



2024 Catalog

*Information Technology and System
Administration Degrees (Ensign College)*

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Associate Degree in Information Technology Program Information

Degree Description

A degree in information technology prepares students to work in an entry-level position in any IT department or technical support function. Students learn the basics of Windows and Linux technology as well as SQL Database administration, cloud infrastructure, and Windows Server Active Directory with a focus on account management and proper access control design. There is also a heavy focus on virtualization and cybersecurity.

Upon completion, students will have had the opportunity to earn several IT industry certifications that can be added to their resumes and will be able to demonstrate practical hands-on configuration and virtual infrastructure experience.

Program Outcomes

- Design and configure a simple network.
- Install and configure a Windows workstation.
- Install and configure a Linux machine.
- Demonstrate how to set up and configure a Windows Domain Controller and implement Active Directory.
- Demonstrate how to install, configure, and query a simple database.
- Create a simple script to automate common IT functions.
- Demonstrate simple red-team and blue-team cybersecurity tools and techniques.

Career Opportunities

There are many career opportunities for students with an IT degree. Common entry-level positions include help desk or technical support roles, which are often used as preparatory experiences prior to a back-office role in a corporate IT department.

Required Certificates

1st Certificate: Technical Support Engineer

2nd Certificate: IT Professional



Associate Degree in Information Technology Required Course List

PathwayConnect Certificate* (7 credits)

PC 101	Life Skills
PC 102	Professional Skills
PC 103	University Skills

Technical Support Engineer Certificate (15 credits)

IT 102	PC Hardware Technician
IT 125	Introduction to Information Technology
CS 104	Python Scripting
IT 235	Cloud Server Administration
IT 255	Networking Fundamentals

IT Professional Certificate (15 credits)

IT 143	Database Design and Analysis
IT 160	Cloud Computing Essentials
IT 210	Linux Fundamentals
IT 312	Cybersecurity Foundations
IT 350	Network Configuration and Design

Additional Required Courses (15 credits)

GS 170	Career Development
ENG 101	Introduction to College Writing
BAP 115	Excel and Introduction to Technology
MAT 107	Quantitative Analysis and Personal Finance
COMM 122	Interpersonal Communications
ENG 301	Technical Writing
CAR 398	Project Based Internship

Religion Courses (8 credits)

REL 250	Jesus Christ and His Everlasting Gospel
REL 275	Teachings and Doctrine of the Book of Mormon
REL 225	Foundations of the Restoration
REL 200	The Eternal Family

The associate degree will be automatically awarded to students after they have completed all associate degree requirements. All student credits earned (including general education, certificate, or transfer credits) will be applied toward the awarding of an associate degree.

**Direct admit students complete the following alternative courses instead of PathwayConnect:*

<i>GE 103</i>	<i>Online University Skills (1 credit)</i>
<i>SS 160</i>	<i>Leadership and Human Behavior (3 credits)</i>
<i>BUS 202</i>	<i>Organizational Effectiveness (3 credits)</i>



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Bachelor's Degree in System Administration Program Information

Degree description

Students with a system administration emphasis are prepared to work in any corporate IT department. While specializing in the broader area of system administration and cloud infrastructure, students will build strong IT foundational skills and knowledge.

Today, the cloud hosts a large portion of corporate infrastructure. This degree program will teach students how to develop and implement corporate resources such as Active Directory Domain Services, Linux Services, web services, and database services utilizing on-premises and cloud environment infrastructures. Students will learn about several cloud technologies, including Amazon AWS and Microsoft Azure. Students will also acquire a taste of network architecture and best cybersecurity practices.

Upon completion, students will have had the opportunity to earn several IT industry certifications that can be added to their resumes and will be able to demonstrate practical hands-on configuration and virtual infrastructure experiences.

Program Outcomes

- Demonstrate job skills associated with the introductory, intermediate, and advanced certificates (Technical Support Engineer, IT Fundamentals, and System Administration).
- Achieve the outcomes associated with general education, which include the ability to demonstrate proficiency in written and verbal communication, problem solving, and college and career readiness from a global perspective.
- Integrate knowledge and skills, including the College-Wide Capabilities, from a global perspective and across disciplines of study, including cultural literacy and knowledge of the physical and natural world.
- Demonstrate career readiness through the successful completion of an experiential learning experience and reflection on professional preparation.

