management tools enable network automation. *Pass/No Pass Option.*

**CIT 024 IMPLEMENTING AND ADMINISTERING  
CISCO NETWORKING  
TECHNOLOGIES 4.0 UNITS**

Total Lecture: 54 hours, Total Lab: 54 hours

Prerequisite: CIT 023

Acceptable for credit: California State University

The course is advanced course that provides students with the required knowledge to develop a comprehensive foundation for designing, securing, operating, and troubleshooting modern computer networks, on the scale from small business networks to enterprise networks, with an emphasis on hands-on learning and essential career skills like problem solving and collaboration. *Pass/No Pass Option.*

**CIT 078 MICROSOFT SERVER ESSENTIALS 4.0 UNITS**

Total Lecture: 54 hours, Total Lab: 54 hours

Advisory: CIT 011

Acceptable for credit: California State University

This course focuses primarily on the installation, storage, “compute features and functionality” and the “networking features and functionality” available in Windows Server 2016. It covers general installation tasks and considerations and the installation and configuration of Nano Server, in addition to the creation and management of images for deployment. It also covers local and server storage solutions, including the configuration of disks and volumes, Data Deduplication, High Availability, Disaster Recovery, Storage Spaces Direct, and Failover Clustering solutions. The course also covers Hyper-V and containers, along with the maintenance and monitoring of servers in physical and compute environments, DNS, DHCP, and IPAM implementations, in addition to remote access solutions, such as VPN and Direct Access. It also covers DFS and BranchCache solutions, high performance network features and functionality, and implementation of software-defined networking (SDN) solutions, such as Hyper-V Network Virtualization (HNV) and Network Controller. *Pass/No Pass Option. C-ID # ITIS 155.*