



### Program Information

#### Degree description

Students focusing on Information Technology with a Systems Administration emphasis are equipped to serve in any IT department within the corporate sector. This program from Ensign College emphasizes the expansive domain of systems administration and cloud infrastructure, ensuring students acquire a robust foundation in IT skills and knowledge. In today's digital landscape, a significant portion of corporate infrastructure is cloud-based. This curriculum is designed to instruct students in the creation and management of essential corporate resources, including Active Directory Domain Services, Linux Services, Web Services, and Database Services, leveraging both on-premises and cloud-based infrastructures. Participants will explore various cloud technologies, such as Amazon AWS and Microsoft Azure, and gain insights into network architecture and the principles of cybersecurity. By the end of the program, students will not only be eligible for numerous IT industry certifications, enhancing their resumes, but they will also possess practical experience in configuring and managing virtual infrastructures. Graduates with a degree in Information Technology – Systems Administration can find career opportunities across a wide array of IT departments.

#### Program outcomes

1. Demonstrate job skills associated with the introductory, intermediate, and advanced certificates (Technical Support Engineer, IT Fundamentals, System Administration).
2. 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.
3. 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.
4. Demonstrate career readiness through the successful completion of an experiential learning experience and reflection on professional preparation.

#### Potential employment

- System Administrator.
- Server Administrator.
- Network Administrator.
- Database Administrator.
- IT Administrator.
- Cloud Administrator.
- Linux Administrator.
- Windows System Administrator.

#### Required certificates (details on next page)

- 1st Certificate: Technical Support Engineer Certificate
- 2nd Certificate: IT Professional Certificate
- 3rd Certificate: System Administration Certificate



### Required Course List

#### PathwayConnect Certificate\*

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

#### Technical Support Engineer Certificate

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

#### IT Professional Certificate:

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

#### System Administration Certificate:

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

#### Additional Required Courses:

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



# 2024 Catalog

## Information Technology Bachelor's Degree (Ensign)

### General Education Courses:

ENS 497	Disciple Leadership Capstone
IT 497	IT Capstone
HIST 175	History of Technology in the United States
REL 250	Jesus Christ and His Everlasting Gospel
REL 275	Teachings and Doctrine of the Book of Mormon
REL 200	The Eternal Family
REL 225	Foundations of the Restoration
REL 333	Teachings of the Living Prophets (or other religion elective course)
REL 324	The Doctrine and Covenants — Part One (or other religion elective course)
REL 325	The Doctrine and Covenants — Part Two (or other religion elective course)
LS 303	Knowledge of the Physical and Natural World

\*Direct admit students complete alternative courses instead of PathwayConnect: GE 103 Online University Skills, SS 160 Leadership & Human Behavior, and BUS 202 Organizational Effectiveness

## Course Details

### PathwayConnect Certificate

#### 1. 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.

#### 2. PC 102: Professional Skills (3 credits)

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

#### 3. 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.



### Technical Support Engineer Certificate:

#### 4. 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 that is appropriate to the situational requirements.
- Troubleshoot common computer problems.
- Prepare for and take the Test Out PC Pro Certification Exam.

#### 5. CS 104 Python Scripting (3 credit)

#### 6. 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

#### 7. 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

#### 8. IT 255 Networking Fundamentals (3 credits)

- Identify and explain the different layers of the OSI Model
- Demonstrate the proper way to identify Ipv4 subnets, 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:

#### 9. 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.

#### 10. IT 160 Cloud Computing Essentials (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.

#### 11. 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.

#### 12. 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 to 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

#### 13. 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

### System Administration Certificate:

### 14. 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.

### 15. 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.

### 16. 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, analytical problem framing and make recommendations for improving efficiency and profitability of an organization

### 17. IT 350 Network Configuration & Design (3 credits)

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

### 18. 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.

### Additional Required Courses:

#### 19. 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 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 student's target industry.
- Apply for jobs and/or improved position in current organization.
- Demonstrate effective interviewing and post-interviewing skills.

### **20. 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.
- 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.

### **21. CAR 398 Project Based Internship (1 credit)**

### **22. 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.

### **23. 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

### **24. 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.

### **25. 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.

### **General Education Courses:**

#### **26. ENS 497 Discipline Leadership Capstone (1 ½ credits)**

#### **27. IT 497 IT Capstone (1 ½ credits)**

#### **28. 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.

### **29. REL 250C 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.

### **30. REL 275 Teachings and Doctrine of the Book of Mormon (2 credits)**

- Identify several "Great things" that the Lord has done for his children.
- Explain how the "covenants of the Lord" with the House of Israel make it so that "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."

### **31. 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 and apply the doctrines and principles taught by 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.

### **32. REL 225 Foundations of the Restoration**

- 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 doctrine of the ongoing restoration and in maintaining lifelong spiritual growth within the Church of Jesus Christ of Latter-day Saints.

### **33. LS 303 Knowledge of the Physical and Natural World (3 credits)**

#### **Direct Admit Courses:**

### **34. SS 160 Leadership & 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 CO 4: Synthesize the perspectives of childhood, adolescent, and adult development and apply the related theories to your past experiences and future goals

### **35. 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 organization performance.

### **36. GE 103 Online University Skills (1 credit)**