Career Opportunities

Career opportunities for students with a degree in system administration exist in most IT departments. Typical entry-level positions include system administrator, server administrator, network administrator, database administrator, IT administrator, cloud administrator, Linux administrator, and Windows system administrator. Advancement opportunities increase with experience.

Required Certificate

3rd Certificate: System Administration



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Bachelor's Degree in System Administration Required Course List

System Administration Certificate (15 credits)

IT 316	Scripting for Security Operations
IT 330	Azure Technologies
IT 335	AWS Cloud Practitioner
IT 340	Business Intelligence Systems
IT 370	Advanced Linux

General Education Courses (9 credits)

HIST 175	History of Technology in the United States
LS 303	Knowledge of the Physical and Natural World
ENS 497	Disciple Leadership Capstone
IT 497	IT Capstone

Religion Courses (6 credits)

REL 290	The Divine Gift of Forgiveness (or other religion elective course)
REL 333	Teachings of the Living Prophets (or other religion elective course)
REL 280	Answering My Gospel Questions (or other religion elective course)

The bachelor's degree will be automatically awarded to students after they have completed all bachelor's degree requirements. All student credits earned (including general education, certificate, or transfer credits) will be applied toward the awarding of a bachelor's degree.



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Course Details

PathwayConnect Certificate

PC 101: Life Skills (3 credits)

- Develop essential life skills, such as goal setting and problem solving.
- Develop writing ability in organization, clarity, and audience awareness.
- Learn and apply basic math skills to everyday situations.

PC 102: Professional Skills (3 credits)

- Develop necessary skills to advance a career.
- Produce clear and professional writing.
- Learn to use data and math to make decisions.

PC 103: University Skills (1 credit)

- Create and follow an academic plan to a bachelor's degree.
- Demonstrate an understanding of local and online resources for online student success.

Direct Admit

SS 160: Leadership and Human Behavior (3 credits)

- Demonstrate understanding of social and behavioral science methods, concepts, and theories.
- Formulate foundational questions about social behavior central to an understanding of leadership.
- Analyze patterns of human behavior, perspective, and motivation in self and others in a leadership setting.
- Develop a comprehensive leadership framework and skills in self and others.
- Synthesize the perspectives of childhood, adolescent, and adult development and apply the related theories to your past experiences and future goals.

BUS 202: Organizational Effectiveness (3 credits)

- Apply principles to challenges related to organizational effectiveness at individual, team, and organizational levels.
- Apply theories and frameworks to create alternatives to complex problems related to organizational dynamics.
- Create a personal toolbox with skills for real-world organizational leadership challenges.
- Apply ways to improve individual, team, or organizational performance.

GE 103: Online University Skills (1 credit)

- Plan how to achieve certificates and a degree.
- Practice selected reading comprehension strategies.
- Demonstrate self-management skills related to academic success.
- Develop personal strategies for persistence in pursuing online education.



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Technical Support Engineer Certificate

IT 102: PC Hardware Technician (3 credits)

- Identify the technology and specifications used to describe computer components.
- Demonstrate how to set up a new computer and complete basic system management tasks.
- When purchasing or setting up a computer, select a configuration appropriate to the situational requirements.
- Troubleshoot common computer problems.
- Prepare for and take the TestOut PC Pro Certification exam.

IT 125: Introduction to Information Technology (3 credits)

- Install, deploy, and update Windows in both physical and virtual environments.
- Effectively lock down Windows using Active Directory and Group Policy.
- Install, configure, and manage user-accessible hardware in a Windows computer.
- Demonstrate basic networking principles by configuring TCP/IP settings in both wired and wireless Windows networks.
- Deploy and manage Windows applications, including virtualized Cloud resources.
- Manage rights and permissions in network-connected mobile Windows devices.

CS 104: Python Scripting (3 credits)

- Recall fundamental Python syntax and data types.
- Explain the concepts of variables, data types, and control structures in Python.
- Write simple Python programs to solve basic computational problems using packaging, JAR files, source control, and automated testing to perform tasks such as string parsing.
- Identify and debug common programming errors in Python code.
- Write Python programs that incorporate input, loops, conditional statements, file IO, and JSON.
- Comprehend the basics of databases and their importance in programming.
- Decompose real world problems into logical class structures using the Python programming language.

IT 235: Cloud Server Administration (3 credits)

- Install, configure, manage, and maintain servers.
- Implement and support disaster recovery solutions, backup techniques, and storage device technologies.
- Apply physical and network data security techniques.
- Troubleshoot network connectivity, systems hardware, software, connectivity storage, and security issues.



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IT 255: Networking Fundamentals (3 credits)

- Identify and explain the different layers of the OSI Model.
- Demonstrate the proper way to identify Ipv4 subnets and subnet masks and determine the number of available host addresses per subnet.
- Create a network diagram showing correct placement of common networking devices, hardware, and network technologies.
- Demonstrate an ability to analyze network traffic using a common packet analyzer tool.
- Demonstrate how to troubleshoot networking problems using common command-line tools.
- Demonstrate how to identify and map network devices using a discovery scanning tool.
- Demonstrate an ability to write professional executive summaries that can explain technical concepts to non-technical people.

IT Professional Certificate

IT 143: Database Design and Analysis (3 credits)

- Design a relational database to be used according to given parameters.
- Demonstrate proficiency with SQL for decision making.
- Evaluate, access, retrieve, and present data to meet business needs.

IT 160: Cloud Computing Essentials (3 credits)

- Demonstrate comprehension of fundamental cloud concepts.
- Analyze and compare the business value of cloud service models in various organizational situations.
- Identify and mitigate common security risks within an organization.
- Create and present a cloud deployment proposal appropriate to the needs of a business.

IT 210: Linux Fundamentals (3 credits)

- Demonstrate and apply Linux fundamentals to administration tasks and real-world problems.
- Design, install, and set up virtualized Linux systems.
- Manage, maintain, and troubleshoot Linux systems.

IT 312: Cybersecurity Foundations (3 credits)

- Describe the various attack vectors that could be exploited by hackers.
- Describe various defensive models that might be used to protect a corporate network infrastructure or develop a corporate security policy.
- Demonstrate how to harden a server or network device.
- Demonstrate how to create a simple firewall rule.
- Demonstrate how to analyze network traffic to search for possible threats.
- Demonstrate how to use common Pen Testing tools to generate attack activity.
- Demonstrate how to set up auditing on a Windows server and Linux machine and generate audit logs.
- Demonstrate how to configure a HIDS agent on a server and register it with an IDS system.



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IT 350: Network Configuration and Design (3 credits)

- Install and configure Cisco switches.
- Install and configure Cisco routers.
- Implement Ethernet virtual LANs.
- Analyze, design, and configure subnets.

System Administration Certificate

IT 316: Scripting for Security Operations (3 credits)

- Describe core components of a computer and how they interact.
- Explain basic addressing modes and storage components.
- Demonstrate how software can access and manipulate the different hardware components of a computer (non-maliciously).
- Explain how common attacks work within a hardware context.

IT 330: Azure Technologies (3 credits)

- Implement core Azure services and products to solve business problems.
- Manage and monitor security, privacy, and compliance through Microsoft Azure.
- Interpret Azure pricing, Service Level Agreements, and Lifecycle to assist stakeholders in making timely business decisions.
- Apply the concepts, characteristics, delivery models, and benefits of cloud computing to develop business solutions.

IT 335: AWS Cloud Practitioner (3 credits)

- Implement AWS services and technology to provide solutions in common use cases.
- Manage and monitor security and compliance through AWS.
- Interpret AWS cloud pricing, analysis, and the value proposition to assist stakeholders in making timely business decisions.
- Apply the concepts, characteristics, delivery models, and benefits of cloud computing to develop business solutions.

IT 340: Business Intelligence Systems (3 credits)

- Analyze and interpret data using business analytics.
- Build and enhance business intelligence solutions.
- Construct data models, prototypes, and reports in support of business objectives.
- Perform a needs assessment, use analytical problem framing, and make recommendations for improving efficiency and profitability of an organization.

IT 370: Advanced Linux (3 credits)

- Build LAMP servers utilizing advanced Linux commands to meet organizational needs in a secure environment.
- Use the LAMP stack to organize and present data.
- Network distributed database servers in various workplace configurations.



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Additional Required Courses

GS 170: Career Development (1 credit)

- Communicate personal and essential employable skills matched to a target job.
- Create a list of employers, contacts, and opportunities to obtain or improve employment.
- Prepare effective professional documents and a digital profile that incorporate essential employability skills.
- Identify and practice effective networking and job-search strategies.
- Connect and network with professionals, mentors and potential employers in a target industry.
- Apply for jobs and/or improved position in current organization.
- Demonstrate effective interviewing and post-interviewing skills.

BAP 115: Excel and Introduction to Technology (1 credit)

- Locate within Microsoft Excel the tools used to create professional spreadsheets and workbooks.
- Demonstrate knowledge of how to use the tools' simulated activities and guided projects.
- Complete projects, guided and unguided, using the tools within Microsoft Excel.
- Measure proficiency of knowledge of the tools by completing practice exams.
- Evaluate skills learned through the Microsoft Office Specialist certification testing.

CAR 398: Project Based Internship (1 credit)

- Demonstrate their application of the College-Wide Capabilities and the mission of Ensign College in the workplace.
- Gain real-world work experience in the industry of their program.
- Develop meaningful and useful professional relationships that may open doors for future opportunities.
- Strengthen their career management skills by articulating the effect of their internship experience on their individual marketable value in their professional portfolio.

COMM 122: Interpersonal Communications (3 credits)

- Analyze and apply effective methods, principles, and strategies of interpersonal communication to complex problems, situations, and personal and professional relationships.
- Demonstrate an understanding of communication behaviors and attitudes based upon personal perceptions and critical reflection.
- Examine individual values, strengths, and gifts, and utilize those attributes to improve communication skills.
- Assess emotional intelligence and identify emotions in yourself and others to facilitate stronger relationships and communication practices.
- Evaluate and develop conflict resolution strategies to manage and resolve conflict in personal and professional relationships.



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ENG 101: Introduction to College Writing (3 credits)

- Discover critical thinking processes about genre, audience, context, and intent (rhetorical analysis).
- Identify and apply a variety of reading strategies to summarize, paraphrase, analyze, and synthesize texts in your writing.
- Develop written and verbal communication that is professional, clear, concise, evidence-driven, persuasive, and free of distracting surface-level errors.
- Prepare written and verbal communication for diverse audiences, modes, and environments for the purpose of mutual understanding and edification.
- Apply information literacy through navigating library resources, evaluating research and source credibility, and appropriately crediting sources with APA guidelines.

ENG 301: Technical Writing (3 credits)

- Produce instructional, transactional, and analytical technical communication deliverables.
- Understand the parameters and purposes of specific genres of technical communication in order to construct deliverables that respond to stakeholder requirements and expectations.
- Deliver technical communications with clarity, brevity, and accuracy.
- Implement research of systems or software in deliverables.
- Translate technical terms and concepts to stakeholders or nontechnical audiences.

MAT 107: Quantitative Analysis and Personal Finance (3 credits)

- Apply sound mathematical and financial principles and skills to real-life scenarios, decisions, and situations, such as housing and transportation alternatives, risk management, investing, and retirement.
- Use mathematical models to organize, communicate, and solve problems.
- Analyze a given set of data and draw conclusions using statistical tools such as mean, median, mode, shape of distribution, and measures of variation.
- Calculate probabilities of dependent and independent events in a variety of contexts and situations, and use permutations and combinations to calculate possible numbers of outcomes.
- Find measurements and apply geometric principles to solve real-life problems involving 2- and 3-dimensional objects, slope, and scaling, applying appropriate unit conversions when needed.
- Apply the principles of compound interest to investments and loans. Demonstrate an understanding of the related terms and conditions, calculate payment strategies, and show how a variety of changes affect the amount paid over the life of the loan.



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General Education Courses

ENS 497: Disciple Leadership Capstone (1 ½ credits)

- Investigate and identify collective principles for disciple leadership and the College-Wide Capabilities (CWCs).
- Construct personalized working definitions for disciple leadership and the CWCs that interface with the collective principles.
- Deconstruct how outside influences informed your creation and application of the collective principles and individual definitions.
- Demonstrate synthesis of discipleship and the CWCs in real and applied ways in the context of your major.
- Critically reflect and draw conclusions about your individual discipleship and your application of the CWCs.

IT 497: IT Capstone (1 ½ credits)

- Apply Christ-like disciple leadership values to navigate ethical dilemmas in IT, reflecting on moral choices in technology use.
- Showcase advanced IT skills and problem-solving capabilities through the execution of projects while developing innovative solutions to complex challenges that integrate technical knowledge with ethical considerations.
- Exhibit strong teamwork and leadership with IT projects, enhancing communication and interpersonal skills.
- Engage in reflective practice to evaluate personal and professional growth, aligning IT expertise with spiritual and ethical values in a professional portfolio.

HIST 175: History of Technology in the United States (3 credits)

- Analyze current economic issues in light of the past in order to become a responsible voter and an informed citizen.
- Evaluate how invention, war, and advances in technology have influenced the history of this country and its people.
- Illustrate (map) expanding technology and economic ventures across geographical space.
- Clearly explain historical trends in technology through modern delivery methods.

LS 303: Knowledge of the Physical and Natural World (3 credits)

- Identify the features of earth processes to explain local characteristics of the environment.
- Apply knowledge of cellular biology to living creatures and to current health issues.
- Identify, define, and discuss the role of genes in relation to the building of proteins and evolution.
- Assess the health of living ecosystems and plan the preservation of endangered species.
- Practice applying vital statistics to assess human health.
- Connect what you have learned about life and nature to the Creator and the process of creation.



Religion Courses

REL 250: Jesus Christ and His Everlasting Gospel (2 credits)

- Demonstrate the ability to follow Jesus Christ along Heavenly Father's covenant path to eternal life.
- Describe the divine roles of Jesus Christ in the everlasting gospel.
- Define the new and everlasting covenant.

REL 275: Teachings and Doctrine of the Book of Mormon (2 credits)

- Identify several "great things" the Lord has done for His children.
- Explain how the covenants of the Lord with the House of Israel make it so "they are not cast off forever."
- Teach why Jesus is the Christ, the Eternal God.
- Understand how to apply the doctrine of Christ to "be found spotless at the judgment seat of Christ."

REL 225: Foundations of the Restoration (2 credits)

- Identify and understand foundational revelations and doctrine relating to the ongoing Restoration, and know key people and historical events related to each.
- Develop greater faith in Jesus Christ, a testimony of the prophetic calling of Joseph Smith, the ongoing Restoration of the gospel of Jesus Christ, and the continuation of prophetic authority.
- Evaluate the reliability and validity of doctrinal and historical source material, and constructively manage ambiguity. Students will practice critical thinking skills useful in resolving contemporary challenges to faith.
- Become more confident in explaining, defending, and applying the foundational doctrines of the ongoing Restoration and in maintaining lifelong spiritual growth within The Church of Jesus Christ of Latter-day Saints.

REL 200: The Eternal Family (2 credits)

- Learn doctrines and principles taught within "The Family: A Proclamation to the World," such as the eternal nature of marriage and family, the doctrine of gender, the divine roles of men and women, the laws governing chastity and physical intimacy in marriage, and principles governing happiness in family life.
- Demonstrate understanding of and apply the doctrines and principles taught in "The Family: A Proclamation to the World."
- Demonstrate the ability to teach and share with others across a range of topics associated with the doctrines and principles found in "The Family: A Proclamation to the World."
- Show the ability to problem-solve challenges that result from violations of doctrines and principles found in "The Family: A Proclamation to the World."

REL 290: The Divine Gift of Forgiveness (2 credits) or other religion elective course

- Explain what repentance is, why we should repent, and how to repent.
- Identify barriers to repentance and forgiveness and how to overcome them.
- Recognize how, and from whom, forgiveness of sin comes.
- Feel increased faith and trust in Heavenly Father and Jesus Christ and have a greater desire to repent.
- Answer questions about repentance and forgiveness by turning to the words of scripture and the prophets.



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REL 333: Teachings of the Living Prophets (2 credits) or other religion elective course

- Identify, describe, and apply the doctrines and principles taught by latter-day prophets, emphasizing those found in the most recent general conference.
- Discover and share key aspects of the workings of God in the lives and backgrounds of the current First Presidency and Quorum of the Twelve Apostles.
- Describe the order of succession in the Presidency and Apostolic seniority, what it means to preside, and the principle of revelation as it relates to jurisdiction.
- Define priesthood, priesthood keys, and delegated authority.
- Exemplify faith in Jesus Christ by applying the teachings (both word and deed) of the latter-day prophets, and esteem them above personal, philosophical, and political ideologies.

REL 280: Answering My Gospel Questions (2 credits) or other religion elective course

- Learn how to identify and use reliable sources to address each topic.
- Frame selected topics from a perspective of faith.
- Improve your ability to discuss these topics in a spirit of mutual respect and love.
- Consider how to take righteous, effective action on what you learn.